Submissions Report

AGL Dalton Power Project

APRIL 2012

Prepared for

NSW Department of Planning and Infrastructure

On behalf of

AGL Energy Limited

Level 22, 101 Miller Street

North Sydney, NSW 2064

43177661

URS

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Executive Summary

Over the next decade, it is predicted that rising electricity demand from the whole of NSW along with a change in the mix of electricity generation sources as a result of the expansion of Renewable Energy Targets (RET) will substantially increase the need for rapid response "peaking" power generation within NSW. To meet this rapidly changing electricity supply landscape, AGL proposes to construct and operate a gas turbine power station with a nominal generating capacity of up to 1500 megawatts (MW) at a site near Dalton (known as the Site), south western NSW (known as the Dalton Power Project). The Dalton Power Project would be able to supply electricity during times of peak demand.

The Project will be constructed in two stages. The first stage comprises the construction of between two and four open cycle gas turbines with a capacity of between 250 and 750 megawatts and associated and ancillary infrastructure. The second stage will comprise the construction of up to a maximum of six turbines with a capacity of up to 1,500 megawatts.

An environmental assessment of this Project was prepared by URS on behalf of AGL, and was exhibited by the NSW Department of Planning and Infrastructure between 17 August to 19 September 2011.

This Response to Submissions and Preferred Project Report (the Report) provides AGL's:

- response to the submissions made during the public exhibition of the environmental assessment (EA);
- preferred project components and elements of the design of the proposed Project that have been modified since the exhibition of the EA so as to minimise environmental impacts; and
- AGL's revised statement of commitments, which have been made to address issues raised in submissions and further reduce the impacts of the Project.
- AGL has incorporated further comments from the Department of Planning and Infrastructure post review of the draft version of this document submitted in October 2011. The NSW Office of Environment and Heritage and Upper Lachlan Shire Council also made additional comments on the draft which were considered and incorporated into this final report version.
- AGL has also incorporated additional comments on the January 2012 and March 2012 drafts of the document provided to AGL by DP&I and including responses to EPA, NOW and additional community submissions. After reviewing the January Submissions Report, the EPA has updated a number of its recommended conditions of approval. Changes to these recommendations are detailed, and discussed, within this report also.

Key issues raised during public exhibition of the EA included:

- the adequacy of the Air Assessment and the need for ongoing monitoring;
- the adequacy of the Noise Assessment and the need for ongoing monitoring;
- water requirements and clarification on from where water will be sourced;
- potential construction impacts and the staged delivery of the Project;
- visual impacts;
- flora and fauna reports; and
- traffic impacts on the local community and roads.

Minor modifications are proposed to the Project in response to submissions in order to minimise its potential environmental impacts. This includes the relocation of the southern portion of the gas pipeline to a position west of the original proposal to reduce the area of impact on Box Gum Woodland.

Executive Summary

AGL has included the description and assessment of an on-site concrete batching plant (CBP) option for the Project. A number of further clarifications are also presented in this Report in response to the submissions received.

Notwithstanding the repeal of Part 3A the Project is a transitional project which will continue to be subject to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act),. The next step will be for the application for approval of the Project to be determined under the provisions of Part 3A of the EP&A Act.

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Introduction

This Report has been prepared following the public exhibition of the EA for the Dalton Power Project.

This Report documents:

- the issues raised in submissions made during the public exhibition of the EA;
- AGL's response to the submissions plus additional comments on the EA made by agencies;
- the changes proposed to the Project to minimise its environmental impact; and
- AGL's revised statement of commitments.

1.1 Project Context

AGL is seeking project approval under Part 3A of the EP&A Act to construct and operate a gas turbine power plant up to a nominal 1500 megawatt (MW) capacity on a site near Dalton, in NSW. The Dalton Power Project would be constructed in two stages, the first of which would involve installation of between two and four open cycle gas turbines and the second of which would involve the installation of up to a total of six open cycle gas turbines. AGL is seeking approval for both stages of the Project.

1.2 Project Location and Description

The Site is located approximately 4 km north of Dalton, and approximately 12 km northwest of Gunning in the Southern Tablelands of NSW. The Site is within the boundary of the Upper Lachlan Shire, and it is approximately 208 km south west of Sydney and 63 km north west of Canberra. Developments immediately surrounding the Site are predominantly rural enterprises with the Lachlan River forming the northern boundary of the Site.

AGL has proposed the Dalton Power Project be constructed and operated within an approximately 26 ha footprint within a 508 ha site area. The Site currently operates as a rural landholding with sheep and cattle grazing. The majority of the Site is cleared with some areas of woodland in the centre of the Site. Access to the Site is off Walshs Road from the south.

The Dalton Power Project is proposed by AGL to address the rising peak demand for electricity in NSW. AGL proposes to construct and operate a gas turbine power station, which would operate during times of peak electricity demand, for less than 15 % of any 12 month period.

The Dalton Power Project would be constructed in two stages. The total Project would involve the installation of up to six gas turbines with a nominal generating capacity of up to 1500 MW.

The constituent elements of the Dalton Power Project would include:

- the proposed power station;
- a lateral gas pipeline connection from the power station to an existing natural gas supply pipeline located approximately 3 km to the south of the Site;
- an access road to the Site;
- a communications tower connected to the Facility via underground services and access track easement; and
- one or two transmission towers to connect power station to the existing 330 kV transmission line easement.

Further details regarding the Project can be found in **Chapter 4 *Project Description*** of the EA.

1 Introduction

Two modifications to the Project are now proposed. These are discussed in the relevant sections dealing with responses to submissions, and within the preferred project section of this report:

The two modifications are:

1. AGL is no longer seeking approval for the use of E Class turbines as part of this current project. AGL has confirmed that the turbines to be used at Dalton will be F Class.
2. Onsite bore water is now the proposed source of operational water for the facility. The source has been confirmed through the successful drilling and testing of two bore wells within the Facility footprint. It is noted that the EA also examined other water source options for the supply of operational water, including the trucking of water to site. AGL is not currently proposing this option, and is not seeking this as part of this current approval. Should the trucking of water to site be reconsidered by AGL at some future date, a separate approval application would be prepared for this. AGL anticipates that the studies undertaken as part of the EA would be used in support of any such application.

It is also noted that the option for an on-site Concrete Batching Plant (CBP) has also been considered and assessed within the Preferred Project Report section.

1.3 The Assessment Process

A record of opinion was issued on 5 March 2010 by the Director Infrastructure Projects, as delegate for the then Minister for Planning, confirming that the Project is subject to approval under Part 3A of the EP&A Act. The Project is also a 'critical infrastructure' project under section 75C of the EP&A Act, in accordance with the gazettal notice of 26 February 2008 by the then Minister for Planning.

A preliminary environmental assessment (PEA) was submitted to the Department of Planning and Industry (DP&I), (formerly the Department of Planning) in accordance with the Part 3A process.

The DP&I subsequently issued the environmental assessment requirements (EARs) for the EA on 19 April 2010. Supplementary EARs for the Project were issued on 5 July 2010.

The EA was prepared in accordance with the provisions of Part 3A of the EP&A Act, the *Environmental Planning and Assessment Regulation 2000* and the EARs and Supplementary EARs. An EA is part of a larger assessment process in which the proponent of a project:

- identifies a need;
- considers alternatives and identifies a preferred option;
- assesses the likely environmental impacts and identifies mitigation measures; and
- presents the EA to DP&I for public exhibition.

The EA was placed on public exhibition from 17 August 2011 to 19 September 2011. It was made available on DP&I's website and at the following locations:

- DP&I, Information Centre;
- Upper Lachlan Shire Council (Crookwell and Gunning Offices);
- The Nature Conservation Council of NSW; and
- on the AGL website.

During the public exhibition period, submissions were invited from anyone with an interest in the Project, including members of the community and government agencies. A total of 21 submissions were received by DP&I.

Appendix B-1 presents each submission received during the exhibition period in full.

Appendix B-2 presents additional comments received on the EA from agencies during exhibition as well as post review of the Draft Response to Submissions Report submitted to DP&I in October 2011.

Appendix B-3 presents additional comments received on the EA from agencies and community members and additional comments provided by DP&I post review of the Response to Submissions Report submitted to DP&I in January 2012.

Appendix B-4 presents additional comments received on the Submissions Report (March 2012 draft) from DP&I.

On 26 September 2011, the Director-General:

- required AGL to respond to the issues raised in the submissions by preparing a submissions report;
- notified AGL that if any changes to the Project were proposed to minimise its environmental impact, a preferred project report would be required;
- noted that the Statement of Commitments may need to be revised to reflect any proposed changes to the Project; and
- identified a number of other matters required to be addressed in the submissions report/preferred project report.

This report:

- addresses the issues raised in the submissions;
- proposes some minor changes to the Project to minimise its environmental impact and address issues raised in the submissions; and
- provides a revised statement of commitments for the Project.

Legislation repealing Part 3A of the EP&A Act has commenced its operation. However, the Project is a transitional project under transitional provisions of the Act and, accordingly, will continue to be assessed and determined under Part 3A of the EP&A Act.

The next step will be for AGL's application for approval of the Project to be determined under Part 3A of the EP&A Act.

1.4 Stakeholder Consultation

AGL has consulted extensively with government, non-government organisations and community groups and individuals prior to, during and post public exhibition of the EA.

Consultation for the Project has been led by AGL, and has consisted of direct consultation with local authorities and government agencies. Consultation with the wider community has taken a variety of forms to date including face to face meetings, letters, newsletters, as well as two open days at the Dalton Church Hall.

The consultation undertaken as part of the Project assessment process is outlined within Chapter 6 of the EA and discussed at Section 3.13 of this Report.

1 Introduction

1.5 Report Structure

This Report comprises the following:

- Section 1: Background, context and definitions.
- Section 2: A summary of the submissions.
- Section 3: Response to the submissions.
- Section 4: Preferred Project Report.
- Section 5: The revised Statement of Commitments for the Project.

The Submissions Report is supported by the following Appendices:

- Appendix A: Summary of submissions. A summary of DP&I and other agency comments on the EA post review of the Draft Response to Submissions Report is included.
- Appendix B-1: The submissions as received.
- Appendix B-2: Additional correspondence from Agencies about the EA and draft Submissions Report
- Appendix B-3: Additional comments received on the EA from agencies and community members and additional comments provided by DP&I post review of the draft Response to Submissions Report submitted to DP&I in January 2012.
- Appendix B-4: Additional comments received on the Submissions Report (March 2012 draft).
- Appendix C: Supporting ecology and heritage field results for the proposed change to the Gas Pipeline (southern section) route.
- Appendix D-1: Reptile Supplementary Results
- Appendix D-2: Flora Supplementary Report
- Appendix D-3: GSM Supplementary Report
- Appendix E: Further analysis regarding G Class Stability Conditions
- Appendix F: Additional facility layout and elevation plans
- Appendix G: Hydrogeological Report

1.6 Definitions

As for the EA, the following definitions apply:

- **AGL:** AGL Energy Limited
- **CBP:** (concrete batching plant) refers to an additional component of the proposal which may be included by AGL and its contractors during the construction phase of the project. An onsite concrete batching plant is an alternative option to site deliveries of ready mixed concrete. AGL notes a number of benefits relating to this option, including reduced traffic movements. As such, this option has been discussed and impacts of this option addressed within the Preferred Project Report Section (Section 4).
- **Dalton Power Project or Project:** major project application number 10_0035. Construction and operation by AGL of a two stage gas turbine power station with a maximum generation capacity of 1500 MW. The first stage will comprise construction of a power station with between two and four open cycle gas turbines with a generating capacity of between 250 to 750 megawatts. The second stage will comprise construction of up to a total of six open cycle gas turbines with a generating capacity of up to 1,500 megawatts. The development of ancillary infrastructure for the power station is also included. The Project would be located at a site to the north of Dalton, NSW.

1 Introduction

- **OEH:** The NSW Office of Environment and Heritage. A recent organisational restructure has meant that some recent correspondence from this agency is now provided from the EPA. For this reason, the report discusses both comments received from OEH, as well as comments received from the EPA. However, for the purposes of this report, the EPA is considered to fall within the *OEH.*
- **Facility:** gas turbine power station comprising up to six turbines with a total generation capacity of 1500 MW.
- **Site:** collectively refers to the property comprising "The Elms" Lot 115, 249, 252, 253, 305, 307 in DP754111; "Holmes" Lot 14, 183, 184, 187, 200, 283, 306 in DP 754111 & Lots 1 & 2 in DP 126122 , and "Riverview" Lot 116, 321, 322, 162, 317, 318 in DP754111.
- **AGL Owned Lands:** AGL has purchased 573 ha, this includes the Site and Lots 21, 186 and 251 in DP754111 &Lot 1 DP 126119 through which the gas pipeline (northern portion) and access road traverse, also parts of Lot 30 and 31 DP754111, which would contain the valve station and through which the gas pipeline (southern portion) traverses.
- **Access Road:** new road to be constructed to provide access to the Facility. The access road would extend approximately 1.9 km north east from Walshs Road at the point where Walshs Road takes a 90-degree turn west.
- **Gas Pipeline:** proposed lateral gas pipeline extension connecting the Facility to the existing Moomba to Sydney Gas Pipeline.
- **Development Footprint:** area within the wider 573ha Site to be developed for the power station and associated infrastructure as discussed in the EA.
- **Revised Gas Pipeline:** The original proposal included the southern portion of this infrastructure incorporated into the existing reserve of Walshs Road. As presented in Section 4, AGL now proposes to locate the southern portion of the pipeline to the west of the original route across portions of Lot 23/DP75411 and Lot 27/DP754111.
- The **amended Development Footprint** discussed within this Submissions Report includes additional Lot 23 DP754111 and Lot 27 DP754111 given that an easement agreement through parts of these Lots has been negotiated for revised gas pipeline route (southern portion).

2

Summary of Submissions

2.1 Overview

The EA was placed on public exhibition from 17 August 2011 to 19 September 2011. Submissions received during and after the exhibition period were directed to the DP&I. All submissions were numbered as received and provided to AGL for consideration.

DP&I received a total of 22 submissions. A number of submissions were received from government agencies. However, a significant proportion were received from community groups and individuals.

2.2 Submissions Received

Twenty two submissions were received by the DP&I. These submissions were from the following stakeholders:

- Government agencies (eight submissions):
  - Upper Lachlan Shire Council
  - NSW Department of Trade and Investment, Regional Infrastructure and Services
  - NSW Roads and Traffic Authority
  - NSW Land and Property Management Authority
  - NSW Office of Water
  - NSW Office of Environment and Heritage
  - Civil Aviation Authority
  - Department of Defence

In addition, DP&I, the Upper Lachlan Shire Council and the NSW Office of Environment and Heritage also provided AGL with comments following the review of the Draft Response to Submission Report submitted in mid-October 2011. Further comments from DP&I, the EPA and NOW were received following the submission of the report version lodged with DP&I in January 2012. These additional comments have been addressed within relevant sections of **Section 3** under the respective topic headings, and also within **Section 4** where comments required AGL to provide additional information not previously included within the EA.

Section 3 has been amended to include an additional section entitled 'Agency Final Comments' to report on final agency comments received on the versions of the draft Submission report, where this is appropriate.

Further comments were received from DP&I on the March 2012 draft of the Response to Submissions Report. Clarifications are offered in **Section 3** and **4** as appropriate, with full detail of the amendments outlined in **Section 4.10**.

- Community Submissions:
  - Community for Accurate Impact Assessment of the Dalton Power Station
  - Dalton Public School
  - Private Individuals (eleven submissions of which five were requested to remain anonymous)
  - Katrina Hodgkinson (MP)

The tables below group the issues raised under similar environmental aspects and outlines where in **Chapter 3** each aspect is addressed. **Table 2-1** groups the submissions by Government agencies,

2 Summary of Submissions

Table 2-2 presents issues raised by Agencies in relation to the broader EA, and **Table 2-3** groups each of the submissions from individuals, community groups and other non-statutory bodies.

For further details on these submissions refer to **Appendix A** for a summary of submissions listed by author. **Appendices B-1 – B-4** contain the full submissions and additional correspondence received in relation to respective drafts of the Report.

2 Summary of Submissions

Table 2-1 Summary of Government Agency Submissions

Issue Category	Government Agency	Submission Report Section Addressed
Air Quality	CASA and OEH	Section 3.2
Noise and Vibration	Upper Lachlan Shire Council and OEH.	Section 3.3
Construction Impacts	None.	Section 3.4
Project Description and Staging	Upper Lachlan Shire Council.	Section 3.5
Water Requirements (demand, sources and availability)	Upper Lachlan Shire Council, NSW Office of Water and OEH.	Section 3.6
Water Quality Impacts	None.	Section 3.7
Visual Impacts	None.	Section 3.8
Flora and Fauna	OEH.	Section 3.9
Traffic Impacts	Upper Lachlan Shire Council and NSW Roads and Traffic Authority.	Section 3.10
Socioeconomic Impact	Upper Lachlan Shire Council.	Section 3.11
Heritage	None.	Section 3.12
Consultation	None.	Section 3.13

Table 2-2 Summary of Agency comments on EA and on Draft Submissions Response Report

Issue Category	Government Agency	Submission Report Section Addressed
Air Quality	DP&I and OEH	Section 3.2.1, 3.2.2
Noise and Vibration	DP&I and OEH.	Section 3.3.1, 3.3.2
Project description	DP&I	Section 3.2.2, Section 5
Water Requirements (demand, sources and availability)	DP&I and Upper Lachlan Shire Council	Section 3.6.1, 3.6.2 Section 4
Visual Impacts	DP&I	Section 3.8.1, 3.8.2 Section 4 .5
Flora and Fauna	DP&I and OEH.	Section 3.9 Section 4.3
Traffic Impacts	DP&I and Upper Lachlan Shire Council	Section 3.10 Section 4.7
Socioeconomic Impact	DP&I and Upper Lachlan Shire Council	Section 3.11

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Table 2-3 Summary of Community Submissions

Issue Category	Submission Reference	Submission Report Section Addressed
Air Quality	Submissions 20038, 20050, 20042, 20501, 20002, 20022, 20050, 21194 and 20004.	Section 3.2
Noise and Vibration	Submissions 20497, 20501, 20022, 20050, 21194 and 20042.	Section 3.3
Construction Impacts	Submissions 20497, 20022, 21194 and 20501.	Section 3.4
Project Description and Staging	Submissions 20016, 20497, 20501, 20022, 20034, 20042 and 20019.	Section 3.5
Water Requirements (demand, sources and availability)	Submissions 20016, 20019, 20497, 20034, 20042, 21194 and 20038.	Section 3.6
Water Quality Impacts	Submissions 20050 and 20042.	Section 3.7
Visual Impacts	Submissions 20497 and 20501.	Section 3.8
Flora and Fauna	Submissions 20497, 20042, 21194 and 20501.	Section 3.9
Traffic Impacts	Submissions 20038, 20497, 20050, 20019, 21194 and 20042.	Section 3.10
Socioeconomic Impact	Submissions 19998, 20034, 20042, 21194 and 20501.	Section 3.11
Heritage	None.	Section 3.12
Consultation	Submissions 20501, 20034, 20050, 20042, 21194 and 20022.	Section 3.13
Land Use	None.	Section 3.14

3

Response to Submissions

3.1 Introduction

The submissions received have for the purposes of response been categorised into the following topic areas:

- Air Quality;
- Noise and Vibration;
- Construction Impacts;
- Project Description and Staging;
- Water Requirements (demand, sources and availability);
- Water Quality Impacts;
- Visual Impacts;
- Flora and Fauna;
- Traffic Impacts;
- Socioeconomic Impact;
- Heritage;
- Consultation; and
- Other

Submissions and their content are referenced in each topic area. The reference numbers are those provided by DP&I on its website. A copy of each submission reference is provided in **Appendix B-1** to this report. This Section provides responses to each of the issues raised in the submissions. The responses have been made against the relevant topics.

3.2 Air Quality

3.2.1 Agency Submissions

The submission from **OEH (20897)** addressed, inter alia, proposed emission limits and monitoring recommendations for the Project. Recommended Air Conditions as provided by OEH are presented in full in Submission 20897 in **Appendix B- 1**.

Following review of the Draft Response to Submissions Report, OEH issued revised Recommended Air Conditions as presented in Appendix B-2 (OEH – 24/11/2011).

A submission from **CASA (20906)** confirmed that the Dalton plume rise assessment had been assessed in accordance with the CASA Plume Rise Advisory Circular 139−05(0)2004. The submission did not raise any points requiring consideration within this report.

Response

AGL requested that OEH consider issuing air quality monitoring conditions more in line with other similar developments. AGL accepts the proposed revised recommended conditions of consent subsequently issued by OEH. The EPA did revise its initial requirement for monitoring carbon dioxide, sulphur oxides and particulate matter. The basis of this revision was that acknowledgement that the proposal would only be permitted to run using natural gas as fuel, the throughput of which would deem the calculation of generated CO_2 much more reliably than monitoring emissions. In addition, it was noted that predicted emissions of particulate matter and sulphur oxides are considered by the EPA to be negligible from natural gas combustion.

3 Response to Submissions

3.2 Air Quality
3.2.2 Community Submissions

The submission from **CASA (20906)** did not include any points requiring response within this report.

Agency Concurrence or Conclusions

The EPA (Julian Thompson, 22 February 2012) notes that AGL has accepted the updated monitoring conditions that were recommended by the EPA in its correspondence of 24 November 2011. It is recommended by the EPA that this monitoring be incorporated into any approval conditions.

3.2.2 Community Submissions

A number of community submissions made comment on the sourcing of existing air quality data. These included:

Submission 20038: Stated that proper estimations of emissions from the proposed plant should be measured at several sites within Dalton, including the primary school, and not at distant air monitoring stations.

Submission 20050 stated:

"The proposed facility is approximately 3 km from our school (Dalton Public School). We have concerns regarding the pollution and dust that will be generated by the project.

The Environmental Assessment provided has not established the existing levels of air quality at our school. Any proposed monitoring of these levels will not provide any meaningful data which would allow us to assess the impacts of the development as there will be nothing to compare it to. At the moment, Dalton is a quiet place with no industrial pollution. The proposed project will obviously have impacts on the school and the learning environment."

Submission 20042 stated:

No background levels of pollutants or noise have been established against which impacts may be assessed. "..The Proponent has not clearly identified nor specified, amongst many other things background, pre-development noise and air assessments for the site and for the village of Dalton or other "sensitive receptors". While levels at more heavily polluted sites may provide conservative assessments of the expected total emissions from the project, the absence of any data with respect to existing conditions does not provide "…sufficient information to determine the environmental impacts and benefits of the Dalton Power Project…". It also allows the Proponent to draw spurious conclusions such as "no adverse impacts on local air quality are expected as a result…" (EA p9-9). Undertaking these assessments is also critical for the purposes of assessing any subsequent applications to realise the "…potential for more extended operation" (EA p1-).

and,

"No site-specific background monitoring data was available for this assessment" (EA p9-4). Therefore, the Proponent has adopted an assessment that it states as "…unsuitable for predicting the actual scale of cumulative air quality impacts of the proposed project" (EA p9-4). Despite this, the Proponent concludes in the EA that "…no adverse impacts on local air quality are expected as a result…" of this project (EA p9-9).

Submission 21194 stated:

3 Response to Submissions

3.2 Air Quality

3.2.2 Community Submissions

"AGL can only give a vague estimation of air quality for people living around the plant. Air quality monitoring needs to be done in and around Dalton. The health of people living in the area should not be compromised by this plant."

Response

AGL acknowledges concern expressed in a number of submissions from the members of the community at Dalton in relation to the issue of potential air quality impacts. While the construction of a power generation facility such as is proposed at Dalton will inevitably generate concerns, AGL confirms that, notwithstanding any specific responses to submissions made on the Dalton project, the construction of the Dalton Power Station will comply with all relevant regulatory requirements and guidelines issued through conditions of consent. AGL is aware that these requirements provide for the safety of the environment and human health, and so is supportive of these.

The Air Quality Impact Assessment (AQIA) (**Appendix C - Volume 2 Part 1 Appendices**) provides an assessment of the air quality impacts associated with the Project. The AQIA has not been performed to specifically quantify baseline or total cumulative concentrations of key pollutants. It has assessed whether the Project is likely to cause exceedances of air quality criteria.

Given the level of community concern expressed and in response to further comments from DP&I on the draft Response to Submissions Report, AGL have AGL has added further detail around commitments on appropriate air quality monitoring during both the construction and operational periods of the project. Revisions to the Statement of Commitments in Section 5 of this report are also presented.

AGL commits to the preparation of an Air Quality Management Plan (AQMP) which would be prepared in consultation with OEH and in consultation with the community should the proposal be approved. This management plan will detail the monitoring strategy to be put in place by AGL and its contractors during the construction and operation stages of the project. AGL commits to performing real time monitoring of dust during construction, with consideration to be given to the determination of appropriate sites for this monitoring, such as the Dalton Public School and/ or other identified sensitive sites.

While the Dalton School may not be an optimal location for air quality monitoring from a technical standpoint, AGL acknowledges that monitoring locations will be determined in consultation with the community and OEH with the air quality monitoring objectives to be set during this consultation. AGL will include this location as one of a number of locations for monitoring if this is confirmed during this process.

In addition, under the AQMP AGL would commit to conducting real time monitoring for NO_2 during plant operations. This would take place during the 1st year of plant operation or over 100 hours of plant operation, whichever period is the longest. Again, AGL is committed to ensuring the monitoring locations for this would address OEH air quality monitoring objectives, and AGL is committed to carrying out monitoring from the Dalton Public School and/ or other sensitive locations if so determined in consultation with the community and OEH.

3 Response to Submissions

3.2 Air Quality

3.2.2 Community Submissions

Submission 20042 raised issues regarding the sourcing of existing air quality data and noted that air quality impacts were estimated to be significant. The submission noted:

The EA states at EA 9.5.2 that, "(i)n order to assess the cumulative impacts of the plant emissions on the local air quality, background concentrations of the criteria pollutants were obtained from the relevant OEH and TMS monitoring stations." These concentrations allow comparison with the areas from which they were derived and have no bearing on the impact on our air quality. The predicted NO2 emissions from the proposed project are 166% of the background levels recorded in Monash ACT, which the Proponent states to be "…considered 'generally representative of the upper bound' of pollution concentrations for the region…" (EA p9-4). It is submitted that even compared to the Monash data, the predicted emissions would represent a significant adverse impact on air quality. It must be implied that site-specific data would demonstrate an even greater significant adverse impact.

Response

As background to the assessment included within the EA, the assessment was refined to a level that is required by OEH, in accordance with OEH approved methodology, to demonstrate full compliance with regulatory air quality criteria. Under the assumption of continuous operation, when the highest background (i.e. the highest monitoring result from over 8,600 hourly records collected at Monash in 2006) is added to the highest estimated impact from the project, the estimated cumulative level is below the threshold at which OEH considers the air to be protective of human health and the environment.

The assessment has conservatively considered all predicted concentrations of oxides of nitrogen (NO_X) emissions to be in the form of nitrogen dioxide (NO_2), which is the form that is more harmful to human health. Upon emission from the power station, emitted NO_X will be approximately 90% nitrogen oxide (NO) and 10% NO_2. Chemical reactions in the atmosphere will change this ratio over time to approximately 80% NO and 20% NO_2. Actual concentrations of NO_2 in the ambient environment will therefore be further below the OEH threshold considered harmful to human health than predicted.

The conservative nature of the assessment methodology needs to be considered when assessing the likelihood of adverse air quality impacts from NO_x emissions. For example, the assessment of such projects in Victoria is based on the 99.9^{th} percentile concentration (as opposed to the maximum as applied in NSW). The 99.9^{th} percentile concentration is equivalent to 999^{th} highest of every 1000 estimated concentrations. For the modelling scenario in which the peak impact was predicted, the 99.9^{th} percentile 1 hour concentration was estimated to be 19 $\mu g/m^3$ (all NO_x as NO_2). This means that for this scenario, assuming that the plant operates for all 1000 hours, 999 of the impacts would be at or below 19 $\mu g/m^3$. Further, assuming a NOx to NO_2 ratio of 0.2 (which has been applied on similar projects in Australia), this would equate to an incremental impact of 3.8 $\mu g/m^3$ NO_2. This figure is well below the 150.7 $\mu g/m^3$ estimated in the AQIA, and shows the importance of recognising the statistic presented.

3 Response to Submissions

3.2 Air Quality

3.2.2 Community Submissions

When considering potential effects on ambient levels, this also means that during the highest background concentration of the year (assumed to be 90 µg/m^3), and assuming constant operation, there is a 999 in 1000 chance that the increase would be less than 19ug/m^3 (all NO_x as NO_2)[1]. Again, assuming a NO2 to NOx ratio of 0.2, there would be a 999 in 1000 chance that the increase is less than 3.8 ug/m^3. Assuming operation of the facility for 10% of the year, and a NOx ratio of 0.2, it is estimated that there is a 9,999 in 10,000 chance that the increase would be less than 3.8 ug/m^3.

