ALINTA ENERGY REEVES PLAINS POWER STATION

DEVELOPMENT APPLICATION

12 OCTOBER 2017

APPENDIX A – PUBLIC INFRASTRUCTURE ENDORESMENT

Government of South Australia
Department of the Premier
and Cabinet

In reply please
quote:D17010361

Mr Ken Woolley
Executive Director Power Generation
Alinta Energy (Reeves Plains) Pty Ltd
Level 11,
20 Bridge Street
SYDNEY NSW 2000

Dear Mr Woolley,

REEVES PLAINS POWER STATION

I refer to your letter of 3 July 2017 regarding the request for support and specific endorsement pursuant to Section 49(2)(c) of the *Development Act 1993* for the proposed Reeves Plains Power Station (RPPS) project at 1629 Redbanks Road, Reeves Plains.

Given that the proposed works meet the definition of "public infrastructure" as outlined in Section 49(1)(a) of *Development Act 1993,* and the project will provide additional back-up to the State's existing power generation supply, I am prepared to support and specifically endorse, pursuant to Section 49(2)(c) of the *Development Act 1993,* the works as detailed below:

Up to 6 x 50 MW GE LM6000 PF sprint gas turbines;
Gas receiving station;
Water storage and distribution components;
Wastewater treatment facilities;
Administration building, workshop and stores, switch-room and control building;
Internal access roads and car parking;
Electrical 275kV switchyard and substation; and
Diesel storage and delivery system.

A conceptual site layout of these works (Figure 3 Plan) is detailed in Attachment 1.

The Department of the Premier and Cabinet make no representations or gives no warranties in relation to the outcome of the development application or time that it takes to secure a planning outcome for the project.

It is Alinta Energy's responsibility to obtain all other statutory approvals, licences and permits from relevant authorities, manage community expectations and to fund the project. The State Government makes no commitment to purchase any product or services related to the project.

A development application must be lodged by Alinta Energy at its cost with the Development Assessment Commission on or prior to 28 September 2018. If this is not achieved by that time, my support under Section 49(2)(c) of the *Development Act 1993* for the RPPS works will lapse.

Please contact Mr Brett Fundak, DPTI - Infrastructure Coordinator if you have any queries in relation to this advice or require further information. He can be contacted on 8402 1845, Mobile 0407 617 022 or via e-mail at brett.fundak@sa.gov.au

Yours sincerely,

Dr Don Russell
CHIEF EXECUTIVE

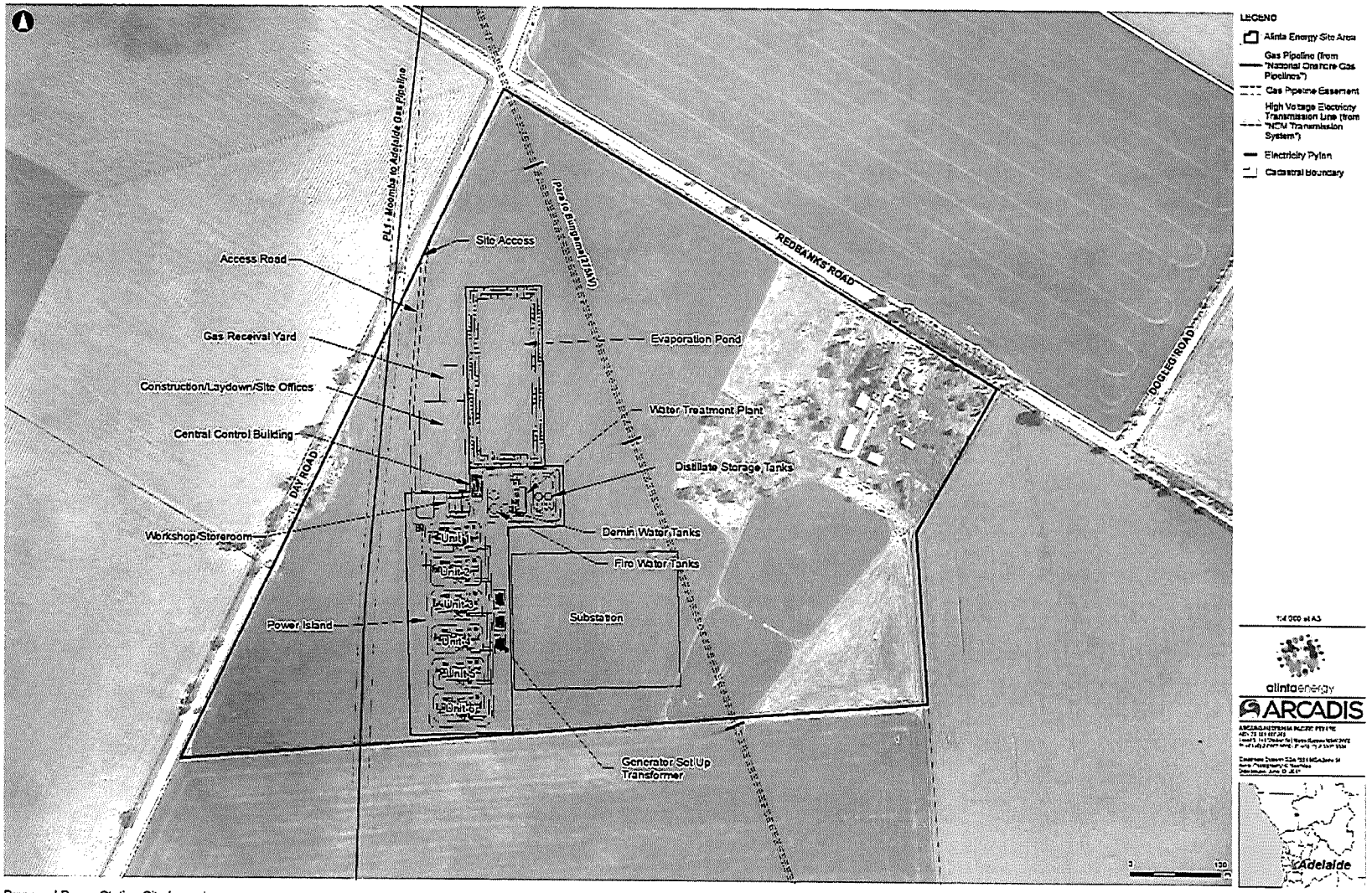
Attachment 1: conceptual site layout (D17010340)

16 August 2017

Office of the Chief Executive

State Administration Centre. 200 Victoria Square, Adelaide 5A 5000 | GPO Box 2343, Adelaide 5A 5001
Tel (+61) 08 8226 3500 | Fax (+61) 08 8226 3535 | www.dpc.sa.gov.au | ABN 945 004 15644

Figure 3 - Conceptual Site Layout



Proposed Power Station Site Layout

ATTACHMENT 1

APPENDIX B – OTR ENDORESMENT

Government of South Australia
Department of the Premier and Cabinet

Ref: 2017/01873.01 D17016925

Energy and Technical Regulation

Office of the Technical Regulator

Level 8, 11 Waymouth Street
Adelaide SA 5000

GPO Box 320
Adelaide SA 5001

Telephone: 08 8226 5500
Facsimile: 08 8226 5866

www.sa.gov.au/otr

7 August 2017

Alistair Dolk
Alinta Energy (Reeves Plains) Pty Limited
Level 11, 20 Bridge Street
Sydney NSW 2000
By email: alistair.dolk@alintaenergy.com.au

Dear Alistair,

RE: CERTIFICATE FOR DEVELOPMENT OF THE REEVES PLAINS POWER STATION

The development of the Reeves Plains Power Station at 1629 Redbanks Road, Reeves Plains, has been assessed by the Office of the Technical Regulator (OTR) under Section 37 of the Development Act 1993.

Regulation 70 of the *Development Regulations 2008* prescribes if the proposed development is for the purposes of the provision of electricity generating plant with a generating capacity of more than 5 MW that is to be connected to the State's power system – a certificate from the Technical Regulator is required, certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.

In making a decision on your application, our office has taken the following information into account:

- Alinta Energy's document 'Reeves Plains Power Station, Application to the Office of the Technical Regulator, Technical Conditions Addendum' Revision 1, emailed by Dianne Nicotra of Alinta Energy to the OTR on 7 August 2017;
- A meeting between Alinta Energy representatives and the OTR on 4 August 2017.

Government of South Australia
Department of the Premier and Cabinet

After assessing the information provided, I advise that approval is granted for the proposed generator.

Should you have any questions regarding this matter, please do not hesitate to call David Bosnakis on (08) 8226 5521.

Yours sincerely

Rob Faunt
TECHNICAL REGULATOR

cc: Dianne Nicotra – Alinta Energy
Marino Bolzon – DPC
Brett Fundak – DPTI

Energy and Technical Regulations

Level 8, 11 Waymouth Street Adelaide SA 5000 | GPO Box 320 Adelaide SA 5001 | DX541
Tel (+61) 8 8226 5500 | Fax (+61) 8 8226 5866 | www.dpc.sa.gov.au | ABN 83 524 915 929

APPENDIX C – CERTIFICATE OF TITLE

PIPER ALDERMAN
GPO BOX 65
ADELAIDE SA 5001

LTO BOX 63

23 May 2017

CONFIRMATION OF REGISTRATION NOTICE

The following dealings have been registered -

Dealing(s):	DISCHARGE OF MORTGAGE 12723301
	WITHDRAWAL OF CAVEAT 12723302
	TRANSFER 12723303
Title(s):	CT 5887/243
Registration Date:	23/05/2017

Confirmations of registration are attached on the following page(s).

Brenton Pike

Registrar-General

Lands Titles Office

CONFIRMATION OF REGISTRATION

Certificate of Title - Volume 5887 Folio 243

Estate Type

FEE SIMPLE

Registered Proprietor(s)

ALINTA ENERGY DEVELOPMENT PTY. LTD. (ACN: 151 231 980)
OF L 11 16-20 BRIDGE STREET SYDNEY NSW 2000

Description of Land

ALLOTMENT 1 DEPOSITED PLAN 22848
IN THE AREA NAMED REEVES PLAINS
HUNDRED OF GRACE

Easements

SUBJECT TO THE EASEMENT(S) AS PROVIDED FOR BY SECTION 9 OF THE NATURAL GAS AUTHORITY ACT 1967

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A TO THE ELECTRICITY TRUST OF SOUTH AUSTRALIA (T 2027870)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED B TO PIPELINES AUTHORITY OF SOUTH AUSTRALIA (T 2996359)

Schedule of Dealings

NIL

Registrar-General

Lands Titles Office

WARNING CREASING OR FOLDING WILL LEAD TO REJECTION

27848

PLAN OF DIVISION

HUNDRED OF GRACE

SECTIONS 125, 126, 127, & 128

0 100 200 300 400 500

METRES

C.T. VOL. 2942 FOL. 79
C.T. VOL. 3630 FOLS. 12 & 13

DISPOSITION OF EASEMENTS

PORTIONS OF LOTS 1, 3 & 4 MARKED A HEREON ARE SUBJECT TO AN EXISTING EASEMENT & RIGHT OF WAY TO THE ELECTRICITY TRUST OF SOUTH AUSTRALIA VIDE C.T. VOL. 2916 FOL. 44

PORTIONS OF LOTS 1 & 3 MARKED B HEREON ARE SUBJECT TO AN EXISTING EASEMENT & RIGHT OF WAY TO THE PIPELINES AUTHORITY OF SOUTH AUSTRALIA VIDE C.T. VOL. 3937 FOL. 174

ENLGT. E
NOT TO SCALE

ENLGT. F
NOT TO SCALE

ENLGT. D
NOT TO SCALE

ENLGT. C
NOT TO SCALE

UNLESS OTHERWISE SHOWN, FENCES ARE POST & WIRE

TODD, ALEXANDER & CO. PTY. LTD.
30 FRANKLIN STREET ADELAIDE S.A. 5000
Ph. 512786 Ref. T.A. 12867

Permanent marks shown thus ... PM

DEPOSITED PLAN NUMBER
DP 22848

ACCEPTED FOR DEPOSIT
pro Registrar-General
1 / 6 / 1988

Reference Map No.

