STATE COMMISSION ASSESSMENT PANEL
A COMMITTEE OF THE STATE PLANNING COMMISSION

APPLICATION ON NOTIFICATION – CROWN DEVELOPMENT

Applicant:	Alinta Energy (Reeves Plains) Pty Ltd (sponsored by the Department of the Premier and Cabinet)
Development Number:	312/V005/17
Nature of Development:	'Reeves Plains Power Station', comprising the construction of a 300 MW capacity gas fired peaking power station and associated infrastructure
Type of development:	Public Infrastructure
Zone / Policy Area:	Primary Production Zone
Subject Land:	1629 Redbanks Road, Reeves Plains (approximately 50 kilometres north of Adelaide) on freehold titled land, comprising Allotment 1 in the Hundred of Grace, being Certificate of Title : Volume 5887 / Folio 243
Contact Officer:	Lee Webb
Phone Number:	(08) 7109 7066
Start Date:	Wednesday 8 November 2017
Close Date:	**COB WEDNESDAY 29 NOVEMBER 2017**
During the notification period, hard copies of the application documentation can be viewed at the Department of Planning, Transport and Infrastructure, Level 5, 50 Flinders St, Adelaide, during normal business hours. Application documentation may also be viewed during normal business hours at the local Council office (if identified on the public notice).	

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered or emailed to the State Commission Assessment Panel.

Any representations received after the close date will not be considered.

Postal Address:
The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Street Address:
Development Division
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders St
ADELAIDE SA 5000

Email Address: scapadmin@sa.gov.au

South Australian DEVELOPMENT ACT, 1993
S49 – CROWN DEVELOPMENT
REPRESENTATION ON APPLICATION

Applicant:	Alinta Energy (Reeves Plains) Pty Ltd (sponsored by the Department of the Premier and Cabinet)
Development Number:	312/V005/17
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Contact Officer:	Lee Webb
Phone Number:	(08) 7109 7066
Start Date:	Wednesday 8 November 2017
Close Date:	**COB WEDNESDAY 29 NOVEMBER 2017**

My name:_____

My phone number: _____

PRIMARY METHOD(s) OF CONTACT: Email address: _____

Postal address:_____

_____Postcode_____

<u>You will be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard in support of your submission.</u>

My interests are:

- ☐ owner of local property
- ☐ occupier of local property
- ☐ a representative of a company/other organisation affected by the proposal
- ☐ a private citizen

The address of the property affected is _____ Postcode _____

The specific aspects of the application to which I make comment on are:

_____

_____

_____

_____

_____

_____

I

- ☐ wish to be heard in support of my submission
- ☐ do not wish to be heard in support of my submission

(Please tick one)

By

- ☐ appearing personally
- ☐ being represented by the following person:

(Please tick one)

Date _____ Signature _____

Return Address: The Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide SA 5001 or scapadmin@sa.gov.au.

SECTION 49 & 49A – CROWN DEVELOPMENT
DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

COUNCIL: Adelaide Plains Council

APPLICANT: Alinta Energy (Reeves Plains) Pty Ltd

ADDRESS: Level 11 , 20 Bridge Street Sydney NSW 2000

CROWN AGENCY: DPTI

FOR OFFICE USE

DEVELOPMENT No: _____

PREVIOUS DEVELOPMENT No: _____

DATE RECEIVED: / /

CONTACT PERSON FOR FURTHER INFORMATION

Name: Greg Harrison (Arcadis)

Telephone: 03 8623 4081 [work] 0439 711 576 [Ah]

Fax: 03 8623 4111 [work] NA [Ah]

Email: greg.harrison@arcadis.com

☐ Complying	Decision: _____
☐ Merit	Type: _____
☐ Public Notification	Finalised: / /
☐ Referrals	

NOTE TO APPLICANTS:

(1) All sections of this form must be completed. The site of the development must be accurately identified and the nature of the proposal adequately described. If the expected development cost of this Section 49 or Section 49A application exceeds $100,000 (excl. fit-out) or the development involves the division of land (with the creation of additional allotments) it will be subject to those fees as outlined in Item 1 of Schedule 6 of the *Development Regulations 2008.* Proposals over $4 million (excl. fit-out) will be subject to public notification and advertising fees.
(2) Three copies of the application should also be provided.

	Decision required	Fees	Receipt No	Date
Planning:				
Land Division:				
Additional:				
Minister's Approval				

EXISTING USE: Primary Production / Grazing / Cropping

DESCRIPTION OF PROPOSED DEVELOPMENT: Gas fired peaking power station with ultimate capacity of 300 MW. This incorporates 6 x gas and liquid fuel turbines, switchyard, ancillary buildings and infrastructure, evaporation pond, water treatment plant, crossover and internal roads, security fencing, landscaping and drainage works.

LOCATION OF PROPOSED DEVELOPMENT:

House No: 1629 Lot No: 1 Street: Redbanks Road Town/Suburb: Reeves Plains

Section No [full/part] _____ Hundred: Grace Volume: 5887 Folio: 243

Section No [full/part] _____ Hundred: _____ Volume: _____ Folio: _____

LAND DIVISION:

Site Area [m^2] _____ Reserve Area [m^2] _____ No of existing allotments _____

Number of additional allotments [excluding road and reserve]: _____ Lease: **YES** ☐ **NO** ☐

DEVELOPMENT COST [do not include any fit-out costs]: $ 450,000,000

POWERLINE SETBACKS: Pursuant to Schedule 5 (2a)(1) of the *Development Regulations 2008,* if this application is for a building it will be forwarded to the Office of the Technical Regulator for comment unless the applicant provides a declaration to confirm that the building meets the required setback distances from existing powerlines. The declaration form and further information on electricity infrastructure and clearance distances can be downloaded from the DPLG website (www.dac.sa.gov.au).

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the *Development Act 1993.*

SIGNATURE: _____ Dated: 9 / 10 / 2017

DEVELOPMENT REGULATIONS 2008
Form of Declaration (Schedule 5 clause 2A)

Government of South Australia

To:

Department of Planning, Transport & Infrastructure

From:

Alinta Energy (Reeves Plains) Pty Ltd

Date of Application: **12 / 10 / 2017**

Location of Proposed Development: _____

House No: 1629 Lot No: 1 Street: Redbanks Road

Town/Suburb: Reeves Plains

Section No (full/part): - Hundred: Grace

Volume: 5887 Folio: 243

Nature of Proposed Development:

Gas fired peaking power station with ultimate capacity of 300MW. This incorporates 6 x gas and liquid fuel turbines, switchyard, ancillary buildings and infrastructure, evaporation pond, water treatment plant, crossover and internal roads, security fencing, landscaping and drainage works.

I, Ken Woolley, being the applicant for the development described above declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of section 86 of the Electricity Act 1996. I make this declaration under clause 2A(1) of Schedule 5 of the Development Regulations 2008.

Signed: _____ **Date:** 9 / 10 / 2017

Government of South Australia

Note 1

This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in section 4(1) of the Development Act 1993), other than where the development is limited to –

a) an internal alteration of a building; or
b) an alteration to the walls of a building but not so as to alter the shape of the building.

Note 2

The requirements of section 86 of the Electricity Act 1996 do not apply in relation to:

a) an aerial line and a fence, sign or notice that is less than 2.0 m in height and is not designed for a person to stand on; or
b) a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3

Section 86 of the Electricity Act 1996 refers to the erection of buildings in proximity to powerlines. The regulations under this Act prescribe minimum safe clearance distances that must be complied with.

Note 4

The majority of applications will not have any powerline issues, as normal residential setbacks often cause the building to comply with the prescribed powerline clearance distances. Buildings/renovations located far away from powerlines, for example towards the back of properties, will usually also comply.

Particular care needs to be taken where high voltage powerlines exist; or where the development:

- is on a major road;
- commercial/industrial in nature; or
- built to the property boundary.

Note 5

An information brochure: 'Building Safely Near Powerlines' has been prepared by the Technical Regulator to assist applicants and other interested persons.

This brochure is available from council and the Office of the Technical Regulator. The brochure and other relevant information can also be found at **sa.gov.au/energy/powerlinesafety**

Note 6

In cases where applicants have obtained a written approval from the Technical Regulator to build the development specified above in its current form within the prescribed clearance distances, the applicant is able to sign the form.

12 October 2017

Mr Lee Webb
Senior Specialist (Environmental) Planner
Strategic Development Assessment – Major and Crown Development
Planning and Development
Department of Planning, Transport & Infrastructure – Development Division
GPO Box 1533
Adelaide SA 5001

Dear Mr Webb,

Reeves Plains Power Station – Development Approval Application

On behalf of Alinta Energy (Reeves Plains) Pty Ltd (**Alinta Energy**), I am pleased to provide you with our Development Application for the proposed Reeves Plains Power Station. This application, for development within Adelaide Plains Council, is made pursuant to Division 3—Crown development and public infrastructure, Section 49 of the *Development Act 1993*.

The proposal comprises the staged development, construction, commissioning and operation of a 300MW nominally rated dual fuel power station and associated infrastructure at 1629 Redbanks Road, Reeves Plains (the **Project**). The total capital investment for the full 300MW Project is estimated to be in the order of $450 million.

The proposed Project received support and endorsement as public infrastructure pursuant to Section 49(2)(c) of the *Development Act 1993* from Dr Don Russell of the Department of State Development on 16 August 2017. A copy of this correspondence is attached to the accompanying Development Application Report.

Alinta Energy has, and will continue to, implement a comprehensive program to engage stakeholders and the local community on the proposed Project. The proposal has been discussed with Adelaide Plains Council, Country Fire Service, Environment Protection Authority, Department of Education and Childhood Development, Department of Planning, Transport and Infrastructure, Department of State Development, Office of the Technical Regulator, SA Water, and the local community in Reeves Plains. Alinta Energy will continue to consult with South Australian Government departments and agencies, Adelaide Plains Council and surrounding land owners as part of the development process.

Please find enclosed three copies of the Development Application Report, including specialist assessments, development plans and application form. An electronic copy of this documentation is also provided on the attached USB.

Should you have any queries, please do not hesitate to contact Huw Adler, Alinta Energy Manager Business Development on 0425 751 228, or Greg Harrison at Arcadis on 0439 711 576.

Yours sincerely

Ken Woolley
Executive Director Merchant Energy
Alinta Energy
Ken.Woolley@alintaenergy.com.au
08 9486 3709

ALINTA ENERGY REEVES PLAINS POWER STATION

DEVELOPMENT APPLICATION

12 OCTOBER 2017

ALINTA ENERGY
REEVES PLAINS POWER STATION

Section 49 Development Application

Final

Author	Sam Withers	
Checker	Greg Harrison	
Approver	Greg Harrison	

Report No	10005589-R01-03
Date	12/10/2017
Revision Text	Final

REVISIONS

Revision	Date	Description	Prepared by	Approved by
01	06/09/17	Alinta project team review	SW	GH
02	27/09/17	Alinta management review	SW	GH
03	12/10/17	Final for lodgement	SW	GH

CONTENTS

APPENDICES

FIGURES

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PHOTOGRAPHS

ABBREVIATIONS

Acronym	Reference
AARD	Archive of the Aboriginal Affairs and Reconciliation Division
ACHM	Australian Cultural Heritage Management
AEP	Annual Exceedance Probability
AQIA	Air Quality Impact Assessment
ARI	Average Recurrence Interval
ASS	Acid Sulphate Soils
CEMP	Construction Environmental Management Plan
CFS	Country Fire Service
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTR	Controlled Traffic Region
DEWNR	Department of Environment Water and Natural Resources
DPTI	Department of Planning, Transport and Infrastructure
EPA	Environment Protection Authority
EPBC	Environment Protection and Biodiversity Conservation
EPC	Engineering Procurement Construction
EPP	Environmental Protection Policy
FTE	Full Time Equivalent
GHG	Greenhouse Gas Emissions
GTP	Gould Thorpe Planning
KNCHA	Kaurna Nations Cultural Heritage Association
L_{eq}	Equivalent Noise Level
LVIA	Landscape and Visual Impact Assessment
MAPS	Moomba to Adelaide Gas Pipeline System
MNES	Matter of National Environmental Significance
NEM	National Energy Market
NTSA	National Trust of South Australia

Acronym	Reference
NVAP	Native Vegetation Assessment Panel
NVC	Native Vegetation Council
OEMP	Operational Environmental Management Plan
OMP	Operations Management Plan
OTR	Office of the Technical Regulator
PDC	Principles of Development Control
RAAF	Royal Australian Air Force
RPPS	Reeve Plains Power Station
SCAP	State Commission Assessment Panel
WMP	Waste Management Plan
ZTVI	Zone of Theoretical Visual Influence

EXECUTIVE SUMMARY

Overview

Alinta Energy (Reeves Plains) Pty Limited (Alinta Energy) is proposing the staged development, construction, commissioning and operation of a 300MW nominally rated dual power station and associated ancillary infrastructure (**the Project**) at **1629 Redbanks Road, Reeves Plains** (subject site). The total capital investment for the full 300MW Project will be in the order of $450 million.

Alinta Energy

Alinta Energy is an established energy company with operations, investments and assets across Australia and New Zealand and currently owns and operates approximately 1,800MW of electricity generation capacity. Alinta Energy is actively looking to expand its Australian energy portfolio as part of a revitalised growth strategy and South Australia is a key part of this new business growth agenda.

Subject Site

The subject site is owned by Alinta Energy. Located on the corner of Redbanks Road and Day Road, the subject site is more particularly described in Certificate of Title Volume 5887 Folio 243. Refer Figure ES 1 - Site Locality overleaf.

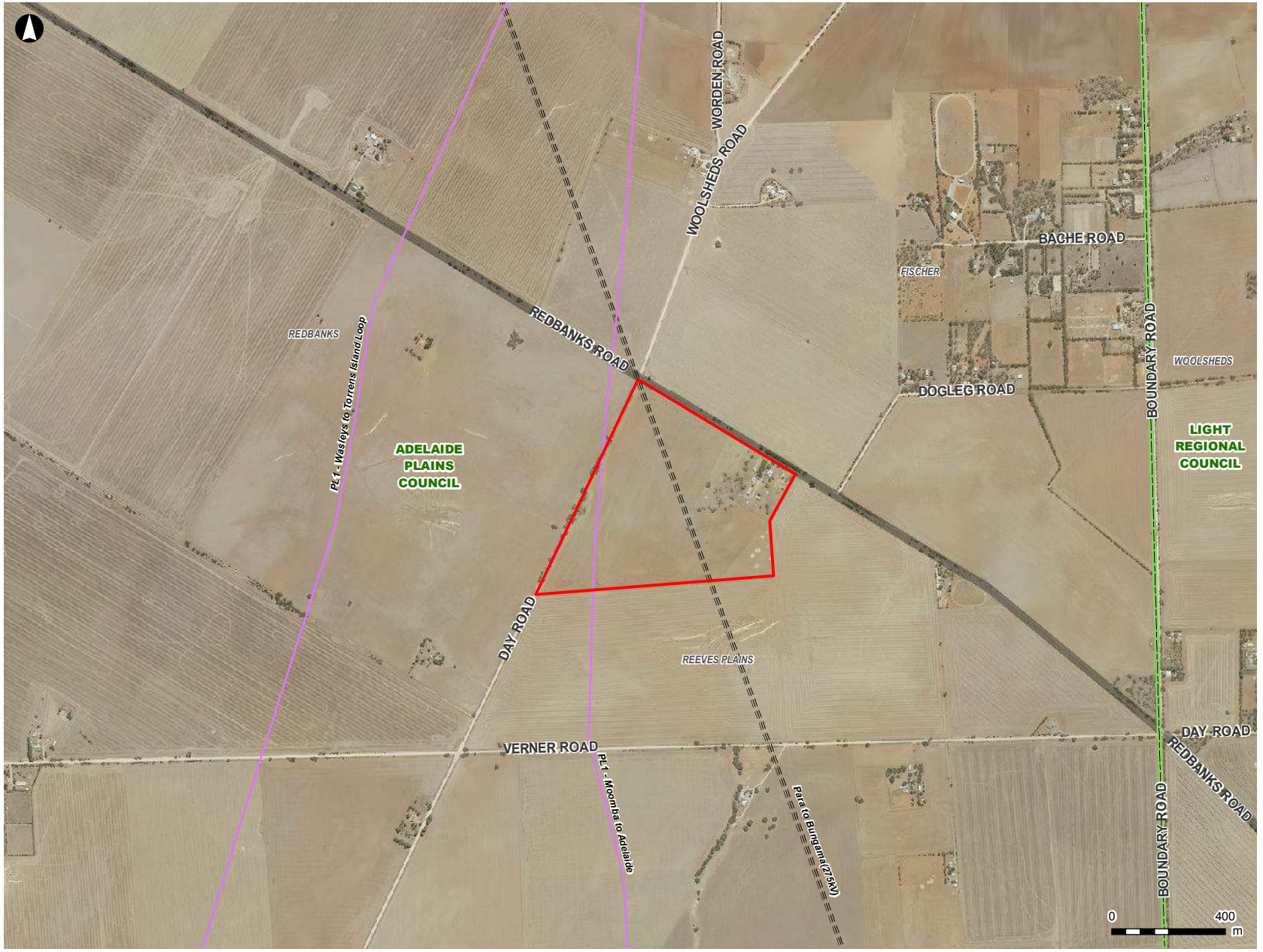
There are multiple easements that cross the subject site, including one for ElectraNet (Formerly Electricity Trust of South Australia) for the 275kV transmission line and another for Epic Energy (Formerly the Pipelines Authority of South Australia) for the Moomba to Adelaide Gas Pipeline System (MAPS). The subject site is situated approximately 50 kilometres north of Adelaide within the municipality of Adelaide Plains Council and the provisions of the Mallala Council Development Plan apply.

Proposal

The proposed Reeves Plains Power Station is a gas fired peaking power station that will include diesel back-up capability. The development incorporates the following key elements:

- 6 x General Electric LM6000 PF Sprint dual fuel turbine packages each of rated output of 50 MW
- MAPS connection
- Gas receiving station
- Water storage and distribution components
  - Water treatment plant
  - Raw water storage tank
  - Demineralised water tank
  - Potable water tank
  - Firefighting system
- Wastewater treatment facilities
- Workshop and stores, switch-room and control building
- 300,00L diesel storage and delivery system
- Drainage and stormwater management works on site
- Pipeline connection to the SA Water network, via the 150-mm main at Redbanks Road
- Electricity grid connection including:
  - Two to three cut in towers
  - Switching station
  - Telecommunications tower
  - Demountable amenities and control buildings

Figure ES1 - Site Locality



LEGEND

- Subject Site
- High Voltage Electricity Transmission line
- Gas pipeline
- Sub Arterial road
- Local Government Area

1:20,000 at A4

alintaenergy

ARCADIS

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker St | North Sydney NSW 2060
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 54
Date issued: September 27, 2017

Alinta Energy - Reeves Plains Power Station

Date: 27/09/2017 Path: F:\10005589\L-GIS\A_Current\B_Maps\10005589_063_SiteLocality_A4L_v1_ES1.mxd
Created by : LH
QA by : RB

- Upgrade to adjoining roads including the intersection at Redbanks Road and Day Road, sealing of Day Road to the Reeves Plains Power Station entrance and the crossover and internal access road from Day Road.
- Demolition of the existing buildings onsite
- Installation of security fencing and signage around the perimeter of the Reeves Plains Power Station.
- Security lighting in accordance with Standard AS4282 Obtrusive Effects of Outdoor Lighting.
- Car parking for employees and contractors
- Landscaping on the subject site to providing partial screening from public roads and nearby dwellings
- Temporary construction facilities.

The Project will operate on an intermittent basis during periods of high energy demand in South Australia. Alinta Energy estimates that the power station will operate approximately 1,400 hours per year and anticipates the turbines would typically run for a duration of no more than 4 hours, subject to market conditions.

Approvals

This Development Application has been prepared in accordance with Section 49 of the *Development Act 1993* following endorsement by the Department of State Development as public infrastructure on 16 August 2017.

The Mallala Council Development Plan applies to the municipal area of Adelaide Plains Council. The subject site is located in the Primary Production Zone. A comprehensive assessment of the Project against the provisions of the Mallala Council Development Plan has been undertaken. This assessment confirms that the Project merits Development Plan Authorisation.

A range of secondary approvals will be required prior to the construction and operation of the Project including an EPA Licence to conduct an activity of environmental significance, a Connection Agreement, Electrical Generation Licence and Generator Registration.

Communications and Stakeholder Engagement

Alinta Energy has, and will continue to, implement a comprehensive program to engage stakeholders and the local community as well as inform the planning and design phases of the Project. An inclusive stakeholder engagement approach employed for the Project was undertaken early, with a *no surprises and no stone unturned* approach.

Key engagement tools have included the establishment of a 1300 information line, provision of a dedicated project webpage with FAQs and circulation of regular email updates. A Community Information Session was held in July and this was attended by over 100 people. A further Community Information Session will be held following lodgement of the Development Application.

Feedback and comments raised by community and stakeholders will continue to be addressed by the Project Team.

Specialist Assessments

A range of specialist assessments have been undertaken to identify and assess potential impacts associated with construction and operation of the Reeves Plains Power Station. The Specialists evaluated the Project against applicable legislation, policy and guidelines.

An Air Quality Impact Assessment assessed the Project's potential impact on air quality over a range of operating scenarios. The results confirm that the Reeves Plains Power Station would comply with the *Environmental Protection (Air Quality) Policy 2016* for all scenarios. A Continuous Emissions Monitoring System will be installed on each gas turbine unit and this will enable operational phase performance monitoring against the EPA licence.

A Bushfire Hazard Assessment has been completed on the basis that the subject site is located in a General Bushfire Risk Area. The Project complies with Minister's Code: Undertaking development in Bushfire Protection Areas. The siting of the power station includes a 50m reduced fuel zone that will mitigate the

threat of potential bushfires and also makes recommendations regarding emergency vehicle access and provision of firefighting water.

An Environmental Noise Impact Assessment has been undertaken. It concludes that during the worst-case weather and operating conditions that Project would comply with the *Environmental Protection (Noise) Policy 2007*. The selected EPC Contractor shall prepare a Construction Noise Management Plan as part of the Construction Environmental Management Plan (CEMP) to ensure that noise during construction complies with the Noise EPP. Similarly, during the first 12 months of operation Alinta Energy will commission independent noise monitoring to validate compliance with the Noise EPP.

A Landscape and Visual Impact Assessment and a Landscape Concept Plan have been prepared as part of the Development Application. The landscape character and visual impact assessment concluded that, with appropriate landscaping, the visual impact of the Project would be minor but acceptable. The Landscape Concept Plan proposes swathes of mixed native trees and bands of shrub and grass planting.

A Traffic and Transport Assessment has been prepared to inform the planning and design of the Reeves Plains Power Station. Minimal impact is expected on the surrounding transport network. Construction traffic volumes, based on a B-Double Truck, equates to 11.5 vehicles per week or 2.3 vehicles per day across a 5-day working week. The operational phase of the power station is expected to generate significantly less traffic than the construction phase of the project. A total of 12 vehicle trips per day on average will be generated by 6 full time employees. Car parking provision will accord with the parking requirements specified under the General Section of the Mallala Development Plan and the Australian Standards AS 2890 Parking Facilities.

A range of other specialist assessments have been undertaken including aviation, contamination and ground water, cultural heritage, ecology, stormwater management and waste management. These reports have informed the preparation of the Development Application.

Summary

On the basis of the comprehensive assessment undertaken in this Development Application Report, the proposed development is not seriously at variance with the overall intent of Mallala Council Development Plan and therefore merits Development Plan Authorisation.

1 - INTRODUCTION

1 INTRODUCTION

1.1 Overview

Alinta Energy (Reeves Plains) Pty Limited (Alinta Energy) is proposing the staged development, construction, commissioning and operation of a 300MW nominally rated dual power station and associated ancillary infrastructure (**the Project**) at **1629 Redbanks Road, Reeves Plains** (subject site). The total capital investment for the full 300MW Project will be in the order of $450 million. Alinta Energy engaged Arcadis Australia Pacific Pty Ltd (**Arcadis**) to prepare this Development Application on behalf of Alinta Energy (the Applicant) for development consent of the Reeves Plains Power Station.

The land upon which the Project would be developed is owned in Fee Simple by Alinta Energy. The subject site is situated approximately 50 kilometres north of Adelaide within the municipality of Adelaide Plains Council. Refer overleaf to Figure 1-2. The subject site is located in a Primary Production Zone and the provisions of the Mallala Council Development Plan apply.

In accordance with to Section 49 of the *Development Act 1993*, Dr Don Russell, Chief Executive of the Department of State Development has endorsed the Project as a development of public infrastructure. This formally confirmed to Alinta Energy via correspondence dated 16 August 2017.

Alinta Energy is committed to the Project and, subject to obtaining all relevant project approvals, licenses and permits from relevant authorities, completion of a detailed investment case and Alinta Energy Board approval, the first stage of the Project is expected to be completed and operational by the first quarter of 2020.

1.2 Alinta Energy

Alinta Energy, is an established energy company with operations, investments and assets across Australia and New Zealand. Alinta Energy currently owns and operates approximately 1,800MW of electricity generation capacity as outlined in Figure 1-1 below. Earlier this year Alinta Energy was acquired by Chow Tai Fook Enterprises. Against a backdrop of new ownership, the company is actively looking to expand its Australian energy portfolio as part of a revitalised growth strategy. South Australia is a key part of this new business growth agenda, and Alinta Energy plans to re-enter and directly invest in the South Australian generation market to support its growing South Australian retail operations.

Figure 1-1 - Alinta Energy existing and proposed assets in Australia

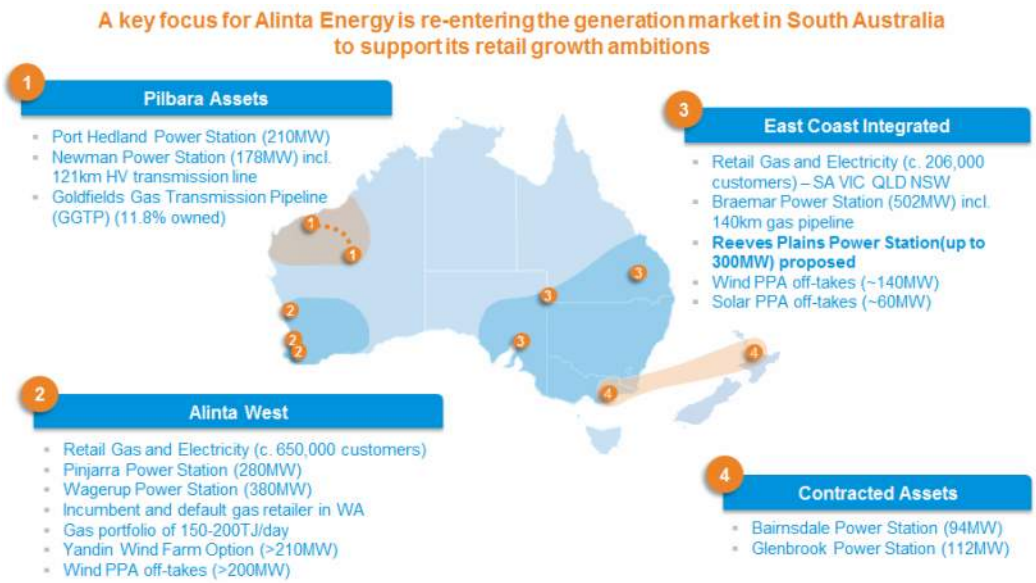
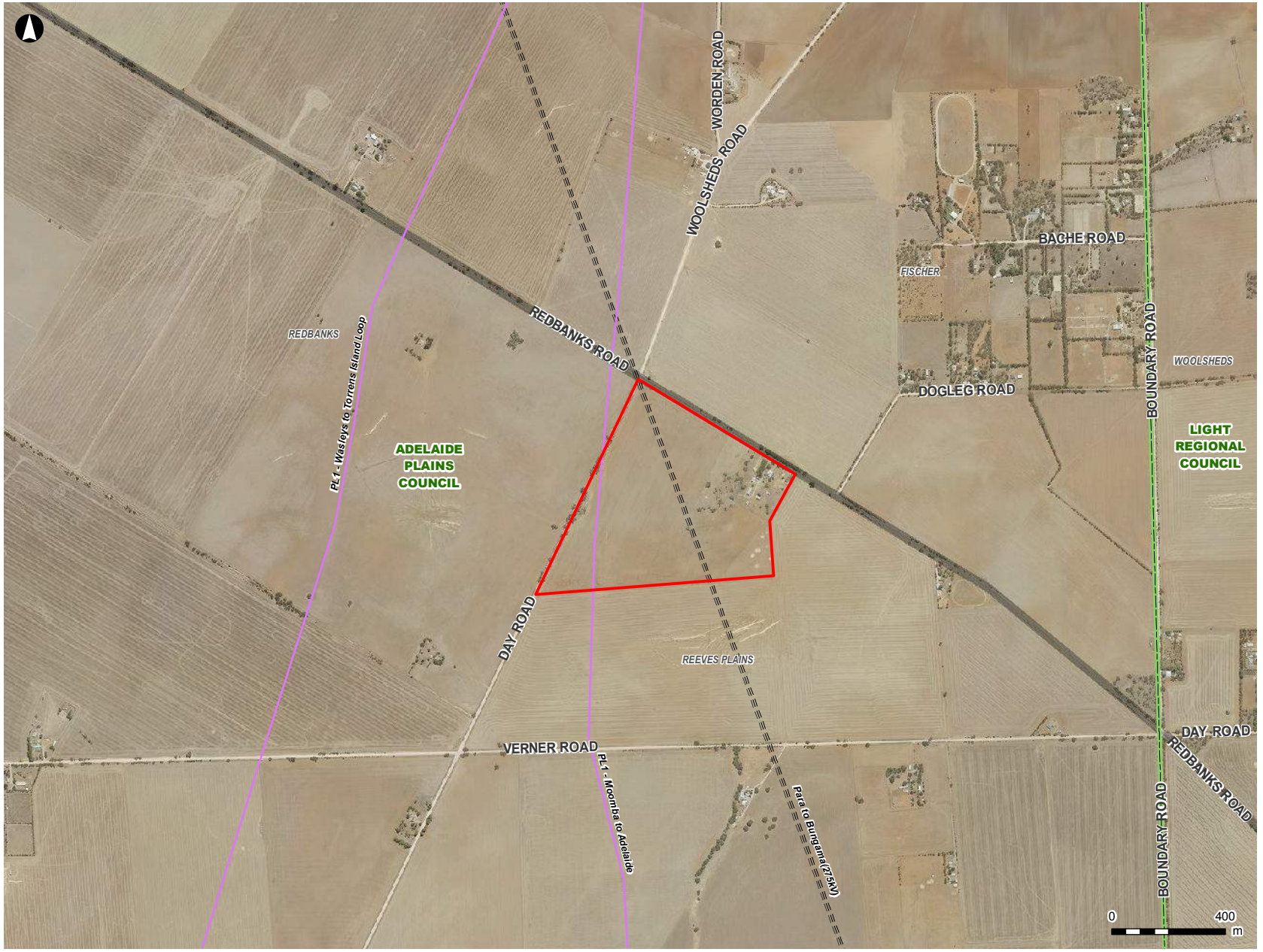


Figure 1-2 - Site Locality



LEGEND

- Subject Site
- High Voltage Electricity Transmission line
- Gas pipeline
- Sub Arterial road
- Local Government Area

1:20,000 at A4

alintaenergy

ARCADIS

ARCADIS AUSTRALIA PACIFIC PTY LTD
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Coordinate System: GDA 1994 MGA Zone 54
Date issued: September 27, 2017

Alinta Energy - Reeves Plains Power Station

Date: 27/09/2017 Path: F:\10005589\L-GIS\A_Current\B_Maps\10005589_062_SiteLocality_A4L_v1_Fig1_2.mxd
Created by : LH
QA by : RB

1.3 Stakeholder and Community Engagement

To inform and support the preparation of this Development Application for the Reeves Plains Power Station, a number of stakeholder and community engagement activities have been undertaken. The following organisations and individuals have been directly consulted:

- Department of Planning, Transport and Infrastructure (DPTI)
- Department of State Development
- Adelaide Plains Council
- Office of the Technical Regulator (OTR)
- Environmental Protection Authority
- Country Fire Service
- SA Water
- ElectraNet
- Epic Energy South Australia Pty Ltd; and,
- Local community members and landowners.