Hence it is considered highly unlikely for the Project to result in a 166% increase beyond the levels measured at Monash as suggested in the submission.

As outlined in Section 5 of this report, AGL has committed to the preparation of an AQMP that would detail requirements for air quality monitoring during construction and operational stages of the Project.

AGL has committed to performing real time monitoring of dust during construction, with consideration to be given to the determination of appropriate sites for this monitoring, such as the Dalton Public School and/ or other identified sensitive sites. In addition, the AQMP would commit AGL to carrying out real time monitoring for NO_2 during plant operation. This would take place during the 1st year of plant operation or over 100 hours of plant operation, which ever period is the longest. Again, AGL is committed to ensuring the monitoring locations for this would address OEH air quality monitoring objectives, and AGL would undertake monitoring from the Dalton Public School and/ or other sensitive locations if this were determined to be an outcome of consultation with the community and OEH.

Submission 20042 raised issues regarding additional requirements for assessment for operation during more than 5% of the year. It noted:

"It is essential that the Proponent provide pre-development background monitoring data. The true impact of this proposal cannot be assessed without it. Further, without such data, any subsequent applications to operate beyond the 5% annual threshold sought by this application should require an assessment of the impacts in the context of the pre-development environment."

Response

Operation of the power station will be dependent on demand within the electricity market. Consequently it is not possible to predict exactly for how many hours the power station will operate in any one year. In order to assess the proposed operation at any time of the year, and to consider potential air quality impacts under a wide range of meteorological conditions, the AQIA has assumed that the plant operates, and starts up (under different modelling scenarios) continuously for every hour of the year.

Thus the assessment of air quality as provided in the AQIA does provide an adequate basis for understanding potential impacts beyond the 5% threshold level.

AGL has added a commitment within Section 5 that commits AGL to operating the plant for a maximum period of up to 15% within any twelve month period. Operational limits on the facility are anticipated to be stipulated within any Conditions of Consent issued for the Project, and AGL would be obligated to ensure compliance with these and with conditions of a Site Environment Protection Licence (EPL).

[1] Assuming independence of incremental impacts and background level datasets, which is considered a valid assumption for the level of this analysis.

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Submission 20042 raised a number of points regarding the consideration of sensitive receptors within the air quality assessment. This included:

The Dalton Public School has not been considered as a "sensitive receptor".

Response

The assessment has been carried out using model predictions over a 40km by 40km grid, with receptor points located every 500m. This covers every location within the 40km by 40km grid, including the Dalton Public School.

Given the distance from the emissions source to sensitive receptor locations such as individual houses and Dalton village (and the Dalton Public School), and the distance at which peak impacts were predicted to occur, this level of assessment resolution is considered appropriate. It is noted that compliance with air quality criteria was predicted at all modelled grid receptor points.

Two submissions raised issues regarding the requirement for continuous monitoring of emissions. They were:

Submission 20038: "Emissions must be adequately monitored every day for the life of the proposed power station".

Submission 20022: "NOx emissions should be measured throughout the lifetime of the plant, using a constant Emissions Monitoring System (CEMS)."

Response

AGL proposes to monitor NO_x emissions using Continuous Emissions Monitoring System (CEMS), throughout operation of the Facility during its lifetime. This will ensure that emission controls are operating effectively, and in accordance with the licence conditions.

Two submissions raised issues regarding changes to plant design and emission parameters after the assessment:

Submission 20501 noted that:

Air quality assessment has been done assuming 35m and 46m stacks and is invalid if shorter stacks are used. The air quality assessment has been done assuming 35m and 46m stacks. However in Chapter 4, it is stated the "height of the exhaust stacks could be up to 46m but likely in the order of 28 to 30m". The plume dispersion modelling will have very different outcomes if shorter stacks are to be used and the impacts on air quality will need to be reassessed.

Submission 20022 stated that:

Under Air Quality it (i.e. the Statement of Commitments) *provides for review of assumptions and emission estimates during the design stage and states that should these increase then the modelling would be revised to meet the standards, however no specific plant design criteria are identified to address this.*

3 Response to Submissions

3.2 Air Quality

3.2.2 Community Submissions

Response

The emissions parameters included in the air quality model have been sourced from turbine manufacturer's information, and have been adopted in the environmental assessment as being representative of the proposed generator technologies. This has been done for the purpose of assessing whether the proposal is likely to result in adverse air quality impacts.

As discussed in Section 4.1.1 of the AQIA (***Appendix C - Volume 2 Part 1 Appendices***), the dispersion of exhaust emissions from the turbines are dominated by buoyancy effects, where the combustion heat released means that the air contained within the plume is less dense than the surrounding air, causing the plume to rise. Hence turbine emissions will typically rise in excess of several hundred metres into the atmosphere under a range of meteorological conditions. The effects of a change in stack height in the order of 16m are likely to be minor to negligible.

While not anticipated, any significant differences between the "as assessed" and "as constructed" Project will require the investigation of implications for such changes. This would be undertaken, in accordance with the statement of commitments for the Project, by appropriate specialists in accordance with OEH requirements. This investigation would be carried out to confirm that emissions from the Project achieve the parameters as set out within the Environmental Assessment.

In addition, updated OEH requirements for the Project (**Submission 20897**) have since stipulated that an air quality verification report is to be submitted within 3 months of the completion of the Facility. This report is to confirm that emissions from the constructed project are consistent with the emissions used in the AQIA. AGL would be bound to the conditions of consent issued for the Project.

Submission 20501 suggested that the incorrect peak impact area was stated:

Incorrect peak impact area stated. The report says the peak impact area is 10km south south-west of the plant. However this is not correct. Appendix C states "The peak impact area was predicted to occur 10km south south-west of the Facility, as shown in the Figure 9." But Figure 9 isn't included in the report. In Figure 8 of Appendix C, the iso-contours show a concentration of pollutants west south-west as well as south of the site, near the town of Dalton.

Response

The peak impact area is correct as indicated within the contour plots, as illustrated in the Figures section of the AQIA (***Appendix C - Volume 2 Part 1 Appendices***). The abovementioned line of text is indeed incorrect, in that "*south south-west*" should read "*west south-west*", and "*Figure 9*" should read "*Figure 8*".

Notwithstanding these corrections to the text, the principal results of the study remain. Compliance with regulatory criteria is predicted for all model receptor points.

Submission 20501 noted that the incorrect stability class was stated:

Incorrect stability class identified for the site. The stability classes for the site are reported in Table A-2 of Appendix A to Appendix C. It is stated that "Table A-2 shows moderately stable atmospheric conditions (Stability Class D) is the most prevalent Stability Class of the area". This is incorrect as the table shows moderately stable atmospheric conditions (Stability Class F) to be the most prevalent Stability Class of the area, occurring with a frequency of 39.2%. Stability Class D (neutral) occurs 20.2% of the time. The assumption of a less stable atmosphere will seriously underestimate the air quality impacts in any modelling.

3 Response to Submissions

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Response

AGL confirms that this is an error in the text. "*Moderately stable atmospheric conditions (Stability Class D)"* should read "*Moderately stable atmospheric conditions (Stability Class F)*". Estimated stability class frequency is as shown in Table A-2 of the AQIA.

It should also be noted that the stability classes as shown in Table A-2 were included in the dispersion model as provided, meaning that the dominance of Stability Class F has been assessed within the dispersion modelling.

Submission 20501 raised a number of points specifically regarding potential NOx emissions.

Submission 20501 stated:

The main emissions from the operation of the power station are known carcinogens and cause smog. The main emissions assessed in the EA are nitrogen dioxide, carbon monoxide, sulphur dioxide, particulate matter and formaldehyde. Formaldehyde is a known human carcinogen while nitrogen oxides (NOx - NO and NO_2) and sulphur dioxide react in the atmosphere to form smog and acid rain.

What are the WHO and Australian NO_2 emission standards? Long-term exposure to NO_2 at concentrations above 40– 100 µg/m^3 causes adverse health effects. The 2003 World Health Organisation (WHO) guideline values for NO2 are a 1-hour level of 200 µg/m^3 and an annual average of 40 µg/m^3 (http://www.euro.who.int/__data/assets/pdf_file/0005/112199/E79097.pdf). The Australian National Environment Protection (Ambient Air Quality) Measure 2003 criteria for NO_2 is higher than the WHO criteria with a 1-hour level of 246 µg/m^3 and an annual average of 62 µg/m^3.

The standards for NO_2 emission limits should be reduced to take into account summer air temperatures. The submission by Canberrans for Power Station Relocation (CPR) Inc to the Tuggeranong 210MW gas turbine power station states that "The Australian standard for exposure to Nitrogen Dioxide for a maximum of 1-hour per annum was introduced in 1998 and is set in a different unit of measurement –parts per million (ppm). When this limit (0.12ppm) is converted to micrograms per meter cubed at 25 degrees centigrade, this converts to a limit of 225µg/m^3, not 246µg/m^3.". They go on to say if you take into account maximum summer time temperatures of 40 degrees centigrade, the National air quality standard is reduced to 214µg/m^3. They also say the WHO standard would be lowered when taking into account summer temperatures. http://canberrapowerstation.info/ftp/CPR-ACTPLA-Submission-27-5-08%20Final.pdf

The Dalton power station NO_2 emissions exceed the WHO standards and the temperature adjusted Australian standards. The proposed Dalton plant has a maximum cumulative 1 hour level of 240.7 µg/m^3 NO_2, and an annual level of 37.4 µg/m^3. This 1 hour level significantly breaches the temperature-adjusted Australian standard as well as the level the WHO considers safe for human health. The annual level is only just below the WHO standard to prevent adverse health effects.

Response

The short-term mass-based nitrogen dioxide criterion in the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (Approved Methods) is provided as 246 µg/m^3, without a temperature reference. Whilst it is acknowledged that the co-referenced volumetric criterion of 12 pphm implies that the figure would be referenced to 0°C, it is the mass-based criterion that is applied in NSW for air quality impact assessments, as model predictions are provided in mass based

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units[2]. It is presumed that OEH endorses the mass-based criterion (without a temperature correction) on the basis that it is applied in a conservative manner, such as in the AQIA for this Project.

As discussed in section 5.3.1 of the AQIA, the assessment has been refined to a level that is required to demonstrate compliance with air quality criteria. Should it have been required to demonstrate compliance with a (lower) temperature corrected criterion, additional refinement would have been undertaken.

The Approved Methods advocates the use of progressive refinement of assessment methods ranging from the simplistic to the more detailed:

- Method 1 – 100% conversion of NO to NO_2:
  - Level 1 – Maximum Prediction with maximum background concentrations;
  - Level 2 – Contemporaneous prediction and background concentrations 1 hour average.
- Method 2 – NO to NO_2 conversion limited by ambient ozone concentration (OLM):
  - Level 1 – Maximum Prediction with maximum background concentrations;
  - Level 2 – Contemporaneous prediction and background concentrations 1 hour average.
- Method 3 – NO to NO^2 conversion using an empirical relationship:
  - Level 1 – Maximum Prediction with maximum background concentrations;
  - Level 2 – Contemporaneous prediction and background concentrations 1 hour average.

The assessment has applied a simplified, standard approach using a Method 1, Level 1 approach. Had a Method 2 or 3 with Level 2 assessment been used, it is considered that estimates of peak cumulative concentrations would still have been within the OEH goal, and a temperature adjusted WHO goal.

Submission 20501 stated:

Also the manufacturer says for the turbines GE 9FA, NOx emissions exceed 25 ppm bv.3 AGL says all manufacturers guarantee emissions of 25 ppm when operating at over 50% load (AGL and URS 2011, p3-62).

Response

Manufacturing data has guaranteed that emissions will be lower than 25ppmvd. Furthermore, this will be applied to the Project as a licence limit, and a Continuous Emissions Monitoring System (CEMs) will be used to ensure that emissions are compliant with the licence condition when the turbines are operational.

Submission 20501 commented:

Residents neighbouring existing gas fired power stations in NSW haven't raised air quality as a problem, but the proposed Dalton power station is unprecedented in its size and the region is subject to a very high frequency of stable meteorological conditions.

[2] URS has not identified any Air Quality Impact Assessment conducted within NSW that has applied temperature corrections to the criteria in the Approved Methods, nor is there capability within Ausplume, TAPM or Calpuff models to apply such temperature corrections to predicted results.
[3] http://www.china-power-contractor.cn/GE-9FA-255mw-Gas-Turbine-Generator.html

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Response

Whilst open-cycle gas turbine facilities of the scale proposed (considering both stages of the Project, up to 1500MW) are not understood to have been previously proposed in NSW, the scale of energy generation project and emission impacts are certainly not unprecedented in NSW. The AQIA presented within the EA offers a comparison of emissions from this proposal and existing coal-fired power generation facilities within NSW.

Submission 20501 raised issues that residents have not been notified of air quality impacts associated with the Project. It stated:

The community does not want Dalton to be an air pollution zone. Have residents in the peak impact area been told about the exposure to emissions from the power station? The peak impact area is predicted to be 10km from the plant. The EA report has been written to suggest this is a good thing – that the community of Dalton won't be exposed to the worst of the emissions. It may be a relief for the people of Dalton but it will be of serious concern to the people south south-west of the site. Has AGL as part of their consultation process contacted affected land owners in this area to tell them their exposure to NO2 emissions will exceed WHO safety standards?

Response

The key conclusion of the air quality assessment is that all areas within the modelling domain were assessed to be compliant with air quality criteria, which OEH endorses as being protective of potential adverse air quality impacts.

Submission 20002 raised the issue of carcinogens from the air emissions:

Submission 20002 indicates that there is no reference to the carcinogens toluene and benzene in the Environmental Assessment that an AGL representative confirmed would be present in the exhaust plume.

Response

Section 1.3.5 of the AQIA (***Appendix C - Volume 2 Part 1 Appendices***) lists nine hazardous air pollutants that include toluene and benzene. Of these nine pollutants, formaldehyde has been selected for reporting as the key pollutant, given that the US EPA emission factors for gas-fired gas turbines, when considered in conjunction with OEH criteria, indicate that compliance with formaldehyde criteria subsequently demonstrates compliance with the relevant criteria for other hazardous air pollutants. Formaldehyde concentrations were predicted to be below the OEH assessment criterion.

Submission 20501 suggests that there is insufficient account of the adverse meteorological conditions (such as temperature inversions) of the region in the (noise and) air quality assessment.

Response

F class conditions, which are indicative of ground-based inversions, were predicted to occur for approximately 40% of the time. Noting that the presence of either winds >2 m/s, sunlight or cloud cover will prevent the formation of an F class condition, the predictions are approaching the theoretical upper limit of potential formation. In addition, the upper air meteorology has included estimations of temperature profiles, which include upper air (capping) inversions.

3 Response to Submissions

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Submission 20022 raised concerns about the proposed environmental safeguards and commitments included for the Dalton Project:

Submission 20022 refers to the AGL NSW Leafs Gully gas Turbine Power Station, as well as Uranquinty Cross Road Power Station, and their corresponding conditions of approval. The submission comments that "..stringent conditions have been set on the approval … including meteorological and air quality monitoring, air quality performance verification, noise and water quality monitoring, and auditing."

Submission 20022 states that the proposed environmental safeguards and commitments around these [issues as presented in the EA for the Dalton Power Project] are quite minimal in a number of areas.

Response

AGL proposes to undertake a range of monitoring, verification, benchmarking and auditing activities in accordance with regulatory requirements for the Project. AGL has considered a wide range of environmental controls for the Project which have been detailed within the Environmental Assessment. Further, the Air Quality Impact Assessment (AQIA) (**Appendix C - Volume 2 Part 1 Appendices**) provides an assessment of the air quality impacts associated with the Project. The AQIA has not been performed to specifically quantify baseline or total cumulative concentrations of key pollutants. It has assessed whether the Project is likely to cause exceedances of air quality criteria.

Given the level of community concern expressed and in response to further comments from DP&I on the draft Response to Submissions Report, AGL have AGL has added further detail around commitments on appropriate air quality monitoring during both the construction and operational periods of the project. Revisions to the Statement of Commitments in Section 5 of this report are also presented.

AGL commits to the preparation of an Air Quality Management Plan (AQMP) which would be prepared in consultation with OEH and in consultation with the community should the proposal be approved. This management plan will detail the monitoring strategy to be put in place by AGL and its contractors during the construction and operation stages of the project. AGL commits to performing real time monitoring of dust during construction, with consideration to be given to the determination of appropriate sites for this monitoring, such as the Dalton Public School and/ or other identified sensitive sites.

While the Dalton School may not be an optimal location for air quality monitoring from a technical standpoint, AGL acknowledges that monitoring locations will be determined in consultation with the community and OE,H with the air quality monitoring objectives to be set during this consultation. AGL will include this location as one of a number of locations for monitoring if this is confirmed during this process.

In addition, under the AQMP AGL would commit to conducting real time monitoring for NO_2 during plant operations. This would take place during the 1st year of plant operation or over 100 hours of plant operation, whichever period is the longest. Again, AGL is committed to ensuring the monitoring locations for this would address OEH air quality monitoring objectives, and AGL is committed to carrying out monitoring from the Dalton Public School and/ or other sensitive locations if so determined in consultation with the community and OEH.

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Submission 20042 broached the issue of water usage and impacts on air quality:

Submission 20042:

It is not clear from the EA as to the assumptions made with respect to the application of water in the generation process when assessing the air-quality impacts. This water use is described in the EA as "discretionary" and would affect "…merely the efficiency of that generation" (EA p14-8). Although it is mentioned that "(p)rocess water also has the effect of marginally reducing the carbon dioxide (CO2) emissions per unit power generated (~2%)" (EA p 14-8), no further consideration is given to this matter. On a quick Google search (quick because of the limited time available for critical examination of these issues), I found the following US EPA document, which states, in relation to gas-fired turbines:

"Water or steam injection is a technology that has been demonstrated to effectively suppress NOX emissions from gas turbines. The effect of steam and water injection is to increase the thermal mass by dilution and thereby reduce peak temperatures in the flame zone. With water injection, there is an additional benefit of absorbing the latent heat of vaporization from the flame zone. Water or steam is typically injected at a water-to-fuel weight ratio of less than one.

Depending on the initial NOx levels, such rates of injection may reduce NOx by 60 percent or higher. Water or steam injection is usually accompanied by an efficiency penalty (typically 2 to 3 percent) but an increase in power output (typically 5 to 6 percent). The increased power output results from the increased mass flow required to maintain turbine inlet temperature at manufacturer's specifications.

Both CO and VOC emissions are increased by water injection, with the level of CO and VOC increases dependent on the amount of water injection."
(www.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf, 3.1.4.1 Accessed on 10/09/2011)

Response

Water is used in gas turbines for a variety of purposes. Measures such as "spray intercooling", "high fogging", "evaporative cooling", are used prior to the combustion stage to cool the gas stream, such that the efficiency of compression is improved, and the mass flow rate increased. This use is discretionary, and would primarily affect available output, and to a lesser extent, the efficiency of the turbine.

"Water injection", as described in the US EPA AP42 reference, refers to the injection of water into the combustion zone. This has the effect of reducing peak flame temperatures, and reducing NOx formation. Water injection is not regarded as best available control technology for gas fired turbines. AGL propose to use "Dry Low NOx" (DLN) technology to control NOx formation which provides lower emission levels than water injection. This is a modern technology relative to water injection, which reduces the water requirements of the turbine. DLN will be operational throughout the time that turbines are above (approximately) 50% load.

For a gas turbine with no NO_x emission controls, NO_X levels are typically in the vicinity of 200 parts per million (ppm). The AQIA has assumed in-stack NO_x levels of 25 ppm, which are consistent with the capabilities of the proposed equipment and the proposed licence limit. In practice, AGL will ensure that NO_X levels comply with the licence limit by using a Constant Emission Monitoring System (CEMS). This system would measure the amount of NO_x in the exhaust continuously throughout the operation of each turbine.

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3.2 Air Quality

3.2.2 Community Submissions

Submissions 20042 stated that downstream emissions from trucking had not been included in the greenhouse gas assessment:

Submission 20042: In addition to the issues addressed by the Proponent, the Director General also requires that the EA address "…any significant up or downstream emissions" (EA Table 1-1 'Greenhouse Gases'). Given the high volumes of road traffic outlined and the possibility of large numbers of water trucks being required, it is submitted that the relevant emissions would be significant. This should be addressed, quantified and made available.

Response

The challenges in the predictability in the operation of the Project has introduced large variance in the estimates of potential total quantities of greenhouse gases emitted. In Section 3.1 of the greenhouse gas assessment (***Appendix E, Volume 2 Appendices***), a materiality threshold of 5% is nominated, where emissions that are estimated to contribute to less than a total of 5% of project emissions have been excluded from the inventory. Trucking emissions associated with construction were considered immaterial, and were excluded from the assessment. As an example of this, based on a full fuel cycle (Scope 1 + Scope 3) emissions intensity of 0.8 tCO_2-e/MWh, the operation of the 1500 MW facility for a single hour would result in emissions of 1200 tCO_2-e. Based on a fuel consumption of 54 L/100km, a full (diesel) fuel cycle emission factor of 69.6 kg/GJ, and an energy content of 38.6 GJ/kL of diesel fuel, this would be equivalent to the emissions from 1,700 articulated trucks completing a 500 km return trip from Botany freight terminal in Sydney to the Site.

Section 4.2.4 of the greenhouse gas assessment for the Project gives consideration to emissions associated with trucking water to the Site. It was estimated that such emissions would contribute less than 0.6 kg/MWh to the operation of the Project, which equates to approximately 0.08% of operational emissions. AGL notes that this is small compared to such factors as the variation in generator efficiency with varying meteorological conditions, and is also below the materiality threshold of the assessment.

Submission 20022 stated:

It is noted that plant restoration and retrofit improvements are identified under Greenhouse Gas Emission however retrofit options are only considered if cost effective. AGL should commit to maintenance of all plant to design condition for the lifetime of the power station and implementation of all available state of technology retrofitting options.

Response

AGL has committed to selecting plant that is capable of achieving a thermal efficiency that is consistent with best available technology for peaking power generation. During operation, AGL does not propose to pursue emission reductions at any cost. Rather, in agreement with the intent of the (anticipated) emissions trading scheme, AGL proposes to pursue emission reduction targets through cost effective emission reductions.

3 Response to Submissions

3.2 Air Quality

3.2.2 Community Submissions

Submission 20501 stated:

Technologies are available to reduce NOx emissions but rejected as too costly. A number of possible options for controlling NOx emissions are examined by AGL with the most effective being Selective Catalytic Reduction (SCR) (AGL and URS, 2011, p3-61). AGL state that the SCR process has the problem of causing exhaust emissions of ammonia and potential for accidental release of ammonia at a site adjacent to the Lachlan River. (It is hoped AGL have the competence to prevent the accidental release of any and all harmful chemicals stored on site). They also state that the process could cost up to $50,000 per tonne of NOx removed, whereas they are able to pay the NSW Government a load based licensing fee of $220 per tonne of NOx emitted.

An independent assessment needs to be made concerning the costs and benefits of technology options for controlling NOx emissions. Community residents are concerned that technologies that are available aren't being implemented to control NOx emissions, especially with emissions exceeding WHO guidelines.

Response

AGL has considered a wide range of emissions control technologies for the Project and these have been detailed within the Environmental Assessment. The results of the assessment are consistent with other reviewed gas fired power stations approved in Australia in recent years.

Submission 20038 and **20004** request that monitoring be carried out at Dalton. They state:

Submission 20038:

Plans must be in place for guaranteed action to reduce emission levels if the emission levels approach levels unacceptable for human health in the future.

Submission 20004:

"Due to the high risk of hazardous chemical fallout from the exhaust plume from the Dalton Energy Project we request that the contaminant levels be monitored. This would be performed by an independent agency and financed by AGL. The monitoring agency would be rotated periodically and the programme would include testing levels of contamination in domestic rain water tanks in Dalton and Gunning. This would be performed before the Dalton Power Project was commenced to establish a base line and then every 6 months thereafter. The results, in plain English, would be published in the public domain. In the event of any contamination being found, the station will cease operating until the problem rectified."

Submission 20042 noted that monitoring proposed in the EA will not be valid without baseline monitoring:

"The "monitoring" proposed by the EA will be meaningless without appropriate scientifically valid controls. To suggest otherwise is poor science."

Response

The intent of ambient monitoring would be to assess whether ambient pollutant levels comply with concentrations considered by OEH to be protective of human health, and manage emissions in accordance with this objective irrespective of whether baseline data has been collected. Baseline monitoring is not required to determine the compliance with air quality criterion and emissions limits associated with the Project.

3 Response to Submissions

3.2 Air Quality

3.2.2 Community Submissions

Notwithstanding the above, baseline monitoring would proceed monitoring for dust during construction prior to activities, and NO_2 prior to the operation of the plant as part of monitoring AGL would commit to as part of the Air Quality Management Plan.

AGL has committed to monitoring air emissions in compliance with emissions limits set for the Project by OEH, and in accordance with the AQMP to be developed in consultation with the community and OEH to meet air quality objectives for the project.

A number of submissions raised concerns about the impacts associated with the deposition of hazardous air pollutants on vegetation and drinking water:

Submission 20022 commented:

"Dalton and surrounds does not have any air pollution at present however the power station will contribute a massive amount of pollutants to the air, including carcinogens such as formaldehyde and benzene. The EA has not stated where these pollutants will deposit and impact. AGL should state where the pollutants will deposit, and what concentrations are expected in air, soils and water. The cumulative effects of 40 years exposure to these pollutants should also be quantified.."

Submission 20050 stated that the students grow vegetables as part of the curriculum and therefore respondent expressed serious concerns about the impacts of pollution on the health of the students and staff. The respondent stated the Applicant should be required to undertake the relevant investigations into the existing air quality levels and to commit to the monitoring of those levels for the life of the project.

Submission 20002 noted:

"There is concern over the combustion by-product in the exhaust fume will fall out and accumulate in rain water tanks and contaminate crops. This has the potential to cause a significant health risk.

Submission 20042 stated:

"*The students grow vegetables for their own consumption and rely on harvested rainwater for drinking and other requirements. Insufficient data has been provided regarding the cumulative effect of exposure to the relevant pollutants. Of particular concern is exposure to some of the hazardous air pollutants (HAPs) identified in the EA, such as polyaromatic hydrocarbons, which may be highly persistent and highly toxic, and have significant detrimental health consequences. "*

Response

Given the clean burning nature of the fuel, the predicted buoyant plume properties, and the low particulate matter levels (onto which volatile compounds could adsorb and subsequently deposit), the potential for concentrated deposition of the hazardous air pollutant emissions is considered to be low. Substances such as benzene and formaldehyde are relatively volatile, and hence are considered unlikely to accumulate in significant concentrations.

A Human Health Risk Assessment (HHRA) was performed by Katestone (2003)[4] for an open-cycle gas fired power station of 660 MW capacity in rural NSW. The HHRA investigated likely health impacts of the emissions through inhalation, deposition on the soil, ingestion of produce and deposition on roofs used for drinking water. The assessment used several conservative assumptions, including:

- The assessment of Chronic risks over a period of 70 years of continuous power station operation;
- The assessment of the maximum concentration on the grid rather than specific sensitive receptors;
- That all contaminants are deposited as particles with an aerodynamic diameter of 20 µm. In contrast, US EPA emission data indicates that particulate emissions from gas turbines typically have aerodynamic diameter of less than 1 µm, with approximately 90% less than 0.1 µm. Hence the model assumption implies that particulate matter will drop out of the air more quickly than in reality, leading to a greater concentration of deposition impacts nearer to the point of emission. HAP emissions are also quite volatile, hence likely to be present primarily in gaseous form, and disperse prior to depositing;
- Home grown garden produce constitutes 100% of the daily intake.

The assessment concluded that risks were low and acceptable when compared against health risk assessment criteria adopted by NSW EPA.

3.3 Noise and Vibration

3.3.1 Agency Submissions

The **Upper Lachlan Shire Council** commented on potential noise impacts within **Submission 19969**:

Concerns are raised regarding the potential noise levels during the day and at night if the full potential of the project is realized, eg. 24/7 for an extended period of time and notes the EA has not explained the potential impacts of this situation.

Response

The noise modelling was based on likely maximum operating conditions. Additionally, for the purpose of modelling, each operational noise source was assumed to operate continuously and simultaneously i.e. 24/7 operation was assumed. The adopted operational noise limit was the night-time limit (lowest limit of day, evening and night-time limits), which has also been applied to day and evening periods for the purpose of the noise impact assessment.

The **OEH submission (20897)** noted it could issue an Environment Protection Licence in relation to the proposal if its recommended conditions are incorporated into any project approval.