COUNCIL
DISTRICT COUNCIL OF MALLALA
Development No. 312 : D008 : 87

THIS IS SHEET 1 OF 1 SHEETS

Verner Road vide Dkt. 63/2009.
Pro. R.G. 23-2-2010. GB.

PERMANENT MARKS APPROVED BY SURVEYOR GENERAL

PLAN EXAMINATION

Closure Checked	Plan Examined	Data Approved (X
Norm Swansson	Chris Rodgers	pro Principal Drafting Officer 25/5/1988

I, ALAN ARCHIBALD THOMPSON
Licensed Surveyor, of South Australia do hereby certify –

(1) That this plan has been made from surveys executed by me or under my supervision;

(2) that the field work was completed on the 7th day of OCTOBER 1987;

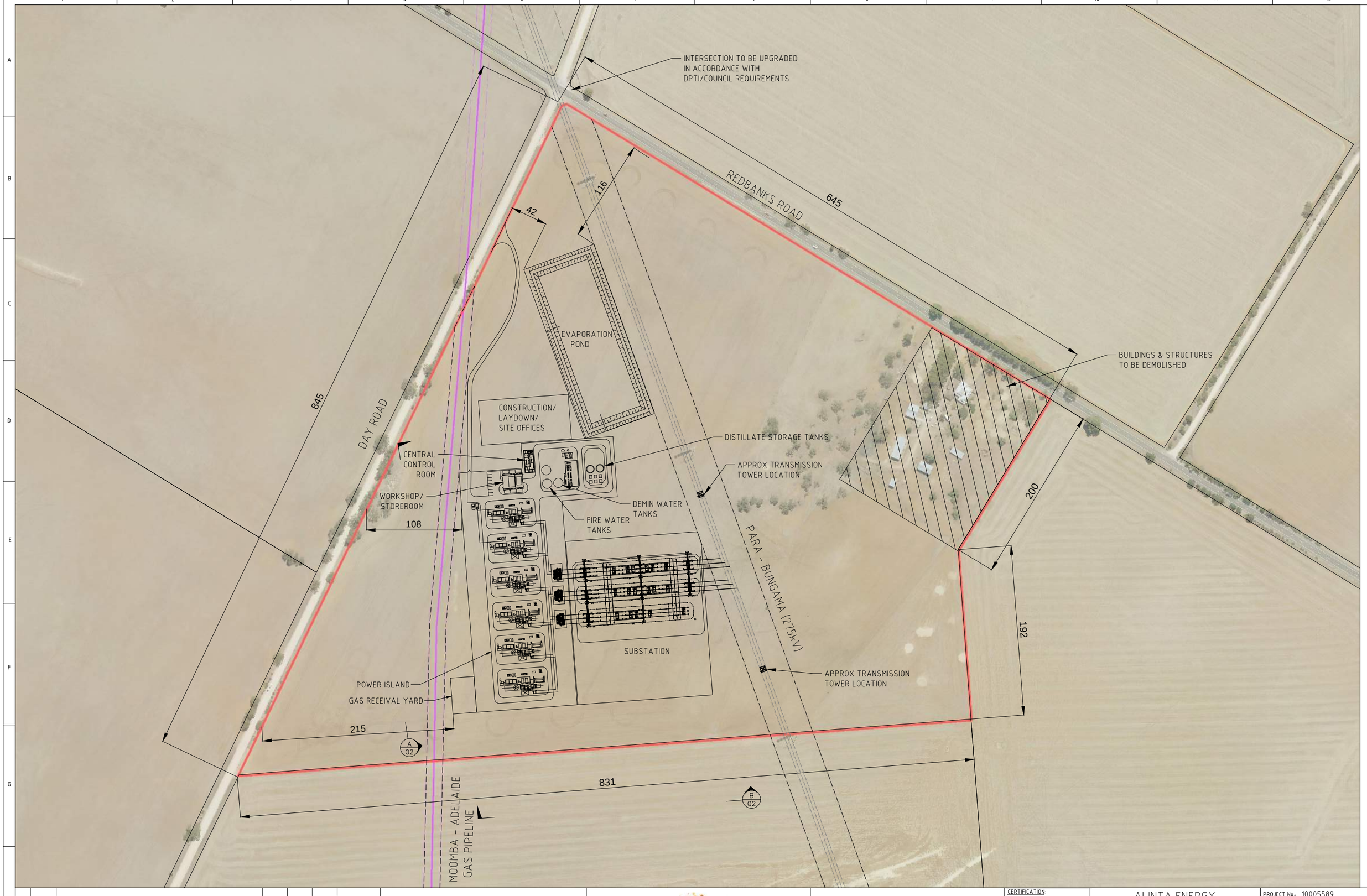
(3) that both plan and field work are to the best of my knowledge correct and have been made in accordance with the Regulations under the Surveyors Act, 1975.

Date 9th NOVEMBER 1987

Licensed Surveyor

LTO E

APPENDIX D – CONCEPT LAYOUT AND ELEVATIONS



REV	DATE	DETAILS	DRAWN	CHECKD	APPRVD	DRAWING No.	REFERENCE DRAWING TITLE
B	25-09-17	ISSUED FOR DA LODGEMENT	A.S.	S.W.			
A	25-08-17	ISSUED AS CONCEPT	A.B.	S.W.			

alintaenergy

ARCADIS Design & Consultancy for natural and built assets
Level 5, 120 Edward Street, Brisbane QLD 4000. Phone (07) 3337 0044
www.arcadis.com

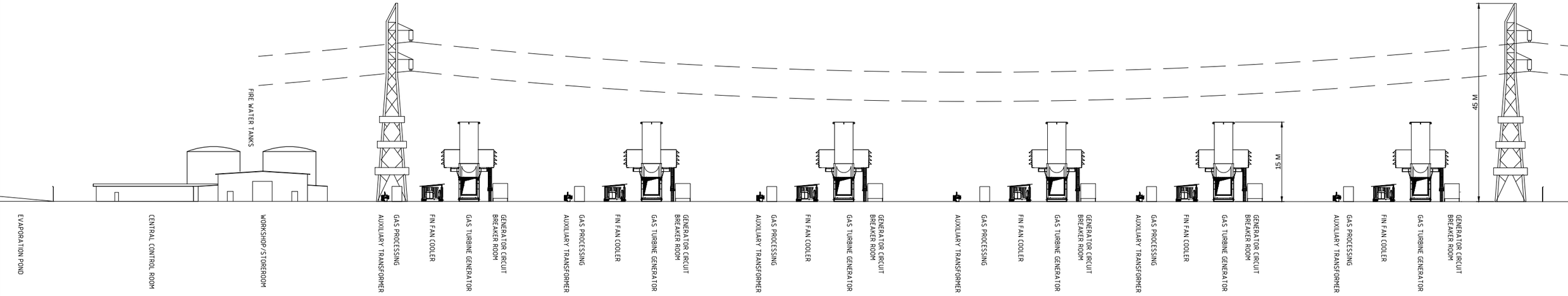
CERTIFICATION:
RPEQ No:
Document No:

DESIGNED	
DRAWN	
CHECKED	
APPROVED	

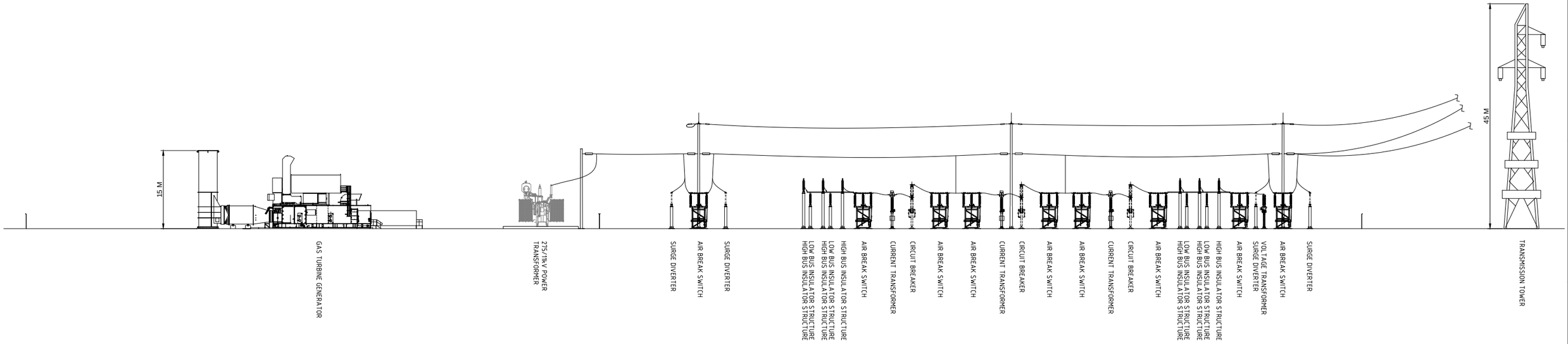
ALINTA ENERGY
REEVES PLAINS POWER STATION

PROPOSED CONCEPT LAYOUT

PROJECT No.: 10005589
DRAWING NUMBER
5589-01
SHEET 1 OF 2 REVISION B
SCALE : AS SHOWN A1



WESTERLY VIEW A 01
SCALE: 1:400



NORTHERLY VIEW B 01
SCALE: 1:400

REVISION CLOUDS:
REVISION CLOUDS ARE SHOWN ON THIS DRAWING TO DRAW ATTENTION TO THE MAJOR ITEMS THAT HAVE CHANGED SINCE THE LAST REVISION. IT IS THE RESPONSIBILITY OF ANY PERSON USING THIS DRAWING TO ENSURE THEY FULLY READ THE ENTIRE DRAWING TO FAMILIARISE THEMSELVES WITH ALL CHANGES SINCE THE PREVIOUS REVISION

REV	DATE	DETAILS	DRAWN	CHECKD	APPRVD	DRAWING No.	REFERENCE DRAWING TITLE
B	25-09-17	ISSUED FOR DA LODGEMENT	A.S.	S.W.			
A	06-09-17	ISSUED FOR APPROVAL	A.B.	S.W.			

alintaenergy

ARCADIS Design & Consultancy for natural and built assets

Level 5, 120 Edward Street, Brisbane QLD 4000. Phone (07) 3337 0044
www.arcadis.com

CERTIFICATION:
RPEQ No:
Document No:

DESIGNED	
DRAWN	
CHECKED	
APPROVED	

ALINTA ENERGY
REEVES PLAINS POWER STATION

PROPOSED CONCEPT ELEVATIONS

PROJECT No.: 10005589
DRAWING NUMBER
5589-02
SHEET 1 OF 1 REVISION B
SCALE: AS SHOWN A1

APPENDIX E – ENVIRONMENTAL NOISE IMPACT ASSESSMENT

Reeves Plains Power Station
Environmental Noise Impact Assessment

Report Date: Friday, 8 September 17
Reference: A17342RP1, Revision 1

www.resonateacoustics.com

Document Information

Project	Reeves Plains Power Station	
Client	Arcadis	
Report title	Environmental Noise Impact Assessment	
Project Number	A17342	
Author	Nick Henrys Senior Acoustic Consultant p+61 8 8155 5888 m+61 481 882 689 nick.henrys@resonateacoustics.com	
Reviewed by	Darren Jurevicius	

Revision Table

Report revision	Date	Comments
0	10 August 2017	DRAFT
1	8 September 2017	FOR ISSUE

Glossary

A-weighting	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
Ambient noise	Noise at a noise sensitive receptor location or other place of interest, other than from the *noise source*.
Background noise level	means the noise level that, according to a measurement taken using fast time weighting in accordance with Part 3, is equalled or exceeded for 90 per cent of the period over which the measurement is taken (L_{90})
Characteristic	Associated with a noise source, means a tonal, impulsive, low frequency or modulating characteristic of the noise that is determined in accordance with the *Guidelines for the use of the Environment Protection (Noise) Policy 2007* to be fundamental to the nature and impact of the noise.
Continuous noise level	A-weighted noise level of a continuous steady sound that, for the period over which the measurement is taken using fast time weighting, has the same mean square sound pressure as the noise level which varies over time when measured in relation to a noise source and noise-affected premises in accordance with the Noise EPP
Day	Between 7 am and 10 pm as defined in the Noise EPP
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of that sound level.
dB(A)	Units of the A-weighted sound level.
Frequency (Hz)	The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second.
Indicative noise level	Indicative noise level determined under clause 5 of the Noise EPP.
L_{eq}	Equivalent Noise Level—Energy averaged noise level over the measurement time.
L_{90}	Noise level exceeded for 90 % of the measurement time. The L_{90} level is commonly referred to as the background noise level.
Night	Between 10.00 p.m. on one day and 7.00 a.m. on the following day as defined in the Noise EPP
Noise source	Premises or a place at which an activity is undertaken, or a machine or device that is operated, resulting in the emission of noise.

Resonate acoustics

www.resonateacoustics.com

Table of Contents

Executive Summary

An environmental noise impact assessment has been undertaken for the Proposed Reeves Plains Power Station. The power station will provide electricity during periods of high demand, and will be delivered in two stages with up to 150MW (3 turbines) installed initially with further build out up to 300MW as required by prevailing market conditions.

The proposed project site is located 12km to the south-east of Mallala, in a predominantly rural area. The nearest noise sensitive receptor to the development is 920m to the south of the nearest turbine, with a further 22 dwellings within 3 km.

The Project is located in a Primary Production Zone, while the most affected noise sensitive premises are located in a Primary Production Zone or Rural Living Zone within the Mallala Council Region. Planning noise criteria have been derived in accordance with the *Environment Protection (Noise) Policy* 2007 (Noise EPP), taking into account the promoted activities in these zones.

Because the power station may operate at any time, worst-case noise emissions are assessed against the more stringent night time criteria of 40 dB(A) L_{eq} for receivers in the Rural Living Zone, and 45 dB(A) L_{eq} for receivers in the Primary Production zone. Compliance with the night criteria will ensure that the project complies with the less stringent daytime criteria by a significant margin.

Ambient noise measurements undertaken in the vicinity of the site indicate that noise from existing sources such as road traffic is within the range of 40 to 50 dB(A) L_{eq} when averaged over a typical day.

A noise model has been produced to predict noise emissions at noise sensitive receivers in the vicinity of the Project. The predictions are based on noise source data from measurements undertaken of the similar model of turbine, and assume worst-case meteorological conditions in terms of sound propagation.

Worst-case noise emissions generated by the power station, with all six turbines running in the noisiest mode of operation, are predicted to meet the relevant Noise EPP criteria at all surrounding receiver locations. It is noted that predictions are based on a conservative scenario which is expected to be rare in practice. Noise emissions are likely to be significantly less for the majority of the time.

Noise from power transformers, water treatment plant, and other ancillary equipment is expected to be negligible compared to turbine noise, and will not increase overall noise levels from the site when measured at the nearest receiver locations.

Construction noise is expected to meet the provisions of Division 1 of the Noise EPP provided work is carried out between the hours of 7:00am to 7:00pm Monday to Saturday, and all reasonable and practicable measures are taken to minimise noise.

While horses and other animals are not sensitive receivers as defined by the Noise EPP, the potential effects of noise from the project on horses has been considered in response to community concerns. Based on research into the hearing threshold and behaviour response of horses to noise, we consider that noise from construction and operation of the project will not have any adverse effect on the health or behaviour of horses at large distance (greater than 1 km).

1 Introduction

This report outlines the results of the environmental noise assessment for the proposed Reeves Plains Power Station (the **Project**). The project consists of up to 6 x 50 MW GE LM6000 PF Sprint open cycle gas turbines and other ancillary infrastructure. The site is located 12 kilometres (km) to the south-east of Mallala in a predominantly rural region of South Australia. The nearest noise sensitive receiver is 920m to the south of the nearest turbine, with a further 22 dwellings within 3 km.

The potential noise emissions from the project have been assessed against the requirements of the South Australian Environment Protection (Noise) Policy 2007 and the Mallala Council Development Plan.

2 Development

Alinta Energy (Reeves Plains) Pty Limited is proposing the staged development, construction, commissioning and operation of a power station and associated infrastructure of up to 300MW in capacity, at 1629 Redbanks Road, Reeves Plains (the **Project**).

The Project will comprise the following:

- Up to 6 x 50 MW GE LM6000 PF SPRINT open cycle gas turbines;
- Gas receiving station;
- Water storage and distribution components:
    - Water treatment plant;
    - Raw water storage tank;
    - Demineralised water tank;
    - Potable water tank; and
    - Fire-fighting system.
- Wastewater treatment facilities including:
    - Stormwater evaporation basin;
    - Wastewater evaporation basin; and
    - Oil/water separator.
- Administration building, workshop and stores, switch-room and control building;
- Internal access roads and car parking;
- Electrical 275kV switchyard and substation; and
- Liquid fuel storage and delivery system.

The power station will operate as a 'peaker', providing electricity during periods of high demand, and is designed to generate up to 300 megawatts (MW) of power and will be delivered in two stages with up to 150MW (3 turbines) installed initially with further build out as required by prevailing market conditions.

The Project is required to obtain development consent from the State Commission Assessment Panel before proceeding. Construction of the Project is scheduled to commence in 2018 with operation of the power station occurring in the first quarter of 2020 at the earliest.

Turbines and other equipment will operate in response to demand, and may therefore operate at any time of the day or night.

The site is located 12km to the south-east of Mallala. The Mallala district forms part of the Adelaide Plains region located to the north of Adelaide. The surrounding area is a predominantly agricultural and horticultural region that is generally flat with limited vegetation coverage. Agricultural and horticultural land is used for cropping cereal grains such as wheat, barley, lucerne and mungbeans. Parts of the surrounding region are used for rural living purposes, which includes several properties at the nearby town of Fischer.

The nearest noise sensitive receptor to the development is R34, some 920m to the south of the nearest turbine. There are a further 22 noise sensitive receptors within 3 km of the project site, with most concentrated in the town of Fischer to the northeast. The locations of the nearest receptors are shown in Table 1 and Figure 1 below. We note that the numbering of receptors is consistent with Air Quality and other technical reports, which may include receptors at greater distances from the site than those considered in this assessment.

Table 1 Location of nearest noise sensitive receptors

Receiver ID	Address	Easting	Northing	Approximate distance to nearest turbine (m)
R1	81 Woolsheds Rd	280802.1629	6180444.662	1230
R2	30 Worden Rd	280887.2565	6180722.976	1520
R9	64 Woolsheds Rd	281055.4466	6180363.742	1230
R47	715 Verner Rd	278478.5442	6178453.983	2160
R10	43 Dogleg Rd	281545.801	6179695.378	1110
R11	67 Dogleg Rd	281717.2025	6179744.508	1280
R12	77 Dogleg Rd	281895.1454	6179716.36	1440
R49	1800 Redbanks Rd	279581.4699	6180378.547	1480
R13	264 Boundary Rd	282354.7762	6179800.667	1900
R50	1561 Redbanks Rd	281638.2288	6179015.184	1090
R14	236 Boundary Rd	282316.412	6179936.945	1910
R51	1806 Redbanks Road	279209.0905	6179730.919	1420
R15	21-43 Bache Rd	282118.4916	6180066.744	1780
R16	43 Bache Rd	281974.0646	6180028.294	1640
R17	57 Bache Rd	281893.3775	6180127.165	1620
R18	75 Bache Rd	281589.4818	6180132.718	1380
R19	206 Boundary Rd	282291.6565	6180331.268	2060
R20	164 Boundary Rd	282295.6542	6180530.722	2180
R21	351 Boundary Rd	282438.5094	6178681.168	1920
R30	1357 Redbanks Rd	282990.8657	6177713.396	2780
R34	974 Verner Road	280940.2968	6178220.098	920
R35	236 Day Rd	279363.4404	6177605.787	1870
R36	334 Day Rd	279071.7498	6176763.822	2720

Figure 1: Proposed development site and surrounding area with location of nearest noise sensitive receptors

3 Noise criteria

Noise is typically assessed against criteria measured in decibels (dB). The decibel scale is logarithmic, meaning that a sound that is 3 dB higher has twice as much energy. We typically perceive a 6-10 dB increase in sound as a doubling of loudness. Criteria are usually A-weighted to represent human response to hearing at different frequencies. The typical sound level associated with common noise sources is shown below.