A Community Information Session was held at Mallala Football Club in July 2017 with over 100 people attending the event. An information hotline as well as a project website (https://www.alintaenergy.com.au/about-us/power-generation/reeves-plains-power-station-proposal) were established to share project related information and obtain commentary and feedback from stakeholders. Section 6 provides further details on the stakeholder and community engagement activities undertaken to inform the planning phase of the Project.

1.4 Structure of Report

This report has been prepared to accompany the Development Application for the Reeves Plains Power Station. It comprises the following:

- An overview of the Project need and benefits (Section 2)
- A summary of the legislative and regulatory requirements applicable to this Development Application (Section 3)
- An overview of the subject site and its locality (Section 4)
- A detailed description of the Reeves Plains Power Station (Section 4.3)
- Details of stakeholder and community engagement activities undertaken to date (Section 0)
- A summary of the environmental impacts and mitigation measures (Section 8)
- An assessment of the Project against the relevant provisions of the Mallala Council Development Plan (Section 5)
- Future commitments for environmental management at the subject site (Section 9)
- Endorsement of the Project as 'public infrastructure' under Section 49 of the *Development Act 1993* (Appendix A)
- Compliance with the procedures of the OTR (Appendix B)
- Copies of the concept site layout plan, elevations and other relevant concept design information (Appendix D); and,
- Specialist reports for the Project detailing the outcomes of modelling, impact assessments and mitigation measures where appropriate, including but not limited to air quality, noise, ecology, stormwater, heritage, traffic management, bushfire, land contamination (Appendix E to Appendix R).

1.5 Contact Details

The key contact for all discussions in relation to this Development Application is:

Greg Harrison | Infrastructure Advisory Director

Arcadis Australia Pacific Pty Ltd
Level 32, 140 William Street
Melbourne | VIC 3000
Direct: (03) 8623 4081 I Mob 0439 711 576
Email: greg.harrison@arcadis.com

Huw Adler | Manager Business Development

Alinta Energy
Level 11, 20 Bridge Street
Sydney | NSW 2000
Direct: (02) 9372 2673 I Mob 0424 751 228
Email: huw.adler@alintaenergy.com.au

2 – PROJECT NEED AND BENEFITS

2 PROJECT NEED AND BENEFITS

2.1 Project Need

The Project aligns with the strategic electricity network priorities of South Australia, in particular improving the reliability and security of the electricity grid and putting downward pressure on electricity prices through increased, locally based generation capacity.

2.1.1 Local Energy Market Context

"*South Australia is well-placed to capitalise on the opportunities of an early transition to a low-carbon economy"*[1]. The transition process to a decarbonised economy in South Australia is creating some well documented challenges around security of supply and grid stability. The majority of South Australia's electricity comes from a mix of renewable generation and gas fired generation assets. Nearly 50% of total electricity production in the State comes from renewable energy sources.

While renewable generation technologies have a multitude of benefits, they also behave quite differently from traditional, thermal generators. The most advanced and common forms of renewable energy generation, solar PV and wind, are inherently intermittent and posing challenges to maintaining the secure operation of the South Australian electrical network. The energy network security issues that arise with high penetration of intermittent sources of supply are primarily grid support functions such as voltage and frequency control, and have been well documented[2].

The Project will directly address some of the economic and societal impacts of inadequate grid security and reliability whilst supporting the state's growth in renewable energy technologies as outlined below:

- Alinta Energy has chosen fast-start, aero-derivative gas turbines. These turbines will respond to changes in the level of renewable energy production and provide a dispatchable source of energy for prolonged periods of low renewable output (i.e. consecutive low wind/solar days) in order to achieve this objective. The turbines are designed to start within a minimum of five minutes and an average of 10 minutes.
- Most renewable generation is connected to the network via a power converter. Power converters have a lower short circuit ratio and provide limited system stability. Synchronous generators such as those proposed by Alinta Energy tend to have larger short circuit ratios and higher levels of fault current that contributes to increased system strength. A strong system is able to maintain stability in response to various disturbances and exhibits better voltage control. A weak system is more susceptible to voltage instability and collapse. Convertor connected generation is also more likely to trip to protect itself against voltage swings. Synchronous generators such as the proposed gas turbines display better ride-through capabilities. The Reeves Plains Power Station will therefore contribute to increased system strength in a part of the network that has increasing levels of power convertor connected generation.
- A third primary benefit of Alinta Energy's proposal is an increase in the level of synchronous inertia in the system. An increase in the amount of generation connected via power converter leads to an increased Rate of Change of Frequency, meaning additional plant is likely to "trip" and more measures are required to maintain frequency levels. Introducing more synchronous inertia will lower the Rate of Change of Frequency, resulting in improved frequency restoration following system contingency events. The heavy turbine model proposed is expected to offer sufficient synchronous inertia for the local transmission system and is supported by the OTR (Appendix B).

"*South Australia's wholesale electricity prices tend to be higher and more volatile than elsewhere in Australia*[3]." The state of the Energy Market report outlines a number of factors that directly contribute to this including concentrated generator ownership, generator bidding behaviours, thermal plant withdrawals and limited import capability. The high prices and volatility are reflected in electricity prices paid by South Australians with residential customers seeing an average rise of up to 19.9% in the 2017-2018 financial

[1] South Australia's Low Carbon Economy Experts Panel. 2015. *Findings and recommendations*: 1
[2] Australian Energy Market Operator, 2017. *Black System South Australia 26 September 2016*. 5
[3] Australian Energy Regulator, 2017, *State of the Energy Market*: 54

year[4]. The construction and operation of the Reeves Plains Power Station will re-introduce Alinta Energy as a generator in South Australia and help replace some of the thermal synchronous generation capacity that has recently been withdrawn, or is slated for withdrawal from the state. It is expected that this will improve the level of competition within the South Australian generation market and lead to better price outcomes for consumers. It is also expected that the fast-start, open-cycle gas turbine technology will be better suited to a high renewable penetration market. Alinta Energy's ongoing involvement as an electricity retailer will increase competition in the retail market and put downward pressure on electricity prices.

2.1.2 Government Objectives and Policy Alignment

The Reeves Plains Power Station will contribute to a number of South Australia Government objectives including:

- Exceeding Australia's ratio of business investment as a percentage of the economy by 2014 and maintain thereafter
- Maintaining equal or lower unemployment than the Australian average through to 2020;
- Sourcing and using more locally produced gas to generate its own electricity; and,
- Increasing competition in the energy market and facilitating the establishment more renewable energy.

The strategic alignment of the Reeves Plains Power Station with State Government objectives and policies including Our Energy Plan are described in more detail in Section 3.3.

2.2 Project Benefits

The Reeves Plains Power Station will provide significant benefits to South Australia, including safeguarding the State's energy future through new electricity generation capacity and delivering improved energy security.

The main Project benefits are:

- Providing new, locally based, dispatchable generation capacity;
- Improving reliability in the State's energy supply;
- Increasing competition in the South Australian wholesale generation market;
- Enhancing competition in the electricity retail market benefiting business, industry, community organisations and residential consumers; and,
- Creating direct and indirect jobs in South Australia.

Specifically, the following key benefits have been identified across environmental, economic and social aspects.

2.2.1 Environmental benefits

South Australia currently has the second highest renewable energy penetration of all Australian states, behind only Tasmania. The move towards renewables has been driven by declining costs of renewable generation technologies. This is forecast to continue. In order to balance the increasing penetration of affordable renewables with security and quality of supply, South Australia will require dispatchable generation that can complement the increasing level of intermittent generation sources. The Project is expected to support the development of further renewable generation in South Australia through the provision of dispatchable fast starting technology that can both "firm" up electricity generated by renewables as well as adding to overall network reliability and security of energy supply.

Furthermore, the aero-derivative gas turbine technology is a more efficient gas fired generation technology than some of the existing gas generation fleet in South Australia. The proposed LM6000 aero-derivative units are one of the most efficient available on the market. This means that when operating, the Reeves

[4] ABC News 28 June 2017 - http://www.abc.net.au/news/2017-06-28/sa-has-most-expensive-power-prices-in-the-world/8658434

Plains Power Station will have lower emissions per MWh of electricity produced than some of the existing fleet.

2.2.2 Economic benefits

The key economic benefit from the Project will be the lowering of overall electricity supply prices in South Australia. Currently, there is a very high degree of market concentration for scheduled generation capacity in South Australia. Approximately 90% of generation capacity is owned by three companies (Australian Energy Market Operator, 2017). The Reeves Plains Power Station will see Alinta Energy re-enter the South Australian wholesale generation market, providing new competition to the incumbent generators. All else being equal, it is expected that the increase in generation assets would place downward pressure on wholesale market prices.

Price impacts can be expected in both the capacity and electricity markets. The proposed Reeves Plains Power Station will be a peaking power station and support Alinta Energy's own requirements for generation capacity. Once operational, Alinta Energy would no longer purchase capacity from other market participants, and may provide additional capacity for sale into the market. This increase in the supply of capacity is expected to lower the price for generation capacity. The power station would bid into the electricity market and would act to reduce both the overall level of price spikes and the duration of such price spikes.

The Project will help to reduce the likelihood of blackout events that have occurred in South Australia recently across the summer period due to system instability. Furthermore, the Reeves Plains Power Station will enable the system to return to normal operation by providing black start capabilities and reduce the economic cost of these events.

2.2.3 Social benefits

The Project is expected to provide a local socio-economic boost. The Project would be a major capital investment in South Australia. It represents a vote of confidence in the South Australian energy market. Importantly, it will generate permanent, local jobs, and benefit the local community, particularly workers in the Adelaide Plains Council municipal area. This contribution will be visible through the construction phase as well as ongoing operations. Significant employment is expected during the construction phase – it is estimated that up to 100 jobs will be created. During its operational life, the Reeves Plains Power Station will require approximately six full time equivalent (FTE) site based personnel. There will also be ongoing business opportunities for local contractors and suppliers throughout the operational life of the Reeves Plains Power Station.

3 – STATUTORY REQUIREMENTS

3 STATUTORY REQUIREMENTS

The Reeves Plains Power Station has been planned and designed by Alinta Energy to satisfy applicable South Australian legislative and policy requirements. The following section identifies primary and secondary approvals and details the Project's compliance with relevant South Australian legislation and policy.

3.1 Approval Process

3.1.1 Development Act 1993

Section 49 of the *Development Act 1993* relates to what is commonly referred to as Crown Development, a prescribed process for public infrastructure projects endorsed by the South Australian Government. As a precursor to the preparation of this Development Application, Alinta Energy submitted a public infrastructure application pursuant to Section 49 of the *Development Act 1993* to the South Australian Government.

Under the *Development Act 1993*, public infrastructure is defined as:

> *(a) The infrastructure, equipment, structure, works and other facilities used in or in connection with the supply of water or electricity, gas or other form of energy, or the drainage or treatment of waste water or sewage*

The *Development Act 1993* defines infrastructure for the purposes of electricity generation as 'electricity infrastructure, in accordance with the definition provided in Section 4 of the *Electricity Act 1996*'. The establishment of the Reeves Plains Power Station on the subject site represents the development of Electricity Infrastructure.

Under the *Electricity Act 1996*, Section 4, Electricity Infrastructure means:

a) electricity generating plant; and

b) powerlines; and

c) substations converting, transforming or controlling electricity; and

d) equipment metering, monitoring or controlling electricity; and

e) any wires, equipment or other things (including tunnels and cavities) used for, or in connection with, the generation, transmission, distribution or supply of electricity; and

f) anything declared by regulation to form part of electricity infrastructure

but does not include anything declared by regulation not for form part of electricity infrastructure.

The public infrastructure process is the appropriate approval pathway for the Project given that the Reeves Plains Power Station is an 'electricity generating plant'. The Minister (or delegate) is the relevant authority for applications submitted pursuant to Section 49. The State Commission Assessment Panel (SCAP) is involved in this process through the formal assessment of the Development Application. The SCAP prepares a report to the Minister. The Minister (or delegate) may, after receiving a report from the SCAP, approve or refuse the development.

The Section 49 planning pathway has been confirmed as appropriate by Dr Don Russel, Chief Executive of the Department of State Development. Dr Russel endorsed the Project as a development of public infrastructure. This decision was formally confirmed to Alinta Energy via an email correspondence dated 16 August 2017, as per Appendix A.

3.1.2 Mallala Council Development Plan

The Mallala Council Development Plan (Development Plan) applies to the municipal area of Adelaide Plains Council.

The subject site is located in the Primary Production Zone as shown in Figure 3-1. The Primary Production Zone envisages long term, sustainable primary production and agricultural use.

The objectives of the Primary Production Zone are:

1. The long-term continuation of primary production
2. Economically productive, efficient and environmentally sustainable primary production
3. Allotments of a size and configuration that promote the efficient use of land for primary production
4. Protection of primary production from encroachment by incompatible land uses and protection of scenic qualities of rural landscapes
5. Accommodation of wind farms and ancillary development
6. Protection of rural support infrastructure for the bulk handling, storage and transportation of farm commodities situated at Long Plains and Adelaide Road
7. Development that contributes to the desired character of the zone

A comprehensive assessment of the Project against the provisions of the Development Plan is included as part of Appendix O.

3.1.3 Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to any action which is likely to have a significant impact on a Matter of National Environmental Significance (MNES). There are nine MNES that can trigger the assessment and approval process under the EPBC Act including:

1. World heritage properties
2. National heritage places
3. Wetlands of international importance (listed under the Ramsar Convention)
4. Listed threatened species and ecological communities
5. Migratory species protected under international agreements
6. Commonwealth marine areas
7. The Great Barrier Reef Marine Park
8. Nuclear actions (including uranium mines)
9. A water resource, in relation to coal seam gas development and large coal mining development.

Specialist assessments undertaken as part of the Development Application (refer to Section 8) state that the Project is highly unlikely to impact any MNES and therefore a referral to the Commonwealth Government Department of Environment and Energy is not required.

3.1.4 Public Notification

The Reeves Plains Power Station will have an estimated capital cost of $450 million. Accordingly, public notification for a period of 15 business days is required pursuant to subsection 49(7(d)) of the *Development Act 1993* as the cost of the Project is greater than the prescribed $4 million threshold.

3.1.5 Statutory Referrals

In accordance with Schedule 8 of the *Development Regulations 2008* (the Regulations), the following statutory referrals will be required:

- Commissioner of Highways – the Project will require an intersection upgrade at Redbanks Road and Day Road to allow for the efficient and safe movement of heavy vehicles during the construction and operation phases of the Project.
- Environmental Protection Authority – the Reeves Plains Power Station constitutes an activity of major environmental significance under Schedule 22 of the Regulations

- Adelaide Plains Council – the Project is located in the municipality of Adelaide Plains Council.

The statutory referrals will be facilitated by the SCAP following lodgement of the Development Application.

3.2 Secondary Approvals

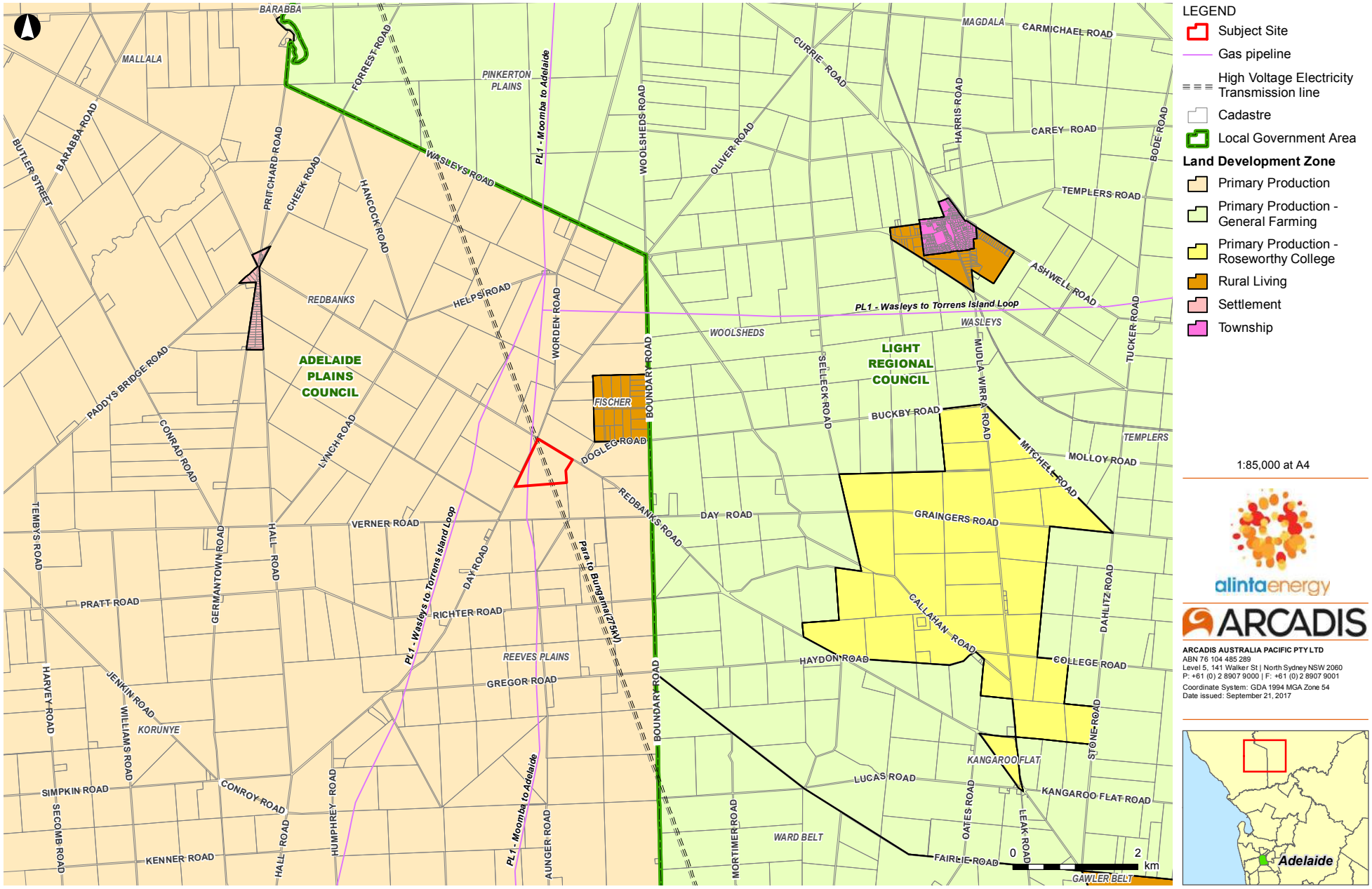
A range of additional or secondary approvals will be required prior to the construction and operation of the Reeves Plains Power Station. These are summarised in Table 3-1 below.

Table 3-1 - Additional approvals

Approval Requirement	Authority / Agency
EPA Licence to conduct an activity of environmental significance (likely to include fuel burning, desalination plant and activities producing listed wastes), in accordance with Section 36 of the *Environmental Protection Act 1993*	Environment Protection Authority
Network Connection Agreement to connect the power station to the Para-Bungama electricity transmission line in accordance with the National Electricity Rules	ElectraNet
Electrical Generation Licence for connection to the National Electricity Market in accordance with the requirements of the *Electricity Act 1996*	Essential Services Commission of South Australia
Generator Registration with AER under the National Electricity Rules	AER

Other approvals (e.g. heavy vehicle permits, road opening permits) may be required subject to the specific construction methodology of the EPC Contractor. These approvals will be obtained by the appointed EPC Contractor prior to the commencement of construction.

Figure 3-1 - Development Plan Zoning



LEGEND

- Subject Site
- Gas pipeline
- High Voltage Electricity Transmission line
- Cadastre
- Local Government Area

Land Development Zone

- Primary Production
- Primary Production - General Farming
- Primary Production - Roseworthy College
- Rural Living
- Settlement
- Township

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Created by : LH
QA by : RB

3.3 State Strategic Alignment

The development of the Reeves Plains Power Station is compatible with a number of South Australian strategic priorities. The key South Australian Government strategic frameworks relevant to the Project are summarised below.

3.3.1 South Australia's Strategic Plan

At the highest level, the Reeves Plains Power Station is compatible with the overarching priorities of South Australia's Strategic Plan including "an affordable place to live" by putting downward pressure on consumer electricity prices and "growing advanced manufacturing" via a new and reliable energy source.

Table 3-2 below outlines how the Reeves Plains Power Station aligns with specific targets of the South Australia Strategic Plan.

Table 3-2 - Project Alignment to SA Strategic Plan

Objective / Target	Project Alignment
Target 35: Economic Growth **Exceed the national economic growth rate over the period to 2020**	The availability of additional electrical generation capacity in the South Australian market will put downward pressure on prices, thereby helping to reduce business costs and promote growth.
Target 38: Business Investment **Exceed Australia's ratio of business investment as a percentage of the economy by 2014 and maintain thereafter**	Capital investment of ~ $450 million with ongoing investment during the operations and maintenance phases in regional South Australia. Provides opportunities for local contractors / suppliers during the construction and operations phases of the project.
Target 49: Unemployment **Maintain equal or lower than the Australian average through to 2020**	The creation of jobs and opportunities for local contractors / suppliers during the construction and operation phases.
Target 64: Renewable energy **Support the development of renewable energy so that it comprises 33% of the state's electricity production by 2020**	The Project will provide dispatchable, fast starting synchronous generation that will support deployment of further renewable energy generation through its ability to respond to the intermittency associated with common forms of renewable generation and help maintain a reliable and stable power supply.
Target 64: Emissions intensity **Limit the carbon intensity of total South Australian electricity generation to 0.5 tonnes of CO2/MWh by 2020**	The Project will provide dispatchable, synchronous power that will support renewable generation. The Reeves Plains Power Station is likely to achieve emissions intensity of just of 0.5 tonnes of CO_2/MWh, lower than some of South Australia's current gas fired generation assets.

3.3.2 South Australia's Strategic Infrastructure Plan (2005)

The South Australia Strategic Infrastructure Plan is currently under review. The current Strategic Infrastructure Plan was developed for the period 2005 to 2015.

The Discussion Paper on the update of South Australia's Strategic Infrastructure Plan refers to the need for reliable and cost effective energy supply to support the growth and development of a range of key industries. This includes the minerals and resources sector, aquaculture and fishing industries and tourism. The Plan further identifies the Greater Adelaide Region as a priority area for securing increased investment in renewable energy. Located 50 kilometres from Adelaide, the Reeves Plains Power Station will make an important contribution to this priority area by providing generation capacity that compliments renewable generation technologies.

3.3.3 Our Energy Plan (2017)

Our Energy Plan was developed by the South Australian Government in response to the perceived failure of the National Energy Market (NEM). One overarching goal is to increase stability of local power supplies. The addition of 300MW of fast-start, synchronous inertia generation on the South Australian grid will materially increase the stability of the local power supply. This increase in system security has been confirmed by the OTR.

Our Energy Plan aims to encourage new electricity generators to enter the South Australian market. The Plan identifies as a goal the construction of a new, privately owned power station, which would be achieved by the development of the Reeves Plains Power Station.

Our Energy Plan also promotes self-sufficiency by requiring South Australia to source and use more locally produced gas to generate its own electricity, thereby reducing reliance on interstate energy supplies and increasing the state's energy independence. The Reeves Plains Power Station will directly contribute to the stabilisation of local supplies and offer independence from inter-state power generation.

The Reeves Plains Power Station will also help to achieve the goal of increasing competition in the energy market and facilitate the establishment of more renewable energy infrastructure.

3.3.4 Blueprint for the Future (2017)

In June 2017, Dr Alan Finkel AO release a *Blueprint for the Future, an Independent Review into the Future Security of the National Electricity Market*. The report was commissioned by the Federal Government to develop a strategic energy plan for coordinated national reform of the National Electricity Market (NEM).

It recommends four key outcomes for the NEM:

- Increased security;
- Future reliability;
- Rewarding consumers; and
- Lower emissions.

The Reeves Plains Power Station would contribute to achievement of all of these objectives as referenced in Section 2.

4 – PROJECT LOCALITY

4 PROJECT LOCALITY

4.1 Overview of Site Selection

Prior to the acquisition of the subject site, Alinta Energy investigated a number of potential sites as part of the feasibility assessment for the power station. Key site selection evaluation criteria included:

- Proximity to existing energy infrastructure (transmission network and gas pipelines);
- Proximate environmental aspects;
- Property size and configuration; and,
- Capacity to minimise impacts on surrounding residents.

The initial feasibility assessments commenced in 2007 with consideration of a 480 MW (nominal) gas fired peaking power station at Helps Road Redbanks, 2.5 km to the north of the subject site (**the Redbanks site**). This proposal received development approval, but was not pursued and the approval lapsed. Investigations were resumed by Alinta Energy in 2011 and the subject site was identified. Alinta Energy decided on a final site in 2011 (the subject site) after having undertaken extensive pre-feasibility studies and due diligence processes. A land option over the subject site was acquired in 2011. Alinta Energy then purchased the subject site in February 2017 and confirmation of registration occurring on 23 May 2017.

4.1.1.1 Redbanks Site

The Redbanks site is located on Helps Road. This site received development approval for a gas fired peaking power station under delegation from the Minister for Urban Development and Planning in 2007. Alinta Energy did not proceed with the Redbanks Site and as a consequence, the approval lapsed. Alinta Energy was unable to renew the land option over this site when it expired and took the opportunity to pursue an alternate site option.

4.1.1.2 Port Augusta Site

Alinta Energy currently has an option over vacant land that adjoins the decommissioned Northern Power Station in Port Augusta. This site's proximity to the Davenport Substation would require only a very short high voltage transmission line to connect to the network.

The advantages associated with the Port Augusta site included:

- The historical power generation use of the property;
- A significant buffer from nearby sensitive land uses;
- Alinta Energy's familiarity with the site;
- Onsite infrastructure as well as proximity to Davenport substation which would reduce capital costs; and,
- Locally based skill sets capable of managing a power station.

While there are multiple advantages for a Port Augusta site, the distance of the Port Augusta site from a suitable high pressure gas pipeline (approximately 60 kilometres away) would require significant capital investment and materially affect the viability of the project.

4.1.1.3 Reeves Plains (the subject site)

The clear benefit of the subject site is its proximity to a gas pipeline and high voltage electricity infrastructure. The subject site is unique in that it sits at the intersection of the MAPS the Para to Bungama 275kV line. Developing Reeves Plains Power Station at this location limits the impact of building additional linear infrastructure and significantly lowers the capital cost of pipeline and HV network connectivity. The subject site is also well located from an environmental constraints perspective with no heritage or significant flora and fauna site located on the site. It is located outside of the Gawler or Light River floodplains. The subject site also allows for efficient road access, with Redbanks Road well connected to the Northern Expressway

and Port Adelaide where the key components will likely be delivered via sea transport. The size of the subject site (41 ha) is also suitable for the Project and provides for reasonable setback from surrounding residential properties.

4.2 Surrounding Area

The subject site is located in the Adelaide Plains Region. The nearest residentially zoned area is Mallala, which has a population of 894[5], Gawler is the closest urban centre with a population of 9,481[6].

Land use in the surrounding area is predominately agricultural and horticultural in nature, as depicted in This rural landscape contains scattered farm dwellings and a small rural living enclave of Fischer approximately 1 km north-east of the centre of the subject site.

No new dwellings have been approved for development or are currently proposed within 1.5 km of the subject site.

The subject site is located within the Salt and Templars Creek surface water catchment. An un-named[7] water course is mapped approximately 350 metres south-east of the south-eastern corner of the subject site, and is likely an ephemeral section of Templars Creek which is more prominent around the Templars and Wasleys townships to the north-east. The closest major waterway is the Light River approximately 7 km north-west of the subject site. There are no Conservation Parks or National Parks in the vicinity of the subject site, the closest being the Sandy Creek Conservation Park 23 km to the south-east of the subject site.