In summary, the OEH made the following points on the proposal and the EA relating to noise:

- Tonality and low frequency noise are likely and, accordingly, adjustment should be made in noise limits for the project;
- Consideration be given to a C-weighted (low frequency) noise limit;

[4] Katestone (2003), *Report from Katestone Environmental to ELP - Health Risk Assessment for a Proposed Power Station at Wagga Wagga*, Katestone Environmental P/L, December 2003. Sourced from: http://www.originenergy.com.au/files/Appendix6EIS.pdf, Accessed: 5/10/2011

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3.3 Noise and Vibration

3.3.1 Agency Submissions

- The use of TAPM data needs to be demonstrated as not under-predicting temperature inversions and light winds; and
- Site based meteorological monitoring is recommended.

Further to OEH's submission, OEH reviewed AGL's Draft Response to Submissions Report and provided further comments (*OEH - 24.11.2011* – Refer **Appendix B-2**). AGL's responses are summarised below.

Tonality

Following the provision of further manufacturer data by OEH, AGL notes OEH's concurrence that the 1/3 octave analysis provided for the 7FA turbine does not indicate tonality. Further, AGL is confident, based on confirmation from turbine manufacturer GE, that tonality would not occur with the adoption of the 9FA type.

Notwithstanding this, AGL accepts OEH's position with regard to the potential for tonal emissions from the 9FA type. It is noted that OEH takes the view that the 5 dB penalty for tonality should be imposed as a precautionary measure and it is predicted that applying the penalty would result in the following exceedances of the L_{Aeq} 35 dB(A):

- 2 dB Exceedance at Receptor B;
- 3 dB Exceedance at Receptor C; and
- 3 dB Exceedance at Receptor D.

AGL notes that an appropriate mitigation measure against these potential exceedances is in place. This is that the tenderer would be contractually bound by AGL to ensure that the L_{Aeq} 35 dB(A) limit is achieved, with consideration to the objective tonality assessment method described in Chapter 4 of the NSW INP. In addition, remedial corrective measures would be enforced in the unlikely event of any exceedance of the limit occurring due to the penalty for tonality being imposed.

As previously noted to the OEH, the preferred turbine manufacturer GE has guaranteed that the turbines would not exhibit any perceptible tonality, with consideration to the objective assessment method described in Chapter 4 of the NSW INP.

Low Frequency Noise

AGL provided 1/3 octave data for the 7FA turbine to demonstrate the absence of tonality from the type of equipment proposed. Given the commercial sensitivity of the 9FA data and contractual issues with the manufacturer, AGL/URS provided the analysis of this data and a C-weighted level calculated based on receiver locations for the low frequency noise discussion. AGL notes that the analysis was based on some conservative assumptions of the lowest octave bandwidth. The corresponding dB(C) level predictions as supplied to OEH by AGL ranged between 60 – 61dB at receivers B, C and D.

OEH reports to have calculated overall dBA and dBC levels from the measured 1/3 octave data provided to OEH for the **7FA turbine type** for the purposes of the tonality assessment. OEH noted that 1/3 octave data gives a better indication for potential low frequency noise with data in frequencies from at least 20Hz to 250Hz. According to the OEH results based on 7FA 1/3 octave data (not the 9FA as proposed), overall dB(C) levels at receivers B, C and D were calculated within the 63-64 dB range.

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3.3 Noise and Vibration

3.3.1 Agency Submissions

OEH proposed the following dB(C) noise limits for the protection against low frequency noise impacts, in addition to the INP process in the letter from Julian Thompson, 24.11.12 (**Appendix B-2**)

- 70 dB(C) during daytime (0700-1800);
- 65 dB(C) during evening (1800-2200); and
- 65 dB(C) during night-time (2200-0700).

AGL reviewed these limits, and compliance with them was predicted based on the URS analysis of the 9FA data which predicted 61 dB(C) at one receptor only.

Following ongoing discussions between DP&I and Noise Policy Branch of the EPA in relation to the regulation of low frequency noise, DP&I has adjusted dBC noise limits for nearest residences. These limits would be 65 dB(C) during the day and 60 dB(C) during the evening and night. The full correspondence is presented in **Appendix B-3**.

AGL notes that the assessment for low frequency noise impacts at nearest receptor locations based on the correct 9FA turbine type predicted an exceedence of 1 dBC above 60 dBC at one residential location.

AGL is willing to accept the revised dBC criteria. Compliance with the revised 65/60 daytime/ night time dB(C) criteria is expected for all receptor locations for Stage 1 of the project. AGL notes that the remaining turbines are not expected to be installed for at least a decade after Stage 1 commissioning, and also notes the high degree of conservatism inherent within the URS assessment of low frequency impacts.

In accepting the proposed dBC criteria to apply to the Project, AGL notes OEH's recommendation to DP&I (OEH 24.11.11) that "any Project approval should trigger a "negotiated agreement" or "acquisition" clause should noise levels exceed these limits." The letter from Chris Wilson DP&I addressed to Mr Julian Thompson of the EPA (dated 2.3.12) states that "mitigation on request should be offered to all affected residents" if this limit is exceeded. Mitigation should be "agreed with the affected residents and provided within 3 months of request".

Although not anticipated, AGL would commit to a negotiated agreement inclusive of mitigation measures at the request of residents should this situation actually eventuate. In practice, the potential for a non compliance is limited because;

- Experience of the actual performance of Stage 1 will be available before any second stage would be committed; and
- The expected extent of night time running is very limited allowing scope for reactive management to limit impacts during adverse acoustic conditions.

Atmospheric Stability

OEH has accepted the atmospheric stability class analysis provided and accordingly removed the inclusion of the G-Class stability condition that the noise limits would apply under. AGL considers this appropriate.

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3.3 Noise and Vibration

3.3.1 Agency Submissions

Noise Compliance Monitoring

Due to the impracticality of powering the peaking facility up and down and running for extended periods for the purposes of noise compliance testing, AGL proposed that compliance with the noise conditions be confirmed during the commissioning stage only. Extensive noise measurements were proposed at the identified sensitive receptor sites and within the near-field of the operating noise sources.

The OEH has indicated acceptance of this approach and is satisfied that intensive noise compliance monitoring during commissioning will provide a satisfactory indication of noise levels from the project.

A revised monitoring condition has been recommended by the OEH as follows:

> *M8.1 To assess compliance with Condition L6.1, continuous logging of A-weighted and C-weighted noise levels must be undertaken in accordance with Condition L6.5 at each one of the locations listed on in Condition L6.1 during the entire commissioning period. Results must be reported to the EPA within one month of the conclusion of the commissioning phase.*

AGL anticipates that it unlikely that all receptors identified would be receptive to long term monitoring on their properties. Additionally AGL is of the view that a fewer number of long term monitoring locations at representative setback distance would be sufficient for the purpose of determining compliance with the noise limits at the sensitive receptor locations. However, the Noise Management Plan for the Project would be developed in consultation with OEH and the community, and AGL remains committed to implementing a monitoring program to achieve appropriate noise mitigation objectives.

AGL has proposed that four representative far-field monitoring locations be established, in agreement with OEH, for the purpose of long term noise compliance monitoring.

The duration of the commissioning stage is not yet known and would involve extended periods where the turbines would not operate. In order to measure noise emissions from the turbines in operation it is proposed that the long-term monitoring is undertaken at the four proposed representative locations capturing no less than 100 hours of data during the running of the station at full load during the day (0700-1800), evening (1800-2200) and night-time (2200-0700) periods.

The results of this monitoring would be provided to OEH along with the corresponding meteorological data, including wind speed, wind direction and atmospheric stability as measured on-site. It should be noted that it is possible that no running hours may be recorded during the night time period due to the low electricity prices that usually prevail during this period.

Additionally, attended noise monitoring would be conducted at receptor sites identified in the EA noise assessment to supplement the long-term monitoring, at the request of the individual landowners.

Additional matters raised by the DP&I

The DP&I has identified the following additional matters that are required to be addressed within the submissions report for the project:

"Additional receptors are required to be considered:

- *operation -mainly those in proximity to receptors already confirmed as exceeding 35dB (receptors B,C,D) i.e R21 and R12-17; and*

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- *construction - those in proximity to the valve station and pipeline i.e R12-R14 & R17." - DP&I (02/12/2011) Appendix B-2.*

Response

Additional Receptors to be Considered - Operational Noise

The noise assessment considered the closest receptors surrounding the proposed turbine locations. These are illustrated as locations A to J in the attached site plan. Also illustrated are the receptors considered by the visual assessment prepared by Green Bean Design.

The pink contour shown on the site plan indicates the L_{Aeq} 35 dB(A) noise limit without any adjustment for the occurrence of tonality; whereas the blue contour indicates the L_{Aeq} 35 dB(A) noise limit assuming tonal emissions from the site, as determined at the receptors.

The figure identifies that compliance with the L_{Aeq} 35 dB(A) noise limit is expected at receptors R21 and R12-17, even with consideration to the penalty that would be imposed for the occurrence of tonality.

Additional Receptors to be Considered - Construction Noise

The noise impact assessment reported Receptor D to be the closest receptor to the proposed pipeline alignment. This receptor was noted to be potentially the most affected by pipeline construction noise, with predicted construction noise levels of up to LAeq 43-52 dB(A). Receptor R12 is setback from the proposed pipeline alignment by a comparable distance (approximately 400 m), whilst receptors R13, R14 and R17 are setback further from the proposed pipeline alignment.

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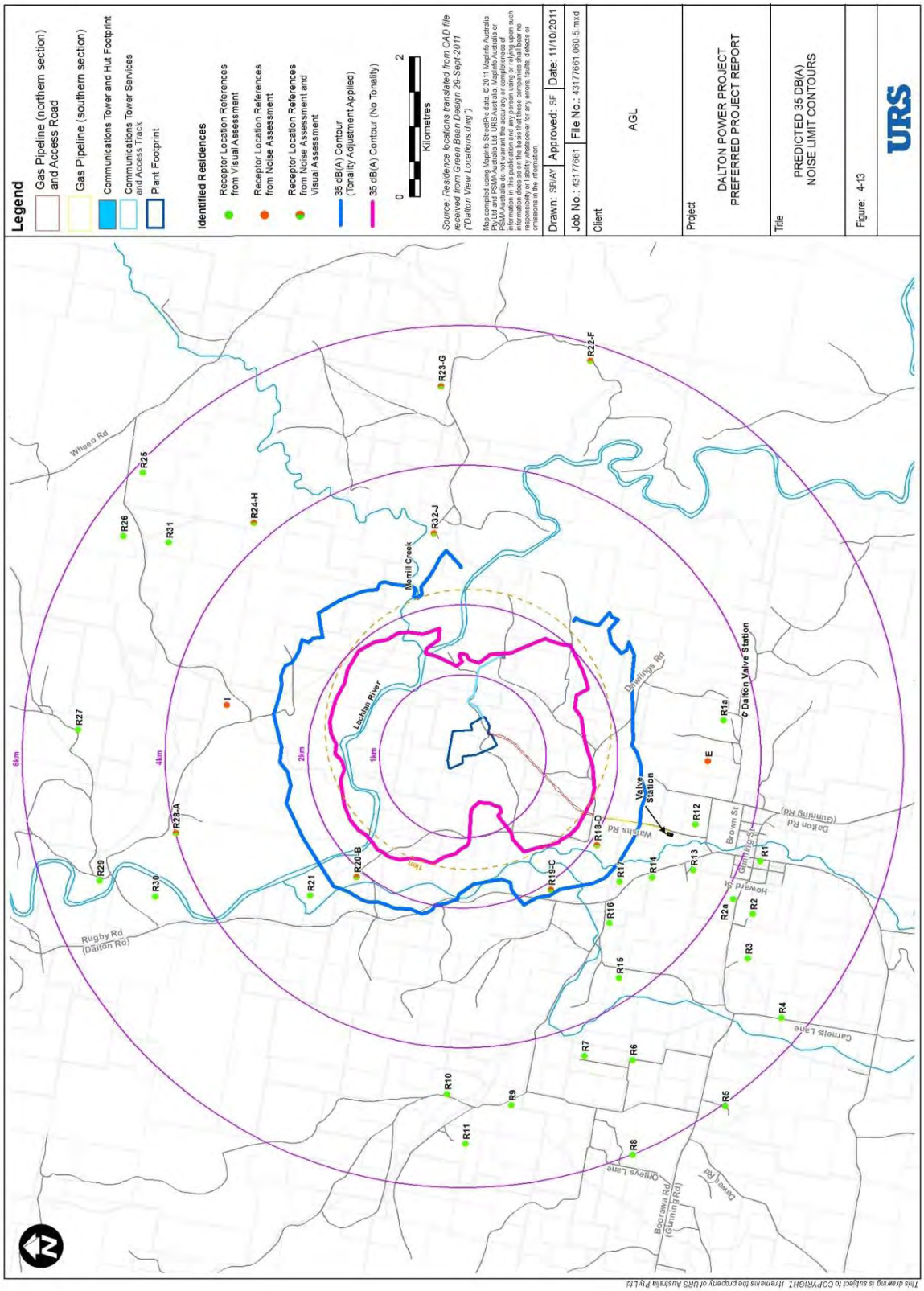
3.3.1 Agency Submissions

Figure 3-1 Predicted 35dB(A) contours across Project Area and Surrounds



3 Response to Submissions

3.3 Noise and Vibration

3.3.1 Agency Submissions

DP&I sought clarification upon review of the Draft Response to Submissions Report as to whether the valve station will emit noise. - DP&I (02/12/2011) Appendix B-2.

Response

The construction of the valve station would not be expected to generate noise levels any higher than the pipeline/alignment development. **Table 3-1** sets out the predicted pipeline construction noise levels at the identified receptor locations.

Table 3-1 Predicted Construction Noise Levels at R12-R14 and R17

Receptor	Approximate Distance from Pipeline Alignment	Predicted Noise Level, $L_{Aeq,15min}$ dB(A)	Daytime Construction Noise Criterion $L_{Aeq,15min}$ dB(A)		Exceedance	
			Noise Affected	Highly Noise Affected	Noise Affected	Highly Noise Affected
D	400	43-52	40	75	Up to 12	No
R12	380	43-52			Up to 12	No
R13	630	39-48			Up to 8	No
R14	680	38-47			Up to 7	No
R17	860	36-45			Up to 5	No

Given the extent of the exceedances and the relatively short construction timeframe for the pipeline, physical construction noise mitigation measures are not considered necessary. However, adoption of the noise management strategies set out in Section 6.1 (***Appendix G, Volume 2, Part 1 Appendices to the EA***) would be implemented to minimise any noise impacts on the identified receptors during the proposed pipeline and valve station construction works. These would be incorporated into the construction phase Environmental Management Plan (EMP).

Valve Station Noise Emissions

AGL can confirm that the valve station will be silent in operation and would therefore have no influence of the findings of the operational noise assessment undertaken for the project.

In comments on the draft Response to Submissions Response, the DP&I expressed that further information should be provided to the Walsh family in response to their Submission and concerns about noise. The DP&I submission noted:

"The response to the Walsh family should indicate that they are receptor B, and detail the results of the noise assessment, level of exceedance and impacts for their property." - DP&I (02/12/2011) Appendix B-2.

Response

AGL has consulted with the Walsh's and has provided the point source calculation for their property as well as Louise Walsh's property.

3 Response to Submissions

3.3 Noise and Vibration

3.3.1 Agency Submissions

AGL is committed to ongoing consultation on issues of noise with the Walsh family and other concerned community members. AGL's commitment towards this was demonstrated by obtaining a Bose Noise simulator and visiting the Walshs at their home to demonstrate potential noise impacts prior to the exhibition period.

Final Agency Responses and Conclusions

Night-time sleep disturbance criterion

Correspondence received from the EPA, Julian Thompson, (Letter dated 22 February 2012) states that AGL has accepted the EPA's updated recommended noise limits and monitoring set out in our letter of 24 November 2011 with the exception of the night-time sleep disturbance criterion (LAmax (1 min) 45 dB(A)). This limit was derived from the noise impact assessment for the proposal. Compliance is proposed to be determined within 1 metre of the dwelling facade. AGL confirms its acceptance of this limit.

The EPA recommends the retention of the compliance point (and noise limit) for this recommended condition (L6.1 and L6.2(b) (ii) as drafted in our correspondence of 24 November 2011.

AGL Response

AGL accepts the retention of the compliance point (and noise limit) for this recommended condition.

Assessment of low frequency noise

The letter from Chris Wilson DP&I addressed to Mr Julian Thompson of the EPA (dated 2.3.12) (refer to **Appendix B-3**) outlines discussions held between DP&I and EPA Noise Policy Branch regarding the assessment of low frequency noise for the proposed Dalton Power Project.

As outlined in this letter:

"*These discussions concluded that the low frequency noise from gas fired power stations should be regulated on a case-by-case basis until an Application Note to the Industrial Noise Policy (INP) is finalised by the EPA. Further it was considered that the C-A weighting plus 5dB(A) penalty approach as defined in the INP, is not a good measure of annoyance, and could result in the application of measures that would not improve environmental outcomes. In this regard, the Department proposes that noise levels at the nearest residences to the Dalton power station should not exceed:*

- *35 dB(A) during the day, evening or night; or*
- *65 dB(C) during the day or 60 dB(C) during the evening and night.*

Further, should either of these limits be exceeded, then mitigation on request should be offered to all affected residents, which should be agreed with the affected residents and provided within 3 months of request."

In response to this letter, Julian Thompson (EPA, letter dated 7.3.12, **Appendix B-3**) confirms the outcomes of discussions:

"*The EPA is satisfied that the approach proposed by the Department of Planning and Infrastructure will protect the amenity of residences potentially impacted by noise from the proposed project. The EPA will ensure if the project is approved, that the proposed noise limits set out in your letter are*

incorporated into any Environment Protection Licence issued for the project. It should be noted that depending on the character of noise emissions from the turbines, a 5dB penalty may be added to the measured noise levels at affected residences if the noise is tonal or impulsive in character."

Response

Compliance with the revised 65 and 60 dB(C) criteria is expected for all receptor locations for Stage 1 of the project. AGL notes that the remaining turbines are not expected to be constructed for at least a decade after Stage 1 commissioning, and also notes the high degree of conservatism inherent within the URS assessment of low frequency impacts due to the limited data available from the manufacturer for the purposes of assessment. In accepting the proposed dBC criteria to apply to the Project, AGL notes that although not anticipated, AGL would commit to a negotiated agreement inclusive of mitigation measures at the request of residents should a low frequency exceedence eventuate at any residential receptor. AGL reiterates that based on the analysis of the 9FA turbine data supplied to URS for the purposes of analysis, 1 exceedence of 1 dBC was predicted for the full operational scale of the Stage 2 Project at one residential location.

3.3.2 Community Submissions

Potential noise impacts were identified within a number of community submissions received. They are presented and responded to below:

Submission 20497 commented on noise generation during both the construction and operational stages of the project. The submission also commented on traffic generated noise which the respondent noted may cause annoyance.

Response

The following provides a summary of the outcomes of the assessment of potential acoustic (noise) impacts:

Operation: Noise levels generated by the proposed operation would be within the established noise limits at all receptor locations under both neutral conditions, and under the site's prevailing, meteorological conditions. Under adverse conditions, as assessed by the existing INP low frequency assessment methodology, it is noted that exceedances would occur at three receptor locations.

Sleep Disturbance: Predicted noise levels are within the sleep disturbance noise limits established in accordance with the NSW Office of Environment and Heritage (OEH) *Industrial Noise Policy* (INP, EPA 1999) and NSW OEH *Environmental Criteria for Road Traffic Noise* (ECRTN, EPA 1999) guidelines.

Low frequency noise: dB(C) limits for the protection against low frequency noise impacts have been recommended by the EPA and DP&I and would be included as conditions within an EPL for the Facility.

Construction Noise: No exceedance of the noise limit is predicted at any residential locations during the proposed construction phase of the power station. During pipeline construction, some exceedances may be experienced at one receptor (Receptor D). The noise impact assessment reported Receptor D to be the closest receptor to the proposed pipeline alignment. This receptor was

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noted to be potentially the most affected by pipeline construction noise, with predicted construction noise levels of up to L_{Aeq} 43-52 dB(A). Receptor R12 is setback from the proposed pipeline alignment by a comparable distance (approximately 400 m), whilst receptors R13, R14 and R17 are setback further from the proposed pipeline alignment.

Off-Site Construction Traffic Noise: The predicted increases in road traffic noise levels are up to 2 dB at the most potentially affected dwellings. The resulting levels remain within the off-site traffic noise criteria.

Submission 20501 comments that "there is a lack of verified noise emission data for the turbines and stacks which have never before been used in Australia. There is a track record of power companies incorrectly modelling noise impacts on communities, with people subsequently forced from their homes by intolerable noise levels, and therefore extensive empirical data needs to be obtained and independently and expertly assessed…"

Submission 21194 comments that "Local residents are concerned about the noise associated with construction and operation of the plant. I would ask that the concerns raised by residents to other gas−fired power stations located in rural areas (namely Origin Energy's Uranquinty Power Station) are considered, specifically the propagation of low frequency noise under varying climatic conditions."

Response

As discussed above in **Section 3.3.1**, AGL notes that the full bandwidth 1/3 octave turbine noise specifications were not available for use in the preparation of the EA. In response to community concerns, and in consultation with OEH and DP&I around this issue, AGL provided OEH with a 1/3 octave analysis for the 7FA turbine as sourced from the manufacturer for the purposes of tonality impacts, and further to this, provided a conservative analysis of low frequency noise impacts at the nearest receptors based on additional data sourced from the manufacturer. AGL has received a guarantee from preferred manufacturer GE that tonality would not occur with the adoption of the 9FA type, and compliance with the proposed dBC limits to be imposed on the project are expected to be met for the project. It is noted that OEH endorses that a 5 dB penalty for tonality be imposed as a precautionary measure.

Submission 20022 states that the noise assessment has not adequately identified noise receivers in Dalton village and the primary school:

Submission 20022 stated the detailed specialist assessment of noise identifies the nearest potentially affected noise sensitive receptor locations (Table 2-1) as various rural residences, located between 2.3 to 5.7 km from the gas turbines. Six of the receptor locations chosen are substantially further than the distance of the entire village of Dalton (comprising a population of >100 people, a primary school, churches and various commercial premises (post office, hotel, service station) from the gas turbines. These receptor locations cannot be considered to be representative of Dalton residences.

Response

Receptor locations C, D and E are located respectively at 2.4 km SW, 2.3 km SSW and 3.7 km S from the proposed turbine locations. The township of Dalton is located further away at some 4 km to the SSW. Operational noise levels at Dalton will be lower than at locations C/D/E. The predicted noise level contours shown in Appendix C of the noise assessment (***Appendix G, Volume 2, Part 1***

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3.3.2 Community Submissions

Appendices to the EA) indicate that noise contribution at Dalton due to the Stage 2 plant operating at maximum capacity would be no more than L_{Aeq} 25 dB(A). This would be expected to be below the existing background noise level, estimated to be close to or just below 30dB(A). The perceivable project impact would therefore be minimal, and it would be unlikely to make a discernible difference to current background noise experienced at Dalton.

Submission 20022 stated that "In relation to the INP assessment, the ES notes that during operation of the power station, noise exceedances above the INP (low frequency) allowable levels are expected at three receptor locations very close to the village. The noise simulation demonstrated by AGL on 26th and 27th August 2011 was based on estimates from the noise modelling that noise level contributions from the power plant operation, of 32 dB or higher, are expected at various locations on the farthest side of the village from the gas turbines. .."

Response

Under adverse conditions as assessed by the INP low frequency assessment methodology, it was noted that exceedances would occur at three receptor locations. Receptor locations C, D and E are located respectively at 2.4 km SW, 2.3 km SSW and 3.7 km S from the proposed turbine locations. The township of Dalton is located further away at some 4 km to the SSW. Operational noise levels at Dalton will be lower than at locations C/D/E.

As outlined in Section 3.3.1, following the EPA's comments on the draft submissions report (dated 22 February 2012), DP&I and EPA have confirmed a revised approach in relation to the management of noise impacts (in particular low frequency noise). These discussions concluded that the low frequency noise from gas fired power stations should be regulated on a case-by-case basis until an Application Note to the Industrial Noise Policy (INP) is finalised by the EPA. Further it was considered that the C-A weighting plus 5dB(A) penalty approach as defined in the INP, is not a good measure of annoyance, and could result in the application of measures that would not improve environmental outcomes. In this regard, the Department has proposed that noise levels at the nearest residences to the Dalton power station should not exceed:

- 35 dB(A) during the day, evening or night; or
- 65 dB(C) during the day or 60 dB(C) during the evening and night.

Compliance with the revised 65/60 daytime/ night time dB(C) criteria is expected for all receptor locations for Stage 1 of the project. Considering the full Stage 2 scale of the project, analysis predicted 61 dB(C) at one receptor only.

AGL notes that the remaining turbines are not expected to be installed for at least a decade after Stage 1 commissioning, and also notes the high degree of conservatism inherent within the URS assessment of low frequency impacts.

Although not anticipated, AGL would commit to a negotiated agreement inclusive of mitigation measures at the request of residents should this situation actually eventuate. In practice, the potential for a non compliance is limited because;

- Experience of the actual performance of Stage 1 will be available before any second stage would be committed; and

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- The expected extent of night time running is very limited allowing scope for reactive management to limit impacts during adverse acoustic conditions.

Submission 20022 stated "The ECRTN assessment of off-site traffic noise did not consider the village of Dalton, including residences adjoining the main road from Gunning, which will be used for all construction traffic movements. The noise sensitive receptor locations selected for the ECRTN assessment, Location D in Dalton, and various sites in Gunning, cannot be considered representative of Dalton as location D is further from access roads than other Dalton residences, and the selected locations in Gunning were affected by local and highway traffic noise, whereas not the case for Dalton".

Response

According to the proposed traffic route proposed by AGL, off-site traffic associated with the development will not pass through the village of Dalton. The receptor locations used in the assessment (Location D, Locations L – O) represent the worst potentially affected receptors. The proposed traffic route currently proposed within the Draft TMP is discussed in Section 4 of this report.

Submission 20022 stated that "..Uncertainties surround the potential noise impacts on Dalton village of construction and operation of the power station, due to the sensitive receptor locations selected not being representative of all village residences, demonstrated exceedances of INP limits, and the inherent limitations of modelling in accurate prediction of actual noise levels."

Response

In response to sensitive receptor locations selected not being representative of all village residences; receptor locations C, D and E are located respectively at 2.4 km SW, 2.3 km SSW and 3.7 km S from the proposed turbine locations, whilst the township of Dalton is located further away at some 4 km to the SSW. Operational noise levels at Dalton will be lower than at locations C/D/E. The predicted noise level contours shown in Appendix C of the noise assessment indicate that noise contribution at Dalton due to the Stage 2 plant operating at maximum capacity at would be no more than L_{Aeq} 25 dB(A). This would be expected to be below the existing background noise level, estimated to be close to or just below 30dB(A). The perceivable project impact would therefore be minimal, and it would be unlikely to make a discernible difference to current background noise experienced at Dalton.

In response to the assertion of demonstrated exceedances of INP limits, discussions between DP&I and the Noise Policy Branch of the EPA concluded that *" the low frequency noise from gas fired power stations should be regulated on a case-by-case basis until an Application Note to the Industrial Noise Policy (INP) is finalised by the EPA. Further it was considered that the C-A weighting plus 5dB(A) penalty approach as defined in the INP, is not a good measure of annoyance, and could result in the application of measures that would not improve environmental outcomes."* - Chris Wilson DP&I 2.3.12 **Appendix B-3**.

The Department proposes dBC limits for the Project in relation to low frequency noise which must be complied with by AGL.

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3.3 Noise and Vibration

3.3.2 Community Submissions

In response to Submission 20022's assertion of inherent limitations of modelling in accurate prediction of actual noise levels, the science behind the propagation of sound is well understood, and noise levels may be calculated for projects with a good degree of accuracy. Predictions can be validated by measurement. Inaccuracies are, however, introduced when modelling environmental noise emissions due to approximations made by algorithms to account for meteorological, terrain and barrier effects. Additionally, accurate predictions rely on accurate noise source definition in terms of absolute sound power level and frequency characteristics. The noise assessment for the Project has taken a conservative approach in defining the noise sources and adverse meteorology and as such the predicted future levels would be expected to be overstated.

Submission 20501 commented on the potential noise and vibration impacts during construction and operation.