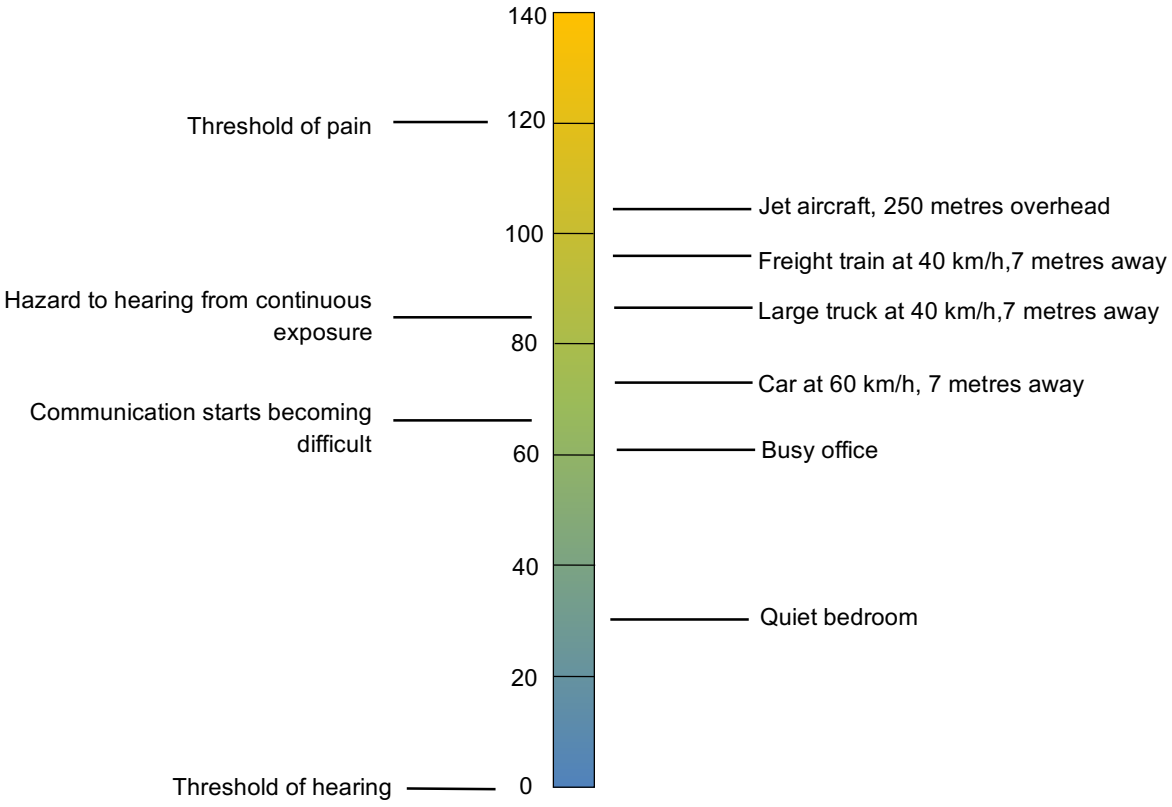


Figure 2: Typical sound levels in dB(A)

3.1 Operational noise criteria

Environmental noise emissions from the proposed development are required to comply with the *Environment Protection (Noise) Policy* 2007 (Noise EPP), which is the most relevant guideline to address the requirements of the overarching *Environment Protection Act 1993*.

The noise goals in the Noise EPP are based on the zoning of the proposed development and the closest noise affected premises in the relevant development plan. The land uses primarily promoted by the zones are used to determine the indicative noise factors shown in Table 2.

Table 2 Indicative noise factors for various land use categories

Land use category	Indicative noise factor dB(A)	
	Day (7 am to 10 pm)	Night (10 pm to 7 am)
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

In this case, the Project is located in a Primary Production Zone, while the most affected noise sensitive premises (residents) are located in a Primary Production Zone or Rural Living Zone within the Mallala Council Region. The Mallala Development Plan promotes rural industrial activities, including those associated with wind farms, within the Primary Production Zone. Low density residential living and small scale rural activities are envisaged in the Rural Living Zone.

Clause 5(5) of the Noise EPP requires that if the noise source and the noise sensitive premises are located in zones where different land use categories are promoted, then the indicative noise level is the average of those relevant indicative noise factors. In this case, the indicative noise level for receptors in the Rural Living Zone is the average of Rural Living and Rural Industry factors, i.e. 52 dB(A) during the daytime and 45 dB(A) during the night. The indicative noise level for receptors in the Rural Industry Zone is not averaged, as these receptors are in the same zone as the noise source.

In accordance with Part 5 of the Noise EPP, the relevant planning assessment criteria for this development is the determined indicative noise level minus five dB(A), as shown in Table 3 below. The *Guidelines for use of the Environment Protection (Noise) Policy 2007* note that the more stringent criteria which are applied to assessment of development applications is in recognition of a range of factors, including increased sensitivity to noise from a new noise source, the increased scope for inclusion of reasonable and practicable noise reduction measures to new development, and the cumulative effect of noise.

The planning criteria apply to external noise levels predicted at the façade of any noise sensitive receptor. We note that the night time criteria are critical as the proposed turbines may operate at any time of the day and night. Compliance with the night criteria will ensure that the project complies with the daytime criteria by a significant margin.

Table 3 Planning noise criteria

Receivers	Planning noise criteria dB(A) L_{eq}	
	Day (7 am to 10 pm)	Night (10 pm to 7 am)
Rural Living	47	40
Rural Industry	52	45

Penalties can also be applied to a noise source for a variety of characteristics, such as impulsive, low frequency, modulating or tonal characters. For a characteristic penalty to be applied to a noise source it must be fundamental to the impact of the noise and dominate the overall noise impact. Application of the characteristic penalty is discussed in the noise emission assessment.

We note that under Part 5, Clause 20(6) of the Noise EPP, exceedance of the recommended criterion does not necessarily mean that the development will be non-compliant. Some of the following matters should be considered when considering compliance:

- the amount by which the criterion is exceeded (in dB(A))
- the frequency and duration for which the criterion is exceeded
- the ambient noise that has a noise level similar to the predicted noise level
- the times of occurrence of the noise source
- the number of persons likely to be adversely affected by the noise source and whether there is any special need for quiet.

3.2 Construction noise criteria

Division 1 of the Noise EPP contain provisions in relation to noise from construction, demolition and related activities as follows:

a) subject to paragraph (b), the activity—
- *i) must not occur on a Sunday or other public holiday; and*
- *ii) must not occur on any other day except between 7.00 a.m. and 7.00 p.m.;*

b) a particular operation may occur on a Sunday or other public holiday between 9.00 a.m. and 7.00 p.m., or may commence before 7.00 a.m. on any other day—
- *i) to avoid an unreasonable interruption of vehicle or pedestrian traffic movement; or*
- *ii) if other grounds exist that the Authority or another administering agency determines to be sufficient;*

c) all reasonable and practicable measures must be taken to minimise noise resulting from the activity and to minimise its impact, including (without limitation)—
- *i) commencing any particularly noisy part of the activity (such as masonry sawing or jack hammering) after 9.00 a.m.; and*
- *ii) locating noisy equipment (such as masonry saws or cement mixers) or processes so that their impact on neighbouring premises is minimised (whether by maximising the distance to the premises, using structures or elevations to create barriers or otherwise); and*
- *iii) shutting or throttling equipment down whenever it is not in actual use; and*
- *iv) ensuring that noise reduction devices such as mufflers are fitted and operating effectively; and*
- *v) ensuring that equipment is not operated if maintenance or repairs would eliminate or significantly reduce a characteristic of noise resulting from its operation that is audible at noise-affected premises; and*
- *vi) operating equipment and handling materials so as to minimise impact noise; and*
- *vii) using off-site or other alternative processes that eliminate or lessen resulting noise.*

The above provisions recognise that construction noise is inherently noisy, with limited opportunity for mitigation. However, given the temporary nature and limited duration of construction noise, it is considered acceptable provided it is undertaken within reasonable hours and all reasonable and practicable measures to mitigate noise are implemented.

4 Ambient noise measurements

4.1 Details

Ambient noise monitoring at 3 locations in the area surrounding the project site was undertaken from Friday 4th August 2017 to Monday 14th August 2017. The locations of monitoring are shown in Figure 3. Locations were selected to be representative of noise levels in the vicinity of the project site.

At the time of sound level meter setup and retrieval, the dominant noise sources were road traffic, and wind induced noise.

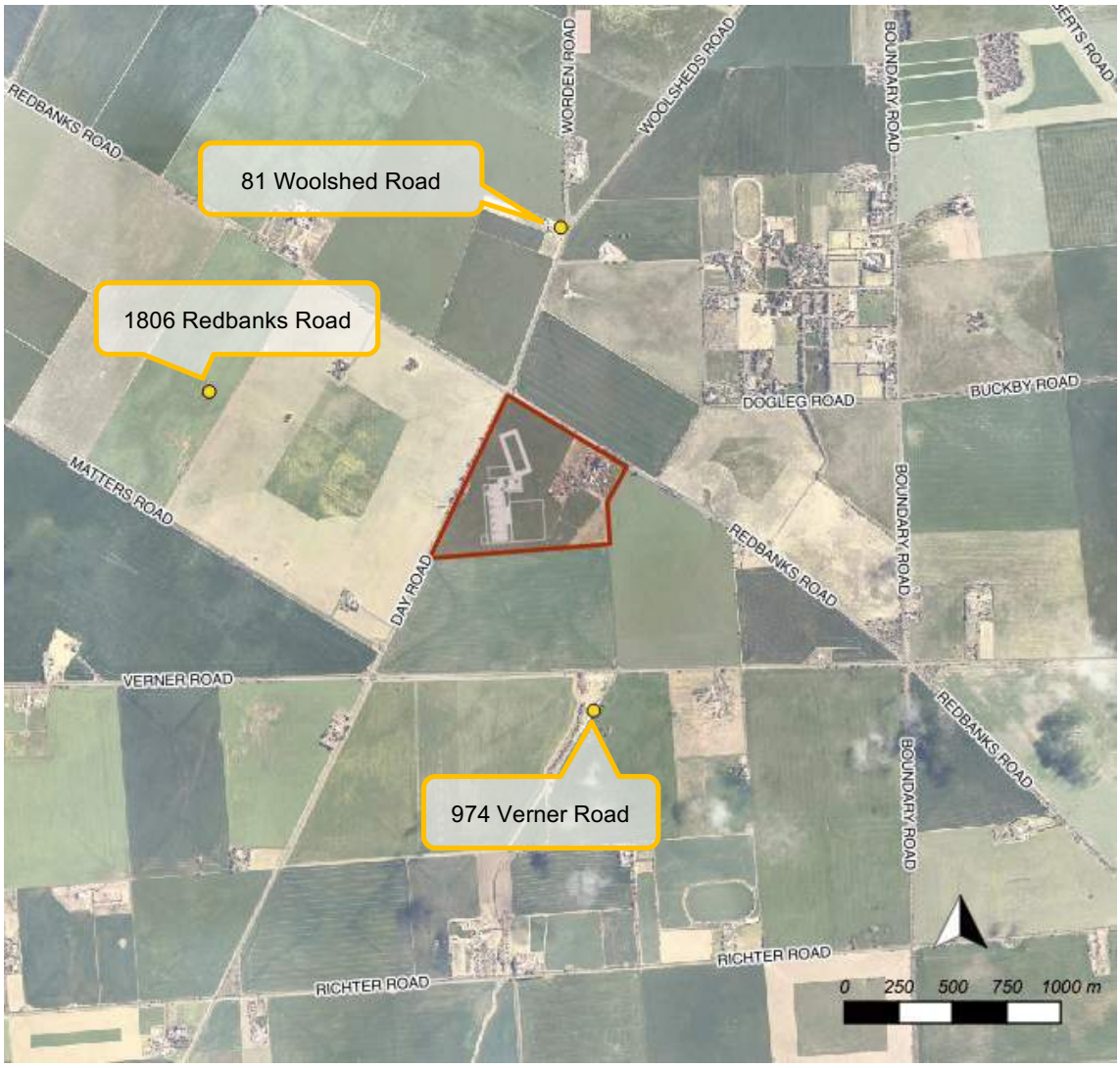


Figure 3 Ambient noise monitoring locations

4.2 Instrumentation

The noise measurements were taken with a calibrated sound level meters, as detailed in Table 4 below. The sound level meters were calibrated both before and after the measurements using a Type 1 Brüel & Kjær 4231 sound level calibrator, and the calibration was found to have not drifted. Sound level meters and calibrator carry current calibration certificates from a NATA accredited laboratory. Copies of the calibration certificates are available on request.