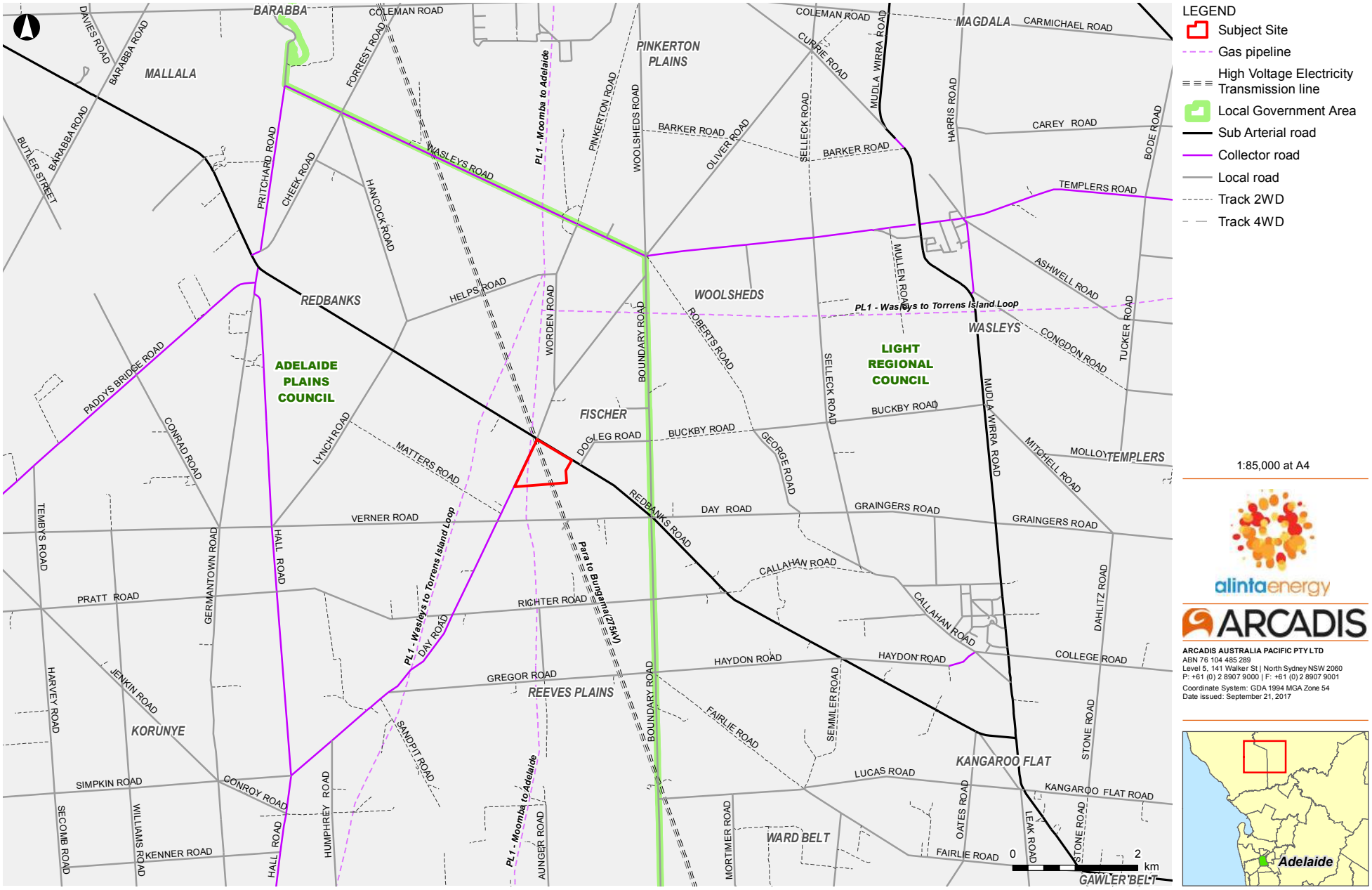
The University of Adelaide – Roseworthy Campus is located approximately 7 km south-east of the subject site. This campus is an Agricultural Research facility, which was originally opened in 1883. It is internationally renowned centre for excellence in dryland agriculture, natural resource management and animal production. Approximately 650 students are enrolled at the University of Adelaide – Roseworthy Campus.

Gawler Aerodrome is located approximately 15 km south-east of the subject site. The aerodrome is owned by Light Regional Council and used by the Adelaide Soaring Club. The Club trains people in the use of Gliders and Light Sports aircraft.

The Edinburgh RAAF Base is located approximately 22 km south of the subject site. The airspace above the subject site falls within the Edinburgh Class C Control Zone (CTR). The Edinburgh CTR was established to protect military arrivals and departures as well as circuit operations and as a consequence, the protection of civilian traffic from military activity.

[5] Australian Bureau of Statistics, 2016
[6] Australian Bureau of Statistics, 2016. This includes Gawler, Gawler East, Gawler South and Gawler West
[7] Nature Maps, Department of Environment, Water and Natural Resources

Figure 4-1 - Local Road Network



LEGEND

- Subject Site
- Gas pipeline
- High Voltage Electricity Transmission line
- Local Government Area
- Sub Arterial road
- Collector road
- Local road
- Track 2WD
- Track 4WD

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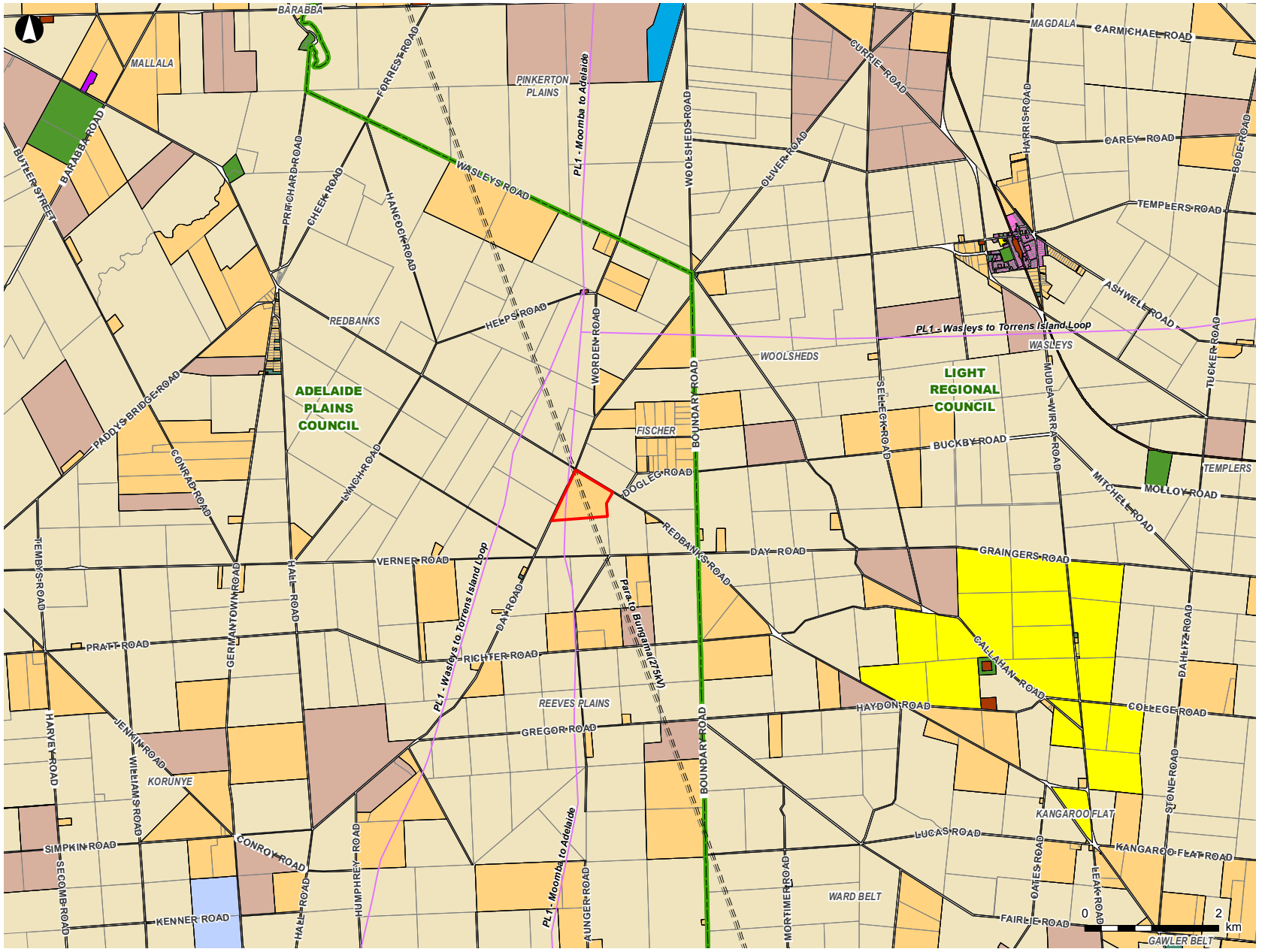
QA by : RB

Figure 4-2 - Surrounding Land Use



LEGEND

- Subject Site
- Gas pipeline
- High Voltage Electricity Transmission line
- Cadastre
- Local Government

Land Use (2016)

- Agriculture
- Commercial / Retail
- Education
- Food Industry
- Horticulture
- Livestock
- Public Institution
- Recreation / Reserve
- Residential
- Rural Residential
- Utility Industry
- Vacant

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Created by : LH
QA by : RB

Figure 4-3 - Surrounding Dwellings

LEGEND

- Subject Site
- Sensitive Receiver
- Gas pipeline
- High Voltage Electricity Transmission line
- Distance from Subject Site Centre
- Local Government Area

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Created by : LH
QA by : RB

4.3 Site Details

The proposed Reeves Plains Power Station site is located at 1629 Redbanks Road, Reeves Plains, South Australia. The subject site is located in the Greater Adelaide Region approximately 50 km north of Adelaide. The nearest population centre is located at Fischer, 1 km to the north-east and the surrounding area is predominantly rural.

The property is bounded by:

- Redbanks Road, a single carriageway DPTI controlled road, runs along the northern property boundary;
- Day Road runs along the western property boundary; and,
- Privately owned agricultural land to the east and south, where crops including wheat, barley, oats, canola, lentils and vetch meadow hay are often cultivated.

Redbanks Road is the main road linking Mallala and Gawler. An overview of the local road network is presented in Figure 4-1.

The subject site covers 41 hectares (ha) and contains a homestead and five outbuildings. Alinta Energy purchased the subject site in February 2017 and has freehold tenure on the land. The subject site is more particularly described in Certificate of Title Volume 5887 Folio 243. There are multiple easements that cross the subject site, including one for ElectraNet (Formerly Electricity Trust of South Australia) for the 275kV transmission line and another for Epic Energy (Formerly the Pipelines Authority of South Australia) for the Moomba to Adelaide Gas Pipeline System.

Photograph 4-1 - Existing dwelling

Photograph 4-2 - Existing ElectraNet transmission line

Existing high voltage transmission across the subject site. The transmission lines connect the ElectraNet owned and operated Para and Bungama substations.

Photograph 4-3 - Existing Epic Energy MAPS

The Moomba to Adelaide Gas Pipeline System (MAPS) also traverses the subject site and is owned and operated by Epic Energy. The gas from the MAPS is used in South Australian power generation and industrial and commercial applications for customers such as OneSteel and Adelaide Brighton Cement. The MAPS features 1,185 km of high pressure gas pipelines with a fully compressed maximum winter capacity of 418 Terajoules per day.

In addition to the MAPS and 275 kV transmission lines, other utility infrastructure around the subject site includes:

- Optus underground cable within the northern road reserve of Redbanks Road; and,
- SA Water 150mm water main within the southern road reserve of Redbanks Road

The subject site has historically been used for agricultural and horticultural purposes. It has supported the cropping of cereal grains and a small amount of animal husbandry incorporating the breeding and keeping of sheep and Shetland ponies.

The subject site is largely clear of native vegetation however small areas of degraded native vegetation exist along Day Road and in the immediate vicinity of the homestead (refer to Section 8 and Appendix L Background Ecological Report).

Photograph 4-4 - Redbanks Road

Photograph 4-5 - Day Road

5 – DEVELOPMENT PLAN

5 DEVELOPMENT PLAN

The following section identifies the provisions of the Mallala Council Development Plan relevant to the assessment of the Reeves Plains Power Station. The detailed assessment in relation to the Primary Production Zone and relevant policy in the General Section of the Mallala Council Development Plan is provided in Appendix O.

The Mallala Council Development Plan outlines what sort of developments and land use are and are not envisaged for particular zones (e.g. residential, commercial, industrial), and various objectives, principles and policies further controlling and affecting the design and other aspects of proposed developments.

5.1 Primary Production Zone

The subject site is located in a Primary Production Zone under the Mallala Council Development Plan (Figure 3-1) and is not encumbered by any overlays. This zone covers the majority of the council area, excluding the townships and several special zones.

The objectives of a Primary Production Zone are:

1. The long-term continuation of primary production;
2. Economically productive, efficient and environmentally sustainable primary production;
3. Allotments of a size and configuration that promote the efficient use of land for primary production;
4. Protection of primary production from encroachment by incompatible land uses and protection of scenic qualities of rural landscapes;
5. Accommodation of wind farms and ancillary development;
6. Protection of rural support infrastructure for the bulk handling, storage and transportation of farm commodities situated at Long Plains and Adelaide Road; and
7. Development that contributes to the desired character of the zone.

Power generation is generally understood and accepted in the South Australian planning system to be an industrial land use.

The Project has been, and will continue to be, developed with Desired Character, Principles of Development Control and Form and Character of the zone in mind.

Key considerations include:

- Using building materials and finishes that complement the rural character of the zone
- Provision of landscaping to contribute to the character and attractiveness of the rural landscape
- Being able to develop the Project within the subject site, thereby not inhibiting the use of surrounding land for primary production
- Implementing appropriate management systems during the construction and operational phases of the Project to mitigate/eliminate potential impacts to land or water resources
- Setting the infrastructure back as far as practicable from public roads to reduce potential visual impacts
- The selection and placement of landscape plantings that will aid in visually screening the Project.

5.2 General Development Plan Provisions

The Mallala Council Development Plan includes a number of principles that the Project is to be assessed against. These principles address a number the key environmental issues raised by the community including, but not limited to:

- Noise
- Air Quality

- Visual impact
- Bushfire
- Water.

Each of these issues has been addressed by technical specialists (Section 8) and this has informed the overall planning assessment against the relevant principles of the Mallala Council Development Plan.

Based on the planning assessment undertaken for the Project, as well as the points identified and discussed in Section 8, it is contended that the Project satisfies the strategic and statutory requirements of the Mallala Council Development Plan and is consistent with land use(s) envisaged within the Primary Production Zone applying to the subject site.

6 – DESCRIPTION OF THE DEVELOPMENT

6 DESCRIPTION OF THE DEVELOPMENT

The proposed development at 1629 Redbanks Road, Reeves Plains will comprise a peaking power plant capable of generating up to 300MW of electricity at full capacity. This section provides a detailed description of the proposed development and ancillary infrastructure.

6.1 Proposed Infrastructure

The Alinta Energy Reeves Plains Power Station incorporates the power station together with a range of ancillary infrastructure. Each of the major components of the Reeves Plains Power Station is discussed in further detail below.

6.1.1 Overview

- The power station buildings and works include:
  - Gas receiving station
  - 6 x General Electric LM6000 PF Sprint dual fuel turbine packages each of rated output of 50 MW
  - Water storage and distribution components
    - Water treatment plant
    - Raw water storage tank
    - Demineralised water tank
    - Potable water tank
    - Firefighting system
  - Wastewater treatment facilities including:
    - Wastewater evaporation basin
    - Oil/water separator
  - Workshop and stores, switch-room and control building
  - Diesel storage and delivery system
- Drainage and stormwater management works on site
- Pipeline connection to the SA Water network, via the 150-mm main at Redbanks Road
- Electricity grid connection

A number of other works and general infrastructure upgrades will be required to support the development including:

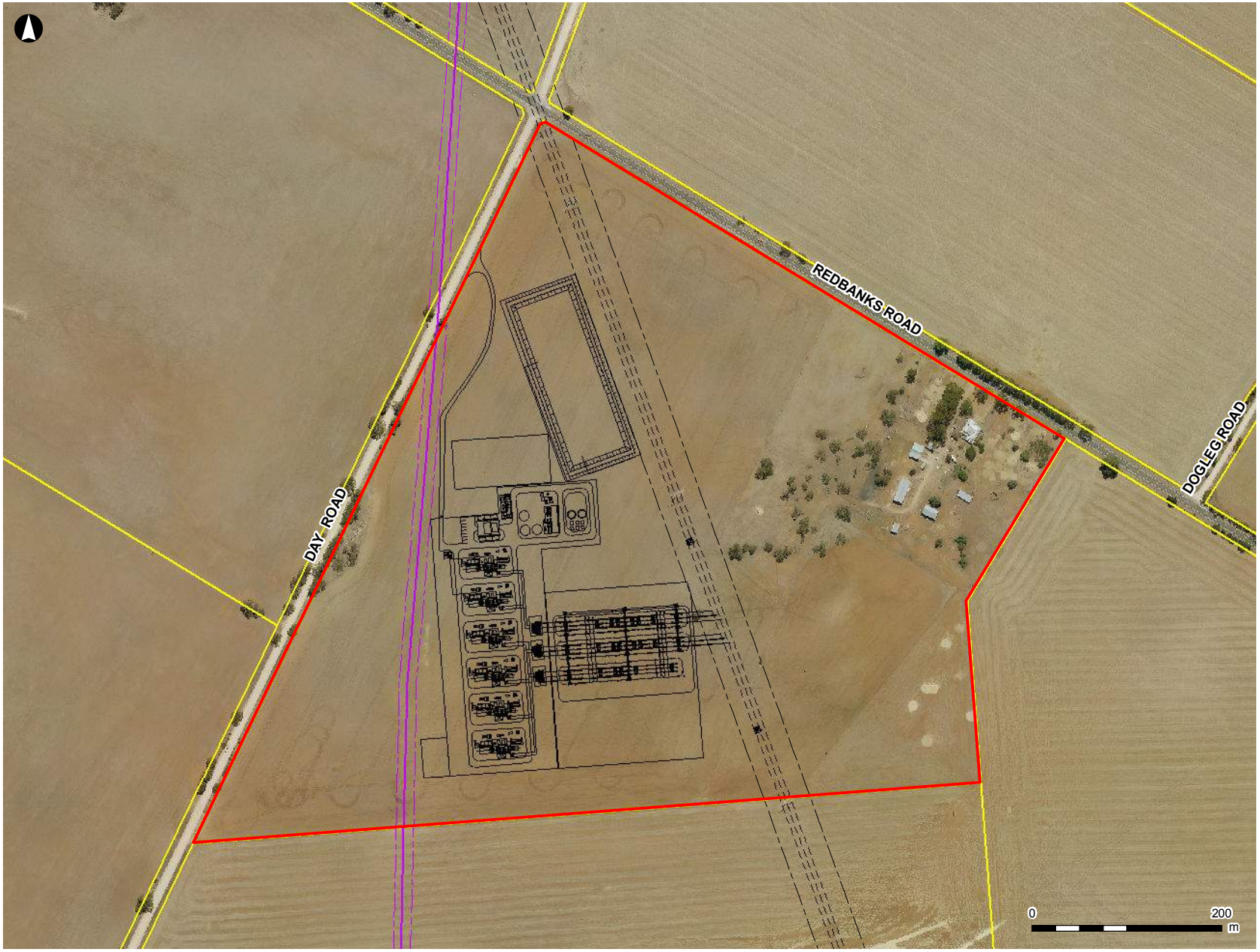
- Upgrade to adjoining roads including the intersection at Redbanks Road and Day Road, sealing of Day Road to the Reeves Plains Power Station entrance and the crossover and internal access road from Day Road. This will be sufficient to allow for vehicle manoeuvring including diesel deliveries and emergency service vehicles
- Demolition of the existing buildings onsite
- Installation of security fencing around the perimeter of the Reeves Plains Power Station. Appropriate signage will be displayed on the fence to communicate any hazards present
- Security lighting in accordance with Standard AS4282 Obtrusive Effects of Outdoor Lighting.
- Car parking for employees and contractors (i.e. 8 spaces)

A Reeves Plains Power Station concept layout, including elevations is shown in Appendix D.

6.1.2 Project Layout

Figure 6-1 (overleaf) shows a concept layout for the Project. This layout has been developed based on existing environmental and planning constraints and represents the base case for the specialist assessments. Subject to detailed design by the EPC Contractor the concept layout will undergo optimisation and minor changes are likely to occur. Any changes made as part of the detailed design phase will not alter the planning or environmental compliance of the proposed development.

Figure 6-1 - Concept Layout



LEGEND

- Subject Site
- Proposed Site Layout
- Electricity Easement (from Land Title)
- High Voltage Electricity Transmission line
- Gas pipeline Easement (from Land Title)
- Gas pipeline
- Cadastre

Land Title reference: DP22848 Plan, dated 9 Nov. 1987

1:6,000 at A4

alintaenergy

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Date issued: September 26, 2017

Alinta Energy - Reeves Plains Power Station

Date: 26/09/2017 Path: F:\10005589\L-GIS\A_Current\B_Maps\10005589_057_SiteLayout_A4L_v3_Fig6_1.mxd
Created by : LH
QA by : RB

6.1.3 Power Generation Process Description

The Reeves Plains Power Station is nominally a 300MW gas fired peaking power station with six (6) x 50MW generators. The power station will include diesel back-up capability. The power station will operate on an intermittent basis as a fast start peaker during periods of high energy demand in the region e.g. hot days in summer. Alinta Energy estimates that the power station will operate approximately 1,400 hours per year. Alinta Energy anticipates the gas turbines would typically run for a duration of no more than 4 hours however this is substantially subject to market conditions.

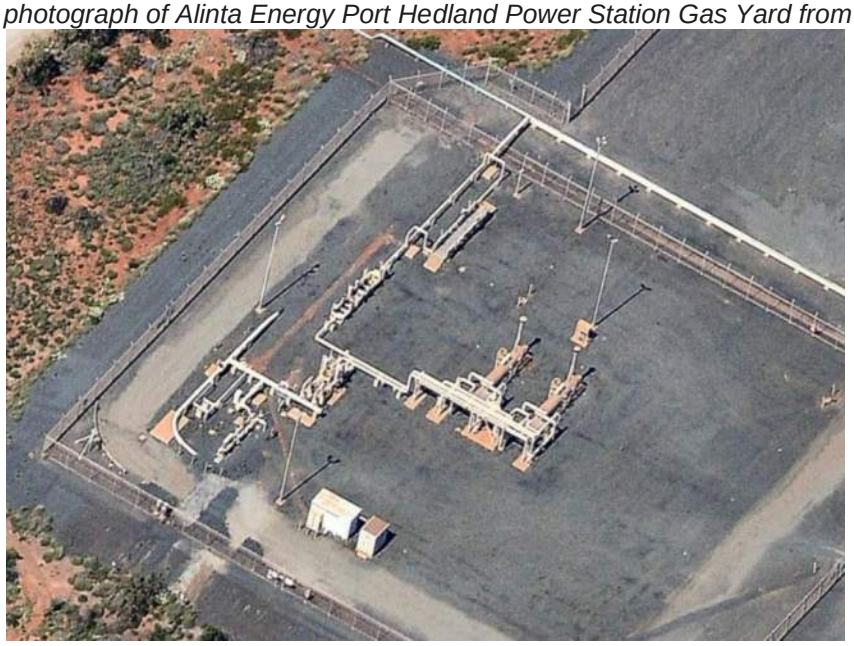
6.1.3.1 Gas Receiving Station

The gas receiving station's main function is to take gas from the MAPS pipeline so that it can be used by the power station. It ensures that the gas is delivered to the power station at the correct pressure for use by the gas turbines. The gas receiving station also contains safety equipment such as an emergency shut-off valve and manual isolation valves to prevent gas from entering the subject site in the case of maintenance activities or an incident on site. The gas receiving station consists primarily of exposed piping infrastructure and values. A gas receiving station that serves Alinta Energy's Port Hedland Power Station is shown below (Photograph 6-1, Figure 6-2, Figure 6-3).

Photograph 6-1 - Example of single unit gas receiving station

Figure 6-2 - Aerial photograph of Alinta Energy Port Hedland Power Station Gas Yard

Figure 6-3 - Aerial photograph of Alinta Energy Port Hedland Power Station Gas Yard from oblique view

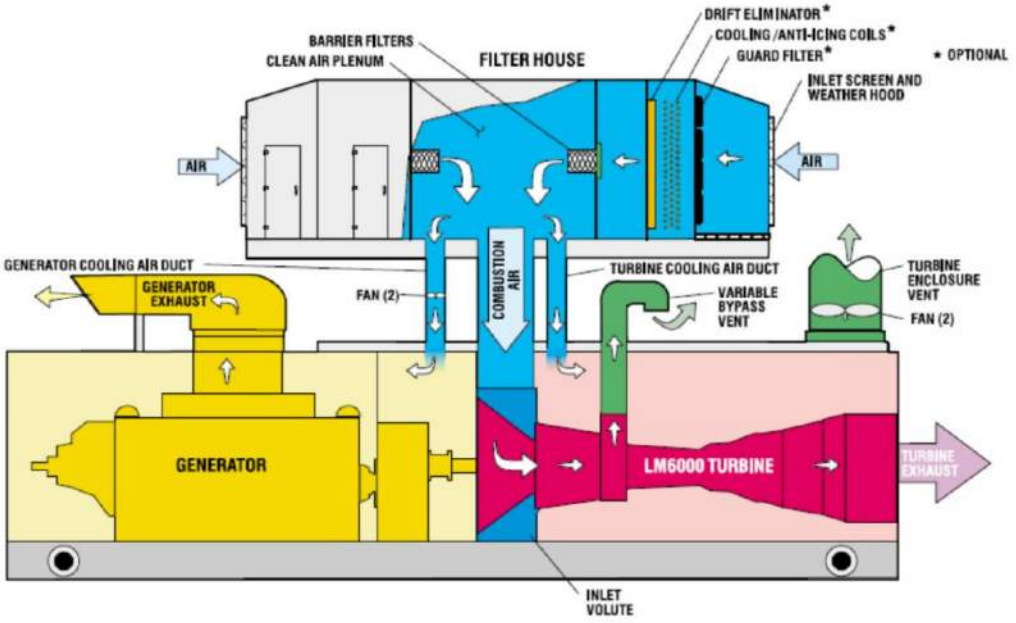


Gas supplied from the MAPS pipeline will be the main fuel source for the power station during its operation. Should the gas supply be unavailable and the power station be required to run, the turbines will run on diesel. The diesel backup capability is explained further in Section 6.1.3.8.

6.1.3.2 Gas Turbine Engines

Once the gas has passed through the gas receiving station and the reticulated gas network on the subject site, it is introduced to the turbine engine. The turbine engine mixes the natural gas with compressed air. The air-fuel mixture is ignited in the turbine combustor and the combustion gases drive a high speed turbine connected to a high pressure compressor and a low speed turbine connected to a low pressure compressor. The turbine engine is connected to an electric generator through a drive shaft and gear box that which is driven by the low pressure turbine. Exhaust gases from the combustion process exit the turbine engine at the exhaust flange.

Figure 6-4 - Turbine airflow process



The LM 6000 PF gas turbines come equipped with spray intercooler technology (SPRINT). As ambient air temperatures increase the output from the gas turbine decreases. To counteract this effect and maintain output, demineralised water is sprayed into the inlet air to increase output of the turbine.

Alinta Energy intends to use General Electric LM6000-PF SPRINT DLE turbines manufactured in the United States. The turbines will have a rated output of approximately 50MW each. An illustration of an LM6000 turbine is shown below.

Figure 6-5 - LM6000 turbine

The turbine is contained in an enclosure to reduce noise impacts, prevent damage from the environment and allow for easier maintenance. The turbine enclosure will, to the maximum extent possible blend in with the surrounding environment.

Each turbine will be fitted with a silencer to reduce the noise emissions from the turbine's operation. After flowing through the silencer, the waste gases are directed up and out of the exhaust stack. The diameter and height of the stacks has been designed to mitigate the impact of atmospheric emissions on the local environment. Typically, the exhaust stack on this type of turbine is between 15-20 meters tall and approximately 4m in diameter.

6.1.3.3 Generators

The generator is connected to the turbine via a drive shaft that rotates when the gas turbine is operating. The rotation from the shaft causes the rotor in the generator to move and generate electricity. The electricity generated is at 11kV and is connected to the power station network.

Alinta Energy intends to use a BRUSH BDAX 7-290ERJ or an equivalent generator. The generator will be rated at 50Hz, be air cooled and capable of operating in a range of ambient temperature conditions. The generator package that will be connected to each turbine is illustrated in Figure 6-6 and Figure 6-7 (overleaf).

Figure 6-6 - Example generator package

Figure 6-7 - LM6000 generator package at Alinta Energy's Boodarie Power station during construction

6.1.3.4 Transformers

Electricity produced by the generator is at a low voltage output (11kV) that needs to be “stepped up” to a higher voltage for transmission (275kV). Transformers are the components of the powers station that perform this function. When the power station is fully built to its 300MW capacity, there will be three oil-immersed, 130MVA rated transformers located on the subject site. The final model of transformer will be decided when the EPC contract is awarded. The transformer supplier will be either ABB, Wilson, Siemens or equivalent.

Once the electricity has been stepped up from 11kV to 275kV, it will then pass through the substation that will be located on the subject site.

6.1.3.5 Network Connection

Connecting the power station to the electricity network will require the construction of new network infrastructure by ElectraNet.

The network connection infrastructure will initially consist of the following items:

- Switching station: a new 275kV substation connecting into the existing 275kV transmission line. This will also include all secondary equipment such as SCADA and protection and ancillary equipment such as earthing and lighting.
- Demountable control building: one control building approximately 20m long x 5m wide x 3.5m high will house control and protection equipment. General building services will include lighting, localised (to the site and building) power supplies and distribution equipment, a 70kg fire extinguisher, air conditioning, security alarm and fire detection equipment.
- Demountable amenities building: approximately 8m long x 4m wide and 3.5m high to accommodate ablutions and tool and equipment storage.
- Demountable telecommunications building: approximately 5m long x 3m wide x 3.5m high this building will house communications infrastructure to enable remote monitoring and control of the substation.
- Telecommunications tower: one lattice tower or steel pole approximately 30m-35m high.
- Electrical structures: a range of electrical infrastructure and primary equipment including gantries, busbar, outdoor switchgears, lightning masts, cabling, cable junction boxes and terminal chambers etc.
- Security fencing: approximately 3.0m high chainmesh or weldmesh security perimeter fence
- Construction of two to three new cut-in structures (40 – 45 metres high) to facilitate the connection into the new substation
- Telecommunication circuits as required, to provide a diverse communication link to and from the switching substation. This includes a telecommunication tower at the substation and an optical ground wire cable between the new substation and Munno Para substation

6.1.3.6 Water supply and storage

Water will be needed at Reeves Plains Power Station for the following operational activities:

- Turbine operation as explained in Section 6.1.3.2.
- Fire suppression
- Potable water for staff
- Power station maintenance such as turbine cleaning

Alinta Energy will install a 500kL raw water tank, which will be fed by the planned connection to mains water. Alinta Energy anticipates using approximately 12,400m^3 of water per annum, subject to the operating regime of the power station.