"Assessment process ignores greater adverse impacts arising from very low ambient noise in a rural environment. The NSW Industry Noise Policy (INP) assessment process has problems for people living in a rural area because it doesn't take into account the very low ambient noise levels in the bush. People in urban areas don't seem as affected by these developments as farmers. This may be because country towns have a higher level of ambient sound. Often farmers may be closer to the developments, but an important factor seems to be that they are going from a 'no noise environment' to a 'noise environment'. This isn't taken into account in the INP assessment process as the Rating Background Level (RBL) of noise, if found to be less than 30 dB(A), is raised to 30 dB(A). For instance at Location K near the Dalton site, the RBL during the day and at night is found to be 25 dB(A). As this is less than 30 dB(A), for assessment purposes, this is raised to 30 dB(A) and the Intrusive Noise Criteria is set at 5 dB(A) above this, i.e.35 dB(A). This allows the power station to increase noise levels by up to 10 dB(A) (35 dB(A) criteria less 25 dB(A) actual RBL) which is 10 times more noise than our current noise levels[5].

Response

The NSW INP policy sets two separate noise criteria to meet environmental noise objectives: one to account for intrusive noise and the other to protect the amenity of particular land uses.

For rural environments, the INP recommends that industrial noise sources should not normally exceed the following acceptable noise levels to protect the amenity of the area:

L_{Aeq} 50 dB(A) – Daytime (0700-1800);

L_{Aeq} 45 dB(A) – Evening (1800-2200);

L_{Aeq} 40 dB(A) – Night-time (2200-0700)

The INP notes that these levels represent current best practice for assessing industrial noise sources, based on research and a review of assessment practices used overseas and within Australia.

The INP intrusive noise criteria is set at 5 dB above the rating background level, with consideration to a threshold background level of 30 dB(A).

[5] As noted, an increase in noise levels by 3dB is a doubling of the noise, while an increase in noise levels by 10dB is a 10 fold increase in noise levels.

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The Project Specific Noise Levels within the INP reflect the most stringent noise level requirement from the criteria derived from both the intrusive and amenity criteria to ensure that intrusive noise is limited and amenity is protected.

In the Dalton vicinity, existing background noise levels are low, and below the threshold rating background level of 30 dB(A). Therefore, the relative increase in noise level has the potential to be more perceivable than it would be in an urban environment, for example, where existing levels would be higher. It should be noted, however, that the predicted levels, based on conservative assumptions, are still very low in absolute terms.

It is also noted that there is no requirement for noise to be rendered inaudible beyond the boundaries of the Site, but only that the noise must be controlled to within acceptable limits with the intent of preserving noise amenity, in accordance with the recognised EPA noise guidelines.

Noise levels are summed logarithmically. A 10 dB increase in noise level does not equate to a ten times more noise, but would be more closely perceived as an effective doubling in loudness.

A change of 1 dB or 2 dB in the level of a sound is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to small but noticeable change in loudness. An increase of about 8 to 10 dB is required before the sound subjectively appears to be significantly louder, with a 10 dB increase widely accepted as an approximate doubling in perceived loudness.

Submission 20501 *enquired as to whether there is research that points to the need to leave RBLs at their measured levels for the purpose of assessing noise intrusiveness. The submission states that "..It is noted that the WHO guidelines for community noise states that noise has the potential to disrupt tranquillity and "existing quiet outdoor areas should be preserved", http://www.who.int/docstore/peh/noise/Commnoise4.htm. On many of the surrounding properties, waterways and old remnant stands of trees have been fenced off for conservation purposes, and should have their tranquillity preserved."*

Response

The noise assessment has been carried out in accordance with the Director General's Requirements issued for the proposal by the Department of Planning and Infrastructure using guidelines designed to protect amenity over a full range of potential receptors.

Potential vibration impacts are commented on within **Submission 20501**:

"Complete absence of vibration assessment. AGL state that they haven't looked in detail at vibrations from the plant. They say "Gas turbine plant operate at high rotational speed and are very sensitive to vibration and hence very well balanced preventing vibration at levels that could be intrusive to surrounding receptors." (AGL and URS 2011, p12-7). However Uranquinty residents comment they can feel the vibrations through the ground and that windows rattle even as far as 4 to 5km away.

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They say:

"The vibrations are often felt separately to the low frequency noise. They can be noticed through the rattling of windows or felt through the body. If you stand in certain parts of our house you can feel the vibration reverberate through your body from the floor. It is quite an unpleasant feeling when a combination of both vibration & low frequency is felt. Neighbours with 'hearing loss' (which is many of the male farmers) are affected more by the low frequency emissions than those with 'full hearing'".

Complaints about vibrations have also been made about the Laverton power station. This was one of the reasons it was ordered to remain in shutdown for certain hours on weekdays.

The vibrations may be coming from the turbines or the stacks. It is thought the vibrations in the case of the Uranquinty site are coming from the stacks. Vibration assessment is a very important part of the environmental assessment. The project should not be approved until a thorough and independent assessment of vibrations has been undertaken. "

Response

Without knowing the fuller details about the issues at Uranquinty and Laverton relayed within Submission 20501, AGL reiterates its industry experience concerning vibration impacts and power stations as presented within the EA. This is that gas turbine plant operate at high rotational speed and are very sensitive to vibration and hence the plant is necessarily very well balanced. AGL's experience has been that this prevents intrusive vibration impacts on surrounding receptors. In addition, AGL will not be installing the type of turbine used at both Uranquinty and Laverton.

Vibration levels decrease with distance from the source as a result of "geometrical spreading" of the vibration energy and its dissipation by soil viscosity and/or friction. For homogeneous soil sites, vibration propagation patterns are simple, and general simple relationships can be found between vibration levels and distance. Considering geometrical damping only, vibration levels could decrease by at least one-third for each doubling of the distance if the soil is homogeneous. AGL notes however that soils are rarely homogeneous and are usually stratified. Nonetheless, AGL points out also that the siting of the Dalton proposal has been carefully investigated to ensure an appropriate setback distance and significant buffer areas in excess of 2km from nearest residential receptor locations.

Submission 20501 comments on the assessment of Low Frequency Noise within the EA:

"The EA report finds that the power station exceeds the INP low frequency noise emission and seeks to lower the standard. The NSW INP guidelines say low frequency noise needs to be considered if the difference between the A and C weighted levels is greater than 15. The NSW guidelines are less stringent than the WHO guidelines which state that low frequency should be considered if the difference between the A and C weighted levels is more than 10 (http://www.who.int/docstore/peh/noise/Commnoise4.htm).

Response

The NSW INP low frequency assessment method nominates a penalty where the difference between the C-weighted and A-weighted noise levels is greater than 15.

3 Response to Submissions

3.3 Noise and Vibration

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The C-weighting - A-weighting difference approach can only provide an indication of a potential low frequency noise effect. Further analysis is required to determine if such an effect would occur. This view is supported by the WHO. The WHO guidelines for community noise notes that the difference between dBC (or dBlin) and dBA will give crude information about the presence of low-frequency components in noise and recommends that if the difference is more than 10 dB, that a frequency analysis of the noise be performed.

As documented in **Section 3.3.1**, DP&I note that "it was considered that the C-A weighting plus 5dB(A) penalty approach as defined in the INP, is not a good measure of annoyance, and could result in the application of measures that would not improve environmental outcomes." Following from consultation with the EPA on this matter, the EPA and DP&I propose noise limits (dB(C)) for the protection against low frequency noise impact.

Refer to correspondence in **Appendix B-1 ,B-2 and B-3**.

Submission 20501 commented on the consideration of the Broner (2008) approach to low frequency noise:

Although the Dalton Gas Fired power station is shown to exceed the INP difference approach for assessing low frequency noise impacts, the EA argues recent literature by Broner (2008) indicates "the INP difference approach is not suitable for use in assessments when the noise levels are low" (AGL and URS 2011, p12-24) – and so a less stringent control can be applied.

This is very surprising, particularly with the number of families in a 2.5km radius bought out by the recently commissioned Uranquinty Gas Fired power station because of intolerable low frequency noise levels, presumably with that project approved under the current set of noise limits (i.e. the INP difference approach). Residents have experienced the effects of the low frequency emissions through nausea, faintness and "vertigo".

As a consequence, five families neighbouring the Uranquinty gas fired power station are gone, two more families are in negotiation to go, and another two are being paid compensation. Also the recent Four Corners report Against the Wind (25/7/2011) indicated a number of people have been forced from their homes by low frequency wind turbine noise because of health problems. Further the low frequency noise from the Laverton power station on the outskirts of Melbourne was impacting so badly on neighbouring office workers in 2007, that the power station was ordered by the Victorian government to remain shutdown on weekdays between 8am and 5pm.

Response

The dBC-dBA difference approach in isolation is not a suitable method to determine that a low frequency noise effect would occur. AGL does not seek a 'less stringent' control. As documented in correspondence from the EPA (formally OEH), the EPA proposes noise limits (dB(C)) for the protection against low frequency noise impact in lieu of the INP process.

Discussions between DP&I and the Noise Policy Branch of the EPA concluded that *"the low frequency noise from gas fired power stations should be regulated on a case-by-case basis until an Application Note to the Industrial Noise Policy (INP) is finalised by the EPA. Further it was considered that the C-A weighting plus 5dB(A) penalty approach as defined in the INP, is not a good measure of annoyance, and could result in the application of measures that would not improve environmental outcomes."* - Chris Wilson DP&I 2.3.12 **Appendix B-3**.

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3.3 Noise and Vibration

3.3.2 Community Submissions

The Department proposes dBC limits for the Project in relation to low frequency noise which must be complied with by AGL.

In respect to Uranquinty, Bassett Acoustics conducted an assessment of the potential environmental noise emissions from the proposed gas-fired power station in 2004 on behalf of Environment and Licensing Professionals (Wambo Power Ventures). A review of this assessment has found that a low frequency assessment was not conducted at the time it was prepared.

Submission 20501 commented:

From this anecdotal evidence, it seems the controls on low frequency noise are not tight enough. If the noise limits are too stringent now, as AGL seems to be saying, it begs the question why people are finding the noise intolerable and abandoning their homes.

The Broner (2008) paper can no longer be the most current literature available. What is the current literature saying about low frequency noise and annoyance? Is there literature pointing to the need for even more stringent controls?

There is a bias in the environmental assessment process for proponents, with considerable research resources at their disposal, to find and generate literature that makes a case to lessen the noise controls on proposals. In no circumstance when controls are met, do AGL and URS say, 'but recent literature points to a more stringent control being necessary'.

For the sake of getting the correct balance between development and amenity, it is vital that if Government noise limits are exceeded, limits aren't relaxed "

Response

It is not claimed in the EA that the NSW INP low frequency noise limits are 'too stringent'. Rather that the dB(C)-dB(A) difference approach serves as an indicator of a low frequency noise effect. This is supported by the WHO guidelines for community noise, which notes that '… the difference between dB(C) (or dBlin) and dB(A) will give crude information about the presence of low-frequency components in noise…'. This is further supported by the research carried out by Broner (2008). The NSW INP method does not take account of the absolute level, and hence audibility, of the low frequency noise. An absolute dB(C) limit would be considered more appropriate for the determination of a potential low frequency noise impact.

Should the Dalton Project be approved, OEH and the DP&I will provide the noise limit license conditions and AGL will accept these and be bound to comply with them. As documented in correspondence from the EPA (**Appendix B-1 – B-3**), the EPA (formally OEH) proposes noise limits dB(C) for the protection against low frequency noise impact in lieu of the INP process. The recommended limits from OEH have been considered by AGL, and compliance is predicted for the Project.

3 Response to Submissions

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3.3.2 Community Submissions

Submission 20501 commented on the potential for errors within the noise modelling carried out:

"Possible errors in worst case scenario noise modelling. The EA report says that adverse conditions scenarios for noise impacts have been examined. The results generally show a 3 to 4 dB increase in noise levels, with one case (Receptor J – Scenario D) showing a 5 dB increase in adverse conditions.

This is well below what would be expected. The NSW INP says that "Certain meteorological conditions may increase noise levels by focusing sound-wave propagation paths at a single point. ... These meteorological effects typically increase noise levels by 5 to 10 dB, and have been known to increase noise levels by as much as 20 dB in extreme conditions, thereby causing a significant noise impact on residents" \http://www.environment.nsw.gov.au/resources/noise/ind_noise.pdf, p 31.

Therefore if the average of adverse impacts from meteorological effects is 5 to 10 dB and up to 20 dB, it is very surprising that this noise modelling only shows a 3 to 4 dB increase.

The apparent underestimation of the adverse weather condition noise impacts could be because of two reasons: the acoustic computer model selected to simulate noise impacts is invalid; and/or the parameters chosen to model the adverse impacts are incorrect.

Response

Noise levels due to the proposed construction and operation of the plant at the identified noise sensitive receptor locations have been predicted using an acoustic computer model created in SoundPLAN Version 6.5. This program is used and recognised internationally as acceptable for noise impact assessment. This program is also considered by the INP as a preferred computer noise model (Section 6.2 – Noise Prediction).

The NSW INP recommends that adverse meteorological conditions should be considered where there is a significant occurrence of such conditions in the local area. In this respect, if inversions occur for >30% of nights in winter and/or source-receiver winds occur for >30% of the time in any assessment period, the INP requires these conditions to be considered. Increase of noise levels up to for example, 20 dB only occurs under extremely stable meteorological conditions (G Stability Class). The detailed meteorological data analysis used for the noise impact assessment did not indicate the likely occurrence of those extreme conditions in the study area.

Further analysis has been carried out in response to this and OEH's submission relating to the frequency of occurrence of the G Class stability condition. The analysis suggests that the occurrence of the G Class condition would most likely be below the 30 % threshold criterion (15%) that would require its consideration with respect to compliance with the noise limits. The analysis is presented in **Appendix E**.

Submission 20501 states: Noise has an ability to carry in the atmosphere in the Dalton area. Residents say they can hear distant noises loudly on clear frosty nights.

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

Neutral and adverse conditions are defined in the EA as (see Appendix G of the EA report, Table 5-5):

Scenario	Temperature	Relative Humidity	Pasquill Stability Class	Wind speed
Neutral: Day	*25*	*60*	*D*	*0*
Neutral: Night	*10*	*75*	*D*	*0*
Adverse: Day	*25*	*60*	*C*	*4*
Adverse: Night	*10*	*75*	*F*	*2*

The temperatures and relative humidity in the adverse scenario are identical to those for neutral conditions. However literature indicates for day and night adverse weather conditions a default of 10 degrees C and 70% relative humidity should be used (Kaliski and Duncan 2010).[6]

Response

The noise assessment recognises that the night-time period is the most sensitive period for potential noise impacts due to the lowest background noise levels generally occurring at this time. As the Dalton power station has potential to operate at any time, the night-time noise limit criteria were adopted for the purpose of assessment.

Temperature and relative humidity parameters were set at 10°C and 75% for the *Adverse Night-time* modelling scenario, essentially as recommended by Kaliski and Duncan. Furthermore F Class atmospheric stability (moderate temperature inversion conditions) was assumed in addition to a 2 m/s windspeed with receptors downwind.

On this basis, adverse conditions, in respect to noise propagation, have been appropriately considered.

It is noted that following further consultation with OEH, OEH has accepted the atmospheric stability class analysis provided by AGL.

Submission 20501 states: It is not clear how neutral conditions are defined. Certainly neutral atmospheric stability, but do neutral conditions mean average temperatures, humidity and wind conditions of the region? If so, a wind speed of 0 m/s is not average. In the air quality assessment (AGL and URS 2011, Appendix C) the average wind speed of the region is reported as between 4.06 and 4.39 m/s for the years 2000 to 2006, with wind speeds exceeding 7.5 m/s a significant proportion of the time (Figure A-1). Also it is noted that across all seasons, wind speeds average between 5.7 and 8.8 m/s for 16% of the time between 7am and 10pm (the period the power station is likely to operate) (Appendix G: Wind Rose analysis – All seasons). It is not clear that these conditions have been considered in the noise modelling.

[6] Atmospheric absorption is a function of temperature, humidity, and pressure. For ... modelling, we use a default of 10 degrees C and 70% relative humidity, as this generally yields the lowest attenuation (from ISO 9613-1), Kaliski and Duncan (2010). http://acousticecology.org/wind/winddocs/noise/kalinsky_annualized%20wind%20farm%20sound%20levels.pdf

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

Response

With respect to propagation of noise, neutral conditions are those regarded to have no enhancing effect on the received noise level, whilst adverse conditions are those that may serve to increase the received noise. The NSW INP recommends that adverse meteorological conditions should be considered where there is a significant occurrence of such conditions in the local area. In this respect, if inversions occur for >30% of nights in winter and/or source-receiver winds occur for >30% of the time in any assessment period, the INP requires these conditions to be considered.

The noise assessment considers neutral and adverse meteorological conditions in respect to propagation of noise.

Submission 20501 states: In the NSW Industry Noise Policy it is stated "Where inversion conditions are predicted for at least 30% (or approximately 2 nights per week) of the total night time in winter, then inversion effects are considered to be significant and should be taken into account in the noise assessment." Appendix C of the NSW INP states that the noise assessment needs to "determine the percentage occurrence of atmospheric stability category F or G temperature inversions" for areas where the rainfall is >500mm (Appendix C, p74).

The Dalton power station noise assessment provides no estimate of the G class stability category that is referred to in the NSW INP. Stability class F is stated to occur 70% of the time in the evenings, and 65% of the time at night (Noise Assessment Appendix G, Appendix B contained in Appendix G). Does the G class stability category occur at Dalton and with what frequency? If it does occur, what does the noise modelling indicate about the noise impacts?

It is known that noise varies with wind gradient, temperature inversions, humidity and temperature. An expert in this field, who is also familiar with the functioning of acoustic computer simulation models, is needed to say exactly what parameters and simulation model will provide an accurate estimate of adverse conditions, given the specifics of the meteorological condition of the area. Nevertheless with respect to parameters, it would seem important to consider a day time case with temperatures at 10 degrees C, 75% humidity7, and high wind gradients;[8] and a night time case with the same temperature and humidity, but a strong temperature inversion.[9]

Response

Further analysis has been carried out in response to submissions relating to the frequency of occurrence of the G Class stability condition. The analysis suggests that the occurrence of the G Class condition would most likely be below the 30 % threshold criterion (15%) that would require its consideration with respect to compliance with the noise limits. The analysis is presented in **Appendix E**.

OEH noted in correspondence provided on the Draft Response to Submissions Report that OEH has accepted the atmospheric stability class analysis provided and accordingly has removed the G-Glass Stability Condition that noise limits would apply under.

[7] See footnote above.
[8] Wind gradient can have a pronounced effect upon sound propagation in the lower atmosphere. http://en.wikipedia.org/wiki/Wind_gradient#Sound_propagation
[9] http://en.wikipedia.org/wiki/Inversion_(meteorology); http://geography.about.com/od/climate/a/inversionlayer.htm

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

Submission 20501 states: "If you double the size of power station you double the noise so the Dalton power station can be expected to be more than twice as noisy as the Uranquinty power station. The proposed Dalton gas fired power station at 1500MW, if constructed, will be the biggest gas fired power station ever built in Australia. If you double the turbines you double the noise.[10] Stage 2 will be twice as noisy as Stage 1.

Response

Levels are combined logarithmically, not arithmetically. Thus, a doubling in the number of noise sources would in fact result in a 3 dB increase in sound pressure level. A change of 1 dB or 2 dB in the level of a sound is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to small but noticeable change in loudness. An increase of about 8 to 10 dB is required before the sound subjectively appears to be significantly louder, with a 10 dB increase widely accepted as an approximate doubling in perceived loudness. The noise impact of the Project will be the result of the outcomes of acoustic design and noise control measures that are installed. Design requirements applied to the Project have been specified so as to comply with regulatory noise requirements.

Submission 20501 states: The Uranquinty power station at 640MW is less than half the size of the proposed Dalton power station. Nevertheless it has not been able to meet the EPA noise limits once commissioned despite retro fitting noise abatement measures. The owner of the Uranquinty power station is now in litigation with the turbine manufacturer. If Uranquinty can't meet noise limits with a smaller number of the quieter E class turbines and AGL say that they are proposing to construct with a larger number of the larger noisier F class turbines, then it would seem impossible to prevent unacceptable adverse noise impacts on neighbouring properties. "

Response

Further information, particularly with respect to the specifications of the installed plant at Uranquinty, would be required to provide a detailed response.

Notwithstanding this, factors other than the rated capacity of the plant need to be considered in comparing the Dalton and Uranquinty situations. In particular the setback distances afforded to residents. In this regard, several receptors are/were located at setbacks ranging between 650 m to 2 km from the Uranquinty site. Additionally, the township of Uranquinty is located some 2.4km from the Uranquinty site. This is approximately the setback distance afforded to the closest receptors to the AGL Dalton project. Dalton Village is located 4 km from the Project site.

Submission 20501 states: "The Dalton power station is a greater distance from dwellings than the Uranquinty power station but it is more than twice as big and not all residents are protected by distance. AGL argue that they have done a better job than the Uranquinty gas fired power station at buying surrounding properties to ensure a better buffer between impacted neighbours. This is not entirely the case. There are three dwellings less than 2.5km from the Dalton site and many a little

[10] Noise is measured in decibels (dB) and the dB unit uses a logarithmic scale. If one machine emits a sound level of 90 dB, and a second identical machine is placed beside the first, the combined sound level is 93 dB. Therefore doubling the sound energy will increase the decibels by 3. A 10 dB increase in sound means sound has increased by a factor of 10. http://www.ccohs.ca/oshanswers/phys_agents/noise_basic.html. It is also noted that sound drops 6 dB as distance from the source is doubled.

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further out, including the town of Dalton 3.7km away. As residents 2.5km away have been forced from their homes in the case of the smaller Uranquinty power station, it would seem the proposed AGL power station, being more than twice as large, will cause significant adverse noise impacts. A map showing the location of residences near the Dalton power station site is shown in Appendix B of this submission. A map showing the location of residences near the Uranquinty power station site, where families have left their homes, are in negotiations to leave, or are being paid compensation for noise, is shown in Appendix A of this submission. "

Submission 20501 outlines other examples of power stations failing to meet noise controls once constructed.

Response

AGL notes that the full details of the Uranquinty situation plus other power stations referenced within Submission 20501 are not provided. In providing a general response, specifically relating to this current proposal, AGL notes the following:

In NSW, the framework and process for deriving noise limit conditions for consents and licences for such industrial activities is provided by the NSW INP. This policy enables the EPA to regulate premises that are scheduled under the *Protection of the Environment Operations Act 1997*. The noise modelling undertaken by URS has applied a degree of conservatism and has predicted noise levels generally compliant with the NSW INP. Exceedances were predicted at the three closest receptors due to incurred penalties applied by the INP low frequency assessment method. Following discussion by the regulatory authorities, it was determined that the C-A weighting plus 5dB(A) penalty approach as defined in the INP is not in fact a good measure of annoyance, and could result in the application of measures that would not improve environmental outcomes. The revised approach outlined now involves setting dBC compliance limits for the Project which AGL must comply with.

In regards to external noise levels and the point raised within Submission 20501 about noise mitigation to be carried out through noise proofing homes, it is noted that there is no requirement for noise to be rendered inaudible beyond the boundaries of the subject site. The noise must be controlled to within acceptable limits with the intent of preserving noise amenity, in accordance with the recognised EPA noise guidelines.

Further, AGL is committed and obligated, to meet the noise limit conditions, to be provided by OEH, that would serve to protect the community from any noise impacts associated with the operation of the power station. Tenderers will be contractually bound by AGL to meet the noise limits and remedial corrective measures would be enforced in the event of any exceedance of the limits.

Submission 20501 states: "Noise inputs for noise assessment have not been independently verified.."

Response

The EA process involved an adequacy review undertaken by the DP&I. Both OEH and DP&I undertook technical reviews of the EA noise assessment. The requirement for further independent peer review has not been required by either OEH or DP&I.

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

Submission 20501 commented that, in the author's view, there is an inconsistency in the turbine type assessed and questions noise assessment methodology:

"Reference is made to 109F Class turbines in the noise assessment, while in the air quality assessment manufacturer's emissions data was sourced on General Electric (GE) 9FA turbines. It is not clear if there is an inconsistency here.

Quite extraordinarily in a footnote to Table 5-4 (Appendix G) it is stated that the "Sound power level of the exhaust stack has been estimated based on the maximum cumulative sound power level the site can generate in order to meet noise limits. To ensure the compliance with the noise limit, sound power level of exhaust stack opening and body combined should not exceed 110 dB(A)". This assumption and subsequent testing seems completely without scientific rigour. It is assumed the stacks wont emit more than 110 dB(A), and then this figure is put into the model to see if it exceeds the noise limits. By assumption it doesn't.

This is a serious and fundamental flaw to the integrity of the noise assessment. As such, no reliance can be placed on these results. It is particularly alarming as noise from the stacks seems to be what is causing people to leave their properties at Uranquinty. The noise assessment needs to be redone with the turbine and stack configuration specified and noise emission data verified by an independent expert.

(The Office for Environment and Heritage say it is common place for proposals to assume plant is able to achieve noise limits. When the project is approved, the proponent goes out to the market and sources plant that can meet these noise limits. If the sourced plant fails to meet limits when installed, then the proponent is required to retro fit abatement measures and can litigate the supplier.

This process creates significant risk for communities.

A critical part of this process must therefore involve the Government clearly specifying, monitoring and enforcing limits to ensure compliance once the plant is constructed. In the case of the Dalton power station, it is critical that limits on A weighted and C weighted noise during typical and adverse weather conditions are specified, monitored and enforced.

At the same time an independent expert assessment of the ability of specified plant to perform as stated, before construction, would go some way towards reducing risk. Given the Uranquinty, Laverton and Alice Springs experiences, any theoretical modelled data should be confirmed with empirical data from actual 'real world' operating power stations with equivalent configurations and mitigation measures. The assessment needs to consider the case of all turbines running simultaneously and at full capacity and any amplification that the configuration may cause.

Response

The noise assessment considered the 109F Class turbine type, which is GE 9FA turbines, on the basis that this is the highest sound power of the turbines that were under consideration. Conservative assumptions appropriate for a worst case noise assessment were made from the information available at the start of the environmental assessment of the Project.

AGL notes that the EA process involved an adequacy review undertaken by independent noise experts from within both OEH/EPA and DP&I.

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

AGL is committed and obligated, to meet the noise limit condition to be provided by OEH/EPA. Such limits would serve to protect the community from any noise impacts associated with the operation of the power station. Contractors will be contractually bound by AGL to meet the approved noise limits and remedial corrective measures would be enforced in the event of any exceedance of the limits.

Submission 20501 presented the community response to the noise simulation:

"The community response to the noise simulation. At the Community Information Day, the last weekend of August 2011, URS and AGL brought along a noise simulator, which simulated the noise of both Stages 1 and 2. For most people Stage 1 was only slightly audible but you could hear Stage 2. It was a low rumble like an earthquake. A number of people were disappointed they could hear Stage 2 and thought the noise might get annoying[11]. "

Response

The simulator demonstrated the predicted noise spectra at the closest receptor (2.3 km from the turbines) under full operational conditions. For most of the community, lower levels are predicted, given their greater setback distance. There is no requirement for noise to be rendered inaudible beyond the boundaries of the subject site, but only that the noise must be controlled to within acceptable limits with the intent of preserving noise amenity, in accordance with the recognised EPA noise guidelines.

Submission 20022 requested a commitment to noise monitoring during operation of the Facility:

"AGL should commit to, and be required by the Conditions of Approval of the project, at the commencement of both Stages 1 and 2 of the project, to confirm under normal operation the noise emission performance of the power plant, and to perform ongoing noise monitoring during the life of the power station, consistent with NSW INP Noise Policy (EPA, 2000). Appropriate remedial measures should be identified and implemented in the event of exceedances of allowable limits.."

Response

AGL would be required by the conditions of approval to commit to a noise monitoring program consistent with requirements of the NSW INP Noise Policy (EPA, 2000). AGL has responded to draft conditions relating to noise monitoring provided by NSW OEH- refer to response in **Section 3.3.1**.

Submission 20022 asserted that there should be a commitment to a process for residents to provide feedback on noise issues:

"AGL should commit to strong community information, consultation, involvement and complaints procedures, and implementation of remedial measures in the event of exceedances, consistent with the statement in the noise assessment that noise impacts of the proposed construction and operation of the plant should not degrade the existing acoustic environment nor create annoyance to residents"

[11] Annoyance is an adverse health impact according to the definition of health by WHO. http://www.euro.who.int/__data/assets/pdf_file/0004/131809/e94731.pdf

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

Response

AGL is committed to facilitating strong community engagement and providing information/ communication. A complaints handling protocol would be set up which would be expected as an inclusion in the Site's Environment Protection Licence (EPL). AGL will investigate any noise complaints received in line with the complaints handling protocol to be established.

Submission 20022 requested a commitment to additional noise mitigation.