Table 4 Instrumentation details

Measurement location	Sound Level Meter	Serial Number	Calibration Date
81 Woolshed Road	Rion NL-22	862934	17/08/2016
1086 Redbanks Road	Rion NL-22	841630	22/09/2015
974 Verner Road	Rion NL-21	409176	6/12/2016

4.3 Procedure

Noise measurements were undertaken in accordance with the following:

- The microphone of the sound level meter was at a height of approximately 1.2 metres above the ground and at least 3.5 metres away from any wall or facade.
- The axis of maximum sensitivity of the microphone of the sound level meter was directed towards the noise source.
- A wind shield was used during all measurements.
- Weather data was collected from the Bureau of Meteorology for the duration of the measurements. Measurement periods with rainfall or wind speeds higher than 5 m/s were excluded from the results.
- Care was taken to avoid any effect on the measurement of extraneous noise, acoustic vibration or electrical interference.
- Noise measurements were undertaken in 15 minute periods.

4.4 Results

The results of the noise monitoring are shown in Appendix C and are summarised below. The values presented are averages for each day. The periods from 4 August to 6 August; and 10 August 2017 have been excluded due to adverse weather.

Table 5 Ambient noise monitoring results

Date	81 Woolshed Road		1086 Redbanks Road		974 Verner Road	
	dB(A) L_{eq}	dB(A) L_{90}	dB(A) L_{eq}	dB(A) L_{90}	dB(A) L_{eq}	dB(A) L_{90}
7 August 2017	47	33	41	26	43	30
8 August 2017	49	27	43	29	41	28
9 August 2017	47	34	50	39	46	37
10 August 2017	-	-	-	-	-	-

Date	81 Woolshed Road		1086 Redbanks Road		974 Verner Road	
	dB(A) L_{eq}	dB(A) L_{90}	dB(A) L_{eq}	dB(A) L_{90}	dB(A) L_{eq}	dB(A) L_{90}
11 August 2017	51	35	43	28	43	33
12 August 2017	48	30	43	29	58	30
13 August 2017	48	34	43	30	49	33

The results show that average noise levels are typically within the range of 40 to 50 dB(A) L_{eq} and 30 to 40 dB(A) L_{90}.

Compliance with a criteria of 40 or 45 dB(A) L_{eq} 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.

5 Noise source measurements

Whilst noise data from the turbine manufacturer was available, Resonate was able to obtain more detailed measurements of a comparable turbine at Bairnsdale Power Station in Victoria. The purpose of these measurements was to:

- Verify the accuracy of manufacturer data;
- Obtain reliable sound power level data for input into the noise prediction model for the current project;
- Measure noise levels over the full warm-up cycle including the period when noise levels are known to be highest;
- Determine the presence of any audible characteristics which may incur a penalty in accordance with the Noise EPP.
- Attempt to quantify noise emissions associated with other ancillary noise sources which may be associated with the proposed power station.

Bairnsdale Power Station consists of two GE LM6000PD turbines commissioned in 2001. This is an older version of the same model of turbine proposed at Reeves Plains Power Station. The newer turbines utilise 'SPRINT' technology to increase power output capability. It is likely that improvements in turbine technology over 16 years have resulted in an overall reduction in noise emissions, however this is not relied on for the purpose of this assessment.

We note that turbines at Bairnsdale are fitted with an approximately nine metre long exhaust silencer. This would be expected to reduce noise emissions from the stack, and therefore result in reduced overall noise levels in the far field (at large distances from the turbine). We have conducted our assessment on the basis that an equivalent or better silencer will be used for each turbine at Reeves Plains Power Station.

Whilst other ancillary plant such as the substation and compressors were also operating when the turbine was running, noise from these sources was significantly less than from the turbine. It was not possible to obtain measurements from non-turbine sources due to the overall noise environment being dominated by turbine noise.

5.1 Instrumentation

Unattended measurements were conducted with 3 x Rion NL-42 sound level meters, while attended measurements were conducted with a CEL 63X sound level meter. All sound level meters used are Type 1 instrument suitable for field and laboratory use. The sound level meters were calibrated both before and after the measurements with a CEL 120/1 portable calibrator. Both the sound level meter and calibrator carry current calibration certificates from a NATA accredited laboratory. Copies of the calibration certificates are available on request.

5.2 Procedure

Noise measurements were carried out in general accordance with AS 1055.1 – 1997 *Acoustics – Description and measurement of environmental noise.*

Weather conditions were overcast at the time of measurement, with light wind.

Unattended measurements were conducted 1.5m above the local ground level at three locations approximately 30, 60 and 100m from the operating turbine, respectively. Attended measurements were taken approximately 1m from various components of the turbine. Measurement locations are shown in Appendix A. Additional measurements were taken near to ancillary plant such as cooler unit, air compressor, and transformers. However, it was found that the noise environment was dominated by turbine noise and other sources

Measurements were conducted before the turbine was operating (background); during warm-up; and during full capacity operation.

5.3 Results

Measurement results are shown in Appendix B. The overall turbine sound power level was determined using a conservative approach whereby each measurement was adjusted for distance from the source and the highest resulting level was used to estimate the overall sound power level for each turbine. The highest noise levels were measured during an approximately 7 minute period within the 'warm-up' phase of operation. Noise levels during full capacity operation were approximately 5 dB lower.

Based on this analysis the total turbine sound power level was determined to be 109 dB(A) L_{eq}.

6 Operational noise assessment

6.1 Noise modelling

Noise emissions from site have been modelled in SoundPLAN Environmental Software v7.4 program, using the CONCAWE method. The model takes into consideration:

- attenuation of noise source due to distance
- barrier effects from buildings, topography and the like
- air absorption
- ground effects
- meteorological conditions

CONCAWE has six difference weather categories—CONCAWE weather category 1 represents weather conditions that are least conducive to noise propagation (best case situation with the lowest predicted noise levels), CONCAWE weather category 4 represents neutral weather conditions, and CONCAWE weather category 6 represents weather conditions that are the most conducive to noise propagation (the worst case situation with the highest predicted noise levels).

In accordance with the *Guidelines for the use of the Environmental Protection (Noise) Policy 2007*, CONCAWE weather category 6 has been used for night time noise emissions.

6.2 Characteristic noise penalties

Penalties to the source level should be applied in accordance with the Noise EPP to recognise annoyance associated with noise that is dominated by tonal, modulating, low frequency, or impulsive characteristics. A 5 dB(A) penalty is applied for one characteristic, an 8 dB(A) penalty is applied for two characteristics, and a 10 dB(A) penalty is applied for three or more characteristics.

Based on measurements undertaken at Bairnsdale Power Station described above, noise from gas turbines and other power station noise sources do not contain any of the above characteristics when measured at distances of greater than 100m.

6.3 Assessment Scenario

Noise emissions have been assessed based on a scenario where all 6 turbines are operating simultaneously in ‘warm-up’ mode. As described in Section 4, this represents a worst-case scenario in terms of noise emissions and is not expected to occur often or for extended periods of time. Turbine noise levels are expected to decrease by between 3 and 5 dB when operating at full capacity.

6.4 Noise source levels

Turbine noise source levels have been established on the basis of measurements described in Section 4. The total sound power level of 109 dB(A) was split equally between a source at 15.5m above ground level representing the exhaust stack, and second source at 10m above ground representing other turbine noise sources.

Diesel operation

We understand that the turbines are able to be fuelled by diesel, in the event that gas supply is cut off, for example. Noise data supplied by GE Energy for an LM6000 Turbine operating on both gas and liquid (diesel) fuel shows a negligible difference in noise level. A sound power level of 109 dB(A) per turbine is therefore also applicable to a worst-case diesel fuel operating scenario.

Other noise sources

Other (non-turbine) noise sources associated with operation of the project include substation transformers, corona discharge from high voltage power lines, water treatment plant, and compressors. At this stage of the project there is insufficient detail to all for noise from these sources to be accurately quantified. However, experience from other projects indicates that these sources are generally significantly less than noise from turbines, and are unlikely to be audible at large distances (greater than 1 km) from the site. This is consistent with measurements and observations at Bairnsdale Power Station.

If necessary, noise mitigation can be incorporated into the detailed design to ensure that noise from these sources does not increase overall noise emissions from the site.

6.5 Predicted noise levels

Predicted noise levels for the assessment scenario at each noise sensitive receptor location are presented in Table 3 below compared with the Noise Criteria set out in Section 3. A noise contour map is presented in Appendix E.

Table 6: Predicted noise levels

Receiver Location i.e. house	Predicted noise level, dB(A) L_{eq}	Night time noise criteria, dB(A) L_{eq}	Compliance
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

Receiver Location i.e. house	Predicted noise level, dB(A) L_{eq}	Night time noise criteria, dB(A) L_{eq}	Compliance
R34	43	45	Yes
R35	32	45	Yes
R47	30	45	Yes
R49	35	45	Yes
R50	41	45	Yes
R51	36	45	Yes
R52	33	45	Yes
R9	37	45	Yes

Noise levels are predicted to comply with Noise EPP criteria at all occupied dwellings in the vicinity of the power station.

7 Construction noise assessment

Construction works associated with the Project is expected to involve:

- Clearing and grubbing
- Demolition of existing buildings
- Bulk earthworks, drainage and utilities
- Site access works on Redbank Road / Day Road and internal road network
- Construction of gas receiving station, switchyard and key power plant components
- Balance of plant construction
- Landscaping and finishing works

Construction equipment associated with these works may include trucks, excavators, bulldozers, generators, cranes, concrete pumps, hand tools, and other fixed and mobile plant. Typical noise levels associated with these sources are generally expected to be in the same order or less than operational noise levels from the turbines.

Provided the majority of 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 as described in Section 3.2.

8 Effects of noise on horses

Horses and other animals are not sensitive receivers as defined by the Noise EPP. However, members of the community have raised concerns regarding potential effects of the project on horses. All persons have a 'general environmental duty' under the *Environment Protection Act 1993* to minimise noise nuisance. On this basis, the potential effects of noise from the project on horses in the surrounding environment have been assessed.

Excessive noise can have adverse effects on horses and other livestock and wildlife. In particular, horses can exhibit behaviour response such as spinning or bolting in response to loud, sudden or unfamiliar noises. If a noise is familiar and not associated with danger, the response may be moderated.

Horses have a higher hearing threshold (i.e. less sensitive to noise) than humans over most of the sound spectrum, with the exception of high frequencies (above 8 kHz), where horses are able to hear sound at lower levels than humans[1].