Demineralised water will be required to supply the SPRINT functionality and evaporative cooling operations. The water treatment plant will consist of:

- 2x 100% microfiltration units (Grundfos or equivalent)
- Reverse osmosis
- Continuous electro-deionisation

The water treatment plant will process 6m^3/hr or 144m^3 per day. Demineralised water will be stored in a 75kL steel tank.

It is expected that the average daily demand for the demineralised water will be approximately 17 kL/day.

Beyond the demineralised water, Alinta Energy will use a combination of raw water and mains water for other day-to-day tasks. The fire suppression system will be supplied by mains water with a raw water backup.

The rate at which water can be drawn is 4 litres per second and this has been confirmed with SA Water.

6.1.3.7 Wastewater and stormwater

All hardstand areas which have the potential to collect oil or chemical spillage will be bunded and will drain to a 15kL sump. The sump will have a fully contained oil water separator that is fully autonomous and relies upon natural separation. The separator will have a processing rate of 30L/sec, subject to final design.

On site there will be one retention/sedimentation pond and one evaporation pond.

The retention pond will collect stormwater draining from general site working areas (roadways, hardstand areas) and have a volume of 3,250m^3. The purpose of the retention pond is to mimic the hydrological response following construction of the Project and allow sediment to settle. The retention pond will also act as a detention basin for events larger than the 10% AEP, stormwater would be released at a flow rate that mimics the pre-development flows to protect areas downstream of the Project.

The evaporation pond will have a working volume of 18,000kL and will have a freeboard capable of coping with a rainfall duration for 1-in-100-year average return interval. The evaporation pond will collect wastewater from the treatment plant, blowdown from the evaporative cooling systems and any drains that can be classified as ‘dirty’ drains.

As identified in Section 6.1.3.6 the turbines will need to be cleaned in order to keep them well maintained. Water from this process will be captured in the wash water tank that will then be periodically emptied by a ‘sucker truck’ for offsite disposal.

6.1.3.8 Diesel storage and delivery

Alinta Energy will design the Reeves Plains Power Station with diesel back up capability.

The diesel fuel will be stored in ~300,000L storage tank on the subject site. The tanks will be provided with bunding that will direct any spills and/or rainfall to an oil water separator. The clean separated water will be directed to the stormwater retention pond or evaporation pond (subject to a risk assessment conducted as part of design development) while spills will be disposed of offsite by a licenced contractor. The bunding design of the tanks will be compliant with EPA Guideline EPA 080/07 and any relevant statutory requirements. The diesel will be delivered to the subject site by road train. The frequency of deliveries will depend directly on the operational regime of the power station.

6.1.4 Other Site Infrastructure

In addition to the site infrastructure described above the following supporting infrastructure will be constructed.

- Control and amenities building
  - Control room
  - Meeting room
  - Offices

  - Kitchen
  - Toilets
- Workshop / warehouse
  - Prefabricated metal building with insulation
  - Indoor fluorescent lighting
  - Lay down area and an overhead travelling crane for major overhauls
  - High rack shelving
  - First aid room
  - Lubricant and oil storage facilities
- Water treatment plant shelter

Details of hazardous substances that would be stored on site in bulk are summarised below in Table 6-1.

Table 6-1 - Onsite chemicals

Substance	Purpose of Substance	Delivery Timing	Approximate Quantity
Synthetic Lube Oil	GT Lubricant	Commissioning / Operation	700L
Mineral Lube Oil	GT Lubricant	Commissioning / Operation	10,000L
Transformer Oil	Transformer	Commissioning	120,000L
Diesel Fuel	Fuel	Commissioning / Operation	400,000L
Sodium Hydroxide	Water Treatment	Commissioning / Operation	1,000L
Sodium Metabisulphite	Water Treatment	Commissioning / Operation	200L
Methylenephosphonic acid	Water Treatment	Commissioning / Operation	1,000L

- Common electrical and control building
  - common plant switchboards
  - switchroom for protection and switchgear panels
  - plant control system
  - plant uninterruptable power system and DC system
  - battery system
  - small power and local lighting
  - air conditioning

All buildings will be fitted with fire detection system and alarms. All turbine enclosures have an individual fire suppression system which is automatically triggered when a fire is detected.

Security fence and security lighting will be installed around the perimeter of the subject site.

Landscaping will reduce the visual impact of the power station and directional lighting will be used to minimise light spill from the subject site. The landscaping will involve swathes of mixed native trees and bands of shrub and grass planting. The planting would be arranged in groups with clear separation between trees and shrub areas to reduce the continuous fuel source potentially available in the event of a bushfire. All plantings would be Australian natives and generally larger trees would be located closer to the subject site boundary to create a greater screening effect of taller infrastructure.

6.1.5 Off-site infrastructure

New and upgraded infrastructure will also be required outside the boundary of the subject site. This infrastructure is summarised below.

- Upgrade to roads including the intersection at Redbanks Road and Day Road. Sealing of Day Road to the Reeves Plains Power Station entrance and the crossover and internal access road from Day Road. This will be designed to allow for diesel deliveries and emergency service vehicles
- Provision of a new bus stop at Reeves Plains as part of the school bus route that passes the subject site
- Connection to SA Water 150 mm water main at Redbanks Road.

6.2 Construction Phase

6.2.1 Construction Program

Subject to development approval, Alinta Energy propose to commence construction of the Reeves Plains Power Station in 2018. The construction period will be approximately 12 to 18 months depending on gas turbine equipment availability. The start date is also dependent on regulatory approvals and the contract tendering process. Alinta Energy intends to enter into an Engineer, Procure and Construct (EPC) contract with a tier 1 EPC Contractor.

Alinta Energy intends to construct the power station in several phases with the first phase consisting of an initial 100MW followed by a further build out of the remaining 200MW at a later stage.

6.2.2 Construction Hours

The hours of construction will be limited to weekdays (7am - 7pm) and Saturdays (8am – 1pm). These hours comply with South Australia EPA requirements in relation to noise. No work will be undertaken outside these hours unless specific authorisation is obtained from the EPA.

6.2.3 Construction Workforce

Employment generation during the construction period is expected to be approximately 100 full time equivalent (FTE) jobs. In addition, opportunities for local employment, goods and services will be given and it is expected that there will spending by construction employees in local food and drink premises, retail outlets and other businesses/services.

The construction period will be approximately 12-18 months, subject to weather conditions and site progress, with the peak in construction workforce occurring in the last quarter of the construction program during the electrical, instrumentation and commissioning activities.

Accommodation for the construction workforce is generally limited in Mallala and is therefore likely to occur either in Gawler, Two Wells or in Adelaide.

6.2.4 Temporary Construction Facilities

Temporary facilities will be established during the construction phase of the Project to provide basic amenities for construction workers as well as temporary laydown and storage areas for construction materials.

The final requirements for temporary facilities will be determined by the construction contractor, however are anticipated to include:

- Site office
- Temporary toilet facilities
- Laydown area

- Temporary (but defined) car parking area within the subject site

Given the size of the site area, it is proposed that all temporary construction facilities will be accommodated within the subject site boundary in order to limit impacts to the local community. Any materials or machinery required for road infrastructure improvements and connection to the water pipeline will also be stored on site.

6.2.5 Utilities

The EPC Contractor selected to complete the works will be responsible for providing the necessary utilities to the subject site to support the construction activities. This may include the provision of diesel powered generators, water carts and portable washing and toilet facilities.

6.2.6 Vehicle Movements

Table 6-2 provides an estimate of the total number of heavy vehicle movements during construction phase of the Reeves Plains Power Station.

Depending on the final construction methodology of the contractor, construction traffic volumes may vary from these estimates.

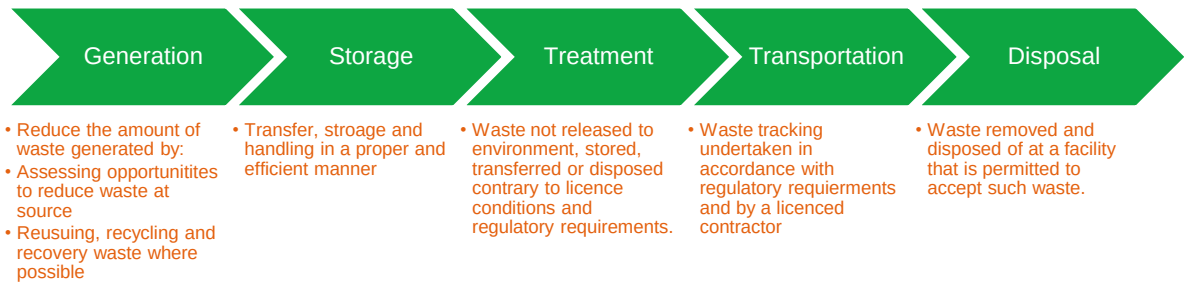
Table 6-2 - Estimated Construction Traffic – Heavy vehicles

Purpose	Estimated number of movements
Civil works	425
Turbine equipment	70
Electrical equipment	10
Miscellaneous deliveries	270

6.2.7 Waste Management

The waste hierarchy will inform waste management during the construction phase which is outlined in Figure 6-8.

Figure 6-8 - Application of waste hierarchy through waste supply chain



Waste is expected to consist of fill, vegetation, surplus building materials and demolition waste and general waste from workforce and contractors. Separate bins (e.g. bins for metal and bins for rubble) would be provided to ensure waste is recovered where possible. All waste will be removed by a licenced contractor and disposed of at a licenced facility.

6.3 Commissioning and Operation Phase

The current proposed program assumes the Project will be commissioned and operational by January 2020 at the earliest.

6.3.1 Commissioning

Commissioning will take approximately 40 days for the gas turbines and 100 days for the balance of plant. The commissioning phase of the Project will involve around 30-40 personnel with key subject matter expertise in gas turbine power station operations.

Commissioning of the Reeves Plains Power Station will be completed in a staged approach. The first stage is to ensure the installation is carried out in accordance with the project design for all mechanical, electrical and instrumentation systems. The second stage will compromise of functionally testing individual components in all systems to confirm they are complete, safe, capable of operation in accordance with the design concept, and ready for system commissioning. The third stage involves demonstrating ancillary systems operate as required for the start-up of the gas turbine.

Upon completion of the commissioning activities, the gas turbines will be started and will undergo rigorous testing on all aspects of operation, control and performance.

Monitoring systems will ensure that noise and air emissions comply with the relevant legislation and waste products will be managed in accordance with EPA guidelines. The key focus of the commissioning period is ensuring that the turbines can run safely and efficiently on gas and diesel fuel, allowing handover to the operations team.

6.3.2 Operation

Alinta Energy will develop a detailed Operations Management Plan (OMP) for the Reeves Plains Power Station which will address safety, emergency preparedness and response, operations management and environmental management for the operation phase of the Project. This will include detailed procedures to manage these risks such as waste management, air quality / emissions control and surface water drainage.

Key aspects of the operation are described below.

6.3.2.1 Operating Patterns

As the Reeves Plains Power Station is a peaking power station, the timing of operations will vary based on the activity of the electricity market. It is estimated that the Reeves Plains Power Station will run for ~1,400 hours per annum with the majority of the run hours likely occurring in the evenings of hot summer periods.

6.3.2.2 Automatic Dispatch and Control

The Reeves Plains Power Station will be fully automated. Dispatch and control of the power station will be primarily undertaken remotely. Whilst the facility will be capable of operating from local controls, the attendance of the operations team will not be required to start and stop the gas turbines.

6.3.2.3 Workforce

Upon construction completion, it is anticipated the plant will employ 6 full time equivalent staff. The on-site staff will include the station manager, O&M technicians and administration support for the power station. In addition to the on-site employment there will be engineering, finance and wholesale trading functions that relate directly to the operation of the power station. These roles will be based in one of Alinta Energy's corporate offices.

Staff will typically be on-site between 9 a.m. to 5 p.m. Monday to Friday. There will be regular outages and scheduled maintenance events when Alinta Energy personnel and contractors are required to operate outside those times.

Staff are not required to be on site during all periods of operation. Additional personnel will be required during maintenance activities, during which time attendance at the site will increase. Maintenance activities are discussed further in Section 6.3.2.4.

6.3.2.4 Maintenance and Emergency Management

Alinta Energy's standard approach is to undertake maintenance works during daytime working hours. This time period takes advantage of maximum availability of labour and provides safer conditions than working at night. In the event that emergency maintenance is required, work may be undertaken at night.

In addition to routine maintenance there are scheduled maintenance activities that require power station outages. The duration of these outages is several days and will occasionally be staffed around the clock. These scheduled maintenance activities are:

- LM6000PF hot section maintenance – required after 25,000 run hours on natural gas or 12,500 run hours on liquid fuel. Takes up to 5 days.
- LM6000PF overhaul maintenance – required after 50,000 run hours on natural gas or 25,000 run hours on liquid fuel. Takes up to 3 days.
- Other minor activities such as a borescope and normal inspection tend to take up to 24 hours and are done as required.

6.3.3 Vehicle Movements

Access to the subject site during operations will be via Day Road. All vehicles will enter and exit the subject site in a forward direction. Internal roads will allow be designed for the safe passage and manoeuvring of the largest vehicles anticipated during construction and operation. Eight car spaces will be provided for staff and contractors.

6.3.4 Utilities

Once operational, the Reeves Plains Power Station will be connected to the water mains and electricity supply. A 10-person sewage system with sucker truck removal will be located on subject site as there is no sewage system to connect to locally.

7 – ENGAGEMENT AND SOCIAL IMPACT

7 ENGAGEMENT AND SOCIAL IMPACT

7.1 Community and Stakeholder Engagement

The following section outlines the community and stakeholder engagement program undertaken by Alinta Energy for the Reeves Plains Power Station.

Alinta Energy recognises that a comprehensive program to engage stakeholders and the local community as well as inform the planning and design phases of the Project are important elements in the preparation of the Development Application. Engagement activities are designed to help Alinta Energy develop an understanding of local and wider area stakeholder issues, concerns and opportunities and to inform the level of investigations required to address potential submissions that may be received during the formal consultation process.

From the initial concept, feedback from stakeholders and the local community has been actively sought and used to inform Alinta Energy's decision making about the Project. An iterative process has allowed the project team to incorporate community and stakeholder input and respond to issues raised and ideas presented and feedback to date has played an important role in shaping the Reeves Plains Power Station Project.

Under Sections 49 of the *Development Act 1993* the approval process provides 15 business days for public comment. Alinta Energy's elevated level of stakeholder engagement prior to the submission aims to provide the potentially affected community with more than the minimum information and opportunity for input than is typically required. This 'no surprises' approach should mean that the majority of affected stakeholders are aware of the SCAP process and are well informed to make further comment during the 15-day period.

Local communities generally have expectations to be involved in, and well informed about, local development projects – particularly public infrastructure projects. They have an increased awareness, and expectation to be heard, on issues which may impact on their social, cultural, economic or environmental wellbeing. Community engagement therefore plays a critical role in the development of sustainable projects and socially acceptable decisions in government, the private sector and the community.

Alinta Energy recognises the importance of stakeholder engagement and contracted local stakeholder engagement firm Gould Thorpe Planning (GTP) to assist with the preparation of the Reeves Plains Power Station Development Application.

The stakeholder engagement approach was created by a team with strong local area understanding and with the firm belief that community and stakeholder involvement results in better decisions, planning and project outcomes.

7.1.1 Stakeholder Engagement Approach

An inclusive stakeholder engagement approach employed for the Project was undertaken early, with a *no surprises and no stone unturned* approach. The early engagement process aimed to:

- thoroughly explain the Project
- listen to the local community
- build strong relationships
- identify key concerns
- identify direct and indirect opportunities
- collect preferred (email, phone, post) contact details, and
- identify any other potential risks which require mitigation prior to lodgement of the Development Application with SCAP.

The engagement activities undertaken to date include a preliminary briefing held with the Adelaide Plains Council Executive Management team on 19-May 2017 and a further briefing session for Elected Members on

19 June 2017. Our engagement team has continued to consult and engage with project stakeholders, including nearby and potentially affected local community members.

A 24/7 telephone information line was set up by Alinta Energy prior to the early engagement period commencing to give all stakeholders easy access the project team, provide consistent information. The consultation process been far-reaching and as inclusive as possible. As part of the stakeholder consultation, local community members were individually door knocked. Meetings were held with key government bodies and other agency/authority stakeholders.

Figure 7-1 - Project contacts card

Business cards with the telephone information line were provided to Adelaide Plains Council at the initial briefing, and were subsequently distributed during a local door knocking campaign held over three consecutive weekends.

Invitations to a drop-in style Community Information and Feedback Session were hand delivered to a total of 734 local properties. Notification of the Community Information and Feedback Session was also advertised in the Plains Producer newspaper (communication shown below).

The information line will continue to be utilised throughout the subsequent planning, construction (if approved) and early operational phases of the Project.

All stakeholders will be given the opportunity to participate in the Project Engagement Process.

The following sub-section outline the base principles which inform this Project's Engagement Process, the activities undertaken to date, issues raised and how the engagement process will be managed in the future.

Figure 7-2 - Community Information Session invitation

7.1.2 Principles of Community Engagement

Successful engagement is based on some simple, practical principles that represent a mix of common sense, good business practice and ethical considerations. The key principles for effective community and stakeholder engagement, are based on:

- Two-way communication between Alinta Energy and local stakeholders (particularly nearby residents)
- Provision of clear, accurate and relevant information – understanding what the local community and stakeholders want to know and understand
- Timeliness – seeking community and stakeholder views as early as possible in the proposal development stage to inform concept development and mitigate real and perceived risks
- Respond to and accommodate reasonable community expectations and requests
- Focus on the community's needs and opportunities for improvement in the design, technical investigations, construction and operation of the Project
- Transparency – clearly identifying objectives of the community and stakeholders and Alinta Energy, to articulate preferred outcomes of the engagement process
- Reporting – documenting decisions and outcomes of meetings with communities and stakeholders, reporting openly the input and including community and stakeholder feedback within the reporting
- Collaboration – working cooperatively to seek mutually beneficial outcomes, by understanding how capable stakeholders and community groups are in participating in the process and where help can be found to support the community (Alinta Energy's neighbours) in the process
- Inclusiveness – recognising, understanding and involving stakeholders early and throughout the process
- Integrity – conducting engagement in a manner that fosters mutual respect and trust, to build credibility, trust and confidence.

7.1.3 Identification of Project Stakeholders

All stakeholders with overlapping land interests, adjacent to the subject site, within eyeline of the site location or within areas, which may be perceived to be affected by noise or air emissions are been considered key project stakeholders.

All local property owners / residents the key stakeholders to be engaged in the planning process.

The wider stakeholder group stretches out into the district and includes anyone with a personal or business interest in the subject site, surrounding district and energy sector, including council, regional economic development organisations and cultural heritage groups.

Key project stakeholders during the planning phase include:

- Adelaide Plains Council (Planning, Civil Works, environment, traffic management, maintenance, councillors and CEO)
- Traditional Owners – Kaurna Nation
- Landholders/residents located directly adjacent to the site and works corridor(s)
- Private and public land owners and managers within the area
- Stakeholders located along the proposed haulage route(s)
- Environmental groups
- Emergency Services providers
- Local businesses who could potentially supply goods and services for the Project
- Community Groups

- Potential sub-contractors
- Utility providers
- Nearby schools and universities
- The wider community
- Other state government departments.
- Utility providers
- Nearby schools and universities
- The wider community
- Other state government departments.

All stakeholders can participate in the Project engagement process prior to and throughout the preparation of Development Application and following its submission to SPAC.

7.1.4 Phases of Engagement and Consultation Activities and Tools

The key stakeholder engagement methods utilised to inform the preparation of the Development Application for the Reeves Plains Power Station are shown in Table 7-1 below.

Table 7-1 - Phases of stakeholder engagement

Phase	Details
Stakeholder Identification	• Engaging with Council, State agencies and the local community
Communications	• Key stakeholder meetings and briefings • Communications • (website, invitation, contacts card) • Information Line • Project updates to registered stakeholders • Ongoing feedback mechanisms (via Alinta website, online feedback form)
Consultation Activities	• Door knocking (risk, issue identification, information collection, initial feedback) • Key stakeholder meetings and briefings • Development Application presentation • Information Session

7.1.5 Identifying and Managing Issues

Accurate records of interactions with communities, individuals and wider stakeholder involvement is being maintained. All areas of interest, including issues raised, experience with previous local development projects, opportunities identified, and commitments and resolutions made will be accurately recorded. Stakeholder feedback, including suggestions for improvements or potential 'show stoppers', are continually fed back to the wider Project team. The following table (Table 7-2) outlines the key stakeholder groups, identified their information needs and assesses their potential level of influence.

Table 7-2 - Stakeholders, information needs and potential level of influence

Stakeholder group	Information Needs	Level of influence
Landholders/residents located directly adjacent to the site or within site line / potential noise / emissions dispersion of the site	Project concept plans and specialist investigation findings as they become available via email, hard copy and media	High
Adelaide Plains Council	Project concept plans and specialist investigation findings as they become available via email, hard copy and media	High
Adelaide Plains Rate Payers & Residents Association	Project concept plans and specialist investigation findings as they become available	Medium
County Fire Service	Provision of information of risk mitigation and fire management protocols and mitigation measures	Medium
Interested suppliers and contractors	Project updates on timelines and construction requirements	Low
Media	Ongoing provision of information on project progress, timelines and information sought by the local community	Medium
Members of Parliament	Up to date project information and provision of key stakeholder concerns / opportunities. Meetings as requested.	Medium

7.1.6 Engagement Methods

In June and July 2017, Alinta Energy commenced early public consultation for the proposed Project. Engagement activities included conducting presentations and information sessions, providing local communities and stakeholders with an overview of the Project, as well as information on potential impacts, and how they will be managed. These engagement activities provided multiple opportunities for participant feedback.

The local community have generally demonstrated interest in the Project and Alinta Energy's future plans.

The Project information line and Alinta Energy website (including registration for project updates and feedback form) will continue to be utilised and promoted.

A summary of the consultation activities undertaken to date are outlined in Table 7-3.

Table 7-3 - Summary of project consultation activities undertaken to date

Dates	Activity	Detail
19/5/2017	Adelaide Plains Council Executive Team briefing	Briefing and questions and answers
19/6/2017	Adelaide Plains Council Elected Members briefing	Briefing and questions and answers – outline of approach
24/6/2017	Door knocking	Residents located closest to the proposed site
1/7/2017	Door knocking	Residents located closest to the proposed site
14-17/7/2017	Invitation letter drop to 734 properties surrounding the site location	Invitation to Information and feedback Session
17/6/2017	Door knocking	Residents located closest to the proposed site
25/7/2017	Reminder letter drop for Information and Feedback Session	Reminder – following some blew away during storm during initial letter drop (locked gates and no letter boxes)
25/7/2017	Email reminder to registered stakeholders of Information and Feedback Session	Reminder for information and Feedback Session
26/7/2017	Reminder advertisement - full invitation in Plains Producer Newspaper	Invitation to Information and feedback Session
27/7/2017	Briefing of Shadow Minister for Energy and Mining Dan van Holst Pellekaan MP	Briefing by Alinta Energy
27/7/2017	Information and Feedback Session	Drop in session from 4pm to 8pm at Mallala Football Club
Ongoing	Receipt of stakeholder feedback via the Alinta Energy website	Responses to, and/or acknowledgment of registrations for updates and/or queries
Ongoing	24/7 Information Line	Provision of information and responses to enquiries as information is available

7.1.7 Engagement Outcomes

7.1.7.1 Feedback Report

The Community Information Session was held at Mallala Football Clubrooms between 4pm and 8pm on Thursday, 27 July 2017.

The information session featured project display panels and included information on the following:

- Reeves Plains Power Station proposal overview
- Site location
- Concept site layout
- Who is Alinta Energy?
- Our approach to safety
- Retail - Alinta Energy
- Issues / visualisation images
- Opportunities
- Environment - noise
- Environment – emissions
- Virtual reality table and headsets - to enable stakeholders to view the proposed Reeves Plains Power Station from their property or other position

Technical specialists were in attendance to answer detailed questions and take questions on notice. Local stakeholder participants asked a range of questions including the potential impacts of the Project. While many of the questions could be answered on the night, others were taken on notice to inform further investigations and communications. The feedback obtained has been invaluable in better understanding the needs, concerns and opportunities of the local community and provided the impetus for further investigations in some cases.

The majority of stakeholders who attended the Community Information Session live near the subject site.

A small number of stakeholders not located near the subject site also attended the session. These stakeholders were largely in support of the Project and attended to gain more information and voice their opinion on the benefits they thought the Project could bring to the local Adelaide Plains Region.

There are clearly two groups of interested stakeholders: (1) those who do not want a power station near them; and (2) those who would like the Project to proceed for the greater growth of the region.

Opportunity was provided at the Community Information Session for participants to provide feedback and write down their key issues and suggestions. All Alinta Energy project team members recorded key stakeholder concerns, questions and suggestions. 'Dot democracy' agreement was encouraged (via an issues and opportunities poster – with sticky dots allocated by stakeholders to comments they agreed with), however, some stakeholders allocated more agreement stickers than representing themselves alone, so quantification of this means of feedback could not be accurately gauged. Key concerns, issues and opportunities, registered by community members on this poster, have been considered by the project team.

The key comments recorded on the issues and opportunities sheet were, in approximate order of Community Information and Feedback Session participant agreement:

- Decreased value of property near the site (unable to sell our property with this proposal now public)
- Noise disruption from the operation of proposed power station
- Feasibility of solar, wind and battery power station instead of gas and diesel back up

- Peace and serenity of the local area to be reduced
- Lack of consulting with residents (particularly prior to purchasing the site)
- Consider the school bus drop off / pick up location near this site (opportunity for new shelter with bike lock up facility)
- Visual impact – effect on rural landscape appearance
- Consideration of moving the proposed power station elsewhere
- The potential for Alinta Energy to purchase neighbouring properties
- Local business investment set at a percentage – employ locals to deliver the Project
- Effects of light spill on surrounding properties
- Construction opportunities during the construction phase
- Look at broader opportunities to underpin the Project, such as accommodation, transport, small business, etc.
- Take community members to a similar Alinta Energy facility
- Effect of emissions from the proposed power station on health, rainwater tanks and land

Virtual reality headsets were available at the event and provided virtual site views of the proposed plant from key surrounding locations (e.g. from each stakeholder's point of view).

The views seen by participants were based on realistic concept views, without any landscape treatment applied. A Landscape Concept Plan has been developed as part of this Development Application and the communities input will be welcomed during the detailed design when selecting plant species and the facility colour scheme.

A mailing list sign-up sheet / registration for interest in project updates was provided and voluntarily completed by consultation participants. Team members collected contact details (particularly for those stakeholders who did not want their contact details visible to others) to ensure stakeholders could be kept up to date as the project progresses through investigations, planning, Development Application preparation and lodgement.

7.1.7.2 Information and Feedback Session Attendance

A total of **120 people** attended the session.

This is a high level of stakeholder involvement, given the relatively small number of properties located surrounding the proposed site.

The project team was available to answer questions and take note of issues, concerns and commentary made by community. Staff in attendance on the night are listed below.

Table 7-4 - Project team members at the Stakeholder Information and Feedback Session

Dates	Activity	Detail
Huw Adler	Alinta Energy	Manager, Business Development
Greg Harrison	Arcadis	Infrastructure Advisory Director
Sam Withers	Arcadis	Environmental Engineer
Megan Taylor	Alinta Energy	Alinta Energy – Communications Manager

Dates	Activity	Detail
Darren Jurevicius	Resonate Acoustics	Technical Director
Belinda Woite	GTP	Stakeholder Engagement – Planning, Environmental Management
Valli Morphett	GTP	Stakeholder Engagement – Urban and Regional Design
Warwick Keates	Wax Design	Director, Landscape Design / Planning
Anton Andreacchio	Jumpgate Virtual Reality	Managing Director
Gary Graham	Northstar	Air Quality – Director

A total of individual 78 stakeholder groups (some are families / couples / organisations) have registered for ongoing project updates via email, PO Box and street address, with stakeholders continuing to register for updates via the Alinta Energy online Registration and Feedback Form

7.1.7.3 Information Session Top Line Results

The top concerns, issues and opportunities raised listed in order of priority, are outlined Table 7-5 below.

Table 7-5 - Key stakeholder concerns, issues and opportunities

Stakeholder Concerns, Issues and Opportunities	Key findings
Pollution/emission concerns	Concerns were raised over emissions, visible plumes, and deposits over water (e.g., input to rainwater tanks) and crops in the vicinity.
Noise concerns	Questions were raised over validity of noise modelling. Concerns were registered over noise and vibrations, alarms going off on the plant and interruption to rural tranquillity.
Visual amenity concerns	Visual impact was a key concern to nearby dwellings. Concerns were raised over impacts on rural views, decreased visual amenity and light spill.
Decreasing property value concerns	Nearby residents are very concerned about impacts on property prices, resell values of their properties and how it will impact on their retirement plans. Some individuals are requesting compensation.
Fire / bushfire concerns	Recent bushfire experiences are fresh in local land holder's memories. There is concern over the plant creating fire risk or being a priority for bushfire response over local homes. The potential for an explosion at the plant in the case of a bushfire was also a concern for some.
Health concerns	Some residents were concerned about the effect of emissions on their health in regards to asthma, particulates and cancer.
Water concerns	Residents would like more information on water consumption, are concerned power plant water usage will further exasperate existing low water pressure, and are worried about increased mosquitos. The quality of water in the evaporation ponds was also raised as an issue. Opportunities were also raised about the ability to source the evaporation pond water in the case of potential future fires.
Suggested consultation improvements	A project presentation is requested in another community consultation session with Questions and Answers. More information is requested to be uploaded to the Alinta Energy website. Some individuals feel the proposal is a 'foregone conclusion'. Some community members would like to be taken to a similar Alinta Energy facility.