"The noise mitigation measures and draft commitments proposed for the operation of the power station are minimal, given the size of the development, its proximity to Dalton village and potential for exceedance of noise limits and low frequency noise. AGL should commit to additional mitigation to be incorporated during the detailed design stage such as construction of sound barriers, inclusion of additional silencers, use of the existing topography to relocate/de-cluster plant and processes. Incorporation of these measures at design stage may alleviate the need for retrofit or noise mitigation measures should noise complaints arise following commissioning of the plant."

Response

The EA noise assessment demonstrated that, with the exception of predicted exceedances at the three closest receptors (due to incurred penalties applied by the INP low frequency assessment method), the proposed project complies with the noise limits provided under the INP.

The EPA and DP&I have outline a revised approach to low frequency noise considering that the C-A weighting plus 5dB(A) penalty approach as defined in the INP is not a good measure of annoyance, and could result in the application of measures that would not improve environmental outcomes. As such, dBC criteria have been recommended for the Project. Compliance with the revised 65/60 daytime/ night time dB(C) criteria is expected for all receptor locations for Stage 1 of the project. Considering the full Stage 2 scale of the project, analysis predicted 61 dB(C) at one receptor only.

Although not anticipated, AGL would commit to a negotiated agreement inclusive of mitigation measures at the request of residents should this situation actually eventuate. In practice, the potential for a non compliance is limited because;

- Experience of the actual performance of Stage 1 will be available before any second stage would be committed; and
- The expected extent of night time running is very limited allowing scope for reactive management to limit impacts during adverse acoustic conditions.

Noise mitigation measures for the primary components of the proposed gas turbines considered by the assessment are set out in Section 5.3.4 of the NIA (***Appendix G, Volume 2 part 1 of the EA***). Additionally, as noted in Section 5.3.2, the sound power level of the exhaust stack for the F Class machine has been estimated (based on the similar engine stacks from the 109E Class machine). At the detailed design stage, the exhaust stack would be engineered to comply with the INP requirements.

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

The assessment found that beyond the measures identified, no further mitigation is required to achieve compliance with noise limits. Notwithstanding this, noise emissions from the plant operation would be verified during the design and commissioning stage to confirm compliance with the project noise criteria. In the unlikely event that an exceedance of the noise limits were to occur, the exceedance would be remedied.

AGL is committed, and obligated, to meet the noise limit conditions, to be provided by OEH, that would serve to protect the community from any noise impacts associated with the operation of the power station. Contractors will be contractually bound by AGL to meet the noise limits and remedial corrective measures would be enforced in the event of any exceedance of the limits.

Submissions 20050 and 20042 noted that the existing noise levels at Dalton Public School had not been established:

Submission 20050: "The proposed facility is approximately 3 km from our school (Dalton Public School). We have concerns regarding the noise that will be generated by the project. The Environmental Assessment provided has not established the existing levels of noise at our school. Any proposed monitoring of these levels will not provide any meaningful data which would allow us to assess the impacts of the development as there will be nothing to compare it to. The Applicant should be required to undertake the relevant investigations into the existing noise levels and to commit to the monitoring of those levels for the life of the project"

Submission 20042: "The Dalton Public School has not been considered as a "sensitive receptor". No background levels of pollutants or noise have been established against which impacts may be assessed.."

Response

The non-use of the term 'sensitive receptor' for the Dalton Public School is a nuance of noise assessment technical language included in the EA rather than a downplay of the significance of the Dalton Public School. In the case of this specific noise assessment, the sensitive receptors identified for the purposes of the assessment were the closest residential dwellings. These locations are closer to the proposed power station than the school, hence the omission of the school's specific mention.

Receptor locations C, D and E are located respectively at 2.4 km SW, 2.3 km SSW and 3.7 km S from the proposed turbine locations, whilst the township of Dalton is located further away at some 4 km to the SSW. Based on a review of aerial photographs, the Dalton Public School is located at approximately 4.3 km from the turbines. Operational noise levels at this location would be lower than those predicted at locations C/D/E. The predicted noise level contours shown in Appendix C of the noise assessment indicate that the noise contribution at the Dalton Public School due to the Stage 2 plant operating at maximum capacity at would be no more than L_{Aeq} 25 dB(A). This would be expected to be below the existing background noise level at all times.

Further to this, in line with DP&I comments on the Draft Submission response Report, AGL commits to the development of a Noise Management Plan for the Project which would be developed in consultation with both the community and OEH to ensure noise monitoring undertaken addresses community concerns and OEH noise protection objectives.

3 Response to Submissions

3.3 Noise and Vibration

3.3.2 Community Submissions

Submission 20042 noted an absence of assessment specifically for Dalton village:

Submission 20042: The EA is also deficient with respect to noise. No assessment of either the existing noise levels, nor the predicted noise levels from the project, have been provided for the village of Dalton. It is essential that the Proponent provide pre- development background monitoring data. The true impact of this proposal cannot be assessed without it. Further, without such data, any subsequent applications to operate beyond the 5% annual threshold sought by this application should require an assessment of the impacts in the context of the pre-development environment. When low-frequency noise impacts were found by the Proponent to exceed the criterion, an alternative assessment was proposed. Such an approach was rejected by the Department of Energy and Climate Change (DECC) when it was proposed for use in the Proponents EA for the Leafs Gully Gas Turbine Power Station. In a letter to the Department of Planning, the Deputy Director General, Environment Protection and Regulation stated:

> *"DECC does not accept the proposed method to assess low frequency noise. The current method specified in the Industrial Noise Policy has been reviewed by industry and community representatives and approved by Cabinet as a "whole of government" policy. Therefore it is not appropriate for the Department of Environment and Climate Change to accept other methods such as that specified in the Environmental Assessment…".*

Submission 20042 stated: Therefore, the proposed alternative assessment of low-frequency noise is clearly not acceptable in this proposal either.

Given the above, it is submitted that the following undertakings must be required of the Proponent.

- *Determining the background pre-development noise levels in the Dalton village to enable a determination of the predicted impacts of the development; to provide a base level against which results from monitoring may be meaningfully assessed; and to effectively assess any subsequent proposal for extending operations beyond the 5% annual operating time sought by the Proponent under this application.*
- *To reduce low-frequency noise to within the required standards based on the accepted assessment methodologies.*

Submission 20042 stated: It is submitted that the EA, in its lack of specificity and detail as to what is actually proposed, fails to satisfy these requirements. The Proponent has not clearly identified nor specified, amongst many other things background, pre-development noise and air assessments for the site and for the village of Dalton or other "sensitive receptors". While levels at more heavily polluted sites may provide conservative assessments of the expected total emissions from the project, the absence of any data with respect to existing conditions does not provide "…sufficient information to determine the environmental impacts and benefits of the Dalton Power Project…". It also allows the Proponent to draw spurious conclusions such as "no adverse impacts on local air quality are expected as a result…" (EA p9-9). Undertaking these assessments is also critical for the purposes of assessing any subsequent applications to realise the "…potential for more extended operation" (EA p1-).

Submission 20016 stated: the impact of increased traffic flows appear to be based on maximum noise levels that occur, rather than the increased frequency of those noise levels. Especially given the doubt about the implementation of trucks for process water supply, it appears that the real world impact of the increased traffic will be substantial.

Response

The assessment has not been performed to specifically quantify incremental increases in noise levels. Rather, in accordance with OEH guidelines, it has assessed whether the Project is likely to cause exceedances of the identified noise criteria. On this basis, the noise assessment provides an appropriate assessment of the noise impacts associated with the Project.

Noise contributions from the proposed power station have been predicted in the village of Dalton. As indicated by the contours provided in Appendix C (of the NIA, ***Appendix G, Volume 2, Part 1 of the EA***), noise levels are predicted to be no greater than L_{Aeq} 25 dB(A), with Stage 2 plant operating at maximum capacity. This noise contribution would be expected to be below the existing background noise level most of the times in the village of Dalton. In regards to the percentage of time the plant would operate, it should be noted that the assessment period considered by the NSW INP is 15 minutes and therefore the actual percentage of time the plant would operate is effectively irrelevant from a compliance point of view. For the purpose of assessment it has been assumed that the plant operates continuously.

It is noted that in relation to the low frequency assessment methodology, the EPA and DP&I have documented a revised approach. The EPA is satisfied that the agreed approach will protect the amenity of residences potentially impacted by noise from the proposed project.

The off-site traffic noise assessment has been undertaken based on the information provided by AGL and in accordance with the NSW Environmental Criteria for Road Traffic Noise.

3.4 Construction Impacts

3.4.1 Agency Submissions

None of the Agency submissions received specifically addressed the issue of potential construction impacts.

3.4.2 Community Submissions

Dust generation during construction was commented on within the community submissions received:

Submission 20497 expressed concern about the dust which will be created during construction and the health effects on those with asthma.

Submission 20022 stated that no specific safeguards are identified to minimise dust particulates during construction, from use of trucks on the unsealed access roads surrounding Dalton village. The respondent suggested that this should be addressed by appropriate remedial measures such as watering the roads or sealing them, and implementation of speed limits.

3 Response to Submissions

3.4 Construction Impacts

3.4.2 Community Submissions

Submission 20038 stated the reliance on trucks to cart water will cause excessive dust, noise and traffic hazards in this currently quiet village. "Even one truck travelling the dirt Loop Road around the village, if winds are blowing south and west, sends dust over the entire town. There are several residences adjacent to this road that will be permanently blanketed in dust with the amount of truck movements suggested in the EA."

Submission 20501 stated that "concerns were raised by farmers about dust levels from the unsealed roads during construction and the impact that will have on dust levels in their wool clip. This is a real concern given that the report states that there will be 4,600 truck deliveries to the site for Stage 1 (AGL and URS, 2011, p4-32). Dust levels along with vegetable matter (VM) and grease affect the yield of the wool. A 10% decrease in yield would typically result in a 10% drop in price. If yields drop very low to below 60% then there would be a greater price discount. The best option for all would be to prevent dust by wetting down road surfaces when needed. This will require having a system in place to identify conditions ahead of time when surfaces will need wetting and coordinating water trucks. As farmers have records on yield going back several years, if there is a significant drop in yield because of dust, then compensation should be sought."

Submission 20042 stated: "Under provision for dust abatement. One water truck per day is estimated for dust suppression for the entire 27-ha construction site and the dirt roads leading to the site (EA Appendix F Table 4-2). No provision was made for water trucks during the operational stage, despite 40 trucks per day estimated to travel on the dirt road for delivering process water.

Response

AGL acknowledges the concern of the community around the issue of dust generation, and is committed to ensuing dust impacts during construction are minimised to the fullest extent possible.

As part of AGL's commitment to addressing this issue, it is proposed to seal Walsh's Rd and Loop Rd and ensure the application of appropriate and effective dust suppression measures during construction activities.

Whilst the Draft TMP is still the subject of consultation with ULSC, Section 5.8 of the plan details dust suppression measures including the proposed sealing of road surfaces. According to the Draft TMP:

> *"Due to the regions enterprise agriculture and wool production (renowned for its high quality wool), dust suppression has been identified as an important control measure and issue for stakeholders. Due to the fact that the project site access route(s) are currently unsealed, dust creation has been identified as a likely possibility. The following control measures will be implemented within the site boundary (as conditions require) to address the issue and provide assurance to the local community;*
>
> — *Watering -- applying water from a truck or other portable spray system.*
> — *Fencing and other artificial wind barriers, aligned perpendicular to the wind direction*
> — *Revegetation or limit removal to surface vegetation to an absolute minimum*
> — *Apply access restrictions to dust prone areas with physical obstructions such as gates, fencing etc.*
> — *Cessation of construction or limiting activity during a high wind events*

- *Surface roughening--the manipulation of a soil surface to produce or maintain clods, which helps disrupt the erosive force of the wind.*
- *Reduced site vehicle speeds*

In addition, GEL intends to prime seal the routes along Loop Road and Walshs Road to enhance the dust suppression control measures. GEL proposes to apply a 14/7mm (typical) two-coat spray seal towards the commencement of the project in accordance with our contractual obligations and prior to any significant increase in road usage. At the end of the project, a final 7mm spray seal application is to be added to rectify wear and tear as a result of our works." - Section 5.8 of Draft TMP.

Further to this, AGL reaffirms the intention to source operational water for the Project from on-site groundwater extraction. Groundwater investigations completed over the Christmas break confirmed the availability of adequate water supply to meet most operational needs within the footprint of the facility. AGL considers that the provision of potable water supply to meet the needs of the small number of permanent staff (<10) at the facility is preferable to prevent cross-contamination. Either the Gunning or Dalton potable water supply would be suitable for these needs. AGL can confirm that the quantity of trucked water to site purely to supply the facility's potable water requirement would be limited to 200 to 300 KL per annum. This would roughly equate to 8 - 12 truck movement per year, and the TMP (a draft of which is currently being discussed with ULSC) would include consideration of such additional vehicle movements within the plan to ensure the impacts of traffic are properly and adequately managed throughout the life of the Project. AGL notes that a result of recent groundwater investigation and bore testing has confirmed an adequate onsite groundwater supply to provide all operational water for the Facility, therefore trucking of water to site for operational purposes is no longer proposed as part of this current Project.

3.5 Project Description and Staging

3.5.1 Agency Submissions

Agency submissions addressing the Project Description or Project Staging were limited to a submission from the **Upper Lachlan Shire Council** (ULSC) about the location of the Gas Pipeline (southern portion).

Submission 19969 (ULSC): The EA discusses that the pipeline would be constructed along Walsh's Rd, Unfortunately, the existence of approximately ten mature, protected white box and Blakely's Red Gum trees within the road reserve leave inadequate space for both the pipeline and the proposed widening of the road. If the pipeline was to be constructed underneath the road, extreme disruptions to traffic would occur for duration of the construction work. The road reconstruction work would also become difficult as the pipeline would need to be buried at a significant depth to prevent damage to it by the anticipated heavy traffic. The paddock to the eastern side of the road has ample space for the pipeline, is relatively clear and eminently more suitable for the location of the pipeline. There will also be safety and operational issues related to the maintenance of the road if the pipeline was to be laid at the edge of the road and at a shallower depth.

3 Response to Submissions

3.5 Project Description and Staging
3.5.2 Community Submissions

Response

AGL considered a number of options for the route of the Gas Pipeline (southern portion) in Chapter 3 of the EA. Additionally, in response to ULSC's request, AGL have further considered the options suggested by ULSC for location of the pipeline in the private property either side of the road easement.

Further ecology and heritage assessments were conducted of the area either side of the road easement. The Ecology and Heritage field results are presented within **Appendix C** of this report, and details about the Preferred Project aspects of the Dalton Project are discussed in detail in **Section 4.1** of this report.

Based on the results of the assessments, AGL has committed to relocating the Gas Pipeline (southern portion) to the west of the original proposal, as shown in **Figure 4-1**.

Although ULSC expressed a preference for the gas pipeline to be on the eastern side of the road easement, it is considered that the western route has the advantage of:

- Ecology: Positive impact on ecology compared to the original alignment due to reducing the area of impact on Box Gum Woodland (NIL ha for proposed portion of southern pipeline alignment compared to 0.106 ha of original portion of southern pipeline alignment).
- Heritage: Same impact on heritage as original alignment with no sites impacted.

3.5.2 Community Submissions

Clarification was sought by a number of community members regarding the staging of the Project and timing for the expansion of the facility from Stage 1 (up to 750 MW) to the full capacity for which AGL is seeking approval (1500 MW). Relevant extracts from these submissions are provided below:

Submission 20016 asserted that "the proportion of time that the power station will run appears to be determined solely by economic factors (eg the wholesale price of electricity) rather than technical factors. Given the very great likelihood that economic factors relating to electricity generation (especially those pertaining to the ongoing use of coal-powered stations) will change, it seems likely that the power station will potentially run for a far greater proportion of the time than indicated in the EA."

Submission 20016 suggested that regulatory or legislative limitations on the power station operating hours per annum would provide certainty to operating times.

Submission 20016 noted that process water modelling is based on a 5 per cent use and the operation of the power station as a whole is based on 15 per cent use.

Submission 20497 asked "'Can you guarantee that the power station will not run for more than the proposed amount of time? AND if it does, can you show me how the prolonged noise will affect my living conditions?'.

Submission 20501 requested an enduring limit on the size of the power station to Stage 1 with operation not to exceed 15% of the time (and 5% of the time where water is required).

Submission 20022 noted: The ES also states that the power station would operate in open cycle mode during time of peak electricity demand, typically for less than 15% of the year. The detailed environmental assessments of noise and air quality state (variously) that the power station is expected

3 Response to Submissions

3.5 Project Description and Staging

3.5.2 Community Submissions

to operate for up to 5% or 15% of the year. The environmental acceptability of the project is predicated on a maximum operation time of 15% of the year. AGL have stated in their April 2011 Newsletter on the Dalton Power Project that 'It is predicted that over the next decade rising electricity demand will substantially increase the need for rapid response "peaking" power generation in NSW.' AGL have also stated publically at the 27 August Open day at Dalton Church hall that the Dalton power station will operate at any time when it is economic for them to do so. These statements indicate that there is a potential for AGL to operate the power plant in excess of the nominated maximum 15% of the year. The Dalton EA estimated environmental impacts are based on a maximum operation time of up to 15%. The Conditions of Approval of the project should include a maximum operating time of 15% per year. AGL should also confirm the maximum operating time for both Stage 1 and Stage 2. Any exceedance of 15% should be subject to separate environmental assessment and Department of Planning approval.

Submission 20034 commented: There has been a lack of transparency about future plans for the site. While it is currently advertised as an off-peak power generation facility, the fact that there are plans for additional capacity suggests that AGL have a belief that they will be able to increase the power station's size and noise envelope in the future to meet the growing requirement for power.

Submission 20042 commented: It is submitted that the EA, in its lack of specificity and detail as to what is actually proposed, fails to satisfy these requirements. The Proponent has not clearly identified nor specified, amongst many other things any consistent detail as to the operational time of the proposed project. This is variously stated as "…typically operate for 15% of each year, with the potential for more extended operation" (EA p1-); "15% of the year to allow for rare and extreme events[12]… reasonable peak run time of 5% of the year…" (EA p14-8); or "approximately 3% of the year…" (EA p9-12). An example of the issues raised by the lack of the Proponent's commitment to the operational time of the project is identified on EA p9- 12, where the Proponent states that "… large uncertainties are associated with the potential emissions over the project lifetime.

Response

AGL has added a commitment to Section 5 of this Report that it would limit operation of the Facility to below 15% within any 12 month period.

Dalton Power Plant is being built as a peaking power station to generate electricity during times of peak demand. It is essential that electricity generating capacity is available to meet very short periods of time of very high demand to avoid power outages. The power station will typically operate during times of high demand that usually coincide with very hot or cold weather. It may also operate during periods of reduced supply caused by equipment outages. Typical operating times are during the morning and evening peaks in winter and during the heat of the day / evening in summer.

Peaking power stations have the lowest cost to construct of all power stations. However they have the highest operating costs. For this reason they are the most expensive to operate and are the last to be turned on and the first to be turned off. It is possible for short periods of time that the run hours of the power station could increase due to extended outages or unavailability of other power stations, for example during extended periods of drought.

[12] "rare and extreme events" are not defined or explained in the EA.

3 Response to Submissions

3.5 Project Description and Staging

3.5.2 Community Submissions

If a carbon price results in a shift from coal fired generation to gas fired generation, base load power generation would be met by combined cycle gas turbines. Dalton is not a combined cycle gas turbine and therefore would not be run as a base load power station as it would not be economic to do so. Dalton would continue to operate for short periods of time to meet peak demand.

In relation to the projects proposed run time ranging typically between 5 – 15 %, the air and noise studies considered the worst case scenario of the plant running continuously. AGL notes that the station is expected to typically run for around 5 % of the year and on approximately 50 days. For example, Colongra Power station ran approximately 3 % and on 50 days last year.

Although there are certain times when peak power is usually required (morning and evening peaks in winter and during the heat of the day / evening in summer), response to power demand means that there is variability in actual operating times relating to:

- the time of day / night, and
- the meteorological condition that is prevalent at the time of operation.

Each assessment (air, noise, water) has been undertaken in the following manner to ensure each assessment is robust and conservative:

- **Air:** As the Facility could potentially run in any meteorological conditions at any time of the year, for modelling purposes it has been assumed that all turbines would operate continuously for all hours of the year, under all meteorological conditions so that all potential scenarios can be addressed. The actual operation would be typically for less than 15 % of the year and not during all hours of the year.
- **Noise:** As the Facility could potentially run at any time of the day or night the noise assessment addressed all potential times of operation within a 24 hour period 7 days per week and in any meteorological condition. This ensures that the assessment is conservative and is addressing all potential run scenarios and worst case scenarios with respect to noise.
  Water: AGL is committed to reducing the water requirement for the Facility. Some confusion exists around the operational run time used in the water assessment. AGL wishes to clarify that the 5% figure quoted represents an “equivalent” usage, as water is not needed at all times of operation. This has been mistaken throughout submissions and public comments to mean that the water assessment considered a 5% operational scenario rather than the maximum of 15% stated elsewhere in the EA. To clarify, water is used for evaporative cooling of the inlet air and is only required in certain weather conditions and only when turbines are required to export maximum power. Therefore, AGL has estimated the equivalent water usage demand to be 5% rather than 15%. AGL has committed to the Facility using this as a maximum water demand as the Facility. Further clarification about issues of water demand is presented in Section 3.6.

To offer further clarification, the intent of the assessments contained within the EA was to present the impacts of the development as they apply relevant to each study to assess the potential worst case scenarios relevant to each study. The EA for the power station is based on an assessment of the full extent of development proposed, i.e. all stages of the project constructed; up to six gas turbines and up to a nominal capacity of 1500MW. The plant is proposed to be built in stages so that capacity can be delivered to the market in line with increased demand. AGL anticipates commencement of construction in mid-late 2012 for the first stage of the power station, subject to planning approvals and

3 Response to Submissions

3.5 Project Description and Staging

3.5.2 Community Submissions

transmission connection agreements. The first stage will be nominally 500MW and include two gas turbines.

AGL will continue to monitor the requirement for additional generation capacity and will determine the correct time to build second and subsequent stages of the power station. Factors such as available transmission capacity and gas will also be considered prior to committing to the construction of future stages. Although the timing it yet to be confirmed, AGL is seeking approval for both stages and therefore the EA has addressed the worst case scenario of the full development being operational.

Submission 20501 raised a question regarding some addresses reported in the EA:

Submission 20501: "Incorrect addresses of impacted residents in the EA report. Many of the addresses reported in the assessment are incorrect. The addresses on Alton Hill Road (which is sometimes referred to as Alton Hill Lane) are all Gunning rather than Dalton. Also a number of attendees at the community meeting, that neighboured the site, commented that the Dalton addresses were incorrect."

Response

The EA has adequately assessed the potential impacts of the proposal for the surrounding community, albeit with some details of the referencing of these locations recorded inaccurately. All residential locations integral to the impact assessment work carried out are clearly represented on figures throughout the EA, even though some of the typographical description of these locations were occasionally inaccurate.

Several community submissions commented on the impact of oversized trucks on the vegetation on the roads approaching the proposed power station:

Submission 20042 stated: The road between Gunning and Dalton is, for a large part of its 9 km length (contrary to the EA's measurement of 3.4 km [ES Appendix F, para 2.1]), lined on both sides by large, old eucalypts and other native vegetation. The proximity of these trees to the roadside, and their habit of overhanging the road, would necessitate the removal of many of them. Widening of the road to accommodate oversized loads will similarly involve destruction of many smaller trees and shrubs.

Submission 20042: It is well known that roadside corridors provide the only native habitat within a highly modified landscape. These corridors are generally thought to allow plants and animals to disperse (or migrate) from one habitat area to another, facilitating gene flow and colonisation of suitable sites (www.tmr.qld.gov.au). Land reserved as easements for roads, rail lines and for protection of creeks and rivers often provide vegetated corridors vital to fauna movement. Surveys carried out by the Proponent were focused on the proposed areas of works (EA 13.2.5), and apparently no consideration has been given to roadsides. A full assessment of the impacts of the road modification and tree removal for the transportation of plant for the proposed project needs to be undertaken. Without this, there is not "sufficient information" upon which the relevant ministers can effectively assess the full environmental impact of this proposal.

Submission 20042: states "the road between Gunning and Dalton is, for a large part of its 9-km length (contrary to the EA's measurement of 3.4 km (ES Appendix F, para 2.1)), lined on both sides by large, old eucalypts and other native vegetation. The proximity of these trees to the roadside, and their habit of overhanging the road, would necessitate the removal of many of them. Widening of the road to

accommodate oversized loads will similarly involve destruction of many smaller trees and shrubs. These trees are not only important habitats and wildlife corridors; they also form an attractive avenue on the approach to Dalton. Destruction of these old trees will have a significant adverse visual impact. The age of these trees precludes replanting from adequately compensating or offsetting their destruction. It will take more than 100 years to restore this vista to its present condition. The Proponent has failed to identify and address this as an issue in their EA.

It is submitted that the EA, in its lack of specificity and detail as to what is actually proposed, fails to satisfy these requirements. The Proponent has not clearly identified nor specified, amongst many other things the routes to be taken and any associated road alterations or vegetation clearing necessary for the movement of these oversized loads. This will have serious consequences for the visual/aesthetic impact of the project; disruptions to access between Gunning and Dalton for education, childcare and commuters; and serious potential impacts on local flora and fauna."

Submission 20019: Expresses concerns about the number of trees that will need to be removed along the route taken to bring in the large pieces of machinery for the project. The large trees, many of which are over 100 years old, provide homes for wildlife and wind protection for adjacent livestock. The road is over 10km long, with potentially hundreds of trees under threat. Replanting will be no compensation, given the age of the trees and the time required to repair the damage.

Response

A study was undertaken of potential traffic haulage routes to determine whether there was a travel path available with the required clearances necessary for the delivery of oversized cargo to the site. 'Oversized' cargo will be transported on trucks with a maximum width of 6.6m and a height of 5.2m. Although this is technically considered 'oversized', the load will not be sufficiently large to necessitate significant clearing of roadside vegetation.

Chapter 11 of the EA reports that a total of 24 over-dimensional and / or over-mass escorted truck convoys of pre-assembled gas turbine, generator and transformer units would occur for the gas turbine facility. These over-dimensional and / or over-mass deliveries assumes six convoys of up to four over-mass / over-size vehicles towing one multi-wheel transport unit as the maximum for either Stage 1 or 2.

To provide further information on this issue in response to submissions received, AGL commissioned Green Bean Design to reinvestigate the road network. Visual representations of typical over-mass / over-size vehicles traversing along the local road network are included as additional information in Section 4 of this report. Refer to **Figures 4-14- 4-16** in **Section 4**. AGL notes that while haulage would not require the clearing of vegetation, some vegetation trimming may be required along the local road network between Gunning and Dalton.

In accordance with details to be finalised within the current draft version of the TMP, where a road upgrade is identified as being required, AGL would liaise and engage with the RTA and relevant Councils responsible for the infrastructure. AGL would also support the remedial treatments required through the provision of financial assistance, subject to Project Approval.

The Flora and Fauna Assessment has considered all vegetation currently proposed for removal as part of the Project in terms of its ecological significance (e.g whether the tree is threatened, hollow-bearing, regionally significant in terms of fauna foraging or habitat supporting). All trees of significance,

if needing removal, have been offset/protected in the area outlined in Figure 9 and additional revegetation has been planned. With AGL's commitment to the biodiversity offset strategy and mitigation measures for the Project, it is considered that the overall biodiversity of the local area would be 'maintained or improved' as is required under biodiversity assessment guidelines under Part 3A of the EP&A Act.

AGL also notes that feedback received from the Upper Lachlan Shire Council regarding vegetation along Walshs Road has prompted AGL to consider alternative routes for the gas pipeline easement between the valve station and the power station. The objectives of subsequent investigation were informed by this imperative of vegetation clearance avoidance. A revised pipeline route is discussed in the Preferred Project Report section of this report (see Section 4).

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

Agency submissions regarding water issues were received from **Office of Environment and Heritage, NSW Office of Water** and the **Upper Lachlan Shire Council**.

The **Upper Lachlan Shire Council** submission (**19969**) addressed:

- The water assessment; and
- The various water supply options identified within this assessment.

Submission 19969 (ULSC): stated the Environmental Assessment is generalised in terms of water supply requirements and lacks due consideration of potential sources of supply. The Assessment while describing the water demand as 'small essential demand', gives no further guidance on quantities required. From discussions with the applicant it is understood that up to 38Ml per annum will be required for this facility. When placed in context with the Dalton Town Water Supply which uses 10Ml per annum the essential demand is not considered small. While the EA also indicates that water can be obtained from a number of sources, it fails to be definitive in quantities from respective sources, and given some of these sources do not appear practicable the overall conclusion is questionable.

Submission 19969 (ULSC) stated: In order to undertake adequate consideration of the water supply component of this project it is considered that the applicant needs to provide further information and undertake further investigations with regard to detail of the water supply options.