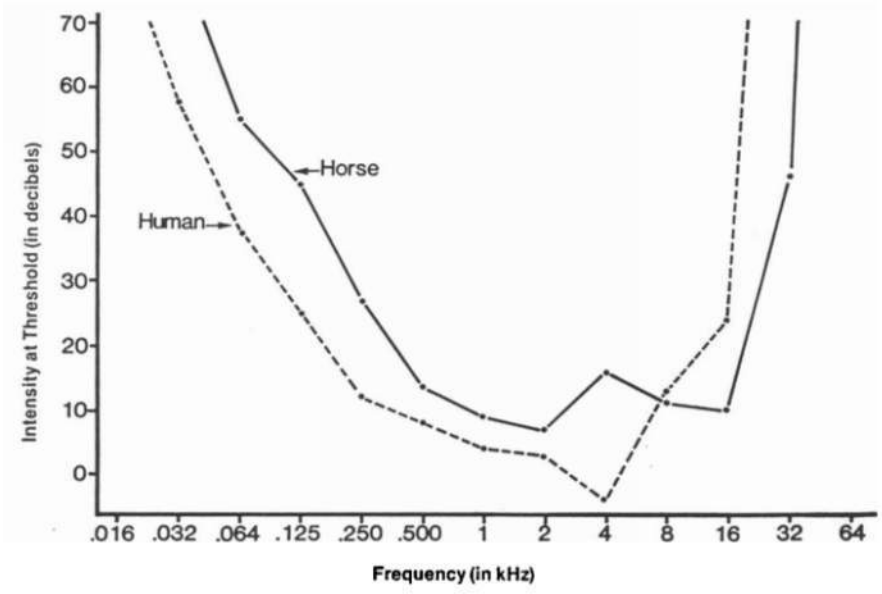


Figure 4: Horse and human hearing threshold (from *The hearing ability of horses*, Heffner and Heffner, 1983).

Noise levels of between 54 – 70 dB(A) L_{eq} have been measured during a music festival at Flemington racecourse. Horses stabled at the venue showed little response to the noise other than when there was also visual stimuli, or when the noise was of a sudden or alarming character, such as short bursts of high-pitched singing[2]. We note that race horses are known for being highly strung and responsive to noise compared to other horse breeds.

[1] *The hearing ability of horses*, Heffner and Heffner, 1983

[2] *Protecting horses from excessive music noise – a case study*, C. Huybregts, 2008.

Noise associated with construction and operation of the proposed power station is expected to be significantly less than 54 dB(A) L_{eq} at distances of greater than 1 km. High frequency sound is readily attenuated by atmospheric absorption such that at this distance there is not likely to significant content above 8 kHz.

Based on the above, noise from construction and operation of the Project is not expected to have an adverse effect on the health or behaviour of horses at distances of greater than 1 km.

9 Conclusions

An environmental noise impact assessment has been undertaken for the Proposed Reeves Plains Power Station.

A noise model has been produced to predict noise emissions at noise sensitive receivers in the vicinity of the Project. The predictions are based on measurements undertaken of the similar model of turbine in operation at Bairnsdale Power Station, and use the maximum noise level generated by turbines during the warm-up phase as the basis for modelled sound power level inputs. Worst-case meteorological conditions in terms of sound propagation have also been adopted in the model.

Noise emissions generated by the power station (with all turbines operating) are predicted to meet the relevant Noise EPP criteria at all surrounding receiver locations. Construction noise is expected to meet the provisions of Division 1 of the Noise EPP provided work is carried out between the hours of 7:00am to 7:00pm Monday to Saturday, and all reasonable and practicable measures must be taken to minimise noise.

Construction and operational noise is not expected to have an adverse effect on horses in the vicinity of the site.

On this basis, we consider that the Project will not cause unreasonable environmental harm or nuisance, and meets the requirements of the Mallala Development Plan and Noise EPP.