Stakeholder Concerns, Issues and Opportunities	Key findings
Lack of information provided in advance	Some residents were concerned that they didn't receive notification in advance of session, and would like Council to do a mail out next time. Others felt that they should have been advised of Alinta Energy's plans years ago, when they first approached the property owner.
Industrialisation of rural area	Concerns were raised over the "industrialisation" of a rural farming area, and the interruption of rural tranquillity.
Alternate energy	Some prefer individuals have solar, or would prefer to run their own generator, and feel the power plant is unjustified in this area.
More tree screens	Some individuals would like tree screens installed earlier, both on and off site, to minimise visual impacts.
No tree screens	Some individuals feel that tree screen with further compromise existing rural views and that mounding, to retain sunset views, be maintained.
Job opportunities	Some individuals were pleased with the construction opportunities during the construction phase and employing local residents to deliver the Project. Broader opportunities that underpin the Project, such as accommodation, transport, and small business were also discussed.
New shelter	The school bus drop off / pick up location near the subject site was considered by residents as an opportunity for new shelter with bike lock up facility.
Effect of emissions	Some residents were concerned about the effects of emissions on rainwater tanks and land.
Location of power station	Some residents want the power station to be moved elsewhere
Compensation	Would Alinta Energy consider purchasing neighbouring properties

Other general concerns/queries of stakeholders included:

- Epic Compression Station and Pelican Point Power Station comparisons
- Fauna impacts
- Wider environmental concerns ("we want a carbon neutral energy system")
- No tree screens – seek other means of screening the proposed Power Station
- Plant design – can this be adjusted to minimise the effects on those who are most visually affected
- Why here?
- Compensation. Will you buy my property?
- Construction noise (low concern once process was explained)
- Increased traffic concerns (low concern once full-time staffing was explained)
- Plant operations (concerns over lighting and sirens)
- Sunset view impacts

7.1.7.4 Future Planned Engagement Activities

The following future engagement activities will be undertaken for the Project:

- Ongoing promotion and staffing of a 24/7 information line (1300 311 040)

- All local residents (invitation catchment area captured 734 properties) and registered stakeholders will be advised when the development application is lodged. A copy will be available online and at the Adelaide Plains Council Office during the State Government formal consultation process.
- Continued upload of information on the Alinta Energy website, with the specialist reports and other Development Application documentation.
- Postal information will be sent to absentee landholders
- Another stakeholder information session will be held by Alinta Energy following submission of the development application with the aim of fully informing stakeholders on the proposal details prior to the formal State Government consultation period.

7.1.8 Management of Issues Raised by Stakeholders

Key and reoccurring questions raised by stakeholders throughout the early stakeholder engagement phase have been considered and a FAQ response has been developed and uploaded to the Alinta Energy website.

A summary of the how some of the key issues that have been, or will be addressed is summarised below in Table 7-6.

Table 7-6 - Project response to issues raised by community and stakeholders

Issue Raised	Project Response
Property Values	Landscape planning, noise mitigation and emissions management may help to reduce the perception that property values will decrease
Noise	Noise modelling and investigations and proposed mitigation measures to meet or exceed EPA guidelines
Emissions	Air quality modelling and investigations and proposed mitigation measures to meet or exceed EPA guidelines
Visual Impact	Landscape planning has considered the preferred views of stakeholders located on all side of the proposed site
Bushfire Risk	The concept layout of the power station was amended to include a 50m set back from the site boundary as per specialist recommendations

8 – SPECIALIST ASSESSMENTS

8 SPECIALIST ASSESSMENTS

The following section summaries the outcomes of a detailed specialist's assessments into a range of potential impacts associated with construction and operation of the Reeves Plains Power Station. The focus of this assessment is to demonstrate that the Project complies with State and Federal environment and planning legislation and environment performance criteria. The assessment also provides recommendations designed to reduce environment risk as far as reasonably practical for each project phase i.e. construction, commissioning and operation. The specialist assessment considers only issues relevant to construction and operation of a power station. These issues include: noise, air quality, visual impact, stormwater, traffic, bushfire, waste management, ecology, heritage, aviation, contamination and climate change and energy use. Full copies of these investigations can be found in Appendices E to R.

8.1 Noise Assessment

8.1.1 Overview

An Environmental Noise Impact Assessment was undertaken by an independent noise specialist Resonate Acoustics in August to September 2017. The objective of this assessment was to determine whether the Reeves Plains Power Station complies with the South Australian Environment Protection (Noise) Policy 2007 (Noise EPP) (EPA, 2007).

The objectives and scope of the noise assessment included:

- determine the appropriate construction and operational noise criteria for the project based on requirements outlined in the Mallala Council Development Plan and Noise EPP.
- undertake noise monitoring at Bairnsdale Power Station (a similar power station to the one proposed for Reeves Plains) in Victoria to provide an indication of likely (maximum) noise levels of the proposed future plant
- undertake background noise monitoring at locations around the subject site
- undertake a noise model of the likely noise emissions from the Reeves Plains Power Station during operation
- assess compliance with modelled noise emissions against the Noise EPP criteria
- provide commentary on potential noise impact on horses.

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix E.

8.1.2 Legislative, regulatory and policy documents

Table 8-1 highlights the key legislative, regulatory and policy regulatory documents that this assessment has considered.

Table 8-1 - Noise assessment - summary of relevant documents

Document	Description
Environment Protection Act 1993 (EP Act) (State)	The EP Act provides the regulatory framework to protect South Australia's environment, including land, air, and water. The South Australian EPA is the main administer of the Act, which is implemented through a suite of legislative and non-legislative policies and regulatory tools.
Environmental Protection (Noise) Policy 2007	Provides guidance on assessing the noise impacts of new developments and sets criteria subject to land use and noise type. The Noise EPP is the key legislative document associated with the

Document	Description
	management of noise in South Australia and is what noise compliance is assessed against.
Mallala Council Development Plan (April 2016)	The Development Plan prescribes the zoning associated with the subject site and surrounds, which informs the noise criteria selected from the Noise EPP.

Review of the Mallala Council Development Plan indicates that the Reeves Plains Power Station is located in an area designated a Primary Production Zone, which for the purposes of the Noise EPP is considered to be Rural Industry land use. The subject site is located one (1) km away from a Rural Living Zone (Figure 3-1) and the noise factors associated with this land use category and Rural Industry need to be taken into account when determining the noise criteria. The Noise EPP provides indicative noise factors for these two zones are highlighted in the table below (Table 8-2).

Table 8-2 - Land use category noise factors (Noise EPP)

Land use category	Indicative noise factor dB(A)	
	Day (7am to 10pm)	Night (10pm to 7am)
Rural Living	**47**	**40**
Residential	52	45
Rural industry	**57**	**50**
Light industry	57	50
Commercial	62	55
General industry	65	55
Special industry	70	60

As the subject site is located within the Primary Production Zone the noise criteria is equal to the indicative noise factor. The interface between the Primary Production Zone and Rural Living Zone is taken into account by averaging the indicative noise factors for each land use. There also is a requirement to apply a 5 dB(A) penalty for projects in the planning stage in accordance with the Noise EPP. This penalty is removed once noise has been validated during the commissioning process. Based on these requirements the planning noise criteria that the Reeves Plains Power Station is legally required to comply with is outlined in Table 8-3. Given the facility could operate at any time during the day or night, the more conservative night time criteria have been adopted for the assessment. This means a “worst case” assessment has been undertaken to determine potential impact on residents.

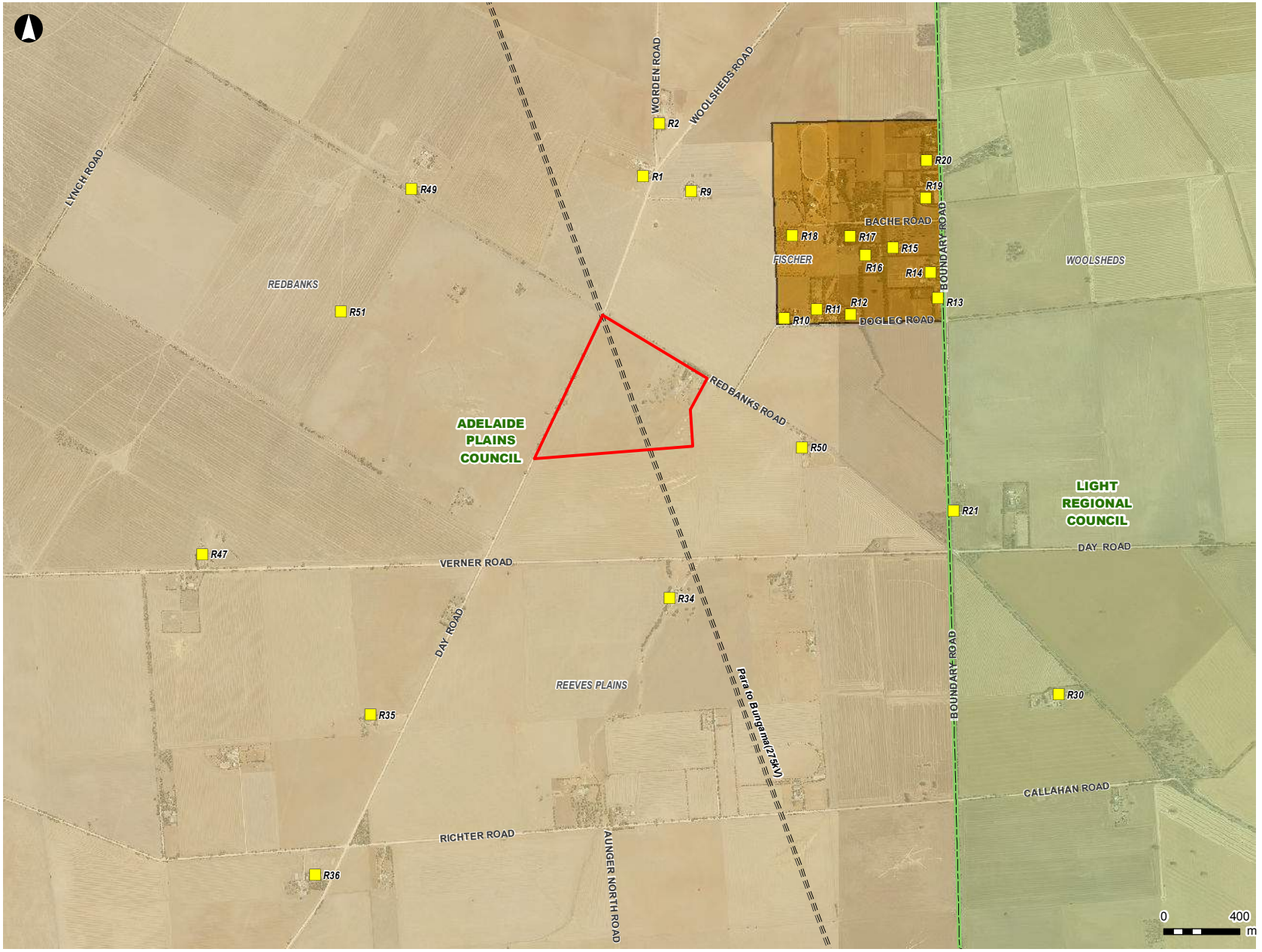
Table 8-3 - Calculated noise criteria for Reeves Plains Power Station

Sensitive Receiver Zone	Planning Noise Criteria dB(A) L_{eq}	
	Day (7am to 10pm)	Night (10pm to 7am)
Rural Living	47	40
Primary Production	52	45

Figure 8-1 shows the location of surrounding dwellings and associated planning noise criteria.

Division 1 of the Noise EPP also contains provisions in relation to noise from construction and demolition activities which state that construction noise should be limited to 7.00 am to 7.00 pm Monday to Saturday and that all reasonable and practicable measures must be taken to minimise noise resulting from construction activities.

Figure 8-1 - Surrounding Dwellings and associated Noise Criteria



LEGEND

- Subject Site
- Sensitive Receiver
- High Voltage Electricity Transmission line
- Local Government Area

Planning Noise Criteria

- 45 dB(A)
- 40 dB(A)
- 40 dB(A)

1:30,000 at A4

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Date issued: September 22, 2017

Alinta Energy - Reeves Plains Power Station

Date: 22/09/2017 Path: F:\10005589\L-GIS\A_Current\B_Maps\10005589_058_SurroundingDwellingsNoiseCrieria_A4L_v2_Fig8_1.mxd
Created by : LH
QA by : RB

8.1.3 Noise Assessment Findings

The following section summarises the results of both background noise assessment and results of noise modelling of the power station. It also discusses the likely impact noise may have on horses during operation of the Project.

8.1.3.1 Background Noise Monitoring

Background noise monitoring was undertaken from Friday 4th August to Monday 14th August 2017 at the locations shown in Figure 8-2.

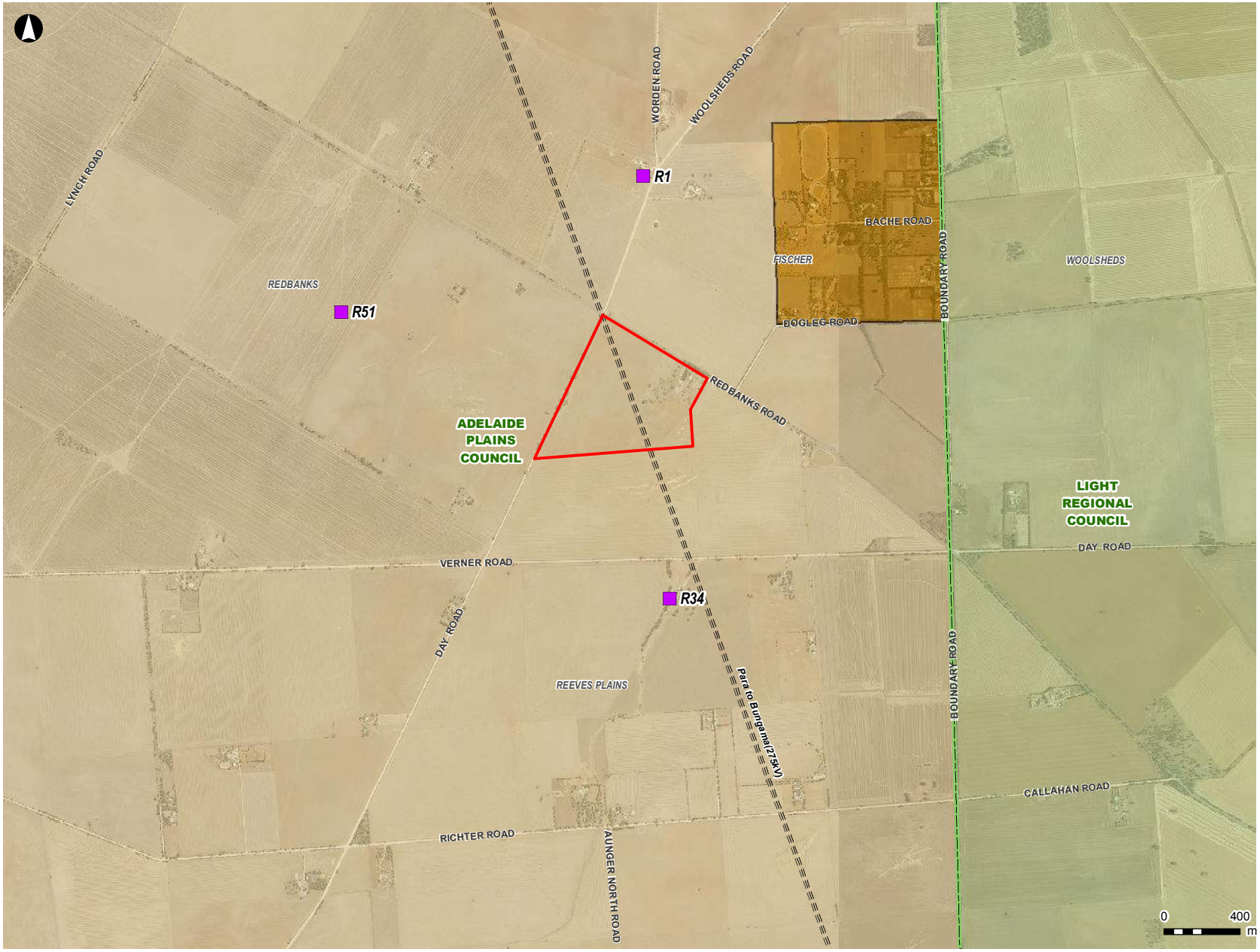
The results showed (Table 8-4) that the average noise levels are typically within the range of 40 to 50 dB(A) L_{eq} and the compliance with the Noise EPP is therefore expected to result in turbine noise which is at similar levels or less, compared to noise from other ambient noise sources in the area.

Table 8-4 - Background noise monitoring results

Date*	81 Woolshed Road	1806 Redbanks Road	974 Verner Road
7 August 2017	47	41	43
8 August 2017	49	43	41
9 August 2017	47	50	46
10 August 2017	-	-	-
11 August 2017	51	43	43
12 August 2017	48	43	58
13 August 2017	48	43	49

*Periods from the 4 – 6 August and 10 August 2017 have been excluded due to adverse weather

Figure 8-2 - Background Noise monitoring locations



LEGEND

- Subject Site
- Sensitive Receiver
- Background noise monitoring location
- High Voltage Electricity Transmission line
- Local Government

Planning Noise Criteria

- 45 dB(A)
- 40 dB(A)
- 40 dB(A)

Note: noise monitoring locations from Friday 4th August to Monday14th August 2017.

1:30,000 at A4

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Date: 22/09/2017 Path: F:\10005589\L-GIS\A_Current\B_Maps\10005589_059_BackgroundNoiseMonitoringLocations_A4L_v2_Fig8_2.mxd
Created by : LH
QA by : RB

8.1.3.2 Noise Assessment

The highest (maximum) noise levels measured at Bairnsdale Power Station have been used in the noise model to determine the likely noise impact. The levels recorded during the warm-up phase of and the power station were found to be 109 dB(A) L_{eq}. The warm up phase represents the noisiest phase of operation and has therefore been used as the basis for modelling. This was confirmed by a significant change in noise levels during full operation, where levels dropped by approximately 5 dB(A). Data supplied by GE Energy showed that the sound level recorded at Bairnsdale is appropriate for operation using either gas or diesel fuel. It is noted that the Bairnsdale Power Station had been fitted with 9 m long silencers, it is expected this would be the minimum specified for the Reeves Plains Power Station.

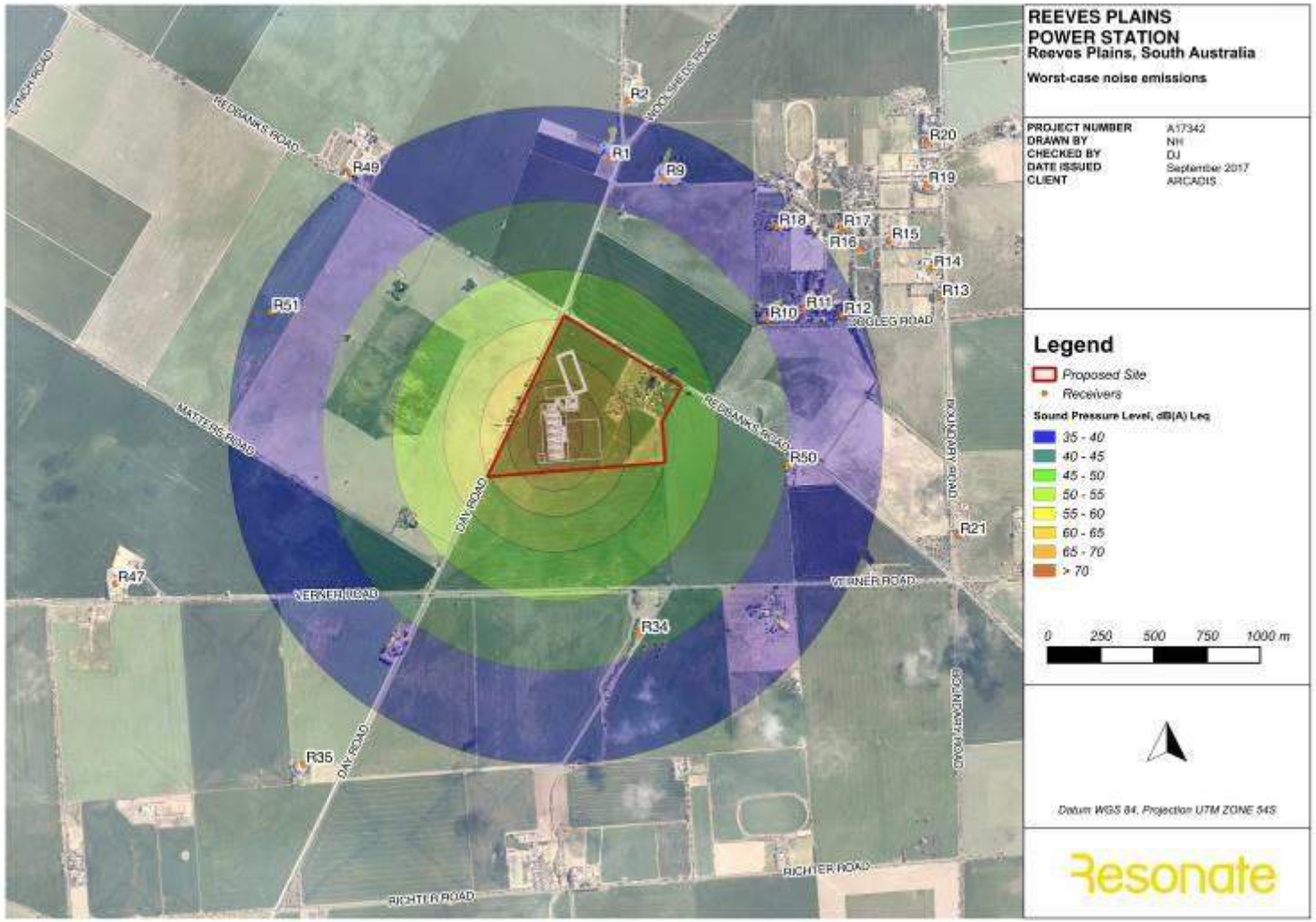
Using the noise monitoring results captured from Bairnsdale a sound model was prepared and run for the worst case scenario, being all six turbines warming up simultaneously, operation occurring during the night and light winds speeds. The model predicted noise levels at each dwelling as outlined in Table 8-5 and operational noise contours are shown in Figure 8-3.

Table 8-5 - Predicted noise levels based on noise modelling results

Receiver reference	Predicted noise level dB(A) L_{eq}	Noise criteria dB(A) L_{eq}	Complies?
R1	37	45	Yes
R10	39	40	Yes
R11	37	40	Yes
R12	37	40	Yes
R13	32	40	Yes
R14	31	40	Yes
R15	35	40	Yes
R16	34	40	Yes
R17	34	40	Yes
R18	36	40	Yes
R19	30	40	Yes
R20	29	40	Yes
R21	32	45	Yes
R34	43	45	Yes
R35	32	45	Yes
R47	30	45	Yes
R49	35	45	Yes
R50	41	45	Yes
R51	36	45	Yes

Receiver reference	Predicted noise level dB(A) L_{eq}	Noise criteria dB(A) L_{eq}	Complies?
R52	33	45	Yes
R9	37	45	Yes

Figure 8-3 - Operational noise contours (Resonate, 2017)



The results show that the predicted operational noise levels comply with the Noise EPP at all occupied dwellings in the vicinity of the Reeves Plains Power Station.

There is no prescribed noise limit that must be complied with during the construction and demolition phase of the Project. As such provided the construction work is carried out between 7:00am and 7:00pm Monday to Saturday and all reasonable and practicable measures must be taken to minimise noise, construction noise will comply with Division 1 of the Noise EPP.

During the Community Information Session, a number of community members enquired about the impact of Project noise on equines (horses). Whilst this is not a regulatory requirement from the EPA or Council, Resonate have include some background information on this issue. Resonate found that noise levels of 54 – 70 dB(A) L_{eq} measured at Flemington Racecourse during a music festival did not impact on horses stabled at the venue. Horses showed little response to noise except for times when this noise was coupled with visual stimuli, or when the noise was sudden or alarming in character. As the predicted noise associated with the operation of the Reeves Plains Power Station has been modelled to be less than 54 dB(A) at sensitive receivers the noise from the Project is not expected to have an adverse impact on the health or behaviour of horses.

8.1.4 Recommendations

In light of the findings from the Environmental Noise Impact Assessment, a summary of the key issues and recommendations for each phase of project development are provided in Table 8-6 below.

Table 8-6 - Summary of noise mitigation recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	Changes to concept layout	Alinta Energy will commit to updating noise modelling based on the final layout and power station design to ensure it still complies with the Noise EPP.
Construction	Noise from various construction activities	The selected EPC Contractor shall prepare a Construction Noise Management Plan as part of the Construction Environmental Management Plan (CEMP) to ensure that noise during construction complies with the Noise EPP.
	Noise from turbine commissioning	Noise monitoring to be undertaken during commissioning to ensure that noise will comply with the Noise EPP.
Operation	Noise from turbine operation	Maintenance activities should be undertaken as planned to ensure the efficient operation of the facility
	Noise from turbine operation	During the first 12 months of operation Alinta Energy will commission independent noise monitoring to validate compliance with the Noise EPP

8.2 Air Quality

8.2.1 Overview

Independent consultants Northstar Air Quality undertook an Air Quality Impact Assessment (AQIA) for the proposed Reeves Plains Power Station to assess compliance with the South Australian Environmental Protection (Air Quality) Policy 2016 (Air Quality EPP) (EPA, 2016).

The objectives and scope of the assessment included:

- identify sensitive receptor locations relevant to this study
- analyse meteorological data used to inform the air quality model
- running a predictive air quality model (AERMOD) to assess likely dispersion patterns of a range of potential pollutants
- assess modelling results to determine compliance with the Air Quality EPP (EPA 2016)
- assess modelling results using both gas and diesel fuel

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix F.

8.2.2 Legislative, regulatory and policy documents

The combustion of gas or diesel during operation of the Reeves Plains Power Station will produce the following primary air pollutants:

- Carbon monoxide
- Nitrogen dioxide
- Sulphur dioxide
- Particulate matter
- Formaldehyde

Alinta Energy is required to undertake air quality (dispersion) modelling, for both gas and liquid fuel, to assess whether ground level concentrations under various operating scenarios comply with the air standards detailed in the Air Quality EPP, which are described in in Table 8-7.

Table 8-7 - Ground level concentration limits

Pollutant	Averaging time	Maximum concentration (mg/m^3)
Carbon monoxide	1 hour	31.24
	8 hours	11.12
Nitrogen dioxide	1 hour	0.25
	12 months	0.06
Particles ($PM_{2.5}$)	24 hours	0.025
	12 months	0.008
Sulphur dioxide	1 hour	0.57
	24 hours	0.23

Pollutant	Averaging time	Maximum concentration (mg/m^3)
	12 months	0.06
Formaldehyde	3 minutes	0.044

8.2.3 AQIA Findings Results

The air quality dispersion modelling takes into account incremental and cumulative impacts, incremental being the concentrations predicted as a result of the Project operating in isolation and the cumulative impact relating to the operation of the Project plus background air quality concentrations which have been sourced from South Australian EPA weather stations. A summary of background air concentrations used in the assessment outlined in Table 8-8.

Table 8-8 - Derived background air quality

Pollutant	Averaging time	Derived background concentration (mg/m^3)
Carbon monoxide	1 hour	0.0400
	8 hours	0.0500
Nitrogen dioxide	1 hour	0.0205
	12 months	0.0082
Particles (PM_{10})	24 hours	0.0157
Particles ($PM_{2.5}$)	24 hours	0.0104
	12 months	0.0073
Sulphur dioxide	1 hour	0.0286
	24 hours	0.0058
	12 months	0.0002
Formaldehyde	3 minutes	0.0000

The weather stations also provide information on predominate wind directions which is an important consideration in determining air quality impacts. Wind roses show that the predominate wind direction is south-westerly and generally in the range of 1.5m/s to 5.5 m/s.

Various operating scenarios were assessed using the dispersion model, with the results varying depending on the pollutant, fuel type and load on the turbines. The following table (Table 8-9) shows the maximum predicted incremental concentration at any identified dwelling for both gas and diesel in comparison with the Air EPP ground level concentration criteria.

Table 8-9 - Predicted incremental ground level concentrations (Northstar, 2017)

Pollutant	Averaging time	Air EPP criteria*	Predicted concentration – gas*	Predicted concentration – diesel*
Carbon monoxide	1 hour	31.24	**0.03747**	**0.03427**
	8 hours	11.12	**0.01480**	**0.01446**
Nitrogen dioxide	1 hour	0.25	**0.06149**	**0.19147**
	12 months	0.06	**0.00053**	**0.00174**
Particles (PM_{10})	24 hours	0.050	**0.00198**	**0.00217**
Particles ($PM_{2.5}$)	24 hours	0.025	**0.00198**	**0.00217**
	12 months	0.008	**0.00008**	**0.00009**
Sulphur dioxide	1 hour	0.57	**0.00983**	**0.00086**
	24 hours	0.23	**0.00153**	**0.00016**
	12 months	0.06	**0.00008**	**0.00001**
Formaldehyde	3 minutes	0.044	**0.00409**	**0.00021**

*All units are in mg/m^3

Green text indicates compliance

Table 8-10 shows maximum predicted cumulative concentration (background concentration plus incremental concentration) of the worst-case scenario gas and diesel operation of the Reeves Plains Power Station.