Further to this, the DP&I provided additional comments on the Draft Response to Submissions Report;

"The potential sources of water (and quantities from each source) for the operation of the project and associated impacts (i.e. any proposed infrastructure upgrades and/or infrastructure required to connect to the site and/or capital contributions) have not been adequately addressed to provide confidence that one, or a combination of these options can source the project if required. This is to be further detailed to enable the Department to have confidence regarding the nature/acceptability of impacts of sourcing water from one or a combination of these sources (Dalton potable water supply, Gunning potable water supply, Gunning sewage treatment plant, groundwater extraction)." DP&I - 02/12/11

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

Response

AGL acknowledges concerns regarding water supply and corresponding issues including traffic for possible water haulage. The following provides additional clarification of issues that have been raised.

Much of the detail in relation to the sourcing of water to meet project requirements is already contained in the project Environmental Assessment (EA). This additional detail is presented to address the numerous submissions received concerning water supply for the Project.

The following table is an extract of information from Table 14-1 in the Environmental Assessment (EA).

Water Demands	F Class Turbines with evaporative cooling only (Preferred)	
	Nominal 750MW Installed Capacity (Stage 1)	Nominal 1500MW Installed Capacity (Stage 2)
Evaporative cooling water (for turbine inlet are cooling)	10.0	20.0
Potable water	0.2	0.3
Gas turbine compressor wash	0.8	0.4
Other utility water	1	1.5
Annual Water Demand	11.6 ML/yr	22.6 ML/yr

Based on this table, AGL has adopted the conservative values of **12.5ML/yr** for Stage 1 and **25ML/yr** for Stage 2 and forms the basis of more detailed investigations.

The EA also contemplates other options, including E Class turbines which presents the worst case, because additional water is used for fogging of inlet air. This requires water of 50 to 70ML per annum overall for stage 1 and 100 to 140ML / annum for Stage 2. However AGL has excluded the consideration of this type of machine as part of this current proposal.

Concern has been raised on the lack of detail on how and where water would be sourced, with AGL previously stating that the preferred option is to use bore water from the site and the worst case being trucking of water.

Although the drilling of bores is usually an activity undertaken by the Contractor once construction has begun, AGL has moved to address concerns by pre-testing water supply during this permit application period.

AGL has received test bore licences for a total of 6 test bore sites from the NSW Office of Water (NOW) and has successfully proven the availability of reliable water supply for the full Stage 2 requirement based on the F Class turbine type of 25ML per annum from on-site bores.

Hydroilex was commissioned by Aurecon on behalf of AGL in December 2011 to manage the drilling, construction and pump testing of two (2) bores identified as ‘Bore 1’ and ‘Bore 2’, at the proposed Dalton Power Station.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

The bores were subjected to two (2) rounds of 24 hour drawdown and recovery pumping tests conducted between December 2011 and February 2012. The aquifer test results indicate the bores are capable of sustaining the following long term pumping regime:

- Bore 1 - 3.0L/s; 12hr Pumping; 12hrs Recovery; 50ML per year at 50% duty;
- Bore 2 - 0.5L/s; 12hr Pumping; 12hrs Recovery; 10ML per year at 50% duty.

The hydrogeological assessment concluded that the bores are capable of sustaining a combined annual groundwater allocation of 60ML (well exceeding Project requirements of 25ML per annum), supported by a significant level of available drawdown, and multiple aquifers with an extensive recharge zone.

AGL attaches the full Hydroilex Report as **Appendix G** to this report.

It is on this basis that AGL is now confident that trucking of water for operational purposes is unlikely to be required to meet the operational requirements for Stage 1 or Stage 2 using the preferred F Class turbines. Trucking of a small amount of potable water to the site would still be required. AGL considers that the provision of potable water supply to meet the needs of the small number of permanent staff (<10) at the facility is preferable to prevent cross-contamination. The quantity required would be limited to 200 to 300 KL of potable water per annum. This would roughly equate to 8 - 12 truck movement per year. Either the Gunning or Dalton potable water supply would be suitable for these needs.

Submission 19969 (ULSC) stated: Augmentation of the Gunning Supply - Total annual water consumption at Gunning is in the order of 60Ml per annum. The supply lacks sufficient treatment and storage to provide a secure supply during drought and flood events. A demand of 38Ml would have a significant impact upon the current water supply infrastructure of Gunning. A significant increase in water storage, a 12km pipeline and appropriate pumping facilities would be required to enable the applicant to obtain water supply from this system. The applicant must recognise this option has a significant cost that will need to be borne by the applicant and has a lead time to completion. If this option is to be pursued the applicant will need to progress discussions with Council with respect to this option as a matter of urgency.

Response

The EA recognises that the final water supply may be provided through a combination of primary and supplementary water sources. Concern has been raised that further detail is required on how and where water would be sourced, with AGL previously stating that the preferred option is to use bore water from the site and the worst case being trucking of water.

AGL now confirms its intention to source water primarily from groundwater, following the successful testing program which was carried out over the Christmas period.

As detailed above, AGL has reconsidered its power station design options and decided to adopt turbines that significantly reduce the maximum water supply demand to 12.5 ML/a (Stage 1) and 25ML/a (Stage 2).

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

Groundwater investigations completed over the Christmas break confirmed the availability of adequate water supply to meet all operational needs within the footprint of the facility. AGL considers that the provision of potable water supply to meet the needs of the small number of permanent staff (<10) at the facility is preferable to prevent cross-contamination. Either the Gunning or Dalton potable water supply would be suitable for these needs.

Groundwater investigations have indicated no significant impacts on existing bores within the region. Section 8 of the Hydroilex Report presented as **Appendix G** to this Report reports the following:

> *"The nearest registered bore (GW702612 ..) is situated approximately 2.2km to the northwest and is not expected to be in strong hydraulic connection with the subject bores. The production bores (Bore 1 and Bore 2) were monitoring during pumping to assess potential drawdown. The bores are positioned approximately 385m apart. It should be noted that no drawdown during pumping was recorded in Bore 2 whilst pumping Bore 1 and similarly no drawdown was recorded in Bore 1 whilst pumping Bore 2. Water level loggers were installed in six (6) existing bores during the second round of pump testing... The hydrographs show no drawdown was recorded in monitoring bores associated with pump testing in the production bores. Distinct drawdown responses are noted in several bores associated with pump operation in those bores during the test period. Hydroilex understand two (2) landowners have expressed concern regarding potential impacts from pumping. The monitoring data clearly demonstrates no drawdown impacts beyond ~380m from the production bores. The production bores have intersected deep fractured rock aquifers associated with large scale aquifers. Hence given the distance of existing bores and no record of drawdown during pumping in monitoring bores the proposed pumping schedule is not expected to impact on existing users." – Hydroilex 2012*

AGL is in discussions with existing licence holders to transfer unused water allocations to ensure total water allocations from the region remain within regulated limits. By way of update towards this, AGL has an agreement with a vendor for the transfer/ assignment of a water access licence. The vendor is in the process of lodging an application under the *Water Management Act 2000* (NSW) and a water access licence will then be transferred/ assigned to AGL.

Submission 19969 (ULSC): Augmentation of the Dalton Water Supply -The understood demand of the facility is almost four (4) times that of the existing village system. The existing village system lacks capacity to provide for this demand. Existing low yielding bores are not capable of providing this demand. It is considered doubtful that adequate yielding bores to supplement the town supply to meet the applicants water demand can be provided.

Response

The EA recognises that the final water supply may be a combination of primary and supplementary water sources. AGL recognised that the existing Dalton water supply would be insufficient to currently supply the Site. As such, AGL reconsidered its power station design options and decided to adopt turbines that significantly reduce the maximum water supply demand to 12.5 ML/a (Stage 1) and 25ML/a (Stage 2).

Groundwater investigations completed over the Christmas break confirm the availability of adequate water supply to meet the operational needs within the footprint of the facility.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

Submission 19969 (ULSC) stated: Gunning Sewerage Treatment Plant - The EA suggests Gunning STP effluent as an option if quality and quantity are sufficient. The annual discharge of effluent from the Gunning STP facility is around 25ML This quantity is below the understood demand of the facility. Effluent quality is well below that required for potable and process needs identified in the EA. The effluent discharge is also located more than 15km from the proposed site. Given the cost of additional treatment, a pipeline to convey it and a lack of quantity to meet total needs, using Gunning STP effluent is not considered a realistic option.

Response

The EA recognised that the final water supply may be provided through a combination of primary and supplementary water sources. The EA recognises that the Gunning treated sewage effluent could be considered as a supplementary water supply source only, however the ground water testing carried out over the Christmas break successfully demonstrates an available source for the project, and AGL now anticipates the use of on site bores to supply the full operational need of the Project.

Submission 19969 (ULSC stated): Tankering to Site - Tankering water to site is nominated as the preferred option. The basis of this preference and an analysis of the logistics of achieving this is not provided in the EA. The EA does not consider the traffic impacts, nor from what source is the tankered water to be obtained. Council is unable to fully consider the impact upon its road network without having information with respect to the route and number of tanker loads needed.

Response

The EA states that the proposed site water supply would be on-site groundwater extraction, supplemented by offsite tankering. The ground water testing carried out over the Christmas break successfully demonstrates an available source for the project, and AGL now anticipates the use of on site bores to supply the full operational need of the Project. Chapter 11 of the EA addresses the traffic impact of operation of the Facility and includes the traffic associated with tankering a quantity of 25ML per annum to the Site for the relevant roads (Walshs Road, Dalton Road, Waratah Street, Hume Street) and intersections around the site around the Site to the main arterial, the Hume Highway. Based on the preferred F Class Turbine type, 25ML represents the total annual operational requirements for the full Stage 2 (up to 1500 MW) Project.

The calculation included within the EA presented a conservative case of all water requirements being met through trucking. Further investigation by AGL into water sourcing options has confirmed the availability of adequate groundwater beneath the proposed footprint. Given this new information, AGL can confirm that the quantity of trucked water to site would be limited to 200 to 300 KL of potable water per annum. This would roughly equate to 8 - 12 truck movement per year, and the provisions to be contained within the TMP when finalised would ensure the impacts of traffic are properly and adequately managed throughout the life of the Project.

Submission 19969 (ULSC) stated: Groundwater Extraction - Groundwater availability in the area is largely an unknown quantity, however given local experiences the ability to obtain a sufficient groundwater source is considered doubtful. Irrespective of the success or otherwise of groundwater investigations it is impossible to fully assess the impact of the development without further information on quantities of water required and also further investigations with respect to potential groundwater availability.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

Response

AGL considers groundwater to be a viable option based on the results of groundwater investigations carried out by Hydroilex (refer to Appendix G for full report). As detailed above, the drilling carried out over the Christmas break successfully demonstrates adequate resources to meet the Project's needs.

Licensed extraction of groundwater is administered under the NSW Office of Water (NOW). A key component of this responsibility is ensuring compliance with the *Water Management Act 2000* and the *Water Act 1912*. Compliance with the legislation is essential to ensure equitable sharing of the resource. NOW determines the sustainable yield from aquifers when determining the number of licences and their volume.

The extraction of groundwater requires an application to NOW for a licence to drill a bore. This is generally issued with conditions to ensure that:

1. the bore is constructed to protect the groundwater resource;
2. information from the bores is obtained for future reference; and
3. the bore is located to minimise extraction interference with other users or the environment.

In regards to a licence to extract groundwater for use at the Dalton site, AGL can only obtain a licence through trading. AGL will not be able to extract any additional groundwater from the aquifer that has not already been allocated. This is because the site and the immediate surrounds have an embargo on applications for new Part 5 water licences unless the project falls into one the specified exemptions. The embargo orders on new licences would apply to the Project and, as such, the only option to source groundwater will be to trade a licence from an existing licence holder. Groundwater licences are issued to protect the rights of licence holders, ensure that water is shared amongst users, and to ensure that environmental requirements are protected.

The Site is within the Lachlan Fold Belt Groundwater Management Unit (GWMU), thus a licence must be sourced from within the Lachlan Fold Belt GWMU. Temporary transfers are allowed from any licence holder within the Lachlan Fold Belt. Permanent transfer of groundwater may not be sourced from bores located in the parishes of Galambine, Wilbertree, Eurundury and Bumberra in the County of Phillip, otherwise permanent trade is permissible. The Site is not located in or near the County of Phillip. It is assumed for the Site the water trade would be a permanent transfer i.e. the outright purchase of part or all of the volumetric entitlement attached to an existing licence.

By way of update towards this, AGL has an agreement with a vendor for the transfer/ assignment of a water access licence. The vendor is in the process of lodging an application under the *Water Management Act 2000* (NSW) and a water access licence will then be transferred/ assigned to AGL.

The Lachlan Fold Belt GWMU covers an area of approximately 238,000 km^2 (http://www.anra.gov.au/topics/water/gmu/gmu-unincorporated-area-lachlan-fold-belt-province.html) predominately in NSW, but extending into Victoria. The sustainable yield of an aquifer is effectively the volume that can be extracted from the aquifer without causing unacceptable impacts on the environment or other groundwater users by depleting the resource i.e. it represents a proportion of the estimated annual average recharge of the aquifer system. The predicted sustainable yield of the overall Lachlan Fold Belt GWMU is about 428,900 ML/a, so the maximum considered requirement of 104 ML/a detailed within the EA (considering various scenarios) would represent only about 0.02% of this. It is noted that the preferred turbine type would require a maximum of 25ML per annum, represented significantly less than the above percentage calculated for the worst case scenario.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

When making a licence application AGL would be required to undertake the necessary investigations to assess the imJ:\JOBS\43177661\5 Works\Submissions report_final\March 2012pacts and provide justification/evidence to the conclusions made on the following:

1. the number and spacing of bores that will be required to meet AGL Dalton site requirements; and
2. that the required extraction regime will not create unacceptable impact on existing users (neighbouring bores and surface water systems).

The level of investigation is typically commensurate with the volume applied for, and in the case of the AGL Dalton site would likely include the following:

1. mapping any springs in the area;
2. drilling of exploration bores to determine areas and aquifer for futher testing;
3. additional drilling in target areas and target aquifers to assess yield and water quality;
4. numerical modelling to predict extent of drawdown based on anticipated extraction rates over the assumed period of use.

AGL has initiated the required investigations to confirm suitability of groundwater for the Project. **Appendix G** to this Report presents the full Hydroilex Report prepared for AGL. By way of update towards water licences, AGL has an agreement with a vendor for the transfer/ assignment of a water access licence. The vendor is in the process of lodging an application under the *Water Management Act 2000* (NSW) and a water access licence will then be transferred/ assigned to AGL.

In relation to the potential to impact on nearby groundwater extraction bores, groundwater investigations to date have indicated no significant impacts are expected on existing bores within the region. According to Hydroilex (2012), no significant measurable drawdown is expected to result from the project.

Submission 19969 (ULSC) stated: The EA identifies that blowdown water will be disposed of in lined evaporation ponds. The EA, however, fails to identify how residual waste from those ponds will be managed, nor details on the expected contaminants contained therein.

ULSC reiterated this point upon review of the draft Report, adding also that details of traffic movements associated with the disposal to an appropriately licensed facility remain unknown. – ULSC (comment on the Response to draft)

Response

The residual waste from the ponds would be disposed off-site by a licensed contractor at an appropriately licensed facility. AGL has committed in Table 14-11 and the Statement of Commitments in Chapter 19 that “Waste solids, sludge/brine would be removed from site and disposed of by a licensed contractor.”

The residual waste in the evaporation ponds is a concentrated brine (salts) solution. The composition of the waste depends predominately on the water quality of the supply water, but also on the pretreatment required and the degree of concentration (evaporation), so we cannot yet be specific about the quality. However, the residual brine will be a typical industrial brine waste containing predominately major cationic and anionic species present in the source water (possibly supplemented by pretreatment additives containing the same basic species): sodium, calcium, magnesium,

potassium, chloride, sulphate, carbonate and bicarbonate. The concentration of the brine will be a function of the degree of concentration that has occurred before it is removed from site, but may approach or exceed saturation and could therefore be up to about 300,000 mg/L total dissolved solids.

Given that the proposal is for a peaking power station, operation would occur only at times of very high peak demand. Operation time cannot be accurately predicted, and therefore any attempt to quantify waste volumes which would be generated would not be meaningful, given that evaporation rates (and hence waste generation rates of this type) would be dependent upon numerous factors which cannot be predicted; climatic conditions at the time of operation and between operation events. These factors would determine both water demand and throughput as well as subsequent evaporation rates within the ponds and hence volume of waste to be periodically transported off site. As an initial indication, AGL might reasonably expect that a total of one truck movement of waste material may be required from the site to a licensed facility every 2 or 3 months.

The **NSW Office of Water** (20737) provided comment on:

- water supply options,
- wastewater pond,
- management and
- licences.

Submission 20737 (NOW) stated "the Environmental Assessment (EA) provides a range of potential water supply options and water supply requirements depending on the final configuration of the project. As these options have not been finalised and no water licences or agreements with licensed providers have been obtained, this represents a significant commercial risk to the project."

Response

For the purposes of the EA, it was proposed that the site water supply would be on-site groundwater extraction, supplemented by offsite tankering. Although the EA states that the final water sourcing arrangements would be subject to further feasibility assessment, and further consideration would be given during the detailed design stage regarding piping from these sources, this EA does not address the broader environmental impacts associated with construction and operation of a water supply pipeline from these sources.

Further to the successful hydrology tests carried out to determine the availability of on site ground water to likely meet the full operational needs of the Project, AGL understands that further liaison with NOW will be required in order to:

- purchase a groundwater allocation from an existing licence holder and apply to NOW for the transfer of that allocation to AGL; and
- apply for a Part 5 bore licence to receive the transferred allocation.

In addition, AGL will be required to have purchased the groundwater allocation from an existing licence holder from within the Lachlan Fold Belt GWMA. Progress towards this is currently being made.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

AGL has an agreement with a vendor for the transfer/ assignment of a water access licence. The vendor is in the process of lodging an application under the *Water Management Act 2000* (NSW) and a water access licence will then be transferred/ assigned to AGL. AGL is confident that the purchase of water allocation for the site for the required volume is achievable such that the groundwater source option is feasible. AGL to date has received test bore licences for a total of 6 test bore sites from the NSW Office of Water (NOW) and has successfully proven the availability of reliable water supply for the full Stage 2 requirement based on the F Class turbine type of 25ML per annum from on-site bores.

Hydroilex was commissioned by Aurecon on behalf of AGL in December 2011 to manage the drilling, construction and pump testing of two (2) bores identified as 'Bore 1' and 'Bore 2', within the proposed facility footprint. The bores were subjected to two (2) rounds of 24 hour drawdown and recovery pumping tests conducted between December 2011 and February 2012. The aquifer test results indicate the bores are capable of sustaining the following long term pumping regime:

- Bore 1 - 3.0L/s; 12hr Pumping; 12hrs Recovery; 50ML per year at 50% duty;
- Bore 2 - 0.5L/s; 12hr Pumping; 12hrs Recovery; 10ML per year at 50% duty.

The hydrogeological assessment concluded that the bores are capable of sustaining a combined annual groundwater allocation of 60ML (well exceeding Project requirements of 25ML per annum), supported by a significant level of available drawdown, and multiple aquifers with an extensive recharge zone.

AGL attaches the full Hydroilex Report as **Appendix G** to this report.

Submission 20737 (NOW) stated that "as detailed in the EA the use of an evaporation pond to store wastewater requires specific design requirements to prevent seepage of contaminants into the groundwater and potentially surface water systems. The NSW Office of Water supports the proposed use of an impermeable liner to mitigate this potential impact and would require the development of a groundwater monitoring program to NOW's requirements to monitor its effectiveness."

Response

Section 14.5.4 of the Environmental Assessment acknowledges the need for an appropriate liner system, stating that:

> *"A pond liner would be required to avoid contamination of surface water, soil and groundwater. A composite pond liner is proposed… The final liner design would be considered in further design stages, understanding however that it would meet the regulatory permeability requirements."*

Detailed design of the liner system for the evaporation pond would include development of a appropriate monitoring system to ensure the integrity of the system is maintained. Mechanisms may include a monitoring of an inter- and/or under-line drainage layer and/or a groundwater monitoring system.

Submission 20737 (NOW) requests "consultation during the development of management plans relevant to water management for both construction and operation periods."

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.1 Agency Submissions

Response

AGL would consult with NOW during the development of management plans relevant to water management for both construction and operation periods.

Submission 20737 (NOW) stated that "based on the potential water supply options detailed in the EA it is likely that the proponent will require licenses under the Water Act 1912 or Water Management Act 2000 and the transfer of water entitlements prior to water extraction and use at the site."

Response

This is acknowledged and noted. AGL is currently progressing the relevant licences required for the Project. An important first step in the process was to demonstrate adequate certainty around the availability of on site groundwater resources which was achieved during the test drilling program carried out over Christmas.

The NSW Office of Water requests the following conditions be included in any determination issued for the Dalton Power Project:

1. *The proponent shall prepare a Water Management Plan in consultation with and to the satisfaction of the NSW Office of Water. This plan must include the following:*
   a) *An Erosion and Sediment Control Plan*
   b) *A Surface Water Management Plan*
   c) *A Groundwater Management Plan*
2. *The proponent must obtain relevant licensing under the Water Act 1912 or Water Management Act 2000 from the NSW Office of Water before commencing any works which intercept or extract groundwater.*

Response

AGL acknowledges the above conditions and would develop the Water Management Plan in consultation with NOW as per the conditions of Project Approval.

The OEH (submission 20897) commented on water management in terms of the requirement for the Project to achieve nil-discharge to the environment, and meet to recommended conditions for the Project.

Response

Recommended conditions relating to water as provided by OEH are presented in full in **Submission 20897** in **Appendix B**. AGL would commit to meeting the conditions of consent for the Project and the EPL licence to operate.

Agency Concurrence and Conclusions

Correspondence received from Department of Primary Industries, Office of Water, (Mark Mignanelli 2 March 2012) cited further review of the submissions report and the additional hydrogeological report dated 22 February 2012.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.2 Community Submissions

The following comments were made:

- *"The Office of Water has completed a review of the pump test results presented in the Hydroilex report 'Hydrogeological Assessment Incorporating 24Hr Pumping Test (Bore 1 and Bore 2)' dated 22 February 2012 whilst taking into account Stages 1 and 2 (based on The F Class turbine type) required water supply. Based on this review the Office of Water concludes that the required water supply requirement of 25 MLly can be sourced via groundwater extraction from on site bores provided water quality and quantity remain consistent with results of the Hydroilex 24 hour pumping test. Appropriate licensing under NSW water legislation will be required."*

- *"The results of the Hydroilex 24 hour pumping test included water level measurements collected from water users within a 4 km radius of the site. Impacts to water levels were not identified in water user bores within this radius during or immediately after the test, thus it is not anticipated that other bore owners will be impacted by the proposed pumping at the site."*

- *"Based on the hydrogeological characteristics at the site and the volume of proposed water to be extracted, the Office of Water does not anticipate significant impacts to the Lachlan River."*

Recommended conditions of approval are consistent with those provided in previous correspondence:

"RECOMMENDED CONDITIONS OF APPROVAL
The Office of Water requests the following conditions be included in any determination issued for the Dalton Power Project (MP1 0_0035):

- *The proponent shall prepare a Water Management Plan in consultation with and to the satisfaction of the NSW Office of Water. This plan must include the following:*
  - *a. An Erosion and Sediment Control Plan;*
  - *b. A Surface Water Management Plan; and*
  - *c. A Groundwater Management Plan.*
- *The proponent must obtain relevant licensing under the Water Act 1912 or Water Management Act 2000 from the NSW Office of Water before commencing any works which intercept or extract groundwater.'*

3.6.2 Community Submissions

Comment on the water requirements of the project were included in community submissions received.

Several submissions commented on the source of water for the project.

Submission 20016 commented: The requirements for water, especially process water, appear to poorly addressed within the EA. It is stated that ([tankers are] "currently the only guaranteed water supply" and a "large number of [tanker] trips [will be] required per year" but then in another part of the EA it is stated: "It is assumed that the Facility would not be supplied entirely by trucking water". Furthermore, process water modelling is based on a 5 per cent use and the operation of the power station as a whole is based on 15 per cent use. Given the economic implications of using process water for improved turbine efficiency and uncertainty as to how many hours a year the power station would actually operate, the reliance on trucking alone as a water supply appears problematic. Such an approach potentially represents a major local environmental impact.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.2 Community Submissions

Submission 20019 commented: As discussed with AGL staff at a local meeting, there is currently no site water available. They have indicated they will not use water from the Lachlan River (which is only now recovering from the last drought). They have indicated they may pipe water from Gunning (10km away), but Gunning's water supply is also limited. They would like to drill to assess the potential for bore water - but the local bore water is not adequate for machinery due to high mineral contamination. Also during the drought, the bores were drying out, so the option of bore water is by no means a stable proposition. The only option left is to truck the water in, which will mean a minimum of 1100 trucks a year (based on AGL's own conservative estimate of requiring 20 megalitres per year). This will be an ongoing negative impact on the local communities and the environment.

Submission 21194 noted that water supply arrangements have not been finalised, and also comments that the Project "is likely to have an impact on surrounding primary producer's ability to water stock and crops as well as local water supply for the towns of Gunning and Dalton."

Submission 20497 requested clarification on where the water for the facility will come from, both for operation and construction.

Submission 20034 noted: Issues such as water use, and the source of that water, have not been addressed to my satisfaction. AGL staff at consultation events have not been able to provide a suitable level of detail on how much water would be required, or where that water would come from.

Submission 20042 noted: The Director General's Requirements specifically state that: "The Proponent must be able to demonstrate that an adequate and secure water supply is available for the life of the project" (EA, p1-13). At best, the EA identifies "a number of potential water sources" (EA, p14-15) for which "approval is sought". This clearly does not satisfy the Director General's Requirements. It is therefore essential that the following matters be determined and verified.

- *The actual water requirement. The Proponent must specify the type and quantity of the turbines to be installed. The nature and extent of water- cooling with respect to the proposed configuration must be declared. It is irrelevant that "…(i)f high fogging is not included, the overall water demand… would be substantially reduced…" (EA p14-9), if it is intended to be used because of "efficiency" reasons. More information is also required as to the air quality implications of not applying water in the process.. The US EPA site provides a document that states, in relation to gas-fired turbines: "Water or steam injection is a technology that has been demonstrated to effectively suppress NOX emissions from gas turbines.. The effect of steam and water injection is to increase the thermal mass by dilution and thereby reduce peak temperatures in the flame zone. With water injection, there is an additional benefit of absorbing the latent heat of vaporization from the flame zone. Water or steam is typically injected at a water-to-fuel weight ratio of less than one. Depending on the initial NOX levels, such rates of injection may reduce NOX by 60 percent or higher. Water or steam injection is usually accompanied by an efficiency penalty (typically 2 to 3 percent) but an increase in power output (typically 5 to 6 percent). The increased power output results from the increased mass flow required to maintain turbine inlet temperature at manufacturer's specifications. Both CO and VOC emissions are increased by water injection, with the level of CO and VOC increases dependent on the amount of water injection." (www.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf, 3.1.4.1 Accessed on 10/09/2011).*

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.2 Community Submissions

The Proponent has not adequately addressed this issue, and the relevant departments may impose in any approval, an obligation to use additional water to achieve "Best Available Control Technology (BACT)" (EA p1-13 Table 1-1, Director General's Requirements)

Submission 20042 commented: If water is to be trucked in, assessments need to be made as to the impacts of this on our roads and towns. As ratepayers, we cannot be expected to be exposed to any liability for maintaining and repairing roads for the benefit of a private, commercial organisation.

Submission 20042 commented: The trucking of large quantities of water will also necessitate additional water requirements for adequate dust suppression. This has not been adequately addressed in the EA. Estimates in the EA allow for one water truck per day during the construction stage (EA Table 4-2, Appendix F) and none during the operational stage. Given the projected increase in traffic and "…the potential for dust to be generated due to the excavation and handling of soils, site grading activities and vehicle movements…", one water truck per day is patently insufficient to provide adequate dust suppression on both the dirt roads and a 27-ha construction site.

Submission 20042 stated: "Given the above, it is submitted that the following undertakings must be required of the Proponent.

- *The provision of specifications regarding configuration, cooling requirements and maximum operating time of the facility, in order to quantify the water required.*
- *Contractual agreements with respect to the supply of water.*

Submission 20042 commented: In the absence of any water-use data relating to operation in excess of 5% of the year, it is submitted that the Proponent could not be applying for approval to operate the plant for anything in excess of that limit. An application for operations in excess of 5% must necessarily provide the relevant ministers with "…sufficient information to determine the environmental impacts…" of operating at that level (EA p1-9).