Appendix A – Bairnsdale Measurement Locations

Figure 5: Unattended measurement locations

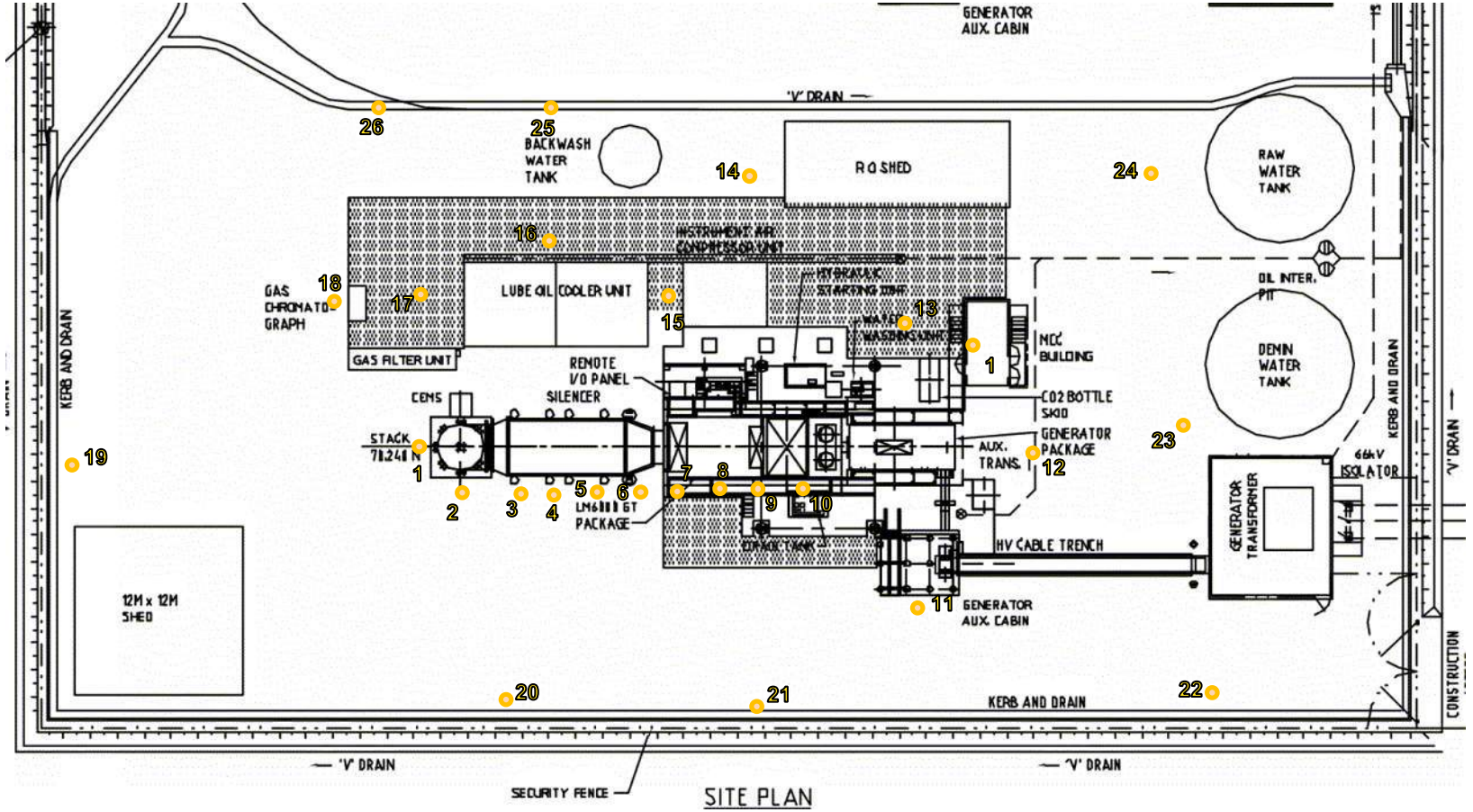


Figure 6: Attended measurement locations

Appendix B – Bairnsdale Measurement Results

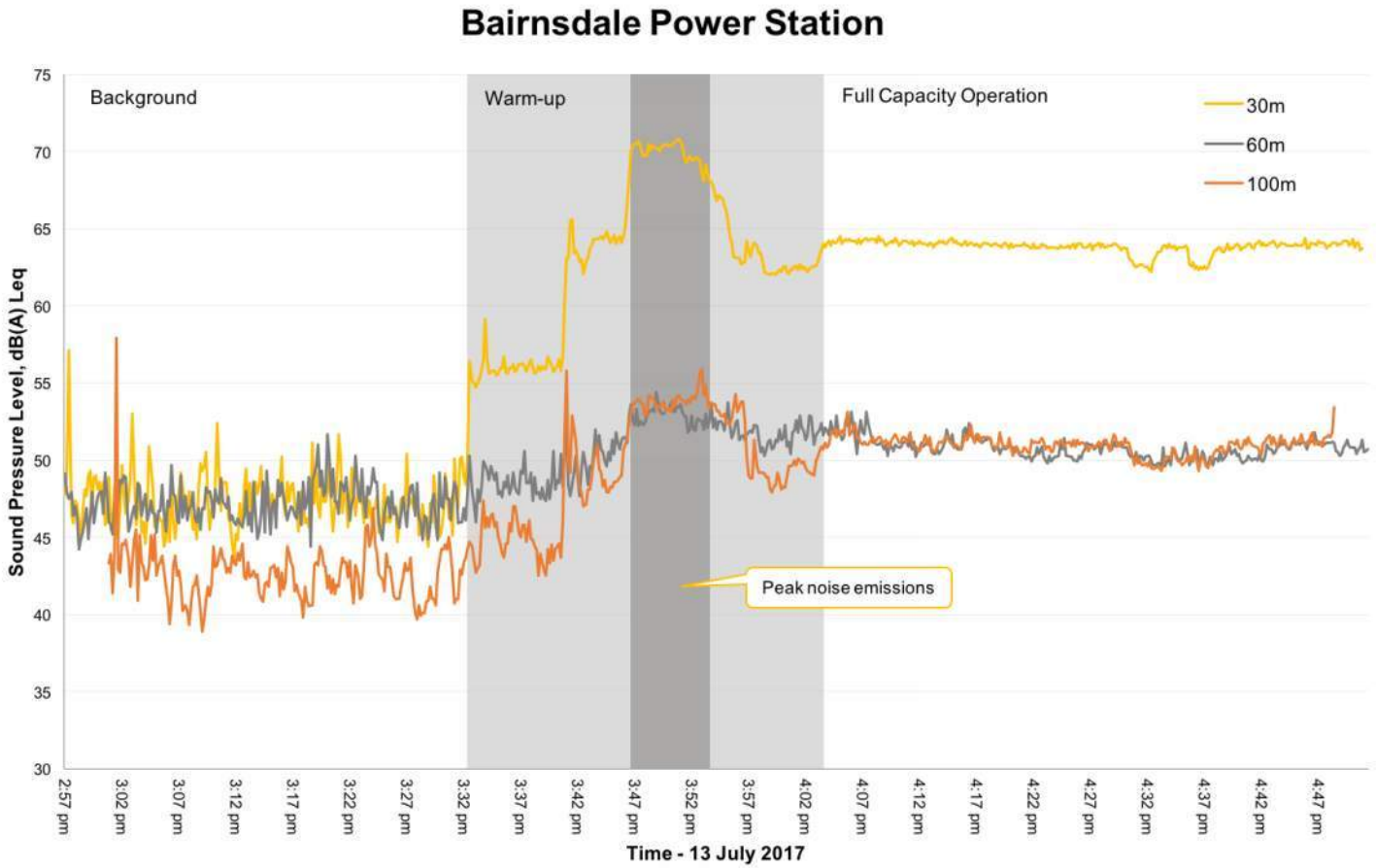


Figure 7: Unattended Measurement Results

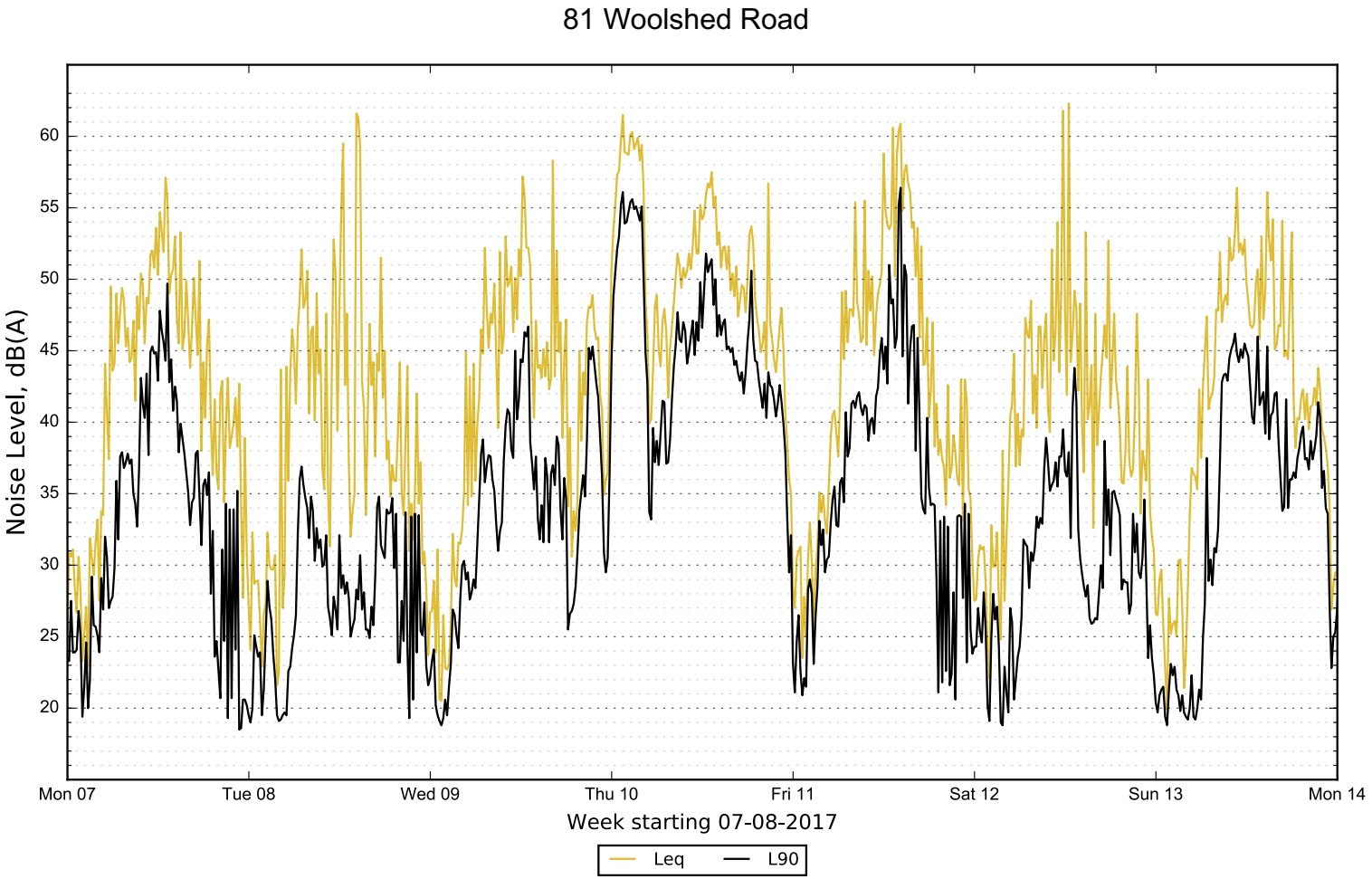
Table 7: Attended measurement results

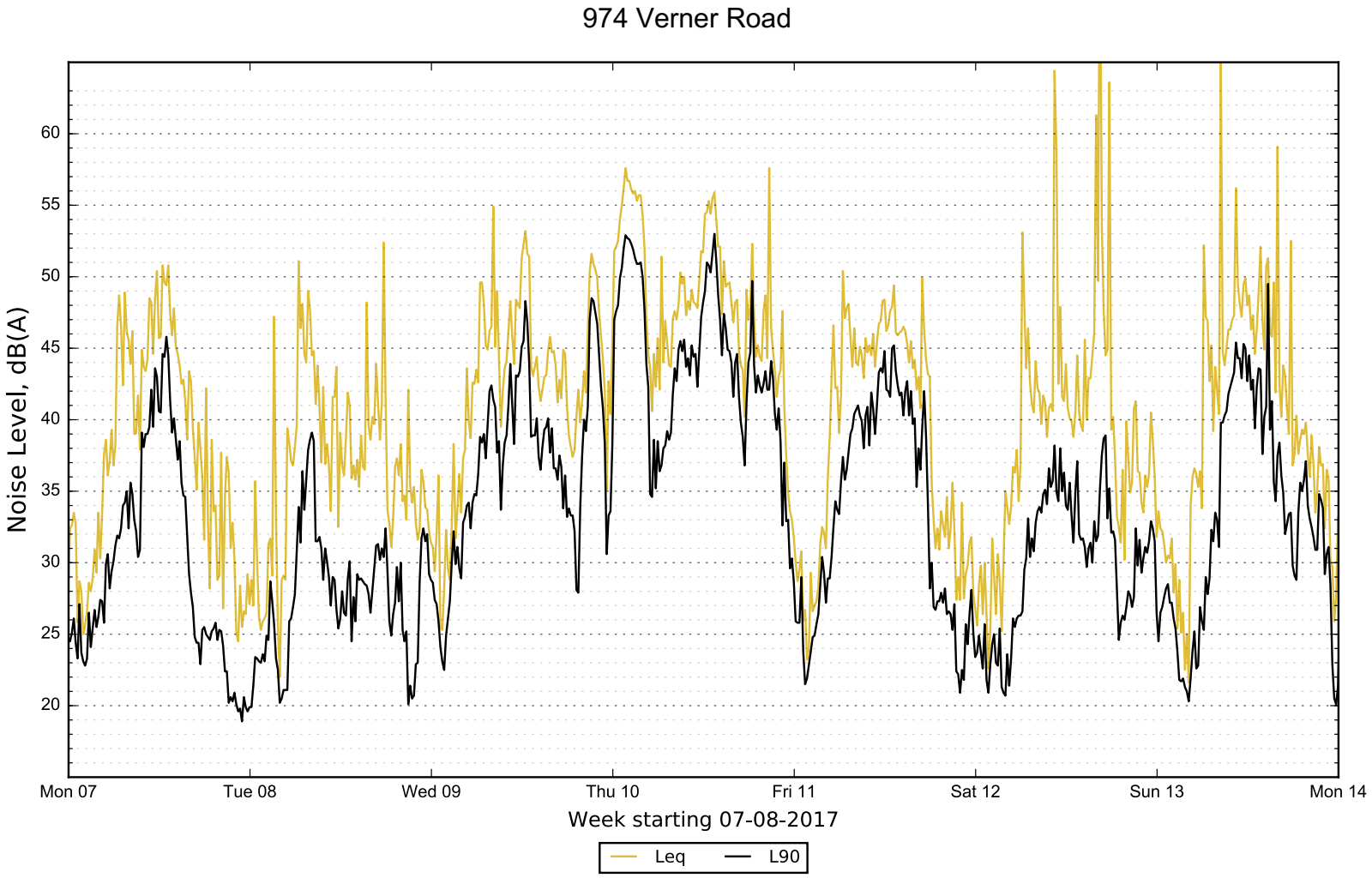
Location	Dominant noise source	Measured sound pressure level, dB(A) L_{eq}
2	Background	45
3	Background	46
6	Background	48
11	Background	46
12	Background	49
13	Background	46
16	Background	55
15	Background	59
17	Background	52
18	Background	52
1	Background	52
19	Background	49
1	Turbines - warm-up	62
2	Turbines - warm-up	59
3	Turbines - warm-up	61
18	Turbines - warm-up	61
17	Turbines - warm-up	67
16	Turbines - warm-up	74
1	Turbines - warm-up	70
2	Turbines - warm-up	64
3	Turbines - warm-up	68
6	Turbines - warm-up	76
7	Turbines - warm-up	77
8	Turbines - warm-up (peak noise emissions)	84
9	Turbines - warm-up (peak noise emissions)	84
12	Turbines - warm-up (peak noise emissions)	71

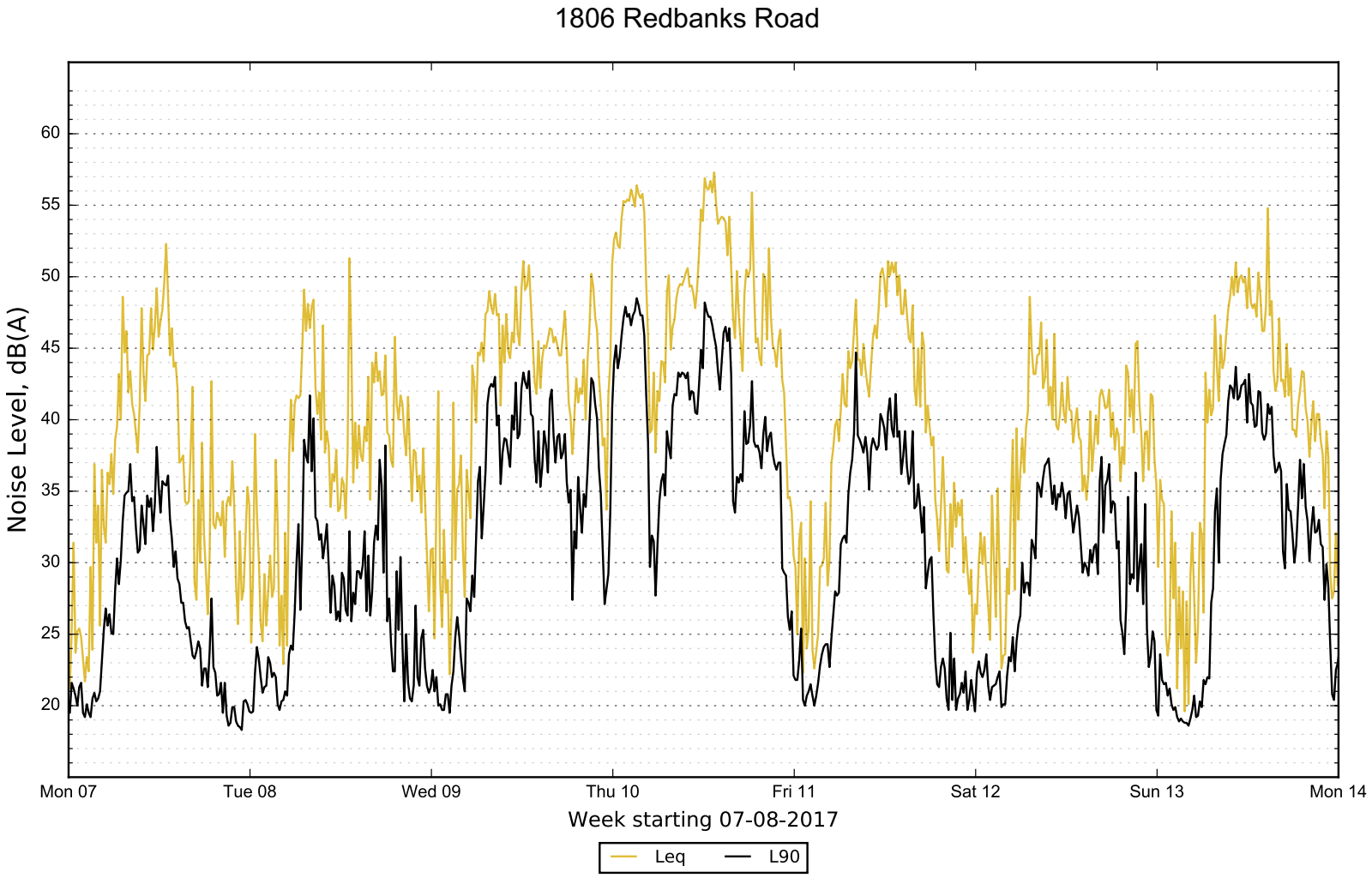
Location	Dominant noise source	Measured sound pressure level, dB(A) L_{eq}
13	Turbines - warm-up (peak noise emissions)	79
15	Turbines - warm-up (peak noise emissions)	76
16	Turbines - warm-up (peak noise emissions)	76
17	Turbines - warm-up (peak noise emissions)	73
7	Turbines - warm-up	79
8	Turbines - warm-up	77
9	Turbines - warm-up	80
9	Turbines - warm-up	80
8	Turbines - warm-up	78
7	Turbines - warm-up	78
2	Turbines - full capacity	65
1	Turbines - full capacity	67
1	Turbines - full capacity	66
2	Turbines - full capacity	65
3	Turbines - full capacity	68
4	Turbines - full capacity	69
5	Turbines - full capacity	71
6	Turbines - full capacity	74
6	Turbines - full capacity	74
5	Turbines - full capacity	72
4	Turbines - full capacity	70
3	Turbines - full capacity	67
7	Turbines - full capacity	81
8	Turbines - full capacity	81
9	Turbines - full capacity	82
10	Turbines - full capacity	81
21	Turbines - full capacity	72