Table 8-10 - Predicted cumulative ground level concentrations

Pollutant	Averaging time	Air EPP criteria*	Predicted concentration – gas*	Predicted concentration – diesel*
Carbon monoxide	1 hour	31.24	**0.07747**	**0.07427**
	8 hours	11.12	**0.06480**	**0.06446**
Nitrogen dioxide	1 hour	0.25	**0.08199**	**0.21197**
	12 months	0.06	**0.00873**	**0.00994**
Particles (PM_{10})	24 hours	0.050	**0.01768**	**0.01787**
Particles ($PM_{2.5}$)	24 hours	0.025	**0.01238**	**0.01257**
	12 months	0.008	**0.00738**	**0.00739**
Sulphur dioxide	1 hour	0.57	**0.03843**	**0.02946**

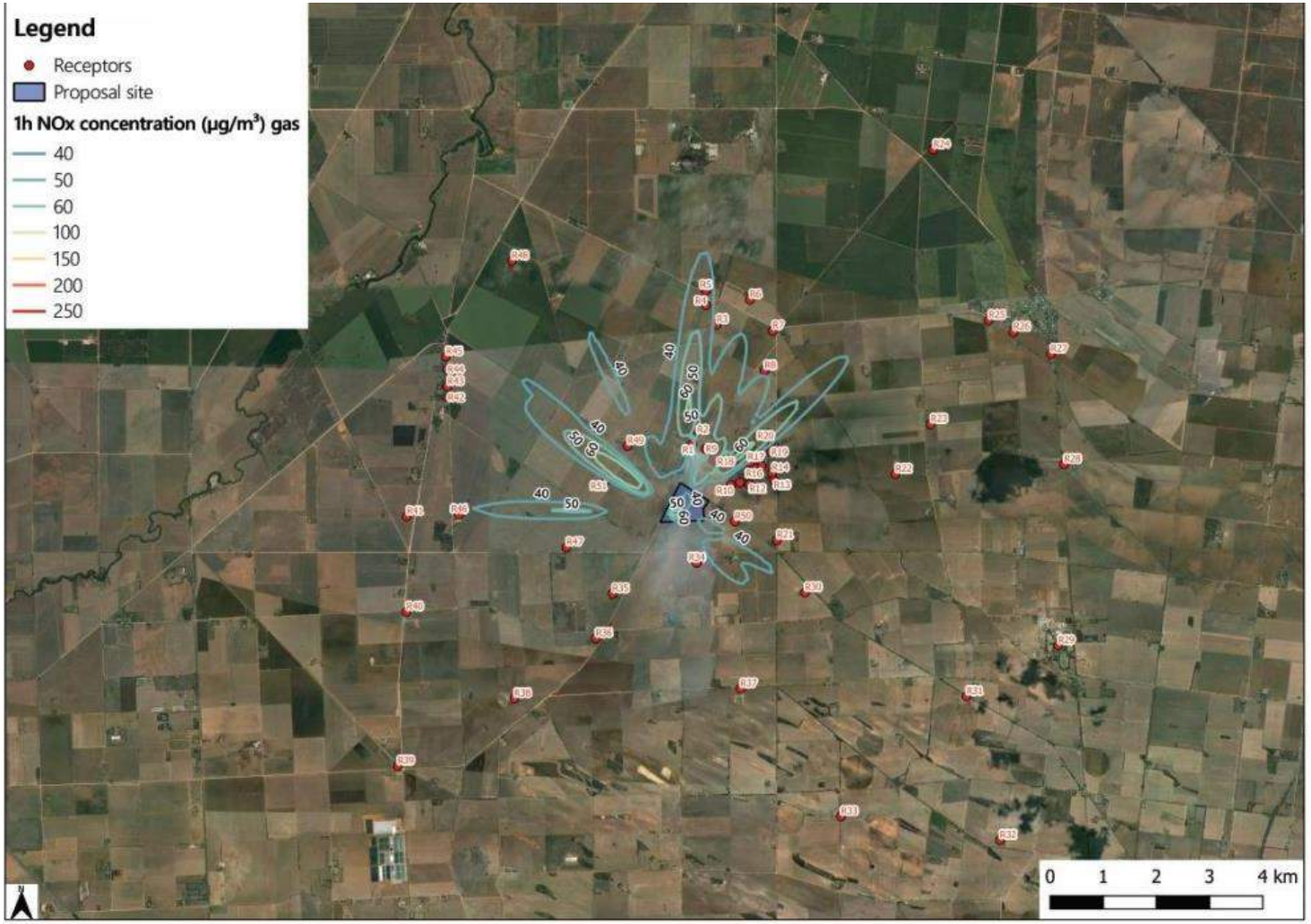
Pollutant	Averaging time	Air EPP criteria*	Predicted concentration – gas*	Predicted concentration – diesel*
	24 hours	0.23	**0.00733**	**0.00596**
	12 months	0.06	**0.00028**	**0.00021**
Formaldehyde	3 minutes	0.044	**0.00409**	**0.00021**

*All units are in mg/m^3

Green text indicates compliance

Both Table 8-9and Table 8-10 show that that the operation of the Reeves Plains Power Station complies with the Air Quality EPP criteria. A selected number of isopleth plots have been included in Figure 8-4 to Figure 8-7 below. These figures show predicted air quality results for a range of scenarios at nearby dwellings.

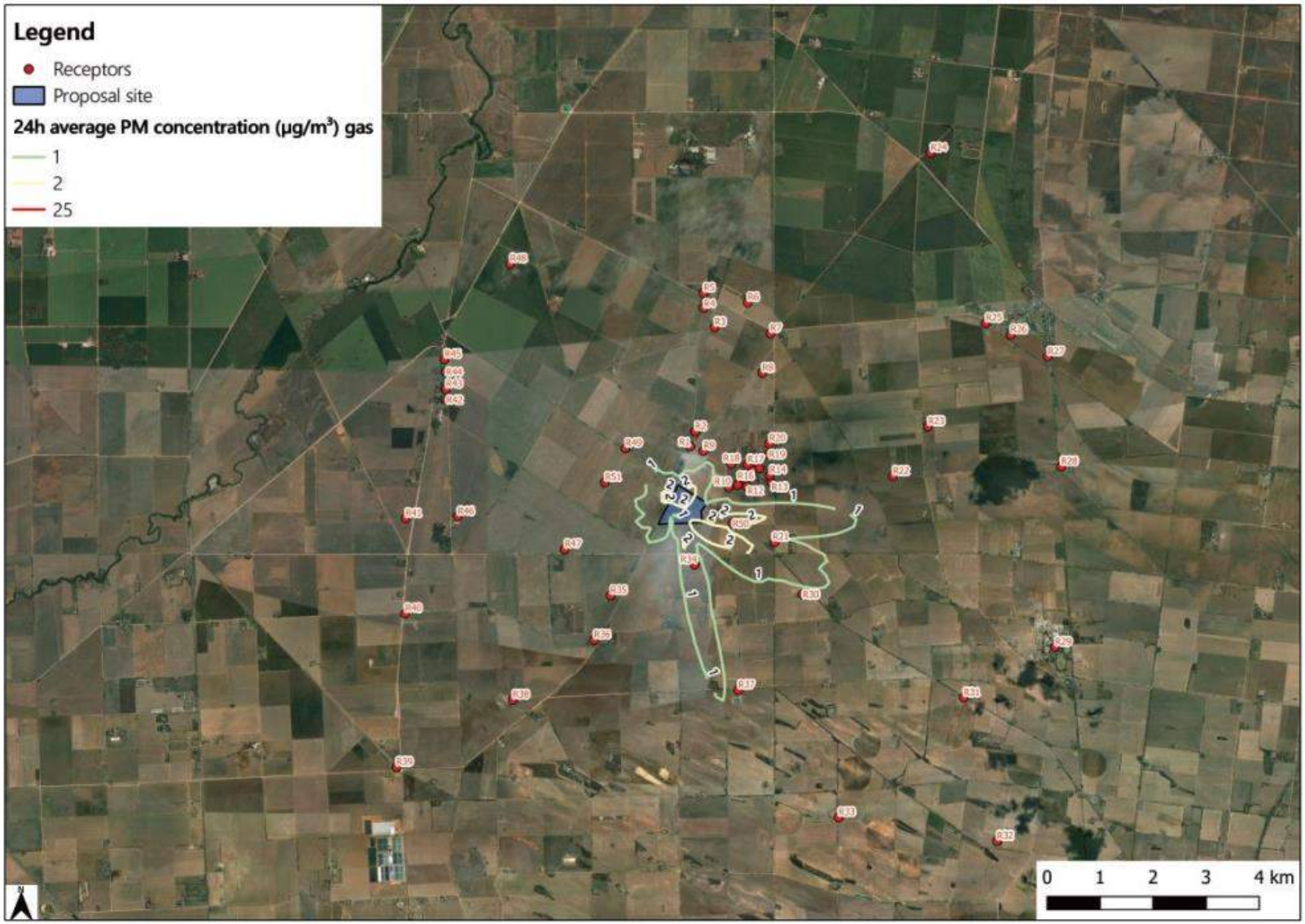
Figure 8-4 - Predicted incremental impact, NOx (as NO_2), 1-hour, 100%, gas



Source: Northstar Air Quality. | **Note:** Please note that the scale and scale bar used to depict the concentrations may not be linear, and care must be applied when interpreting the illustrated values.

Source: Northstar Air Quality

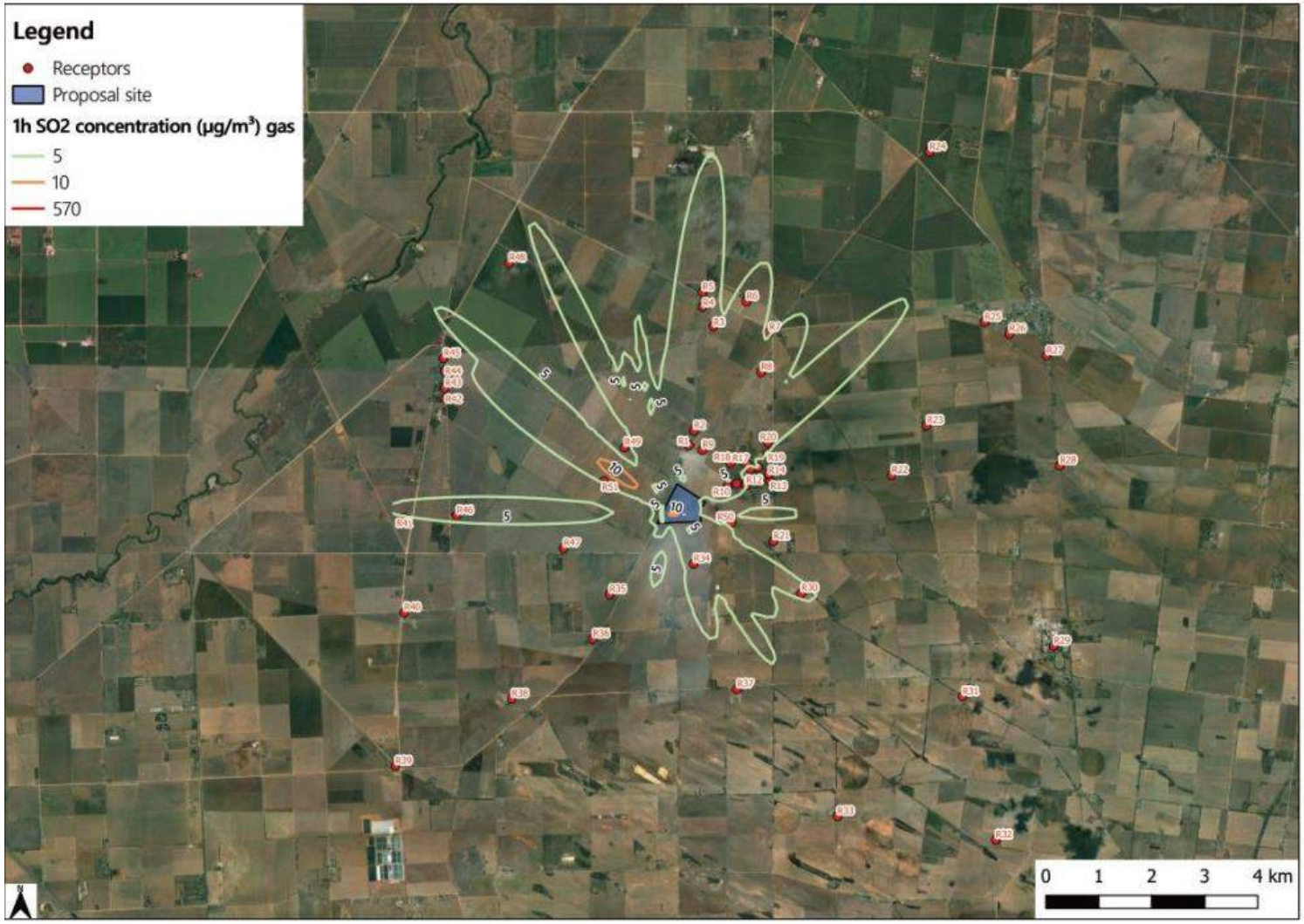
Figure 8-5 - Predicted incremental impact, PM, 24-hour, 25%, gas



Source: Northstar Air Quality. | **Note:** Please note that the scale and scale bar used to depict the concentrations may not be linear, and care must be applied when interpreting the illustrated values.

Source: Northstar Air Quality

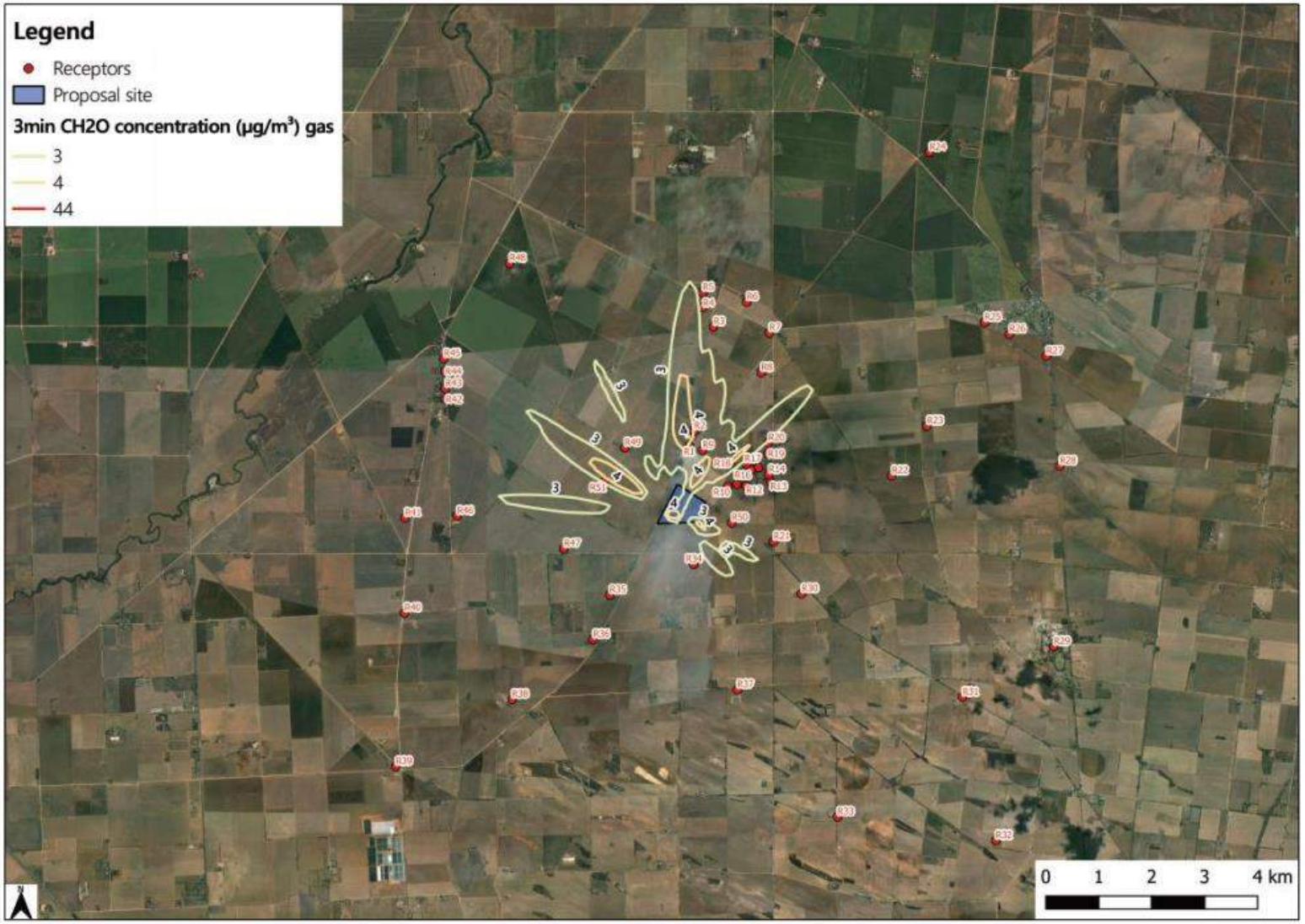
Figure 8-6 - Predicted incremental impact, SO_2, 1-hour, 100%, gas



Source: Northstar Air Quality. | **Note:** Please note that the scale and scale bar used to depict the concentrations may not be linear, and care must be applied when interpreting the illustrated values.

Source: Northstar Air Quality

Figure 8-7 - Predicted incremental impact, CH_2O, 3-minute, 75%, gas



Source: Northstar Air Quality. | **Note:** Please note that the scale and scale bar used to depict the concentrations may not be linear, and care must be applied when interpreting the illustrated values.

Source: Northstar Air Quality

Construction activities have the potential to generate short-term emissions of particulates, mostly in the form of uncontrolled dust emissions. A risk assessment undertaken as part of the AQIA determined that the potential magnitude of impacts stemming from works on the subject site would be negligible given the distance of the dwellings from the area of physical works. The impact of construction traffic was also assessed and based on the estimated number of vehicle movement and the distances of dwellings from Redbanks Road the risk associated with construction traffic was also found to be negligible. Notwithstanding this a range of mitigation measures were proposed within the AQIA to ensure dust from construction activities is controlled and managed as much as reasonable practicable.

8.2.4 Recommendations

Based on the assessment findings, a summary of the key issues and recommendations are provided in Table 8-11 below. The full AQIA provides a full list of recommendations across the project phases.

Table 8-11 - Summary of air quality recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	Changes to concept layout	Alinta Energy commits to updating air quality modelling based on the final layout to ensure continued compliance with the Air Quality EPP.
Construction	Dust from various construction activities	The EPC Contractor shall prepare an air sub-plan as part of the CEMP to ensure that air quality during construction complies with the Air Quality EPP. The AQIA provides a list of mitigation measures that would be considered and adopted were appropriate.
	Air quality during turbine commissioning	Stack emissions will be tested and validated during commissioning to ensure compliance with the Air Quality EPP
Operation	Air quality turbine operation	Maintenance activities will be undertaken as planned to ensure the efficient operation of the facility
	Breaches of EPA licence	A Continuous Emissions Monitoring System will be provided on each gas turbine unit that will enable the operations team to monitor and Project's performance against their EPA licence

8.3 Visual Amenity

8.3.1 Overview

A Landscape and Visual Impact Assessment (LVIA) was undertaken by WAX Design and Brett Grimm Landscape Architect to assess the potential visual impact of the Reeves Plains Power Station on the surrounding environment.

The objectives and scope of the assessment included:

- undertake a landscape character assessment which involved an evaluation of the existing landscape character and site locality.
- undertake visual impact assessment which involved assessing the likely effect of the proposed development on the physical landscape through the lens of selected viewpoints. Four viewpoints were selected after a site visits and consultation with Alinta Energy and other relevant stakeholders.
- provide conclusions about the magnitude of the visual effects of the proposed development on the site locality based on the landscape character assessment and visual impact assessment.

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix G.

8.3.2 Legislative, regulatory and policy documents

A summary of the key legislative, regulatory and policy documents which have referenced in this assessment are provided in Table 8-12. There is no formalised standard visual assessment methodology within planning guidelines at local, state or federal levels of application. Therefore, this LVIA followed a 'best practice' approach, defined by a number of key documents.

Table 8-12 - LVIA - summary of relevant documents

Legislation	Description
Mallala Council Development Plan (April 2016)	The Project is located within the Adelaide Plains Council and therefore the Mallala Council Development Plan is of relevance to this Project. Consideration of visual amenity in the Development Plan is noted through the following provisions: 10. Primary Production Desired Character Statement, Objectives and Principles of Development Control (PDCs) 11. Council Wide Design and Appearance – Building Setbacks from Road Boundaries, Infrastructure, Landscaping, Fencing and Walls, and Sitting and Visibility Objectives and PDCs.
Landscape Quality Assessment of South Australia (Lothian, A, 2000)	This objective of this thesis was to provide a basis for developing credible methodology for scale assessment of perceived landscape quality – specifically in South Australia.

8.3.3 Visual Amenity Findings

The visual impact assessment was undertaken by reviewing the outcomes of Zone of Theoretical Visual Influence (ZTVI) mapping. This provides an illustration of where the proposed development may be seen within the landscape, within a 15-kilometre radius of the project site. The maps anticipate heights of various infrastructure elements and represents 'worst case' scenario as they do not incorporate vegetation, built form or localised screening effects. As part of undertaking the ZTVI mapping the following features of the proposed development were considered:

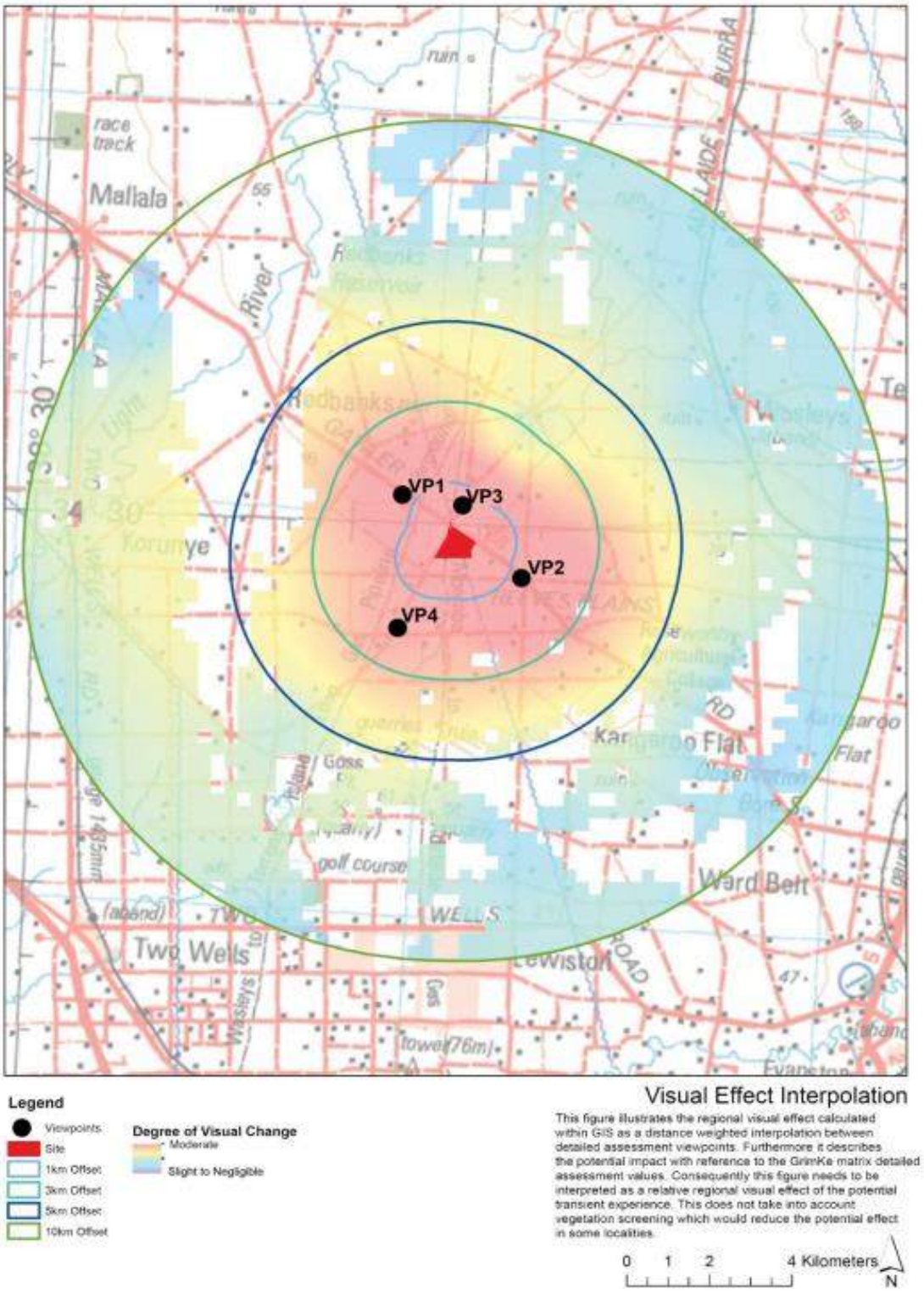
- exhaust stacks of approximately 16 meters
- transmission substation with gantries of a height of 24 metres

- communication tower of 30 m -35 m high
- cut in tower of 40 m – 45 m high
- evaporation pond and holding tanks.

The ZTVI mapping was undertaking from four selected viewpoints, and considered the effect of the proposed development on key aspects of existing landform such as existing landscape character, existing infrastructure, degree of visual containment, horizontal and vertical visual effects and distance to the proposed development. The outcomes of the mapping and visual impact assessment from each viewpoint is summarised below and the shown in Figure 8-8.

- Redbanks Road (VP1): approximately two kilometres from the proposed development site. The setback of the proposed development from the main road provides a degree of visual mitigation. The combination of topography and vegetation reduces the visual impact of the proposed development along the road corridor
- Redbanks Road and Boundary Road intersection (VP2): less than two kilometres from the proposed development site. Potential for the proposed development to have a prominent visual element from this viewpoint due to lack of vegetation.
- Woolshed Road (VP3): The proposed development is located approximately 1.2 kilometres to the south of this viewpoint. A moderate visual effect will be caused due to close proximity to the development and absence of road side vegetation along the Gawler-Mallala Road.
- Day Road (VP4): this viewpoint is located 2.2 kilometres south of the proposed development. A moderate visual effect is expected, seen adjacent to existing agricultural properties. Contrast to these existing properties, the development will be seen as an increase in built form elements within the landscape.

Figure 8-8 - Summary of viewpoint visual impact assessment outcome



The overall visual effect is likely to be defined by a concentrated cluster of infrastructure elements within the existing agricultural landscape. The horizontal infrastructure elements have similarities in scale and mass to a number of existing agricultural structures. The visual effect of the development is likely to be moderate, and opportunities exist to manage the visual effect through material and finishes selections, which respond to the surrounding context and provision of adequate landscape treatments.

In particular, the following key visual aspects are noted that highlight minimal impact the development is expected:

- The presence of vegetation belts both to the foreground and background of all viewpoints provide a degree of visual screening or fragmentation.
- Beyond five kilometres, the combination of topography, visual containment, and vegetation screening significant reduces the visual effect resulting in a slight to negligible impact.
- The vertical development form is similar in height to the other infrastructure elements in the regional landscape, although the appearance will be more concentrated within a defined field of view.
- The cut in towers are the highest piece of infrastructure, with a slim lattice tower and approximately 45 metres high. The slim profile is likely to be screened in many locations by trees or built form, while the lattice construction will reduce the visual prominence.

Photomontages illustrating the Project within the context of the existing landscape are provided in Appendix G.

A Landscape Concept Plan (Appendix Q) has also been developed for the subject site to satisfy the requirements of the Mallala Council Development Plan. The intent of the Landscape Concept Plan is to use bands of trees and shrubs along the perimeter of the subject site to assist in mitigating the visual impact of the infrastructure. All plantings proposed are natives and the proposed locations take into account sightlines for motorists and bushfire risk.

8.3.4 Recommendations

In light of the findings from the assessment, a summary of key issues and recommendations are provided in Table 8-13.

Table 8-13 - Summary of visual amenity recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	Reducing the visibility of the development by landscaping and incorporating enough coverage.	The proposed Landscape Concept Plan will be refined during detailed design taking into account amenity, operational and bushfire management requirements.
	Ensuring that the materiality finishes of the development align with the surrounding agricultural landscape	Material and finishes, such as pitched roof and appropriately coloured Colourbond zincalum finish should be considered for service buildings and other infrastructure.
Construction	No significant permanent visual impacts are expected from construction activities.	
Operation	Failure of landscaping to adequately screen Project.	Ensure the landscaping treatments nominated during detailed design are maintained during operation, particularly during establishment of plantings.

8.4 Stormwater Management

8.4.1 Overview

A Concept Stormwater Management Plan was developed by SMEC in August and September 2017. The objective of this plan was to provide a basis for the stormwater management solution for the subject site, and to determine whether the Reeves Plains Power Station complies with the South Australian Environment Protection (Water Quality) Policy 2015 (Water Quality EPP) (EPA, 2015) and Mallala Council Development Plan.

The objectives and scope of the concept stormwater plan included:

- limit the risk of flooding at the subject site, particularly plant areas
- manage the quantity of stormwater leaving the site to ensure flow rates are not exacerbated downstream
- isolate higher risk areas of pollution
- separate wastewater and site runoff
- consider potential for stormwater reuse
- assess compliance with modelled stormwater discharge against the Water Quality EPP.

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix H.

8.4.2 Legislative, regulatory and policy documents

A summary of the key legislative, regulatory and policy documents which have been referred to as part of the concept stormwater management are provided in Table 8-14.

Table 8-14 - Stormwater management - summary of relevant documents

Document	Description
Environment Protection Act 1993 (EP Act) (State)	The EP Act provides the regulatory framework to protect South Australia's environment, including land, air, and water. The South Australian EPA is the main administer of the Act, which is implemented through a suite of legislative and non-legislative policies and regulatory tools.
Environment Protection (Water Quality) Policy 2015 (State)	The Environment Protection (Water Quality) Policy 2015 provides the main legislative framework to protect South Australian waterways. The environmental values that are to be protected are set out in this legislation. They include: maintenance of aquatic ecosystems, drinking water, primary industries including irrigation, livestock and aquaculture and recreational uses and aesthetics. This Policy specifies pollutants that cannot be discharged to the stormwater system or onto land where they may enter stormwater. This includes a significant number of pollutants generated by the building and construction industry, which includes concrete, building wash water and brick, bitumen or concrete cutting wastewater.
Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry	This Code draws from the Policy, noting that activities undertaken in the building and construction industry have the potential for significant stormwater pollution and impacts to receiving waters. The Code is designed to assist in the compliance with the general environmental duty set forth in the Policy, and the requirements set out in the Code are enforceable through powers under the Environment Protection Act 1993.
Mallala Council Development Plan (Local Government)	The Project is located within the Adelaide Plains Council and therefore the Mallala Council Development Plan is of relevance to this Project. The two main objectives with regards to stormwater planning in the Mallala Council Development Plan are ensuring that:

Document	Description
	• The development avoids the production of waste, minimises the production of waste, reuses waste, recycles waste for reuse, treats waste and disposes of waste in an environmentally sound manner. • The development includes the treatment and management of solid and liquid waste to prevent undesired impacts on the environment including, soil, plant and animal biodiversity, human health and the amenity of the locality. Refer to Section 8 for more information on the developments compliance with the provisions in the Development Plan

8.4.3 Stormwater Findings

The Stormwater Management Plan provides information with regards to stormwater management, to a design standard of 10% Annual Exceedance Probability (AEP)[8] for site stormwater drainage. Drainage from the area generally heads along drainage lines parallel to Day Road, joining to form Templers Creek, which ultimately connects into Salt Creek to the east of Two Wells. The area lies between the Light River (to the west) and the Gawler River (to the south). Based on publicly available flood mapping of a 1% AEP event for the Light and Gawler River, the development is not expected to increase the potential for blockage of floodway's or to alter regional drainage flow paths. Therefore, minimal impact is expected on the drainage line flood storage as well.