Submission 20042 commented: It is submitted that the EA, in its lack of specificity and detail as to what is actually proposed, fails to satisfy these requirements. The Proponent has not clearly identified nor specified, amongst many other things how water will be sourced for the project. The ability "to demonstrate that an adequate and secure water supply is available for the life of the project" is a clear and unequivocal requirement of the Director General and has not been satisfied.

Submission 20042 commented: The actual water requirement will also necessarily depend upon the operational time of the facility. The EA assumes an operational time of 5% of the year. Elsewhere in the EA, the Proponent states that the facility will "…typically operate for 15% of each year, with the potential for more extended operation" (EA p1-1). In the absence of any data relating to operation in excess of 5% of the year, it is submitted that the Proponent could not be applying for approval to operate the plant for anything in excess of that limit. An application for operations in excess of 5% must necessarily provide the relevant ministers with "…sufficient information to determine the environmental impacts…" of operating at that level (EA p1--)

Response

The EA states that site water supply would be on-site groundwater extraction, supplemented by offsite tankering. AGL has provided additional detail contained within this report about refinements to total water demand based on the preferred F Class machine type.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.2 Community Submissions

Feasible water sources have been identified through the preliminary groundwater testing program carried out during the Christmas 2011 period. AGL intends to source the 25 ML for the full Stage 2 Project via the extraction of groundwater from bores to be located on site.

AGL will therefore be required to:

- purchase a groundwater allocation from an existing licence holder and apply to the Office of Water for the transfer of that allocation to AGL; and
- apply for a Part 5 bore licence to receive the transferred allocation.

Licences in accordance to water sharing plans and allocation rules will be required, however AGL is confident that a commercial agreement can be reached for the purchase of these allocations.

Chapter 11 of the Environmental Assessment considered the impact of trucking the nominated water supply for the Project, however AGL reiterates their intention to fully supply the operational needs of the Project through groundwater extraction.

AGL notes that a small quantity of potable water (200- 300 KL per annum) would require transport by truck to Site. Potable water supply delivery to Site would require approximately 15 truck deliveries per year.

From the groundwater quality results obtained during the testing carried out over the Christmas break, the groundwater quality would not present a problem for operational use by the Project considering a number of water treatment options which form part of the proposal.

Water injection into gas turbines can be used to reduce NOx in emissions, but this is not proposed at the Dalton Facility. The water injection for NOx control is into the combustion zone of the turbine, not the inlet air. It is proposed to use dry-low NOx to reduce NOx in turbine emission at Dalton, which is 'best practice' for NOx control, with significantly improved NOx reduction compared to water injection. Water injection is actually the previous generation NOx control method and is generally no longer considered 'best practice'. Humidification/densification of the inlet air using water, as is proposed at Dalton, would not have the same effect on emission as injection for NOx control. Inlet air humidification/densification can be used in conjunction with water injection for NOx control i.e. they have independent purposes. Note that this issue is also discussed in the AGL response to air quality Section 3.2.2.

Submission 20042 stated: The intended source of water. If groundwater is being accessed and used, the impact of this on other users, including the Dalton Village, should be adequately addressed. During the recent drought years, bore yields were not dependable and could not be considered an "adequate and secure water supply".

Submission 20042 also stated: "If ground water is to be used, this will have serious implications for others dependent upon that supply for domestic, business or agricultural purposes. It could also have potential consequences for the Dalton village water supply, which relies on groundwater.

Response

Licensed extraction of groundwater is administered under NOW. A key component of this responsibility is ensuring compliance with the *Water Management Act 2000* and the *Water Act 1912*.

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.2 Community Submissions

A detailed response on this issue is provided in Section 3.6.1 above in response to ULSC. AGL has received technical advice from the contractors engaged over the Christmas period to manage the drilling tests that groundwater extraction on site would be unlikely to impact upon neighbouring bores.

Submission 20042 stated: It is submitted that the EA, in its lack of specificity and detail as to what is actually proposed, fails to satisfy these requirements. The Proponent has not clearly identified nor specified, amongst many other things the type of turbines to be installed. There may be "between two to four "E" class turbines… or two to three "F" class turbines"… (EA p1-1). This has serious implications for the quantity and quality of water required for the "efficient" operation of the facility."

Response

The Environmental Assessment has considered the potential impacts from the Facility being either furnished with E class machines or F class machines. The water assessment considered in detail the water impacts of both types of turbines and their water demand requirements are presented in **Table 14-1** of the Environmental Assessment. AGL reiterates that the preferred turbine type is the F Class and is not proposing the E Class turbine type as part of this proposal. A key consideration in this decision was the significantly smaller water requirements for Project operation.

Submission 20038 stated AGL must consider installing sufficient surfaces and tanks to harvest rainwater as the only sustainable option. Water recycling must also be considered. Using the Dalton groundwater supply without complete understanding of its full extent and the impacts of over-use is irresponsible and environmentally unsound.

Response

As noted in the Environmental Assessment, consideration would be given to potential use of water recycling to supply some of the utility water usage for the project e.g. use of backwash water from water treatment processes and/or rainwater harvesting. As discussed in Section 14.5.3 of the EA, if the high fogging option is adopted, consideration will be given to more substantial recycling of water for process use; distillate from brine concentration. This would be confirmed during detailed design.

With respect to recycling water, AGL has stated in the Statement of Commitments that:

"Following confirmation of water supply source(s) and arrangements during the detailed design of the water treatment system, the following would be investigated and implemented following a cost benefit analysis of the following:

- Assessment and potential implementation of inlet filter (if any) backwash recycling system;
- Maximising recovery of product water in any desalination systems;
- Ensuring appropriate pretreatment prior to a deionisation plant to ensure minimal loss of efficiency due to poor feed water quality (physical fouling, ion-exchange resins 'poisoning' due to organics contamination, etc);
- Assessment and potential recycling of the evaporative cooling system blowdown (side stream purification and return to the cooling water system or blending with the desalination/deionisation plant feed water possibly after filtration and/or other pretreatment); and
- Assessment of a zero liquid discharge option whereby all wastewater streams are thermally desalinated to produce only a solid salt residue, with recovered distillate recycled. This would be

an extension of a brine concentrator option, whereby a crystalliser or dryer would further treat a brine to recover solid salt."

As noted above, the extraction of groundwater is governed by the conditions imposed of the extraction licence. Consequently, over-use over groundwater is not permitted. AGL would comply with all conditions imposed by the extraction licence.

DP&I noted in its comments on the Draft Response to Submissions Report that the response does not address section 6.2-6.9 of the "Community for accurate impact assessment of the Dalton Power Station" submission (Submission 20501 Andrea Strong on behalf of CAIAD). Responses from AGL are provided below.

6.2 The power station needs the water in summer when other demand is highest and supply is lowest. The requirement for water by the power station in the summer coincides with when there is least supply of water and when other water users in the community have the greatest need for water - Submission 20501

Response

The results of the drilling program over the 2011/12 summer period have confirmed adequate groundwater supply and no significant off-site impacts on other bores. Furthermore, AGL is negotiating the transfer of unused groundwater allocations to maintain the total water use in the catchment .The use of groundwater storage will mean there is no competition for water use over summer months.

6.3 All water options have problems. The EA lists water supply options in Table 4-4 stating that although tankered water is the only guaranteed water supply, Gunning water supply (Lachlan River offtake) and ground water extraction are potential options as a primary water supply source - Submission 20501

Response

The preferred water source is groundwater sourced from within the project footprint. Recent groundwater investigations have indicated the presence of sufficient water for these needs.

6.4 Tankering water will increase traffic impacts on residents. While tankering means that AGL is not taking scarce water from the community or interdependent ecosystems, it will increase traffic impacts. The EA says that up to 40 truck deliveries per day could be required to supply water to the plant (p11-10). However it is not clear if this is an upper limit given that it is assumed the plant will only operates 5% of the year with water demand (other analysis is all based on operating 15% of the year). Traffic impacts need to be carefully assessed to minimise disruption to residents. Forty truck deliveries a day seems more than could be comfortably tolerated - Submission 20501

Response

The calculation included within the EA presented a conservative case of all water requirements being met through trucking. Further investigation by AGL into water sourcing options has confirmed the availability of adequate groundwater beneath the proposed footprint. Given this new information, AGL can confirm that the quantity of trucked water to site would be limited to 200 to 300 KL of potable water per annum. This would roughly equate to 8 - 12 truck movement per year. The finalised TMP will

consider additional vehicle movements required for this water trucking requirement within the plan to ensure the impacts of traffic are properly and adequately managed throughout the life of the Project.

6.5 *Experience of the community indicates groundwater may not be abundant. In relation to ground water extractions the EA states that there is currently an embargo on new applications for ground water licences within the Upper Lachlan Alluvium where the project is sited. The EA goes on to say the current level of extractions is well below sustainable yields, arguing that there is groundwater available for the project. However they also note that studies between 2004 and 2005 have shown a consistent seasonal drop in water levels since 1991 (AGL and URS 2011, p8-4). This accords with comments by the community at the public meeting, that previously reliable bores in the Dalton region have gone dry in recent years and any plans to extract groundwater could impact on water availability to the existing users - Submission 20501*

Response

Recent hydrology investigations indicate a sustainable supply of groundwater within the site footprint from fractured rock aquifers. Drawdown from these bores is unlikely to affect exisiting surrounding bores as detailed in the technical discussion offered in Section 8 of the Hydroilex Report presented in Full as Appendix G to this report. AGL is seeking to transfer unused groundwater entitlements to its proposed use to ensure total groundwater extraction remains within the regulated cap for this water resource.

6.6 *Reduced approval process for taking water from the community because of Part 3A. The EA says that in 2008 the then Planning Minister declared power generation projects over 250MW to be "critical infrastructure projects" and subject to Part 3A of the EP&A Act. It then goes on to say:*

> *"Under Section 75U(1) of the EP&A Act, projects approved under Part 3A do not require a water use approval under Section 89, a water management work approval under Section 90 or an activity approval under Section 91 of the Water Management Act 2000.*
>
> *As the proposal does not impact on the river to the north of the site, the licence and approval provisions under the WM Act do not apply."*

It is concerning that the approval process for the Dalton power station, in relation to water usage, may be any less rigorous because of Part 3A of the EP&A Act, particularly so given the ESOO 2011 report which says no new electricity capacity will be needed in NSW until 2018/19, in seven years time. The ESOO 2011 report raises serious questions about declaring all power generation projects over 250MW "critical infrastructure" - Submission 20501

Response

Water regulation is somewhat complicated in NSW due to the relevance of both the Water Act 1912 and the Water Management Act 2000. The latter is the overriding regulatory framework across geographical areas where Water Sharing Plans (WSPs) have been introduced. The provisions of Part 3A were designed to streamline the associated approvals required for certain types of development

rather than remove any requirement for proper and thorough consideration of water use and activities likely to impact upon waterways. AGL contends that NOW and the NSW Department of Planning and Infrastructure have required detailed investigations of project water requirements as well as feasible supply options for water sourcing. Commenting further on the merits or otherwise of approval pathways is beyond AGL's scope in addressing this submission.

AGL included a detailed project rationale within Section 2 of the EA; the Project Needs and Alternatives Chapter. The facility is being proposed to provide peaking power generation capacity to ensure electricity can be generated and supplied to consumers during times of high peak demand.

6.7 How can taking water upstream not impact on the river downstream north or the site? It is also unclear how it is possible to take water upstream, viz. the headwaters of the Lachlan system, and not impact on the river downstream to the north of the site. - Submission 20501

Response

AGL confirms that the proposal has been further refined to rule out water sourcing options other than groundwater extraction and comparatively small deliveries of potable water to site via trucking.

6.8 Demands on water resources makes the project conflict with the aims of the Upper Lachlan Shire LEP 2010. The fact that the operation of the power station requires a large amount of water relative to the current use of the land is inconsistent with the aims of Upper Lachlan Shire LEP 2010 to "encourage conservation of natural resources" and "promote the use of rural resources for agriculture and primary production". - Submission 20501

Response

AGL would like to clarify that the plant could actually function with zero water supply. However, supplying water to the plant great enhances efficiency, and so it is in the best interest that a defined water requirement for the plant is responsibly and sustainably sourced. An assessment of the project against the Upper Lachlan Shire LEP 2010 is presented in Chapter 5 of the EA, and AGL asserts that the proposal is consistent with both listed aims. The relevant extracts are presented below:

LEP objective	Project Consistency	Location within EA
b) to encourage the sustainable management, development and conservation of natural resources	Natural gas is a clean burning fuel and has comparatively low greenhouse gas emissions. In terms of alternate power generation technologies, open cycle gas turbines present the best balance of outcomes between the imperatives of climate change mitigation and meeting peak electricity demand while managing the price of electricity for end use consumers. Water will only be used within sustainable catchment limits as identified by regulation.	Chapter 3 Alternatives

3 Response to Submissions

3.6 Water Requirements (demand, sources and availability)

3.6.2 Community Submissions

LEP objective	Project Consistency	Location within EA
c) to promote the use of rural resources for agriculture and primary production including fishing, forestry, mining and related processing, service and value adding industries	The Project benefits broader community services through the supply of electricity to the state of NSW and the National Electricity Market, and is expected to have positive economic and social impacts during both construction and operation phases with potential for a positive effect on the regional economy. By sourcing unused groundwater allocations from existing users, AGL will ensure that water use is consistent with the National Water Initiative for the movement of water to highest value use, and that no net increase in sustainable groundwater use occurs as a result of the project.	Chapter 3 Alternatives Chapter 16 Land Use and Property Impacts Chapter 17 Socio Economic Assessment

6.9 A review of groundwater and Lachlan River water availability needs to take place. A thorough review of groundwater availability, including interviews with local land owners about actual experience with water levels in bores in recent years to confirm theoretical possible water extraction, is necessary before any major extraction of ground water is approved. Also any offtake from the Lachlan River, either directly from the river or indirectly from the Gunning water supply, needs to assess the impact on existing land owners and the fragile Lachlan River environment.

Given the size of the water demand of the project, relative to agricultural use of the land, extraction of groundwater needs to be assessed to ensure yields are sustainable. It will be important that existing users aren't impacted and interdependent ecosystems aren't damaged. The NSW State Groundwater Policy Framework Document (1997) provides objectives for the ecologically sustainable management of the State's groundwater resources and it will be important this project is consistent with those. Also consistency with the objectives of the Water Management Act 2000 will be important (irrespective of any Part 3A exemptions). - Submission 20501

Response

AGL must consult and satisfy the rigorous requirements of the NSW Office of Water and the NSW Department of Planning and Infrastructure for approval to be granted to source groundwater for the proposal.

3.7 Water Quality Impacts

3.7.1 Agency Submissions

Water quality impacts were not raised in any agency submissions. The OEH (20897) submission namely discussed water in terms of the requirement for the Project to achieve nil-discharge to the environment, and to recommend conditions for the Project. As noted in section 3.6.1 of this Report, AGL commits to meeting conditions of consent for the Project and conditions of the EPL.

3.7.2 Community Submissions

Two community submissions commented on the impact of the development on rainwater used for drinking water:

Submission 20050: We also rely on rainwater for drinking water. Therefore, we have serious concerns about the impacts of pollution on the health of the students and staff.

The Applicant should be required to undertake the relevant investigations into the existing air quality levels and to commit to the monitoring of those levels for the life of the project."

Submission 20042: "The students grow vegetables for their own consumption and rely on harvested rainwater for drinking and other requirements. Insufficient data has been provided regarding the cumulative effect of exposure to the relevant pollutants."

Response

Given the clean burning nature of the fuel, the buoyant plume properties, and the low particulate matter levels (onto which volatile compounds could adsorb and subsequently deposit), the potential for concentrated deposition of the hazardous air pollutant emissions is considered to be low. This will ensure that drinking water collected from a roof will not be contaminated. Note this issue has also been addressed in Section 3.2.2 – Air Quality Impact Responses in this report.

3.8 Visual and Landscape Impacts

3.8.1 Agency Submissions

Visual and landscape impacts were not raised in agency submissions. The DP&I sought additional visual assessment inputs in its submission. These are addressed in Section 4 of this report.

3.8.2 Community Submissions

The visual impact of the project was commented within a number of submissions;

Submission 20497 stated that none of the EA visual simulations shows the impact of the power station on the Mount Pleasant property (3km from the site). The submission requests that the visual impact from this location be identified, and the ways this impact will be reduced.

3 Response to Submissions

3.8 Visual and Landscape Impacts

3.8.2 Community Submissions

Response

AGL notes that five photomontages from representative locations around the facility were completed as part of the visual and landscape assessment included within the EA. However, in response to the specific request within Submission 20497, AGL commissioned Green Bean Design to produce an additional visual simulation to demonstrate potential views of the facility from the Mount Pleasant property.

The visual simulation prepared from the Mount Pleasant property is presented as **Figure 4-10** in **Section 4** (given that this is new information not previously included within the EA).

Submission 20501 commented: "No artist impression or elevation drawings of the proposed development. Apart from the wrong image on the front cover, there is no artist impression of the power station included in the EA. While a plan of the site has been included, showing dimensions roughly 500 m by 700 m, no elevations showing reference levels are provided. Some distant views are included as part of the visual assessment, but nothing is provided to show the bulk and scale of the structure with reference to the topography. An artist's impression of the much smaller 210MW Tuggeranong power station is included here in Appendix C of this submission.."

Response

Given the significant buffer separating the power station from surrounding areas (because the development would be located within a much larger AGL-owned site), it was considered that the distant views (i.e. the actual visual impact of the development from receptor locations) would effectively demonstrate the degree of visual impact likely to be felt by residents and the general public travelling through the area.

AGL has prepared a 3D model to give some indication of what the facility bulk would look like in the landscape from within the AGL owned site. The 3D representation is presented in **Figure 4-4** in **Section 4** (given that this is new information not previously included within the EA). It is noted that this model has been revised since the preparation of the Draft Response to Submissions Report issued to DP&I October 2011. Additional elevation plans are also included in **Appendix F**.

Submission 20501 raised issues regarding site night lighting impacts and sun glare from chimney stacks:

Submission 20501. "An assessment of proposed night lighting needs to be done to prevent adverse impacts. Uranquinty residents say that night lighting of the power station and sun glare from the chimney stacks has impacted negatively on them. AGL have stated that endangered owls in the Dalton area mean that they will face lighting downward and so night lighting won't be a problem for the Dalton community. Given that other communities have had problems with night lighting, the environmental assessment needs to review the night lighting proposal to minimise adverse impacts. "

Response

The visual impact assessment (***Appendix K, Volume 2 Part 2 to the EA***) considered potential visual impacts associated with night time lighting and commented that the use of down lighting and motion sensing lighting would minimise night-time light spill into neighbouring areas. The visual impact

assessment also considered potential mitigation measures to minimise adverse impacts. These included:

- Lighting associated with the power station would be designed to avoid direct line of sight from areas surrounding the site from which the mid to upper portions of power station stacks may be visible at night.
- The top of the stacks would not have lighting.
- Large floodlights would generally not be used, although it is likely that some lights may be required for emergency lighting to allow emergency maintenance.
- Security lighting would be designed not to spill light onto neighboring residences.

Submission 20501 noted: "A review of the effectiveness of non-reflective material to prevent sun glare needs to be undertaken. AGL say non-reflective material will be used to construct the chimney stacks. This was also claimed in the construction of the Uranquinty power station. The initial non reflective material used at Uranquinty didn't prevent sun glare and had to be replaced. AGL needs to review other industry experience to ensure materials used at Dalton will prevent adverse sun glare impacts on the community."

Response

The visual impact assessment considered the potential for sunlight glint and reflectivity and recommended that the colour and texture of structures in the Project should be dark in tone and utilise non-reflective materials which would help minimise any sun glare. A commitment to this effect has been included in **Table 10-4** within Chapter 10 of the EA, and also within Chapter 19, Draft Statement of Commitments.

3.9 Flora and Fauna

3.9.1 Agency Submissions

The OEH submission **(Submission 20897)** addressed the following points on the proposal and the EA relating to Flora and Fauna:

OEH requested:

- That a mechanism for securing the biodiversity offset be identified; and
- That further survey work would be required for certain threatened species prior to construction.

Relevant sections of the OEH Submission are detailed below, with AGL's response following each section.

According to OEH:

"Neither the Assessment or the EA give any guidance as to how the proponent will protect the proposed Biodiversity Offset in perpetuity. It appears that the proponent has made the commitment to offset the predicted impacts of the project on biodiversity by offering an appropriate option for a biodiversity offset to be secured on the project lands.

3 Response to Submissions

3.9 Flora and Fauna

3.9.1 Agency Submissions

Whilst the proponent has agreed in-principle to protect the proposed biodiversity offset land, it has not agreed to a method to ensure this land is conserved in perpetuity and in accordance with the "DECCW Principles for the use of biodiversity offsets in NSW" which states that "13. Offsets and their actions must be enforceable through development consent conditions, licence conditions, conservation agreements or a contract"

Recommendation

Before clearance of vegetation commences, the conservation mechanism for the proposed offset must finalised in a Biodiversity Offset Strategy. Protection must be afforded to the land proposed in the EA as a Biodiversity Offset in perpetuity and OEH recommends that the mechanism be chosen from the following list: Biobanking Agreement (under the Threatened Species Conservation Act 1995), Dedication of land to the public reserve system, Conservation Agreement (under the National Parks & Wildlife Act 1974), Trust Agreement with the Nature Conservation Trust, Voluntary Planning Agreement (under the Environmental Planning and Assessment Act 1979) or a Conservation Property Vegetation Plan (under the Native Vegetation Act 2003.)"

Response

Following submission of the Flora and Fauna Assessment (FFA) in July 2011 (***Appendix H, Volume 2 Part 2 of the EA***), AGL can confirm, as requested, a commitment to enter into a conservation agreement (CA) that will secure the dedication in perpetuity of the proposed biodiversity offset area. The proposed offset area is shown in Figure 9 of the FFA and will be approximately 183.25 hectares. Since submission of the EA for the Dalton Power Project an additional 'Statement of Commitment' has been added to include the commitment for AGL to develop the CA (refer to **Section 5** of this report).

AGL/URS is currently in negotiation with OEH staff to complete the application in preparation for project approval. The CA will be regulated and implemented under the *National Parks and Wildlife Act 1974* (NSW). As required under that Act, once entered into between AGL and the Minister for the Environment, the CA will be registered on the title of the land and will be binding in perpetuity on, and enforceable against, subsequent landholders.

The CA would require AGL to appropriately manage the offset area through the development of a management plan for this area. As described in the FFA (section 7.3.2), management actions for the offset area will include, but not be limited to:

- Exclusion of grazing through stock proof fencing;
- Weed removal and control;
- Revegetation or assisted regeneration of disturbed areas;
- Retention of fallen timber, hollow logs, leaf litter, rocks and other habitat resources;
- Control of feral animals, where appropriate and practical;
- Erosion control, where appropriate and practical;
- Signage to indicate the offset area and to disallow access;
- Maintenance of existing fencing to control grazing pressures; and
- Ecological monitoring and reporting of biodiversity condition and effectiveness of mitigations measures over time.

3 Response to Submissions

3.9 Flora and Fauna

3.9.1 Agency Submissions

These management actions will be further detailed for the offset area, as required for the management and use of the land under the CA. Such actions are expected, over time, to improve further the conservation value of the offset area.

We consider that the CA will meet OEH's recommended approach to ensure conservation of the land in perpetuity in accordance with "DECCW Principles for the use of biodiversity offsets in NSW" (2011), which states that "Offsets and their actions must be enforceable though development consent conditions, licence conditions, conservation agreements or a contract".

AGL notes that a portion of the proposed offset area to the north of the development footprint contains portions of NSW Land and Property Management Authority mapped 'paper roads'. These 'paper roads' fall within the area of Threatened Species Conservation Act (1995) listed threatened ecological community, Box Gum Woodland. AGL has begun the process of acquiring the 'paper roads' so that the CA can be progressed post project approval. Should the purchase of the 'paper roads' not be possible before the CA is finalised OEH and AGL can together prepare a variation to the CA (pers. comm. Lyn Webber October 2011, OEH).

Threatened Species Surveys and Impacts:

As identified in OEH's adequacy assessment of the draft EA, a number of threatened species which could potentially occur at the proposed development site have· not been surveyed for in accordance with OEH's published survey requirements. It is also not clear about what might occur if the promised future survey for the Golden Sun Moth (or any other future surveys) detects this species (or other threatened species) within the development footprint. The survey window for the Striped Legless Lizard Delma impar has already closed for this year (tiles needed to have been in place by August 2011) and the optimum survey period for the Pink Tailed Worm Lizard Aprasia parapulchella is at the present time.

Recommendations

OEH considers that the lack of spring surveys for grassland reptile species is insufficient to properly determine the impacts of the project on certain threatened species. Additional surveys for Aprasia parapulchella and Delma impar (the latter in accordance with the EPBC referral guidelines - http://www.environment.gov.au/epbc/publications/pubs/striped-leglesslizard- referral-guidelines.pdf)J be undertaken during spring prior to commencement of construction.

OEH notes the commitment to undertake additional surveys for the Golden Sun Moth within the appropriate season. We have concerns however, that the Environmental Assessment does not adequately assess the impacts on the project on this species (or the reptiles discussed above) if it is detected prior to vegetation clearance or during pre-clearance surveys. We recommend that if threatened species are detected within the development footprint or proposed offset prior to construction that OEH and the Commonwealth (DSEWPaC) be consulted to determine appropriate actions"..

3 Response to Submissions

3.9 Flora and Fauna

3.9.1 Agency Submissions

Response

AGL/URS has completed additional spring surveys in order to address the additional survey requirements outlined in the FFA within: Survey Limitations (Section 4.2.4), Methodology (Section 4.2.2), Threatened Flora (Section 6.1.1), Threatened Fauna (Section 6.1.2), Impact Avoidance (Section 7.1), and Impact Mitigation (Section 7.2.1; Table 7-1; Vegetation Clearing Strategy and Pre-clearing Survey Strategy).

The key flora and fauna issues addressed in terms of survey included:

1. Threatened Species Conservation Act 1995 (TSC Act) and Environment Protection Biodiversity Conservation Act 1999 (EPBC Act) threatened flora species;
2. TSC Act and EPBC Act threatened reptiles; and
3. EPBC Act threatened insects.

These are discussed below.

Threatened Flora:

Timing for each of the threatened flora surveys is outlined below for each of the four species requiring survey:

1. Silky Swainson-pea (*Swainsona sericea*) – vulnerable, TSC Act. Optimal survey timing to be conducted in spring (DECC Profile: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10783);
2. Button Wrinklewort (*Rutidosis leptorrhynchoides*) – endangered, EPBC Act/TSC Act. Optimal survey timing varies between advice on the DSEWPaC website from October to April (DECC Profile: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10739); Sprat Advice, 2006g, Summer - December to February; Sprat Advice, 2005ae, December to April; Sprat Advice, 2006a, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=7384);
3. Yass Daisy (*Ammobium craspedioides*) - vulnerable, EPBC Act/TSC Act. Optimal survey timing to be conducted during September to November (DECC Profile: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10043); SPRAT Advice, 2008, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=20758); and
4. Hoary Sunray (*Leucochrysum albicans var. tricolor*) – endangered, EPBC Act. Optimal survey timing to be conducted during November to January (SPRAT Advice, 2003, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=56204).

Based on the OEH and DSEWPaC online advice, listed above, conversations with southern tablelands grassland expert, Rainer Rehwinkel (OEH), and utilising URS' botanical expertise, the required additional surveys were scheduled for the threatened flora during the following periods:

- October 24, 25 and 26th, 2011;
- October 31st, November 1, 2, 3, 4th, 2011; and
- Periodically between November 2011 to January 2012, to coincide with Golden Sun Moth surveys (see below).

3 Response to Submissions

3.9 Flora and Fauna

3.9.1 Agency Submissions

This survey timing ensured adequate survey coverage of the Yass Daisy (*Ammobium craspedioides*), which should be in full flower in the first week of November and Hoary Sunray (*Leucochrysum albicans var. tricolor*), which is in flower currently and continuing through until the end of January (R. Rehwinkel). In addition these survey times covered the threatened species, less likely to be present, i.e. Silky Swainson-pea (*Swainsona sericea*), due to be flowering in Spring and Button Wrinklewort (*Rutidosis leptorrhynchoides*) during mid-season flowering period.

Surveys for the four TSC Act and/or EPBC Act flora species were undertaken across grassland areas which cover approximately 115 hectares of land supporting potential habitat within the gas pipeline and access roads, development footprint and offset areas. Supplementary reports to outline the findings of these surveys were provided directly to NSW DP&I, NSW OEH and DSEWPaC.