Location	Dominant noise source	Measured sound pressure level, dB(A) L_{eq}
21	Turbines - full capacity	71
20	Turbines - full capacity	71
20	Turbines - full capacity	71
19	Turbines - full capacity	63
19	Turbines - full capacity	62
26	Turbines - full capacity	68
26	Turbines - full capacity	68
25	Turbines - full capacity	74
25	Turbines - full capacity	72
14	Turbines - full capacity	71
14	Turbines - full capacity	72
13	Turbines - full capacity	78
13	Turbines - full capacity	76
24	Turbines - full capacity	66
24	Turbines - full capacity	67
23	Turbines - full capacity	66
23	Turbines - full capacity	67
22	Turbines - full capacity	66
22	Turbines - full capacity	64

Appendix C – Ambient Noise Measurements


81 Woolshed Road
Noise Level, dB(A)
60
55
50
45
40
35
30
25
20
Mon 07
Tue 08
Wed 09
Thu 10
Fri 11
Sat 12
Sun 13
Mon 14
Week starting 07-08-2017
Leq
L90


974 Verner Road
Noise Level, dB(A)
60
55
50
45
40
35
30
25
20
Mon 07
Tue 08
Wed 09
Thu 10
Fri 11
Sat 12
Sun 13
Mon 14
Week starting 07-08-2017
Leq
L90

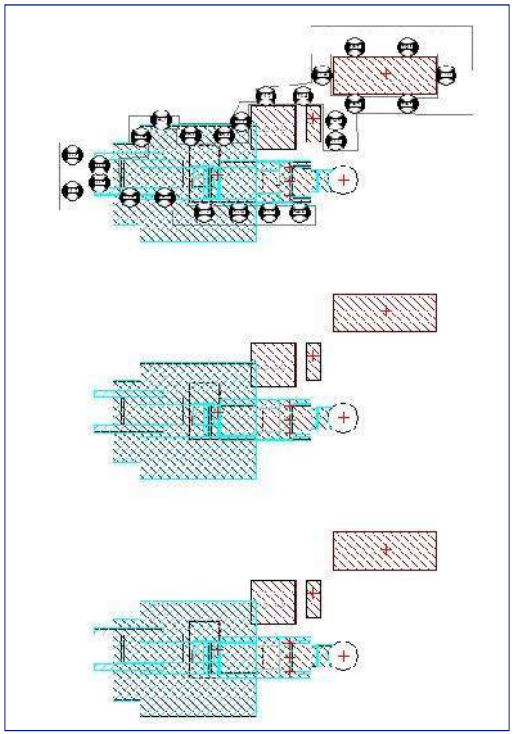

1806 Redbanks Road
Noise Level, dB(A)
60
55
50
45
40
35
30
25
20
Mon 07
Tue 08
Wed 09
Thu 10
Fri 11
Sat 12
Sun 13
Mon 14
Week starting 07-08-2017
Leq
L90

Appendix D – GE Energy gas and liquid fuel noise data

GE ENERGY
AERO
16415 Jacintoport Blvd.
Houston, TX 77015
Engineer: Md Monirul Islam

CUSTOMER	
PROJECT	Alinta Energy
PURPOSE	Provide noise map to Sales/Application
DATE	4-Aug-17
Assumption:	
* 3xLM6000 UG PF	
Gas fuel, fin fan cooler, air cooled generator, 100 feet stack	

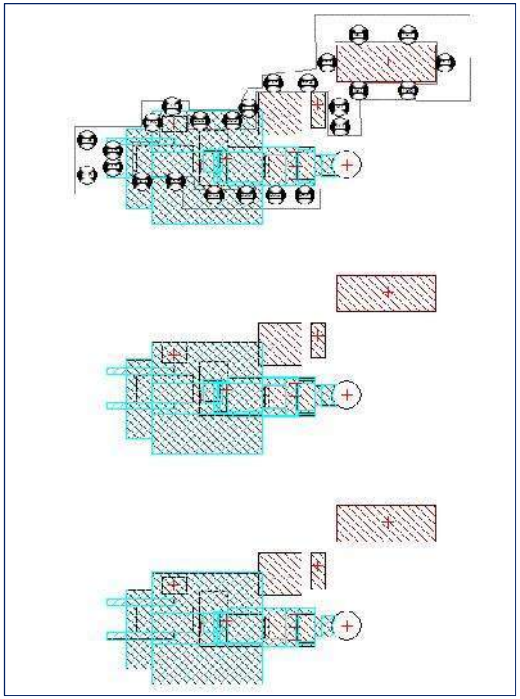
Receiver		Sound Power Level PWL Day (dB(A))								
		31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000Hz	2000 Hz	4000 Hz	8000 Hz
Sound Power for 1 unit										
UNIT 1		99.5	107.1	108.2	99.9	103.4	103.7	99.9	95.0	94.6
SIMPLE CYCLE STACK		99.5	107.0	108.1	95.2	93.7	100.1	93.0	83.0	91.0
FINFAN COOLER		-34.4	80.8	89.9	94.4	94.8	96.0	91.2	85.0	76.9
340 brush generator		46.8	62.6	84.5	80.4	81.0	82.0	82.8	70.8	11.5
Air Cool System		52.9	57.4	82.8	77.9	69.6	72.4	76.8	67.6	43.5
GLO and GEAR BOX		42.4	-19.2	-9.1	68.2	92.0	90.8	91.0	81.9	72.8
WATER INJECTION SKID		44.6	68.8	79.9	85.4	94.8	94.0	93.2	88.0	81.9
AIR FILTER HOUSE		13.6	84.3	75.4	72.5	76.9	79.1	78.4	78.5	84.0
TURBINE COMBUSTION INLET		83.2	83.2	76.3	76.5	77.8	79.0	80.2	80.0	66.9
TURBINE VENTILATION INLET		69.0	69.0	76.3	67.9	71.4	75.4	74.5	74.4	77.4
TURBINE VENTILATION OUTLET		76.0	76.0	76.5	75.7	79.7	84.3	83.6	81.6	89.4
TURBINE BASE		57.1	66.4	76.5	86.5	93.0	88.8	85.6	82.8	73.8
TURBINE ENCLOSURE		64.9	74.9	84.5	94.1	99.7	96.1	93.2	91.1	83.3



GE ENERGY
AERO
16415 Jacintoport Blvd.
Houston, TX 77015
Engineer: Md Monirul Islam

CUSTOMER	
PROJECT	Alinta Energy
PURPOSE	Provide noise map to Sales/Application
DATE	4-Aug-17
Assumption:	
* 3xLM6000 UG PF	
Liquid fuel, fin fan cooler, air cooled generator, 100 feet stack	

Receiver		Sound Power Level PWL Day (dB(A))								
		31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000Hz	2000 Hz	4000 Hz	8000 Hz
Sound Power for 1 unit										
UNIT 1		99.5	107.1	108.2	100.1	103.6	104.2	100.9	95.8	94.7
SIMPLE CYCLE STACK		99.5	107.0	108.1	95.2	93.7	100.1	93.0	83.0	91.0
FINFAN COOLER		-34.4	80.8	89.9	94.4	94.8	96.0	91.2	85.0	76.9
340 brush generator		46.8	62.6	84.5	80.4	81.0	82.0	82.8	70.8	11.5
Air Cool System		52.9	57.4	82.8	77.9	69.6	72.4	76.8	67.6	43.5
GLO and GEAR BOX		42.4	-19.2	-9.1	68.2	92.0	90.8	91.0	81.9	72.8
WATER INJECTION SKID		44.6	68.8	79.9	85.4	94.8	94.0	93.2	88.0	81.9
LIQUID FUEL BOOST PUMP		43.6	64.8	84.9	86.4	90.8	95.0	94.2	88.0	77.9
AIR FILTER HOUSE		13.6	84.3	75.4	72.5	76.9	79.1	78.4	78.5	84.0
TURBINE COMBUSTION INLET		83.2	83.2	76.3	76.5	77.8	79.0	80.2	80.0	66.9
TURBINE VENTILATION INLET		69.0	69.0	76.3	67.9	71.4	75.4	74.5	74.4	77.4
TURBINE VENTILATION OUTLET		76.0	76.0	76.5	75.7	79.7	84.3	83.6	81.6	89.4
TURBINE BASE		57.1	66.4	76.5	86.5	93.0	88.8	85.6	82.8	73.8
TURBINE ENCLOSURE		64.9	74.9	84.5	94.1	99.7	96.1	93.2	91.1	83.3



Appendix E – Operational noise contours

REEVES PLAINS POWER STATION

Reeves Plains, South Australia

Worst-case noise emissions

PROJECT NUMBER	A17342
DRAWN BY	NH
CHECKED BY	DJ
DATE ISSUED	September 2017
CLIENT	ARCADIS

Legend

- *Proposed Site*
- *Receivers*

Sound Pressure Level, dB(A) Leq

- *35 - 40*
- *40 - 45*
- *45 - 50*
- *50 - 55*
- *55 - 60*
- *60 - 65*
- *65 - 70*
- *> 70*

0 250 500 750 1000 m

Datum WGS 84, Projection UTM ZONE 54S

Resonate