Given the concept plan layout the following are noted in the Plan:

- A wastewater evaporation pond at the northern side of the plant area, isolated from general stormwater inputs and separately drained.
- It is expected that bulk earthworks will create a platform, with the plant likely to be sited at one common level, and fall generated around site areas to provide flow paths for drainage.
- Surface runoff separation based on risk and likely level of pollutants to ensure effective and targeted treatment.
- Design of stormwater treatment system to deal with smaller more frequent rainfall evens and less frequent larger storm events that may overflow the system.
- Retainment of runoff on site from rainfall events of up to 10% AEP, with detention provided for larger events.
- Surface water from land surrounding the proposed development area will be diverted around the outside, using bunds and/or swales as required. Those areas effectively remain rural in nature, and are considered to not require detention.
- Runoff from the development plant will result in significantly greater flow rates than those compared to the current undeveloped site, particularly around the hardstand areas. Preliminary calculations indicate that the need for stormwater detention in the order of 2500 m^3 to maintain existing level of discharge during the 1% AEP event. Detention volumes would be lower if designed for smaller event. The detention basin will be integrated with the site civil design, integrating with the landscape and any safety requirements, including treatment of flows to the required standards.

[8] This was previously referred to as 10-year Average Recurrence Interval (ARI)

8.4.4 Recommendations

Having investigated and prepared a concept stormwater management plan for the Reeves Plains Power Station, a summary of the key issues and recommendations are provided in Table 8-15.

Table 8-15 - Summary of recommendations - stormwater management

Phase	Issue / Risk	Recommendation
Detailed Design	Progressing detailed design based on the concept design.	The EPC Contractor should consider the following as part of their detailed design: • Diversion of clean stormwater to be diverted around the Project infrastructure • Blue metal or similar surface treatment around the plant area. This is porous which enables initial infiltration of rainfall events on those areas. • Kerbed internal roadways to control the collection of surface runoff • Underground (pit and pipe/culvert) drainage system to manage the small volumes of run-off associated with regular rainfall events • Overland flow paths along roadways to provide a safe route for runoff between structures and/or equipment in major rainfall events, in excess of the underground drainage system capacity. • Finalise basin sizing subject on plant layout and impervious area • Confirm 1% AEP flood level to ensure critical infrastructure is protected
Construction	Poor stormwater run-off quality during construction phase	Runoff will be directed into a separate sediment pond, to ensure that sediment is allowed to settle and separate, prior to discharge. The CEMP will be developed by the appointed EPC Contractor will include management procedures relating to stormwater management during construction (i.e. Soil Erosion and Drainage Management Plan) accounting for the specific civil works and excavation required for the final detailed design.
Operation	Incidents during operation (i.e. spills) that may impact water quality	Details of operational management aspects will be detailed in the Operational Environment Management Plan (OEMP) to be developed prior to commencement of operations. This will incorporate the recommendations from this assessment, which include: • Areas of high risk contamination – spillage in the chemical storage or handling areas, will be management according to the EPA Bunding and Spill Management guidelines and will be isolated from stormwater systems. Wash-down of site areas will be directed to waste water systems, not stormwater and water collection from these areas will be handled as waste no stormwater.
	Opportunities for reuse	Alinta Energy will endeavour to use water captured from buildings for uses such as toilet flushing, landscaping and area wash-down.
	General management of stormwater	The stormwater management system will be maintained to ensure: • run-off is directed to the retention and detention basin and water levels in bunds are managed to ensure capacity is available in the event of spills.

8.5 Traffic

8.5.1 Overview

A Traffic Impact Assessment was undertaken by Arcadis for the Reeves Plains Power Station. The objective of the assessment is to investigate the proposed access arrangements to the subject site and assess the traffic and safety implications of the Project on the surrounding road network.

The scope of this assessment included the following elements:

- investigate traffic generation characteristics and likely parking demand to be generated from the proposed development
- assess the suitability of proposed access arrangements and proposed parking supply and layout
- determine the transport impact of the proposed development on the surrounding road network, particularly Redbanks Road and Day Road

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix I.

8.5.2 Legislative, regulatory and policy documents

A summary of the regulatory documents which reference to traffic management that this assessment has considered are provided in Table 8-16.

Table 8-16 - Traffic assessment - summary of relevant documents

Legislation	Description
Mallala Council Development Plan (April 2016)	The Project is located within the Adelaide Plains Council and therefore the Mallala Council Development Plan is of relevance to this Project. Consideration of traffic considerations in the Development Plan is noted through the following provisions: 12. Traffic and access Refer to Section 8 for more information on the developments compliance with the provisions in the Development Plan
DPTI Code of Practice for the Transport of Oversize and Overmass indivisible loads and Vehicles (DPTI, 2008)	The Code is legal document issued by DPTI that sets out conditions under which indivisible loads are able to be transported by vehicle (or vehicle combination).

8.5.3 Traffic Impact Findings

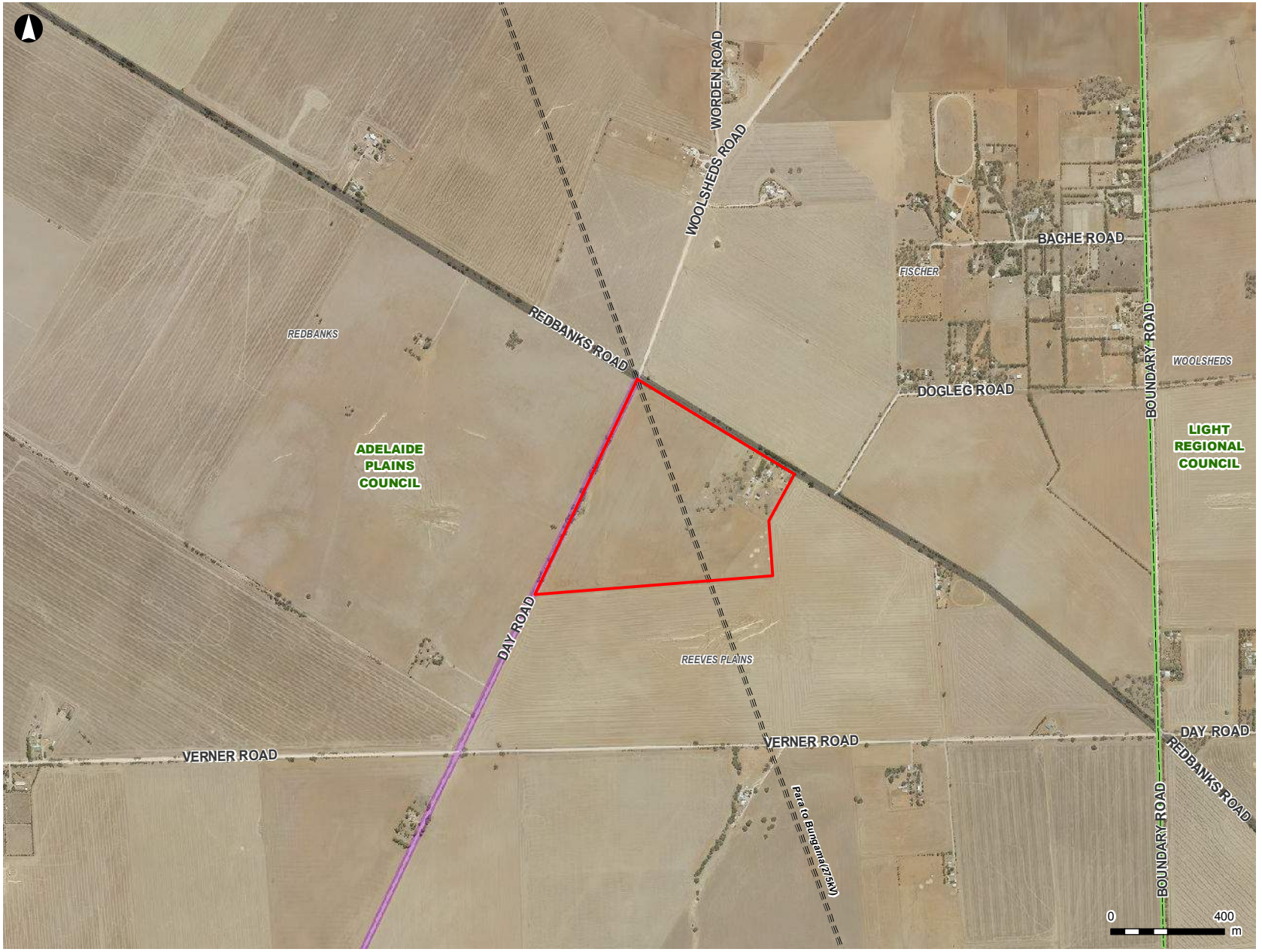
The assessment provided context on the existing road network, which is characterised by three roads and an intersection, each summarised in Table 8-17, and the layout shown in Figure 8-9.

Table 8-17 - Road network surrounding proposed development

Road Network Aspect	Description
Redbank's Road	A sealed two-lane two-way sub-arterial road. Consists of a sealed pavement width of approximate 12 meters and 2.5 meters sealed shoulders on both sites, with a speed limit of 100 km/hr and is under the jurisdiction of the Department of Planning and Transport Infrastructure (DPTI).
Day Road	A carriageway with approximately 8.5 meters' formation width, with no posted speed limit (assumed rural speed of 100 km/hr) and is under the jurisdiction of the Adelaide Plains Council.

Road Network Aspect	Description
Woolsheds road	An unsealed two-lane, two-way collector road. It serves as a local access road and consists of a carriageway with approximately 8.5 meters' formation width, with no posted speed limit (assumed rural speed of 100 km/hr), and is under the jurisdiction of the Adelaide Plains Council.
Redbank's Road / Day Road / Woolsheds Road Intersection	This is an unsignalised intersection, with the side roads of Day Road and Woolsheds Road controlled under 'give way' conditions. Turning movement at this intersection is assumed to be minimal given the low traffic volume of the intersecting roads.

Figure 8-9 - Road network layout surrounding proposed development site



LEGEND

- Subject Site
- High Voltage Electricity Transmission line
- Sub Arterial road
- Collector road
- Other road
- Local Government Area

1:20,000 at A4

alintaenergy

ARCADIS

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Coordinate System: GDA 1994 MGA Zone 54
Date issued: September 22, 2017

Alinta Energy - Reeves Plains Power Station

Date: 22/09/2017 Path: F:\10005589\L-GIS\A_Current\B_Maps\10005589_060_RoadNetworkSurroundingSite_A4L_v2_Fig8_5.mxd
Created by : LH
QA by : RB

A summary of the likely traffic characteristics and impacts are provided below. This has been based after consideration of the existing traffic conditions and a number of assumptions (details of which are provided in Appendix I) on the likely characteristics of traffic generation from the proposed development.

- Construction traffic volume of 600 B-Double Truck vehicles moving to and from the site are expected throughout the 12-month construction period. This equates to 11.5 vehicles per week or 2.3 vehicles per day across a 5-day working week. This additional vehicle traffic that will be generated during construction is considered negligible compared to historical and current data (less than 1% increase).
- No on-site accommodation will be provided for staff during the construction period, and therefore it is assumed that light vehicles will be used on a daily basis for travelling to and from the site. An estimated 170 trips are expected to be made daily to and from the construction site, spread through the peak periods (6-9 am and 3-6 pm). The existing arterial and local road network is expected to have sufficient capacity to accommodate these additional trips.
- It has been assumed that sufficient number of parking space will be provided by Alinta Energy to accommodate delivery and staff vehicles during construction, and no parking on DPTI or Council roads will be required.
- The ongoing operation of the power station is expected to generate significantly less traffic than the construction phase of the project, and primarily the vehicle trips will be generated by 6 full time employees or 12 trips per day. Scheduled maintenance requirements are likely to be infrequent and significantly less than that of the construction phase. It is expected that operational traffic will have negligible impact to the adjacent road network.

8.5.4 Recommendations

Based on the assessment findings, a summary of the key issues and recommendations are provided in Table 8-18 below.

Table 8-18 - Summary of traffic recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	Any significant changes to the proposed site plans that may see an increase in transportation of construction material and therefore vehicles and contractor works.	There is minimal impact expected on the surrounding transport network, which is based on a number of assumptions derived from the concept plans. Any significant deviations to this may see an increase in the number of expected trips of both heavy vehicle and light passenger vehicles which will require additional investigation to assess if the impact is still considered negligible.
	The need to incorporate a secondary access point	The assessment was based on concept plan design which considered one access point to the plant, located along Days Road. The bushfire assessment (Appendix J) has recommended consideration of a secondary emergency access point along Redbank's Road from the southern end of Day Road. Incorporation of this secondary access point will need to be provided in accordance with the relevant design standards and the requirements recommended in the bushfire assessment (Appendix J) and the impacts of any secondary access point will need to be investigated.
	Design of on-site car parking facilities	The design of car parking facilities should consider the parking requirements specified under the General Section of the Mallala Development Plan (see section 8) and the Australian Standards AS 2890 Parking Facilities. Parking provision will also be required for a small number of large vehicles.
	Adequate sizing of access points	The existing Day Road access point and heavy vehicle turning movements have been reviewed, with detailed drawings provided in Appendix I. The analysis shows that minor modification is

Phase	Issue / Risk	Recommendation
		required to widen the access point to ensure safe manoeuvres of large vehicles. This will incorporate the sizing requirements as listed in the bushfire assessment (Appendix J).
Construction	Additional parking requirements during construction to avoid parking on DPTI or council owned roads.	One access point will be required along Day Road located between the gas transmission pipe line and the electricity power lines that will allow construction vehicles to avoid crossing over and under these linear assets. The location of the access point will be determined at the construction stage in consultation with EPIC and Electranet. A construction traffic management plan will be supplied by the contractor engaged for the power plant construction.
	Improvements to intersection and Day Road	It is expected that heavy vehicles will utilise Redbanks Road and are unlikely to create a maintenance burden to the road, providing that the gross weight limit (per truck) for the road is not exceeded. Improvements to Redbanks Road are not expected to be required, as the traffic function of this sub-arterial road will not change as a result of the proposed development. However, Day Road is not suitable in its current condition for use by standard commercial vehicles and over dimension vehicles. Primary access to the site will be via Day Road, and therefore, this road will require upgrades such as re-grading and widening to meet safety standards. The turning movement of B-Double vehicles during the construction phase, may see the wheel path encroach the shoulder on the south-west corner of the intersection when completing a left turn into Day Road. Day Road is currently unsealed, and therefore routine pavement condition audits and rehabilitation of the unsealed road prior to the commencement of construction works will be required.
	School bus stop at the corner of Day Road and Redbanks Road	The EPC Contractor will be required to prepare a Construction Traffic Management Plan and this plan would detail how to safety manage the ongoing use of the bus stop during the construction phase. Formalised bus stops will be built in accordance with DPTI standards and guidelines.
Operation	Ensuring adequate on-site parking spaces are provided.	The parking provided during the construction period will be transformed into light vehicle parking to accommodate employee commuters. Eight spaces are considered to be sufficient

8.6 Bushfire

8.6.1 Overview

A bushfire hazard site assessment of the subject site was undertaken by XWB Consulting, to assess the potential bushfire hazard within the subject site and 100 meters from the subject site boundary, in accordance with AS3959:2009 Construction of Buildings in Bushfire Prone Areas (Standards Australia).

The objectives and scope of this assessment included the following elements:

- consider the criteria and requirements stipulated in the Australian Standards (AS3959:2009) Construction of Buildings in Bushfire Prone Areas and the Mallala Council Development Plan
- assess the surrounding landscape and potential ignition sources to determine the bushfire hazard within the subject site
- identify bushfire mitigation measures.

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix J.

8.6.2 Legislative, regulatory and policy documents

A summary of the key legislative, regulatory and policy documents which have been referred to as part of the bushfire hazard site assessment are provided in Table 8-19.

Table 8-19 - Bushfire assessment - summary of relevant documents

Document	Description
Minister's Code: Undertaking development in Bushfire Protection Areas (October 2012)	This document was prepared in response to the Canberra Bushfires of 2003 and identified Bushfire Protection Areas in 39 South Australian Councils, including Mallala (now Adelaide Plains) Council which has subsequently been included in the Mallala Council Development Plan.
Mallala Council Development Plan (April 2016)	Under the Development Plan, the subject site is included in the General Bushfire Risk Area, as defined by the *Bushfire Protection Area BPA Maps -Bushfire Risk.* The Development Plan specifies that development in a Bushfire Protection Area should be in accordance with those provisions of the *Minister's Code: Undertaking development in Bushfire Protection Areas* that are designated as mandatory for Development Plan consent purposes. The Development Plan also specifies that buildings and structures should be located away from areas that pose an unacceptable bushfire risk a result of one or more of the following: a) vegetation cover comprising trees and/or shrubs b) poor access c) rugged terrain d) inability to provide an adequate building protection zone e) inability to provide an adequate supply of water for firefighting purposes.
AS3959:2009 – Construction of buildings in Bushfire Prone Areas	This standard provides specific requirements for construction of building in bushfire-prone areas to improve their resistance to bushfire attack.

8.6.3 Bushfire Assessment Findings

The subject site is located in the General Bushfire Risk Area. A summary of the findings, with consideration to criteria set out in the Mallala Council Development Plan is presented in Table 8-20 below.

Table 8-20 - Summary of bushfire assessment findings

Criteria	Finding
Vegetation cover comprising trees and/or shrubs	The area around the subject site shows extensive areas of cropping and grazing. Such land use is associated with grass lands under AS3959. Grass fires are the main risk from this. Potential grassfires from this vegetation are typically fast moving intense fires under extreme conditions. This is due to grass being fine and therefore readily combusted. Changes in fuel moisture, structure and wind will have the most significant impacts on fire behaviour.
Poor access	The site has good access adjoined by Redbank's Road the north and Day Road to the west. These roads are not affected by significant curves of gradients. Access to and from the site can be achieved from a number of directions.
Rugged terrain	The site and surrounding land is flat to slightly undulating plains and is not affected by rugged terrain
Inability to provide an adequate building production zone.	An adequate building protection zone is provided based on the concept plan.
Inability to provide an adequate supply of water for firefighting purposes.	An adequate static water supply can be provided on site for firefighting purposes.

8.6.4 Recommendations

In light of the findings from the bushfire hazard assessment, a summary of the key issues and recommendations for each phase of project development are provided in Table 8-21 below.

Table 8-21 - Summary of bushfire recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	*The preliminary plans for the power station, which this assessment is based on, show an asset protection zone bordering the power station infrastructure (* Figure 8-10).	The asset protection buffer should comprise of two zones, an inner zone with no fuel and an outer zone with reduced fuel conditions. The inner zone should comprise a minimum of 10 meters around the facility which is non-combustive. The outer zone should comprise of managed grassland which is regularly mown so that grass is no higher than 100 mm particular during the fire danger season.
	A landscaping buffer will need to be provided, and should address the following: • Be setback as far as possible from the power station facility • Be discontinuous both horizontally and vertically. There should be separation between tree canopies and shrubs horizontally, and not located under trees.	This landscaping buffer will be provided on the perimeter of the property to provide a wind break which will assist in mitigating the rate of spread and intensity of a grassfire (which is heavily influenced by strength of the wind). The findings of the assessment will be considered when developing the final landscaping design.

Phase	Issue / Risk	Recommendation
	• Not exceed a total width of 20 meters.	
	Adequate separation between fencing around the subject site and subject site access.	Secondary emergency access points from Redbanks Road and the southern end of Day Road (in addition to main access from Day Road) will be provided to allow the Country Fire Service access without having to enter the power station itself. Should an inner and outer perimeter of security fencing be provided, access should be available to the area between the two fences.
	Adequate sizing of access points	The main access to the subject site should be a minimum width of 6 meters, formed with an all-weather surface capable accommodating a 21 tonne (GMV) truck. Secondary accesses (such as those described previously) may be a minimum width of 3 meters, provided that passing bay 6 meters in width is provided at intervals no greater than 200 meters and should be formed with an all-weather surface capable of accommodating a 21 tonne (GMV) truck as well.
	Need for independent static water supply for bushfire suppression	The site will have fire water tanks for internal fire suppression systems. In addition to this a concrete or streel tank with a minimum capacity of 36.000 litres should be provided for use by the CFS. The tank should be located close to the entrance to the site, but outside the security fence for the site to allow ease of access by the CFS. Fire trucks should be able to get within 4 meters of the outlet/s of the tank which should be compatible with standard fittings on CFS trucks.
Construction	Ensure that the landscape and conditions are managed appropriately across the construction period to minimise fire risk.	Wind and weather conditions should be monitored on an ongoing basis. Grass should be managed and mown as required, so that grass is no higher than 100 mm during the fire danger season.
	Hot work	The use angle grinders, welders or other cutting tools outside cannot be undertaken on Total Fire Ban Days. Within the Fire Danger Season this work can be undertaken provided a 4-metre cleared space around the area is provided and water or an extinguisher is on hand.
Operation	Understand facility specific fire risks	The bushfire hazard assessment is based on a concept design and not detailed mechanical or operational plans of the facility. Once these have been prepared, a risk assessment should be undertaken by a suitably qualified person to understand the risks associated with operation of the facility and any possible impacts (if any) from a grassfire including smoke, embers and windblown debris.
	Ensure that the landscape and conditions are managed appropriately across the operation period to minimise fire risk.	Ensure vegetation within the asset protection zone is maintained and managed to reduce the potential fuel load.
	Adequately communicating risk to staff and contractors	Develop emergency preparedness and response plans as part of the Operational Management Plan.

Figure 8-10 - Asset protection zone

LEGEND

- Subject Site
- Proposed Site Layout
- Electricity Easement (from Land Title)
- High Voltage Electricity Transmission line
- Gas pipeline Easement (from Land Title)
- Gas pipeline
- Bushfire buffer
- Cadastre

Land Title reference: DP22848 Plan, dated 9 Nov. 1987

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Alinta Energy - Reeves Plains Power Station

Date: 26/09/2017 Path: F:\10005589\L-GIS\A_Current\B_Maps\10005589_061_LayoutConstraints_A4L_v2_fig8_10.mxd
Created by : LH
QA by : RB

8.7 Ecology

8.7.1 Overview

A Background Ecological Report of the subject site was undertaken by RMP Environmental to assess the ecological values at the site and to determine the presence of species of conservation significance.

The objectives and scope of this assessment included:

- review of background information and literature
- search of the *Environment Protection and Biodiversity Conservation Act 1999* Protected Matters database and a high-level assessment of the likelihood of occurrence for listed and threatened flora and fauna species
- a site inspection and assessment of vegetation composition at the subject site to identify the existence of habitats of species of conservation significance
- capture information to facilitate an EPBC Act referral if necessary
- capture information to facilitate a Significant Environmental Benefits approval if necessary
- The assessment covered the entire subject site, within the boundaries of the assessment shown in Figure 8-11.

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix L.

8.7.2 Legislative, regulatory and policy documents

A summary of the key legislative, regulatory and policy documents which have been referred to in this assessment are provided in Table 8-22.

Table 8-22 - Ecology assessment - summary of relevant documents

Legislation	Description
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) applies to any action which is likely to have a national impact on a Matter of National Environmental Significant. There are nine matters of National Environmental Significant that act as “triggers” for the Commonwealth assessment and approval process. Matters potentially affecting vegetation include: • World heritage properties • National Threatened Species and/or Ecological Communities • Wetlands of international importance i.e. Ramsar Wetlands • Migratory Species • National Heritage Places If species or places listed under the Act are affected, approval may be required.
Native Vegetation Act 1991 (State)	Native vegetation in South Australia is produced by the Native Vegetation Act 1991. The Act is administered by the Native Vegetation Council (NVC) with the support of the Native Vegetation Secretariat and the Native Vegetation Assessment Panel (NVAP). Clearance of Native Vegetation is prohibited unless approved by the Native Vegetation Council in accordance with Section 29 of the Act or undertaken in accordance with a Regulation (or exemption) under the Act.

Legislation	Description
Development Act 1993 (State)	The Development Act 1993 requires that approval be sought prior to removing or damaging 'Regulated' trees (including 'Significant' trees) in an area subject to the Act or any development that will affect a registered State Heritage Place.
Local Government Act 1999 (State)	The Local Government Act requires that a person without some other statutory authority must not make alteration to a public road unless authorised to do so by council This includes planting a tree or other vegetation, interfering with vegetation, or removing vegetation.
Natural Resources Management Act 2004 (State)	The Natural Resources Management Act 2004 lists feral animals and noxious weeds and provides for their control. Species that are "declared" in one of the three categories by notice in the Gazette attract certain requirements or provisions for their control.

8.7.3 Ecology Findings

The subject site is located in the Mallala Environmental Association. The following is noted with regards to the state of the subject site:

- The vegetation and habitat types that exist in the project area have been highly altered from their original botanical composition through many years of agricultural land use.
- Along the road reserve areas bounding the project site, where long-term grazing has not taken place, there are some occasional remnants of sparse native shrub layer, but the ground layer is almost exclusively introduced species.

A field survey was undertaken of the site which involved a general assessment during the day on 29 June 2017, to identify habitat for species of conservation significance, including for:

- Remnant and regrowth native vegetation
- Introduced plant species
- Habitat for all vertebrate faunal groups

Three vegetation associations were identified the subject area and along Day Road The extent of these vegetation associations is shown in Figure 8-11:

- Association 1: *Triticum aestivum* (wheat) grassland. This is not considered a Native Vegetation association under the *Native Vegetation Act 1991*.
- Association 2: *Eucalyptus largiflorens* (river box) very open tall woodland. This is considered Native Vegetation under the *Native Vegetation Act 1991.*
- Association 3: Plantation of mixed introduced tree and shrub species. This is not considered a Native Vegetation association under the *Native Vegetation Act 1991*.

Figure 8-11 - Extent of Vegetation Associations

The identified Plant Associations were considered with respect to their listing under the *Environment Protection and Biodiversity Conservation Act 1999* and under the relevant Principles of Clearance under the South Australian *Native Vegetation Act 1991*.

Each Principle of Clearance was considered separately and the potential impact that the proposed vegetation clearing will have compared to the stated Principles was assessed. Overall, the proposed vegetation clearing for this development was found not to be at variance with any of the Principles of Clearance and other relevant legislation. Therefore, the development poses little to no risk of impacting flora or fauna of conservational significance.

8.7.4 Recommendations

In light of the findings from the assessment, a summary of the key issues and recommendations are provided in Table 8-23 below.

Table 8-23 - Summary of ecology recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	The assessment scope covers the proposed layout only, which was considered based on works proposed by an earlier concept design. Some additional works have been proposed (intersection works and water mains), which following subsequent investigations, will see additional vegetation removal that falls on the border of the surveyed area.	Any works required outside of the proposed site layout boundary will require an ecological assessment to ensure potential impacts to flora and fauna are understood.
Construction	Removal of approximately 9 hectares of vegetation is proposed, all of which is non-indigenous or planted varieties.	Implementation of best practice project management, including control of introduction of weeds and revegetation with native species.

Phase	Issue / Risk	Recommendation
	There is potential that this may become a disturbed area, creating a microclimate that favours colonisation by vigorous invasive species and could destabilise soil surface leading to locally increased soil erosion.	Significant increases in the proposed amount of vegetation removal will require a review of the potential impacts. The EPC Contractor should prepare a flora and fauna sub-plan as part of their CEMP
Operation	Fauna management	The landscaping treatments may attract fauna (birds etc.) and the OEMP should detail a procedure for managing fauna that prevents hazard to staff or facilities associated with the Project.

8.8 Waste Management

8.8.1 Overview

A Waste Management Plan (WMP) was developed by Arcadis to assess the potential waste streams that may be generated during the construction and the operational phases of the Reeves Plains Power Station and management measures that could be implemented.

The objectives and scope of the WMP included:

13. consider the criteria and requirements stipulated in the *Environment Protection (Waste to Resources) Policy 2010* and the Mallala Council Development Plan.
14. Identify the waste generating activities across the construction and operational phase and the likely streams.
15. Identify mitigation measures aligned with the waste management hierarchy.

The methodology used to complete this plan, and a fully copy of the report is included in Appendix J.

8.8.2 Legislative, regulatory and policy documents

A summary of the key applicable legislative, regulatory and policy documents which have been referred to as part of the WMP are provided in Table 8-24.

Table 8-24 - Waste management - summary of relevant documents

Document	Description
Environment Protection Act 1993 (EP Act)	The EP Act provides the regulatory framework to protect South Australia's environment, including land, air and water. The South Australian EPA is the main administer of the Act, which is implemented through a suite of legislative and non-legislative policies and regulatory tools.
Environment Protection (Waste to Resources) Policy 2010 (Waste Policy)	Environment Protection (Waste to Resources) Policy 2010 provides the regulatory framework that underpins the governance of South Australia's management of wastes. It aims to achieve sustainable waste management by apply the waste management hierarchy consistently with the principles of ecologically sustainable development set out in objects of the EP Act. It includes specific details on the following: • Landfill bans – prohibition of the disposal of certain types of waste directly to landfill • Listed wastes – disposal obligations for unlicensed activities involving listed wastes, with penalties for non-compliance
South Australia's Waste Strategy 2015-2020 (2016)	The waste management hierarchy underpins South Australia's Waste Strategy 2015-2020. It refers to an order of priority for the management of waste, being: avoidance of the production of waste, minimisation of the production of waste, reuse of waste, recycling of waste, recovery of energy and other resources from waste, treatment of waste to reduce potentially degrading impacts, and disposal of waste in an environmentally sound manner.
2009 Draft Guidelines for the Assessment, Classification, and Disposal of Solid Waste (updated in 2010)	The 2009 Draft Guidelines for the Assessment, Classification and Disposal of Solid Waste (updated in 2010), together with the current criteria for the classification of waste including Industrial and Commercial Waste (Listed) and Waste Soil, provides the detail regarding how to manage and deal with hazardous wastes. A detailed technical review of the criteria set in the draft guidelines was undertaken in 2009 to support the scientific framework used to inform hazardous waste classification. The findings of the review have been published as a supplementary document, 'Supporting documentation for draft Guideline for solid waste: criteria for assessment, classification and disposal of waste'.

Document	Description
	The draft guideline was developed to clarify the application of the criteria for both waste soils and industrial wastes containing listed wastes. It describes in detail the relevant quality assurance and quality controls needed in the assessment, classification, and certification of waste for disposal, and the process and circumstances under which treatment of waste may be required.
Waste and the South Australian Planning System (EPA 1097/16) (November 2016)	This position statement describes how wastes are to be addressed at each stage of the South Australian planning system to ensure that the requirements of the EP Act and the Waste Policy are met. It also informs how the EPA assess actual and potential waste impacts at the various stages of the South Australian planning system. EPA's interest is in ensuring that the waste management hierarchy is applied and that any waste produced during the undertaking of an activity is properly managed. The EPA also have an interest in understanding the waste management measures that are proposed to minimise environmental impacts of referred activities, and to prevent land-use conflicts between waste depots and sensitive land uses. When a Development Application (DA) and any major development or project is prepared, it is EPA's position that: • The waste management hierarchy be used to guide decisions on proposed development to avoid waste generation and ultimately prevent or minimise environmental harm • Propose sensitive land uses not impact on operating waste depots.
Bunding and spill management (EPA 080/16) (May 2016)	This guideline is provided to assist facilities that store liquids above ground with ensuring that they have appropriate bunds or spill containment systems to minimise the risk of environmental harm from liquid spills and leaks. It provides guidance with respect to the Environment Protection Act 1993 and the Water Quality Policy, and the specific requirements on the construction and maintenance of bunds, which includes storage of materials that are of relevance to this site, such as oil, grease and lubricants.
Mallala Council Development Plan (April 2016)	Development Plans are the key on-the-ground development assessment documents in South Australia. They contain the rules that set out what can be done on any piece of land across the state, and the detailed criteria against which Development Applications will be assess. Each of the local council areas in South Australia has their own separate Development Plan, and this provides the zones, maps and policies which form the criteria against which Development Applications are assessed. The Project is located within the Adelaide Plains Council and therefore the Mallala Council Development Plan is of relevance to this Project. The two main objectives with regards to waste planning in the Mallala Council Development Plan are ensuring that: • The development avoids the production of waste, minimises the production of waste, reuses waste, recycles waste for reuse, treats waste and disposes of waste in an environmentally sound manner. • The development includes the treatment and management of solid and liquid waste to prevent undesired impacts on the environment including, soil, plant and animal biodiversity, human health, and the amenity of the locality.

8.8.3 Waste Management Findings

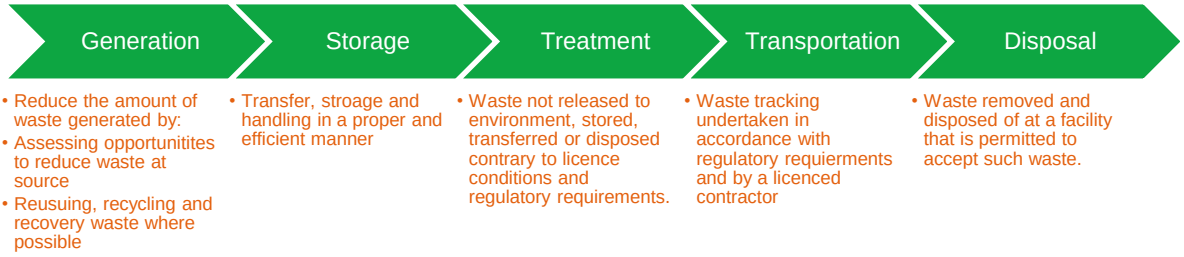
The WMP provides information on potential waste generation streams and areas across the construction and operational phase, and mitigation measures aligned with the principles and requirements stipulated in the through the various regulatory documents described in above.

The South Australian EPA waste management hierarchy has been adopted as the guiding framework for waste management of this Project, depicted in Figure 8-12. This hierarchy is one of the guiding principles in the South Australian Waste Strategy 2015- 2020 and therefore is a key element for guiding waste management practices in South Australia. It is also noted as the first principle of development control in the Mallala Development Plan, and therefore directly relevant to design and planning of the proposed development.

Figure 8-12 - Waste management hierarchy (Zero Waste SA)

Drawing from the waste hierarchy, a summary of the key considerations across each phase of the waste supply chain for the proposed development are provided in Figure 8-13.

Figure 8-13 - Application of waste hierarchy through waste supply chain



The main wastes expected to be generated from each phase are listed in Table 8-25. Hazard level identification and details of the specific nature of the individual waste streams will be determined prior to construction and operation, with specific management procedures to be implemented identified in the CEMP and OEMP.

Table 8-25 - Expected waste stream across construction and operation phases

Phase / Activity	Potential Waste Streams
Construction	• Fill (including waste derived fill) from earthworks and associated installation and construction works • Contaminated soil

Phase / Activity	Potential Waste Streams
	• Vegetation / green waste from clearing • Surplus building material and packaging wastes from installation of temporary construction compounds. • Concrete, brick, timber and other construction and demolition rubble from demolition activities • Excess concrete, brick, timber, asphalt, crushed rock and other construction from building and road making activity. • Residual and recyclable material from office administration, lunch room and other activities.
Operational	Administration, amenities, engineers' workshop and lunchroom waste including: • Residual waste • Recyclable waste (containers and paper/cardboard) • Used spill kit consumables • Oily rags • Surplus chemicals Waste process water from treatment plant, blowdown from the evaporative cooling systems and any drains that can be classified as 'dirty' drains.

8.8.4 Recommendations

In light of the findings from the assessment, a summary of the key issues and recommendations are provided in Table 8-26 below.

Table 8-26 - Summary of waste management recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	Changes to the layout or positioning of allocated waste storage space in design.	Adequate waste storage will be provided, in a secure, bunded area in accordance with the Bunding and Spill Management Guidelines. Changes to the layout will need to ensure that the requirements for storage provision detailed in the WMP are met.
Construction	Appropriate classification of wastes generated	Wastes generated from the site will be sampled, tested and classified according to the Draft Guidelines prior to disposal.
	Ensuring there is appropriate containment of wastes generated and material to reduce risk of spillage.	Bunding requirements and storage will be compliant with the EPA's Bunding and Spill Management Guidelines. Management of liquids and wastewater will be undertaken with the requirements set out in the Concept Stormwater Management Plan (Appendix H). A licensed waste contractor will be engaged for transportation and final disposal of all wastes including controlled wastes (controlled waste would be managed in accordance with the *Environment Protection (Movement of Controlled Waste) Policy 2014)*. A waste sub plan will be incorporated into the CEMP by the selected EPC Contractor to provide procedures for managing hazardous wastes encountered during construction
Operation	Appropriate classification of wastes generated	Wastes generated from the site will be sampled, tested and classified according to the Draft Guidelines prior to disposal. Alinta Energy should detail use a suitably qualified professional to undertake waste classification if required.
	Ensuring there is appropriate containment of wastes	Bunding requirements and storage will be compliant with the EPA's Bunding and Spill Management Guidelines. Management of liquids

Phase	Issue / Risk	Recommendation
	generated and material to reduce risk of spillage.	and wastewater will be undertaken with the requirements set out in the Concept Stormwater Management Plan (Appendix H). Specific handling of hazardous wastes and corrosive chemicals used in the day to day operation of the plant will be aligned with the Australian Standard AS 1940-2004. The storage and handling of flammable and combustible liquids. A licensed waste contractor will be engaged for transportation and final disposal of all wastes (controlled waste would be managed in accordance with the *Environment Protection (Movement of Controlled Waste) Policy 2014)*. Alinta Energy should provide guidance in their OEMP describing the appropriate management procedures for hazardous waste and spills

8.9 Cultural Heritage

8.9.1 Overview

An independent cultural heritage assessment of the subject site was undertaken by Australian Cultural Heritage Management (ACHM) to assess and identify the presence of any places or sites of cultural heritage significance. The cultural heritage assessment is provided in Appendix M and the outcomes summarised below.

The objectives and scope of this assessment included the following elements:

- consider of the criteria and requirements stipulated in the relevant cultural heritage protection legislation, including the Aboriginal Heritage Act 1988; Heritage Places Act 1993 and the Native Title Act 1993.
- determine if any previously identified and/or recorded Aboriginal, European, National and World Heritage are within the subject area, which may indicate a likelihood that is a presence of unrecorded archaeological sites
- undertake a site survey and assessment of any culturally significant remains or areas at the subject site
- the assessment covered the entire subject site.

8.9.2 Legislative, regulatory and policy documents

A summary of the key legislative, regulatory and policy documents that have been referred in this assessment are provided in Table 8-27.

Table 8-27 - Heritage assessment - summary of relevant documents

Legislation	Description
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) applies to any action which is likely to have a national impact on a Matter of National Environmental Significance. The protection of heritage places for which the Australian Government is responsible is administered under the EPBC Act. The EPBC Act protects heritage from actions by the Commonwealth, and protects places in the National Heritage List, in the Commonwealth Heritage List and on Commonwealth land. Any action that has, will have or is likely to have a significant impact on a place of national cultural and/or environmental significance must be referred to the Minister for the Environment for approval.
Aboriginal and Torres Strait Islander Protection Act 1984 (Commonwealth)	The Aboriginal and Torres Strait Islander Protection Act 1984 lists areas that are declared as protected as an Aboriginal area. Declarations made under this Act may involve restricting activities and/or access to an Aboriginal site.
Native Title Act 1993 (Commonwealth)	The Native Title Act 1993 is administered by the National Native Title Tribunal and provides a national system for the recognition and protection of native title and for the co-existence with the national land management system. Native titles form a land title that recognises the unique ties some Aboriginal groups have to land. Aboriginal and Torres Strait Islander people can apply to the courts to have their native title rights recognised under Australian law. Native title holders have the right to be compensated if governments acquire their land or waters for future developments. The way native titles are recognised and practised may vary from group to group, depending on what is claimed and what is negotiated between all the people and organisations with an interest in that country.
Native Title (South Australia) Act 1994	Provisions within the Native Title Act 1993 (Commonwealth) allows for the States to develop their own native title legislation provided the State legislation does not conflict with the Commonwealth Act. This Act allows South Australia to negotiate Claims as authorised by the Commonwealth.

Legislation	Description
Aboriginal Heritage Act 1988 (South Australia)	State of significance according to Aboriginal tradition and sites significant to Aboriginal archaeology, anthropology and history are protected in South Australia by the Aboriginal Heritage Act 1988. Aboriginal sites, objects or remains, whether previously recorded or not, are covered under this legislation. The Act requires that any Aboriginal sites, objects ore remains, discovered on private land be reported to the Minister. It is an offence under the Act to damage, disturb or interfere with an Aboriginal site, objects or remains unless written authorisation from the Minister has been obtained.
Heritage Places Act 1993 (South Australia)	In South Australia, places and objects of state and local heritage are protected under the Heritage Places Act 1993. This Act includes the SA Heritage Register (Part 3 of the Act) which consists of a list of 'State Heritage Places' and 'State Heritage Areas'. It is a requirement under the Act that the discovery of any archaeological artefact or heritage significance be reported to the South Australian Heritage Council, and it is an offence to damage a heritage place entered onto the SA Heritage Register. The Act provides details of the criteria which qualifies a place for inclusion in the SA Heritage Register and areas which may be considered to have local heritage value.

8.9.3 Heritage Findings

The desktop review of the databases revealed no identified sites of significance within the subject site area.

The ground survey area was found to be located within the Native Title application area of the Kaurna peoples, which has been accepted for registration. The members of Kaurna Nations Cultural Heritage Association (KNCHA) are seeking a decision from the Court that the native title exists, so that their rights and interests are recognised by the common law of Australia. Given this, the archaeological survey was conducted in consultation with KNCHA representatives.

The survey team undertook a site survey to investigate ground exposures and large trees for cultural remains, through a documented protocol, which is provided in Appendix M.

No Aboriginal artefacts or cultural scarring on any large trees were discovered during the survey. The whole surveyed area has therefore been archaeologically cleared for development works to proceed, with no objection from the specialists and KNCHA. The archaeological clearance is confined to the boundaries of the subject site.

8.9.4 Recommendations

In light of the findings from the assessment, a summary of the key issues and recommendations are provided in Table 8-28 below.

Table 8-28 - Summary of heritage recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	The assessment scope covers the subject site only.	Any additional works outside of the subject site may require further investigation, subject to the level of disturbance and extent of works. A suitably qualified specialist would confirm whether further assessment would be required.
Construction	Identification of any new archaeological artefacts and Aboriginal sites during construction, not discovered or currently listed in any of the registers.	Once selected the EPC Contractor should develop an unexpected finds procedure to ensure that if an artefact is discovered it is reported as per *Aboriginal Heritage Act 1988* (South Australia).
Operation	Identification of any new archaeological artefacts or Aboriginal sites during operation, not discovered or currently listed in any of the registers.	While the likelihood of uncovering archaeological artefacts during the operational phase is very low (given the lack of earthworks) the OEMP should note a procedure to notify the Minister for Aboriginal Affairs and Reconciliation as part of the Aboriginal Heritage Act 1988 (South Australia) is there are any unexpected finds.

8.10 Contamination and Groundwater

8.10.1 Overview

Arcadis undertook a desk based Phase 1 preliminary site assessment to determine whether contaminants of potential concern may be present at the subject site.

The objective of this assessment was to provide an appropriate level of due diligence to identify the potential for contamination so it can be appropriately considered and managed in subsequent project phases.

The methodology followed to complete this assessment, and a full copy of the report is included in Appendix N.

8.10.2 Contamination and Groundwater Findings

A desktop review of historical site information and the current site characteristics was undertaken. The following key outcomes were noted:

- Based on current aerial imagery of the site, the site surface is mostly covered in crops with a sparse area of vegetation grouped in close proximity to the farm buildings in the north-eastern portion of the site.
- The north western portion of the site is likely to consist of loam soil, while the rest of the site is likely to consist of calcareous loam soil. The Atlas of Acid Sulphate Soils (ASS) (CSIRO) indicates that the area is at extremely low probability of ASS occurrence on the site. The identified soil types on the site are classed as being of negligible potential for developing acid sulfate soils.
- The majority of the site is mapped as moderate soil salinity, although the north-western portion of the site is mapped as moderately low soil salinity. The site is mapped at being at negligible risk from water table induced soil salinity.
- The site is located within a regional aquifer hosted in sedimentary rocks comprising limestone basins. The groundwater salinity is likely to be saline. There are five registered drill holes within 1 kilometre of the property, comprising of three irrigation bores (two of which are abandoned), one backfilled and one for unknown purposes.
- Aerial imagery shows that since 1950, the site and surrounding area has remained mostly unchanged, except for the addition of a few farm buildings since the early 1960's.
- A small 'farm tip' exists at the border of the sit. It appears, based on visual inspection, that the material is inert and consists of construction and demolition material. It is not clear whether this is a result of illegal dumping or has been used by previous owners of the subject site.
- Based on the desktop information of the site history, the following chemicals of potential concern were identified: herbicides and pesticides associated with agricultural land use.

8.10.3 Recommendations

In light of the findings from the assessment, a summary of the key issues and recommendations are provided in Table 8-29 below.

Table 8-29 - Summary of contamination and groundwater recommendations

Phase	Issue / Risk	Recommendation
Detailed Design	Understand the relatively toxicity of the soils given the historical use of herbicides and pesticides.	The assessment has noted these as the only potential contaminants of concern on the site, given the sites history and characteristics. It is recommended that targeted soil sampling be undertaken
	Farm tip waste	Undertake waste classification to determine appropriate disposal method / facility

Phase	Issue / Risk	Recommendation
Construction	Demolition of existing structures	Undertake a pre-demolition clearance check to determine the extent (if any) of hazardous material associated with structures and then develop appropriate demolition strategies to manage any potential risks.
	Excavation of soils and generation of other hazardous wastes and ensuring risk of site contamination is minimised.	Wastes generated during the construction phase will be managed according to the principles outlined in the WMP (Section 8.8 and Appendix K.) This will include the appropriate classification of wastes according to the Guidelines in South Australia, prior to disposal. A waste sub plan should be incorporated into the CEMP by the selected EPC Contractor to provide procedures for managing hazardous wastes encountered during construction
	Spills	Spills will be managed as per the EPC Contractor's spill management procedure detailed in the CEMP. It is expected that the contractor will provide sufficiently stocked spill kits and dispose of any waste in accordance with the waste management plan
	Encountering unexpected contamination	The CEMP should detail and unexpected finds procedure in the event the contaminated material is identify during the construction phase. This will likely involve isolating the area and arranging a specialist to come and remove the material.
Operation	Management of hazardous wastes generated through operations of the plant and ensuring risk of site contamination is minimised.	Wastes generated during the operational phase will be managed according to the principles outlined in the WMP (Section 8.8 and Appendix K.) This will include the appropriate classification of wastes according to the Guidelines in South Australia, prior to disposal. Alinta Energy's Operational Environment Management Plan should include procedures to manage hazardous material

8.11 Aviation

The following section provides a brief aviation assessment of the proposed Reeves Plains Power Station.

The capacity of an airport/airfield to operate as an airport/airfield is fundamentally dependent on what occurs on the land surrounding it. The subject site is located within the Edinburgh Military Control Zone approximately 7.8 nautical miles north west of Gawler uncertified aerodrome and 11.74 nautical miles from Edinburgh ARP.

8.11.1 National Airports Safeguarding Framework

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

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

NASF is comprised of a set of seven principles and seven guidelines.

The NASF principles are:

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

The seven guidelines are:

- **Guideline A:** Measures for Managing Impacts of Aircraft Noise
- **Guideline B:** Managing the Risk of Building Generated Windshear and Turbulence at Airports
- **Guideline C:** Managing the Risk of Wildlife Strikes in the Vicinity of Airports
- **Guideline D:** Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation
- **Guideline E:** Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports
- **Guideline F:** Managing the Risk of Intrusions into the Protected Airspace of Airports.
- **Guideline G:** Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS).

The full set of NASF principles and guidelines documents can be found on the Department of Infrastructure and Regional Development's website at:
www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf.

The NASF applies at all airports in Australia and affects planning and development around airports, including development activity that might penetrate operational airspace and/or affect navigational procedures for aircraft.

8.11.2 Aviation Findings

The Reeves Plains Power Station would not have any detrimental or significant impacts on surrounding airport/airfield flight paths, airspace or aircraft operations. The separation of the subject site from these airports/airfields and the sensitive design and layout of the proposed development make the project satisfactory and appropriate from an aviation impact point of view. Findings in relation to specific aviation matters are summarised below and the Civil Aviation Safety Authority (CASA) assessment is provided in Appendix R.

8.11.2.1 Air Emissions

In preparing the Development Application, Arcadis requested CASA undertake an assessment plume velocity to ensure there was no impact on aircraft safety from the Project. The OAR Screening Tool was used to calculate the height of the 6.1m/s plume as there was a possible impact on the civil and military NDB approaches at that location. The worst-case scenario was the high velocity plume. The tool was limited to using only one distance between the stacks hence the closer figure of 30m was used to achieve the worst-case scenario. Using these parameters, the plume reduced to 6.1m/s at 300FT AGL (249FT above the stack top). The elevation at the site was advised to be 50-52FT (max 170.6m). Therefore, the result is 470.6FT AMSL. This result does not impact the NDB approaches and does not trigger the need for the establishment of a Danger Area. The 10.6m/s result was 83FT AGL (32FT above the stack top) or 253.6FT AMSL which does not trigger the need for the inclusion of a plume symbol. However, consideration may be given to including the name of the Power Station for reference on the relevant aviation charts.

8.11.2.2 Airspace Protection Surfaces

Airspace protection is critically important for all airports, particularly protection of the airport's Obstacle Limitation Surfaces. The CASA *Manual of Standards Part 139 - Aerodromes* defines Obstacle Limitation Surfaces (OLS) as:

> *A series of planes associated with each runway at an aerodrome that defines the desirable limits to which objects may project into the airspace around the aerodrome so that aircraft operations at the aerodrome may be conducted safely.*

The airspace protection surfaces are critical for airport safeguarding purposes, in relation to both on-airport and off-airport development. The height and location of buildings and structures should not adversely affect the long-term operational, safety, commercial and military aviation requirements of airfields. In the context of the proposed Reeves Plains Power Station, the development will not have a structural impact on the OLS and PANS-OPS surfaces of any airports or airfields. Temporary obstacles however such as cranes will need to be managed in accordance with the Airport (Protection of Airspace) Regulations 1996 and addressed within the Construction Environmental Management Plan.

8.11.2.3 Lighting

The likelihood of external lighting on the subject site causing an impact to aircraft operations is considered to be negligible due to the location of the subject site relative to the active runways. Nonetheless, all external lighting on the subject site will be designed in accordance with Standard AS4282 Obtrusive Effects of Outdoor Lighting and emit no upward waste light (Ocd above the horizontal) in accordance with CASA requirements.

8.11.2.4 Reflected sunlight

Reflected sunlight is not considered to be a major concern due to the physical distance between the proposed Reeves Plains Power Station and surrounding airports and airfields. The proposed cladding

materials would comprise muted tones and be generally consistent with materials used on other buildings and structures in the local area.

8.11.3 Recommendations

The following recommendations are made as a result of the aviation assessment undertaken for the Reeves Plains Power Station:

- Consider including the name of Reeves Plains Power Station for reference on relevant aviation charts
- Temporary obstacles such as cranes to be managed in accordance with the Airport (Protection of Airspace) Regulations 1996 and addressed within the Construction Environmental Management Plan.
- During detailed design confirm with CASA/Defence any lighting requirements for the communications tower or cut in towers.
- All external lighting on the subject site to be designed in accordance with Standard AS4282 Obtrusive Effects of Outdoor Lighting.

9 – ENVIRONMENTAL MANAGEMENT

9 ENVIRONMENTAL MANAGEMENT

This section summarises the framework for managing the environmental risks and opportunities associated with the construction, commissioning and operation of the Reeves Plains Power Station.

The primary management framework for delivery of the Project is the Alinta Energy Environmental Health and Safety Management System. Site specific environmental management plans will be developed following approval of this Development Application and will describe how various environmental risks will be managed during the various phases of project development.

9.1 Environmental Management System

Alinta Energy's Board has endorsed an Environmental and Community Policy with a commitment to the protection of all aspects of the environment as a priority, and continual improvement and excellence in the environmental performance of all operations. The Environmental Management Framework was developed in 2008 to support Alinta Energy's business in meeting this policy, enabling Alinta Energy to manage its environmental impacts in a consistent and systematic way and provide the right level of oversight, management and internal control. The Framework outlines the methodology and respective responsibilities for Environmental Management across Alinta Energy's businesses, facilities, projects, regions and assets and was developed in general accordance with ISO14001.

In accordance with the Framework, Alinta Energy will develop specific environmental management systems for the Project which outlines the roles and responsibilities for implementing the Framework at a site level from construction through to operation. Examples of systems that would be developed include:

- Environmental Compliance Registers
- Environmental Risk Registers
- Environmental Training for staff on site
- Emergency Response procedures and plans
- Environmental audits
- Contractor Management

9.2 Detailed Design

The EPC contractor will develop a detailed design that complies with environment and planning regulatory requirements including all approvals issued for the project. Alinta Energy will review and approve the contractor's design to verify compliance to any and all statutory permits, licences and planning conditions. The contractor will be required to undertake the following key tasks during detailed design:

- Finalise detailed design in close consultation with Alinta Energy and regulatory authorities;
- Identify opportunities for improving the design to achieve operational improvements such as:
  - reducing operational noise and impacts on the community through design mitigation (lower noise pumps, equipment, acoustic screening);
  - reduction in water use, maximising reuse of stormwater (rainwater capture);
  - reducing energy use e.g. use of variable speed drives, consideration of renewable sources such as rooftop solar; and
  - other improvements that become apparent during the design process.
- Identify opportunities to reduce visual impact on the community through consideration of low impact site lighting, visual screening and use of a neutral colour scheme for plant and equipment.

9.3 Construction and Commissioning Management

The EPC Contractor will develop a Construction Environment Management Plan (CEMP) which will be implemented in order to minimise the environmental impacts during the construction phase of the Project. The CEMP will be reviewed and approved by Alinta Energy prior to site establishment and mobilisation of the construction workforce. Alinta Energy will ensure the CEMP complies with the Alinta Energy Environmental Management System and relevant regulatory requirements. This includes all environment and planning approvals (including this application).

A number of environmental risks associated with phases and activities outlined in Section 8 will be specifically addressed. Environmental risks will be assessed based on ISO 31000:2009 *Risk Management – Principles and guidelines*, and Alinta Energy's corporate risk assessment procedures. The following table (Table 9-1) lists some of the activities and associated risks that are likely to occur during the construction and commissioning phase.

Table 9-1 - Activities and associated risks during early works, construction and commission phase

Phase	Activities	Risks
Early Works	Site establishment activities such as installing site offices and services, erecting hoarding / security fencing, arranging vehicle access, clearing vegetation and establishing erosion and sediment controls	Some of the key risks to be managed include reduction in water quality and local amenity through erosion and sedimentation and dust nuisance to neighbours
Construction	Building the relevant structures on the subject site	An example of the risks to managed during this phase are likely to include poor drainage and treatment of stormwater resulting in loss of local water quality and noise impacts to sensitive receivers
Commissioning	Testing of the Reeves Plains Power Station and ensuring the facility operates as designed before being handed over to the operations team	Noise and air quality risks at sensitive receptors will need to be managed during this phase as well as ensuring waste products and chemicals are appropriately stored and disposed of

The CEMP will address these and other environmental aspects and identify best practice management procedures. The CEMP will be informed by the findings of the independent assessments summarised in Section 8 and will define management activities that will remove or reduce the degree of environmental risk to an acceptable level. The CEMP will be revised and updated throughout the construction phase to ensure the document is relevant and specific to activities occurring on the subject site

An overview of a potential structure of the CEMP is provided in Table 9-2.

Table 9-2 - Overview of CEMP

Section	Description
Background	An introduction to the CEMP and an overview of the key environmental issues requiring management
Legal and other requirements	The legislation, policies, standards and other requirements that apply to the key environmental issues
Environmental Aspects and Impacts	The relevant environmental aspects requiring protection and potential environmental impacts
Performance objectives and targets	The performance objectives that the EMP is seeking to achieve in protecting the relevant environmental aspects and the required level of performance to meet the objectives, legislative compliance and any project specific requirements

Section	Description
Roles and responsibilities	A detailed description of the roles and responsibilities for managing environmental impacts and implementing management measures
Risk Management Measures	An overview of the management measures that will be utilised to meet the performance objectives i.e. risk management and mitigation methods, risk treatments. Separate plans or procedures may need to be developed to manage particular risks in order to support existing Alinta Energy standards
Monitoring and Checking	Procedures to monitor, measure and record environmental performance which include auditing and site environmental testing e.g. Dust monitoring.
Reporting	Requirements to report to Alinta, regulators, the community and/or other stakeholders on environmental performance
Non-conformance	Actions to be undertaken and procedures to be followed in the event that performance indicators are not met
Continual improvement	Opportunities to review and improve performance based on feedback from regulators, the community and internal audits

9.4 Operation Management

Alinta Energy will operate the Reeves Plains Power Station. Alinta Energy has already implemented effective and comprehensive environmental management procedures for similar operational power stations including Bairnsdale in Victoria and Port Headland in Western Australia. Alinta Energy has sufficient experience and corporate knowledge to develop an Operational Environmental Management Plan (OEMP) consistent with existing high standards set at these sites.

The OEMP will assist in managing compliance with the site Environmental Licence issued by the EPA, along with any other environment issues with the site.

Key items that will be addressed in the OEMP that are also relevant to the site EPA licence will include:

- Monitoring procedures for air emissions;
- Monitoring of noise;
- Community engagement including proactive communication measures and complaints management;
- Waste management;
- Environmental incident and emergency response;
- Stormwater management
- Landscaping care and maintenance, predominantly for the maintenance of a fire break.

The OEMP will be finalised prior to the completion of construction and it is anticipated that this would be provided to the EPA for review.

10 – CONCLUSION

10 CONCLUSION

Based on the foregoing assessment of relevant provisions of the Adelaide Plains Council Development Plan, it is considered that the proposed Reeves Plains Power Station located at 1629 Redbanks Road, Reeves Plains represents an appropriate development for the subject land. The subject site was identified by Alinta Energy as a strategically appropriate location for the development of a power station given its close proximity to the MAPS gas transmission pipeline and existing ElectraNet high voltage electricity infrastructure.

The development of the Project will provide dispatchable generation capacity and help maintain the secure operation of the South Australian electrical network. This is particularly important, as the mix of renewable generation, which provides nearly 50% of South Australia's electricity, is inherently intermittent.

The Mallala Council Development Plan supports carefully considered infrastructure in appropriate locations to minimise impacts on surrounding agricultural land and the amenity of residences within the broader locality. Based on the specialist assessments undertaken by Alinta Energy, it is submitted that the Project exhibits substantial planning merit and accords with the intentions for the locality as outlined in the Mallala Council Development Plan.

More specifically, the Project will:

- Be sited adjacent to existing electricity and gas transmission infrastructure.
- Achieve noise levels compliant with the Noise EPP at all occupied dwellings in the vicinity of the subject site.
- Be compliant with the air quality emissions limits established by the Air Quality EPP.
- Enhance the level of landscaping treatments via the establishment of landscaping to provide partial screening of the infrastructure while meeting the requirements of bushfire protection.
- Comply with relevant stormwater management policies and legislative requirements.
- Ensure that traffic volumes not anticipated to adversely impact travel times or safety for other road users.
- Address general bushfire risk through detailed design, construction and operation plans
- Comply with the Principles of Clearance and other relevant vegetation clearing legislation.
- Not impact on heritage items and places on the basis that the heritage significance survey found no Aboriginal artefacts or cultural scarring on any large trees. The whole surveyed area has been archaeologically cleared for development works to proceed, with no objection from the specialists and KNCHA.
- Not have any detrimental or significant impacts on surrounding airport/airfield flight paths, airspace or aircraft operations.

On the basis of the comprehensive assessment undertaken in this Development Application Report, the proposed development is not seriously at variance with the overall intent of Mallala Council Development Plan and therefore merits Development Plan Authorisation.