AGL/URS present the following brief summary of survey findings for the following species:

- Yass Daisy (*Ammobium craspedioides*): This species was not recorded.
- Hoary Sunray (*Leucochrysum albicans var. tricolor*): This species was located along the roadsides in Dalton and along Walshs Road, however no presence was recorded within the proposed development footprint or offset site. The locations of species recorded was mapped and considered by AGL and their contractor during refinement to traffic and access arrangements to the Site, and this information has also been communicated to OEH and DSEWPaC.
- Silky Swainson-pea (*Swainsona sericea*): This species was not recorded.
- Button Wrinklewort (*Rutidosis leptorrhynchoides*): This species was not recorded.

Refer to **Appendix D- 2** for the full results of the Flora Supplementary Report.

Threatened Reptiles

Subsequent to the submission of the FFA, additional surveys have been conducted by experienced herpetologists for the two EPBC Act listed reptiles mentioned in the OEH submission:

1. Pink-tailed Worm-lizard (*Aprasia parapulchella*) - vulnerable, EPBC Act/TSC Act; and
2. Striped Legless Lizard (*Delma Impar*) - vulnerable, EPBC Act/TSC Act.

Subsequent to the EA, targeted reptile surveys were conducted in spring (25 – 29 September 2011) in accordance with appropriate methodology in order to close any previous survey gaps. Survey timing was designed based on personal communications with P. Ewin of OEH in September 2011 and M. Maly of DSEWPaC in June 2011. Surveys targeted the reptiles across all areas likely to support potential habitat within the gas pipeline and access roads, development footprint and offset areas.

The methodology employed for the reptile survey was undertaken in consultation with the species specific guidelines published in (DSEWPaC 2011a). The survey was designed to utilise a range of sampling techniques as per the *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (*working draft*) (DEC 2004) and relevant scientific articles in order to suit the environment at the Project site and increase the potential for detecting reptile fauna. Four key methods were employed, including:

- Funnel trapping;
- Active hand searches (rock turning);
- Walking transects; and

3 Response to Submissions

3.9 Flora and Fauna

3.9.1 Agency Submissions

- Opportunistic surveys.

In particular, funnel trapping was considered to be a preferential survey technique instead of pitfall trapping at the Project site due to the:

- Effectiveness in capturing a wide variety of reptile fauna including pygopods (Denny 2005; Garden et al. 2007; Sass 2009; Thompson and Thompson 2007);
- Time efficiency with trap activation and their ability to minimise disturbance impacts to reptile habitats (Smith and Robertson 1999);
- Documented success with trapping Pink-tailed Worm Lizard (Wong et al. inpress) and *Delma sp* (Sass 2011a, Sass 2011b);
- Provision of shelter and protection against predation, which is an issue at the Project site with predators such as the Red Fox (*Vulpes vulpes*) and Australian Raven (*Corvus coronoides*) (NSW DPI and ARRP 2011). In addition Smith and Robertson (1999) have discovered evidence showing foxes travelling along pitfall trap lines, feeding from the pits and have suggested not using pitfalls to target Striped Legless Lizard;
- Suitability at the Project site due the hard ground, formed from years of grazing and farming practices as well as the surface and sub-surface rock outcrops both attributes making digging difficult;
- Lack of disturbance to flora and particularly the Commonwealth and NSW listed ecological communities featuring on site; and
- Success with reptile capture, previous studies have found that funnel traps have yielded a far greater number of reptile species than pitfall traps (Sass 2009).

During these targeted surveys, the Pink-tailed Worm-lizard (*Aprasia parapulchella*) nor the Striped Legless Lizard (*Delma Impar*) were detected. The Reptile Supplementary Report, conducted by EnviroKey, has been attached to this report as **Appendix D-1.**

AGL/URS consider that these additional surveys satisfy the additional survey requirements outlined in the FFA (as described above).

Threatened Insects

AGL/URS has completed additional surveys to target Golden Sun Moth (*Synemon plana*) in order to address the survey requirement for this species. Surveys were conducted in line with DEWHA Guidelines 2009, in all areas that have the potential to provide habitat support for the GSM. The survey included the footprints of the proposed gas pipeline and access roads, the development footprint and offset areas. Surveys were scheduled to take place during 'optimum flying period' (October – January), using suggested 'effort', during periods with appropriate 'conditions' (DEWHA 2009).

In addition to guidelines and information regarding GSM, URS consulted with a range of experts and community groups to ensure that the GSM survey was conducted according to an agreed and robust methodology, during the optimum conditions at the appropriate time. Consultation has included but has not been limited to OEH staff, Friends of Grasslands, 'reference site' representatives as well as consultants in the region.

3 Response to Submissions

3.9 Flora and Fauna

3.9.1 Agency Submissions

AGL/URS can confirm by way of update that 6 surveys across over 8 days was carried out for this species. Of the 8 days on site, 5 days met the optimal survey condition requirements outlined within the guidance. URS confirms that no sightings of the species occurred during the 6 surveys carried out between December and mid January.

Refer to **Appendix D- 3** for the full results of the GSM Supplementary Report.

Agency Concurrence and Conclusions

The EPA correspondence to DP&I (Julian Thompson, 22 February 2012) noted the following:

Golden Sun Moth (Synemon plana).

EPA received the report "Dalton Power Project - Golden Sun Moth Targeted Survey" dated 25 January 2012 and prepared by URS. The EPA has reviewed the report and found that an adequate survey was conducted. The prevailing weather conditions during the 2011/12 flying season resulted in a low number of moths seen at reference monitoring sites in the southern tablelands. The EPA is satisfied that the survey was conducted in accordance with the relevant guidelines and no moths were detected at the project site and associated infrastructure. Therefore the EPA concurs that it is unlikely there will be any significant impact on the Golden Sun Moth if the project were to be approved.

Threatened Flora (Yass Daisy, Silky Swainson-pea, Button Wrinkelwort, Hoary Sunray).

As requested by OEH in its submission on the Environmental Assessment, spring surveys were carried out by URS for the above threatened flora species and reported in the Submissions Report. None of the NSW listed threatened species (Yass Daisy, Silky Swainson-pea, Button Wrinkelwort) were detected on the project site or in the locality. The EPA concurs that it is unlikely there will be any significant impact on these species if the project were to be approved.

Consultation on Plans

Recommendation

All plans relevant to the management of Biodiversity proposed in the EA and Statement of Commitments (particularly the Flora and Fauna Management and Complementary Planting and Rehabilitation Plans) should be developed in consultation with OEH and DSEWPaC before clearing commences.

Response

As stated in the FFA (section 7.2), URS/AGL commit to preparing the following management plans. These management plans will include some flora and fauna components:

1. Construction Environmental Management Plan;
2. Operational Environmental Management Plan;
3. Flora and Fauna Management Plan;
4. Vegetation Clearing Strategy;
5. Pre-clearing Survey Strategy;
6. Two-stage Clearing Strategy;
7. Habitat Replacement Strategy;
8. Habitat Corridor and Connectivity Plan;

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9. Groundcover Clearance Strategy;
10. Site Management Plan;
11. razing Management Plan;
12. Edge Effects Strategy;
13. Sediment and Erosion Control Plan;
14. Weed and Pest Management Plan; and
15. Complementary Planting and Rehabilitation Plan.

It is part of AGL's commitment that these plans will be developed post-approval and pre-construction.

AGL commits to developing the plans in consultation with OEH and DSEWPaC before clearing commences.

Management actions in the Biodiversity Offset area

The Flora and Fauna Assessment states that the no vegetation will be cleared during the management of the biodiversity offset and existing fencelines will be used. It is not clear to OEH, based on aerial imagery of the development site, how this might be achieved. Therefore, the following condition should be included in order to avoid any doubt.

Recommendation

During creation of the biodiversity offset no vegetation, particularly of the two Endangered Ecological Communities present on the site, is to be cleared as part of management . requirements (such as fencing and tracks) for the establishment of the biodiversity offset.

Response

Due to the positioning of the biodiversity offset, and its unique location outside of the development footprint and gas pipeline/access track areas, there is no need for vegetation clearance as the area is currently isolated from development.

There is, however, the need for additional fencing to be created/enhanced in some areas around the boundary of the offset area. Such fencing and all biodiversity offset area management actions will form part of the CA and will be addressed in the management plans, including the Site Management Plan, Flora and Fauna Management Plan, Vegetation Management Plan, Habitat Corridor and Connectivity Plan, Weed and Pest Management Plan and the Complementary Planting and Rehabilitation Plan.

As noted earlier, AGL has already committed in the EA to provide financial support for the implementation of management plan actions. The commitment provides for an average of $24,000 per annum over a twenty year period.

3 Response to Submissions

3.9.2 Community Submissions

Submission 20497 stated that some common species were not mentioned as part of the flora and fauna assessment including:

- *Black Snakes*
- *Red Rumped Parrots*
- *Superb Parrot*
- *Corrella*
- *Dollar Bird*
- *Hooded Robin*
- *Eastern Robbin*
- *Serrated Tussock*
- *Cape Weed*
- *Black Wallaby*
- *Blackduck*
- *Other Water Birds*
- *Pacific Heror*
- *Spoonbill*
- *Plover (Spurwing)*
- *Coots*
- *Bathurst Burr*

A series of bats were 'recorded' on Mount Pleasant (adjoining the AGL site) in June 2000 by the Australian National University.

- *Yellow Bellied Sheath Tail Bat*
- *Goulds Wattled Bat*
- *Chocolate Wattled Bat*
- *Long Eared Bat Sp.*
- *Inland Broadnosed Bat*
- *Large Forest Bat\Southern Forest Bat*
- *Little Forest Bat*
- *Freetail Bat Spec*
- *White Striped Freetail Bat*

The submission questions whether the list of bats included in the flora and fauna assessment were recorded electronically. It also questions why there is no mention of any frogs or their habitat considering that there are '6 farm dams within 1 km, and 3 dams within 100 - 300 meters, plus the access road is to cross two small creeks and a wet gully that are all habitat for frogs'.

Submission 21194 relays the concerns of the Walsh family around flora and fauna investigations carried out. According to the submission, AGL's neighbours view the stated impact on flora and fauna within the EA to be inadequate.

Response

Seven microbats were recorded using anabat survey techniques and noted within the Environmental Assessment and in Appendix I and J of the Flora and Fauna Assessment (***Appendix H, Volume 2 Part 2 of EA***). Of these recordings, it was noted that some were "Certain"; some were "Possible" and some "Probable" recordings:

1. White-striped Freetail Bat (Austronomus australis),
2. Gould's Wattled Bat (Chalinolobus gouldii),
3. Chocolate Wattled Bat (Chalinolobus morio),
4. Eastern Horseshoe Bat (Rhinolophus megaohyllus),
5. Large Forest Bat (Vespadelus darlingtoni),

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6. Little Forest Bat (Vespadelus vulturnus), and
7. Nyctophilus sp.

Relevant threatened amphibians (frogs) and relevant terrestrial and aquatic habitats were surveyed for and noted in the Environmental Assessment. Referring to Section 5 of the FFA specifically, it was noted that:

> *"No wetland areas were recorded on development footprint, however several ephemeral creeklines were observed. These were largely dry, save for one small tributary traversing the south of the Site. Based on habitat requirements the development footprint is highly unlikely to support any threatened aquatic species, or species that require wetland habitat, such as Booroolong Frog (Litoria booroolongensis), Australian Painted Snipe (Rostratula australis), Macquarie Perch (Macquaria australasica) or Murray Cod (Maccullochella peelii peelii). However, all water bodies in the study area provide potential foraging habitat for microbats, given the proximity to intact woodland and hollowbearing trees."*

It should be noted that common fauna species were only listed if they were seen opportunistically. No targeted investigations were carried out for common/native species, as is the case for this nature of flora and fauna assessments. The full list of opportunistically sighted species will be made available to interested community members as reports are finalised. URS has kept interested community members briefed on survey results since the completion of the EA and AGL remains committed to maintaining this approach to consultation.

*Submission 20042 stated: Assessments by the Proponent in relation to the effect on flora and fauna on the proposed project site are inadequate and trivialise the subject. For example, surveys conducted on threatened species included a survey for the endangered Golden Sun Moth. The surveys were performed during 10-11 February and 21- 24 February 2011 (EA 13.2.3). A quick literature search for information on the flying season for the Golden Sun Moth reveal that the flying season can vary between early November to mid-December and late November to early January (*www.environment.gov.au/cgibin/sprat/public/ *publicspecies.pl?taxon_id=2523 4). As the Proponent identifies, the survey carried out regarding the Golden Sun Moth is completely inadequate and does not provide us with any useful information. The Proponent proposes that further surveys be undertaken prior to construction (13.4.3). However, this does not provide either of the relevant departments with sufficient information upon which they can assess the environmental impacts of the proposed project. Nor does it allow us to address these issues in this, our one opportunity to have our submissions considered.*

Submission 20042 stated: The farcical nature of the Proponent's assessment is demonstrated in EA p13-22 where it is claimed that the destruction of 33 hollow-bearing trees is purportedly "offset" by the existence of 49 hollow-bearing trees in the proposed "offset site", irrespective of the fact that both populations presently exist. The net result is the destruction of 33 hollow-bearing trees, which can take up to 100 years to form the hollows required for habitat.

It is noted that DP&I commented further on the original response to this submission:

" In response to a submission relating to the 33 hollow bearing trees being offset by the existing 49 hollow bearing trees, it is stated that the offset requirements have been developed to meet state and federal requirements, this needs to be expanded." – DP&I 2/12/11

3 Response to Submissions

3.9 Flora and Fauna

3.9.2 Community Submissions

Response

Prior to this current summer, Golden Sun Moth surveys were unable to be undertaken as per survey limitations outlined within the Flora and Fauna Assessment. Prior to the completion of required surveys, the 'precautionary principle' had been adopted in relation to potential presence as per DEWHA, 2009*, Background Paper to EPBC Act Policy Statement 3.12 – Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (Synemon plana),* i.e. presence has been assumed. A Significant Impact Criteria assessment, under the EPBC Act as well as an Assessment of Significance under the TSC Act, was undertaken and included as part of the FFA to address the likely impact on the GSM should it be found in the development area.

AGL/URS can confirm that 6 surveys (over 8 days) were carried out for this species. URS confirms that no sightings of the species occurred. The supplementary survey for GSM is presented in full as Appendix D-3 to this report. As outlined in **Section 3.9.1**, based on the findings of the additional survey effort, the EPA concurs that it is unlikely there will be any significant impact on the Golden Sun Moth if the project were to be approved.

Hollow bearing tree assessment and offset requirements have been developed to meet state and federal guidelines. AGL acknowledges that the loss of any hollow bearing trees represents a loss of important habitat features. Mapping of all habitat trees including number, size and location of hollows was part of the Habitat Feature Assessment. Details of this survey type are outlined in Section 4 of the FFA, and whilst the proposal would cause the loss of 33 hollow bearing trees within the development footprint, the FFA points out the abundance of these features to be conserved and protected within the offset area. The offset proposed protect in perpetuity the hollow bearing trees in that area. Prior to the Project being proposed none of the hollow-bearing resources in either the Project footprint area or the offset area were protected in perpetuity. Hence the offset proposal is seen to provide for a long term conservation gain.

A community submission raised a question about the offset area.

Submission 20501: The "Offset area (is) only to the west of the site. The proposed biodiversity offset area is only to the east of the site. In the interests of screening and reducing noise impacts we ask that consideration be given to tree planting on the east ridge line and east north-east of the site to provide additional protection to dwellings "J", "G" and "F"."

Response

The proposed offset area is provided in Figure 9 of the Flora and Fauna Assessment (***Appendix H, Volume 2 Part 2 of EA***). This figure presents the proposed offset area to the west, north, east and some offset area to the south of the Site.

The visual and noise assessment addressed the impact at these dwellings and results are summarised in **Table 3-2**.

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3.10 Traffic Impacts

3.10.1 Agency Submissions

Table 3-2 Summary of Outcomes

Dwelling	Summary of Visual Assessment	Summary of Noise Assessment
J / R32	Low visual impact from the power station and communication tower and no visual impact from the valve station.	Noise impact is predicted to be below relevant criteria.
G/ R23	No visual impact from the power station, communication tower or valve station.	Noise impact is predicted to be below relevant criteria.
F / R22	No visual impact from the power station, communication tower or valve station.	Noise impact is predicted to be below relevant criteria.

As the impact on these residences was determined to be low, it is not considered that further screening is required at these locations. However, where the environmental objectives of the off-set area are aligned with the possibility of tree plantings, these would be considered.

3.10 Traffic Impacts

3.10.1 Agency Submissions

Submissions relating to traffic and transport issues were raised in two submissions received from Government Agencies;

- The Upper Lachlan Shire Council (ULSC) (**Submission 19969**); and
- The RTA (**Submission 20511**).

The **Upper Lachlan Shire Council** (**Submission 19969**) commented on the traffic assessment. Council noted potential road safety issues (eg. road crests, curves and signage), routes for over-mass and over-dimensional vehicles, and issues around the capacity and condition of road infrastructure.

The **RTA** submission (**Submission 20511**) advised that further details would be required around the management of oversize/overmass load haulage on the classified road network. The RTA recommended further liaison between AGL and the RTA to assess the appropriateness of the route for transporting oversize/overmass loads and identify any other potential issues.

The ULSC Submission (**19969**) raised a number of points regarding road safety issues:

"The EA discusses transport issues by claiming that the existing road network has the capacity to satisfactorily and safely accept the additional traffic generated by the development. Council disputes this statement and argues that narrow pavements with low design speed characteristics and low background traffic volumes are likely to present a number road safety issues unless adequate consideration is given to how the likely users are going to mix with each other safely. There is a need to address road widths over crests and around curves as well as install additional signage to ensure motorists are aware of the changing traffic conditions that they are likely to encounter."

"The EA fails to address urban safety issues at all. This is of paramount importance as particular attention needs to be paid to the selection of routes within the urban areas of Gunning and Dalton. Both townships have vulnerable facilities such as schools and preschools to deal with as well as lightly constructed pavements to consider. The roads surrounding the northern part of Dalton are also used by the community as walking trails in their pursuit of improved health and fitness. Separation of pedestrians from heavy traffic needs to be considered."

3 Response to Submissions

3.10 Traffic Impacts

3.10.1 Agency Submissions

Response

A detailed draft Transport Management Plan has been developed and is currently being discussed with ULSC. This would form part of the CEMP and Operational Environmental Management Plan (OEMP) and aims to minimise disruption and provide mitigation measures (eg. signage) to address urban safety issues. The TMP discusses school zones, the trucking route, access and speed limits to be imposed, and road capacity.

In relation to school zones, truck haulage times would be stipulated within the TMP to be outside the morning and afternoon school periods (8- 9.30am and 2.30- 4 pm).

As discussed in Chapter 11 of the Environmental Assessment, the safety and amenity of the community will be managed by experienced haulage contractors in liaison with the permit section of the RTA, NSW Police and local governments.

AGL has committed to:

- Undertake a detailed pavement and structure analysis on all affected sections of road prior to, and following construction, and provide ULSC with a copy of the assessment.
- Undertake an analysis of the horizontal and vertical alignment to determine the adequacy of the affected public road network for all expect traffic types prior to construction, and to provide ULSC with a copy of the assessment.

The ULSC and RTA raised issues over road suitability.

Submission 20511 (RTA) stated: The RTA has reviewed the submitted information and cannot make an informed comment on the subject proposal at this stage. To assess the proposal, further details are required regarding how the proponent proposes to manage the issues identified with transporting oversize/overmass loads on the classified road network including the Hume Highway crossing of Paddy's River at Marulan and the Gunning Rail Bridge. The RTA recommends the proponent liaise with the RTA Special ' Permits Unit in Glen Innes early in the process to assess the appropriateness of the route for transporting oversize/overmass loads and identify any other potential issues.

Submission19969 (ULSC) stated: Routine deliveries of building materials including concrete, steel products, gravel, aggregates and water - Council experience with other similar developments indicates that this category of transport has the potential to create far more damage to the road network than any other activity. Concrete trucks in particular cause significant damage due to their high frequency of deliveries, maximum axle load utilisation and suspension characteristics. The lightly trafficked roads will definitely not cope with the additional loading and significant damage is to be expected to be caused by the deliveries associated with the project. This will be further exacerbated if the construction work continues during wet weather. The developer must enter into an agreement with Council (including bonding of repair funds) to ensure that the roads are returned to their present condition (or better) post project. There is also a need to establish a mechanism to ensure timely repair of any pavement failures that occur during the construction phase. This is to ensure the safety of all road users.

Submission 19969 (ULSC) also stated: The assessment and definition of all preparatory and remedial works will be difficult as the developer intends to stage the project into at least two parts. Should these parts be separated by more than several months, the Dalton community will rightly expect that the repairs works will need to be completed at the end of each stage. Traffic using the unsealed roads in the vicinity of Dalton village will also create a considerable dust nuisance for residents. The community has an expectation that the developer will reconstruct and seal the roads involved to council's specifications.

3 Response to Submissions

3.10 Traffic Impacts

3.10.1 Agency Submissions

Submission 19969 (ULSC) further stated: Over-mass and over-dimension vehicles - These will be infrequent and controlled by RTA, NSW Police and Upper Lachlan Shire Council permits. The routes proposed will be along the ULSC Regional Road network which is an asset that is Council property. Council must be consulted in developing the routes to be used as it is the owner of the assets which are lightly constructed pavements. These pavements are suitable for their present use, but are generally not capable of carrying the additional loads proposed without damage. Council is also concerned that there a number of old culverts along the roads that will need assessment to determine what strengthening works and or widening works are required to enable them to safely carry the proposed loads. The capacity of the rail overbridge in Gunning needs to be assessed, as it may not be able to carry either the over-mass vehicles or the repetitive delivery traffic loadings.

Response

A preliminary study has been undertaken for potential traffic haulage routes for the oversize / over dimensional equipment to determine whether there is a preferred travel path available for the delivery of oversized cargo to the site. 'Oversized' cargo will be transported on trucks with a maximum width of 6.6m and a height of 5.2m.

As described in Chapter 11 of the EA, the preliminary haulage study identified the following potential constraints and requirements:

- Hume Highway crossing of Paddy's River at Marulan: bridge constraints require a temporary alternate low level crossing over River at this point;
- Gunning Rail Bridge: bridge constraints require either replacement of the bridge or identifying alternate route via a temporary low level crossing;
- Walshs Road (south, as known locally as Cowper St), Dalton: 90 degree corners and floodway constrain access potentially requiring upgrades.

Further assessment and planning is required during the detailed design phase to identify and cater for any necessary temporary remedial treatments to facilitate passage of over-mass and over-dimensional loads. AGL will consult with the RTA and Councils regarding the appropriate route to transport over-mass and over-dimensional loads. Preliminary details of progress towards this are included in the Draft TMP currently tabled with ULSC. Relevant (preliminary) detail from this draft plan is summarised in **Section 4**.

Where road upgrade is identified as being required, AGL would continue liaison and engagement with the RTA and relevant Councils responsible for the infrastructure. AGL would support the remedial treatments required through some mechanism of financial approval pending Project Approval. AGL will repair of roads that incur degradation due to construction of the power station.

The RTA raised the need for consent for road modifications.

Submission 20511 (RTA): "If after further investigation any modifications to the classified road network are proposed, the modifications will require the concurrence or consent of the RTA under the Roads Act, 1993."

3 Response to Submissions

3.10 Traffic Impacts

3.10.2 Community Submissions

Response

Where road upgrade is identified as being required, AGL would consult with the RTA and relevant Councils responsible for the infrastructure. AGL would support the remedial treatments required through some mechanism of financial approval pending Project Approval.

3.10.2 Community Submissions

A number of community submissions commented on the impact of traffic on local roads, as well as mitigation measures to be employed as part of the Project:

Submission 20497 indicated there would be ".serious implications for local people from increased road use, both in the construction phase and ongoing operations through noise and dust emissions. During peak road use, concerns were raised over road conditions, pot holes, dust and cowboy drivers. Walsh's Road is used by local families in the area. AGL need to demonstrate how they plan to keep the road safe and usable. .."

Submission 20050 stated: "The proposed facility is approximately 3 km from our school (Dalton Public School). We have concerns regarding disruptions to traffic and access to Dalton and our school. The project is likely to affect the traffic flows and the ability of staff and students to attend our school. A large number of students rely on the school bus to get to Dalton. The teaching and support staff also use the Dalton-Gunning Road to get to work. Disruption to access to this road would have serious consequences for our ability to provide our students with the education they require and deserve. The Applicant should give assurances that the delivery of education to local children will not be compromised in any way through disruptions to access to Dalton.

Submission 20019 expressed concern about trucks that will service the site during construction, and after, will travel along school bus routes and past school bus stops.

Submission 20042: commented that the Environmental Risk Assessment (EA Table 7-1 p 7-3) in relation to traffic addresses only the impacts on Dalton. Whilst the noise will be annoying and we will be overcome with dust, the really significant traffic impacts will be felt in Gunning, where the trucks will go right through the main street of town.

The road between Dalton and Gunning does not have "overtaking opportunities for both directions for the majority of its length" (EA Appendix F p11). This is just not true.

Dalton and its surrounds has many commuter workers, Gunning-based Shire employees and children who attend preschool, primary school and after-school care in Gunning. Alternative routes into Gunning require serious, time-consuming detours on substandard roads. The significant road modifications required and the greatly increased numbers of heavy vehicles will cause significant disruptions and inconvenience to the local population.

The Executive Summary states that the proposed construction and operation of the facility is "…not expected to degrade the existing acoustic environment nor create annoyance to the residential receptor locations surrounding the facility"(EA, ES-12). However, this spurious conclusion is based on the fact that the predicted traffic noise impact is assessed in decibels (dB). Despite an increase in traffic flow on Dalton Road of up to 66% and an increase on Walsh's Road of more than 800%, the frequency of noise impact events is not considered relevant, nor the number of those events at the higher decibel mark (i.e. a far greater number and proportion of heavy vehicles). The construction is expected to take four years.

3 Response to Submissions

3.10 Traffic Impacts

3.10.2 Community Submissions

Submission 20042 continued: ".this is a significant time period during which we can expect to be seriously impacted and inconvenienced."

Submission 20042 stated that: "Disruptions to traffic flows through road modifications and transportation of oversized loads will cause serious disruptions to our lives. The Gunning-Dalton Road is a vital link between Dalton and the rest of the world. Alternative access requires lengthy detours on sub-standard roads.

Submission 20042 further suggested: "Adequate notice must be given to all residents regarding all traffic disruptions. There should be undertakings regarding not causing disruptions during the morning and evening peaks and during school drop-off and pick-up times."

Submission 20042 also said: "It is submitted that the EA, in its lack of specificity and detail as to what is actually proposed, fails to satisfy these requirements. The Proponent has not clearly identified nor specified, amongst many other things the routes to be taken and any associated road alterations or vegetation clearing necessary for the movement of these oversized loads. This will have serious consequences for the visual/aesthetic impact of the project; disruptions to access between Gunning and Dalton for education, childcare and commuters; and serious potential impacts on local flora and fauna."

Submission 21194 contended: "Road traffic − Local roads including the Loop Road and the Gunning − Dalton Road need to be upgraded in order to handle the weight and frequency of traffic required for the plant during construction and normal operation. In addition the railway Bridge at Gunning on the Dalton Road will need upgrading to allow for initial transportation of gas turbines to the proposed site and on an on−going basis to account for increased traffic flow to and from the site. Can AGL inform the communities of Gunning and Dalton what route traffic will take when travelling through town and at what times? I urge AGL to tailor the time of day when traffic flows through town, so as to cause minimum disruption to people living in the area."

Response

As outlined above, AGL recognises the requirement for an effective Transport Management Plan. AGL commits to working with their contractors to ensure appropriate speed limitations are imposed across parts of the road network where an increase in construction traffic would cause increased noise impacts.

The level of service of all roads and intersections involved with the Dalton Power Station will remain at Level A, which is the highest level of service as communicated within Chapter 11. The construction phase is expected to generate up to 160 vehicle trips per day during the peak construction period.

The main impacts from construction traffic are likely to occur:

- during the morning peak between 7.00AM to 9.00 AM when arrival of construction staff and early delivery vehicles coincide with the peak periods on the surrounding road network;
- through regular daily traffic generated by delivery trucks for equipment, plant and materials with intermittent peaks associated with concrete pours; and
- occasionally outside of peak periods, through the delivery of large equipment (turbines, generators and transformers) from its arrival Port to the Site.

3 Response to Submissions

3.10 Traffic Impacts

3.10.3 Agency Submissions

A total of 24 over-dimensional and / or over-mass escorted truck convoys of pre-assembled gas turbine, generator and transformer units would occur for the movement of all gas turbines. These would be transported to Site under RTA and NSW Police permit conditions and along approved routes. Temporary works may be required along approved routes for these over-mass and over-dimensional loads and would be defined in further consultation with the RTA and relevant Councils.

The ongoing operation of the Facility would generate significantly less traffic than the construction phase of the Project. The operational phase is likely to generate up to 50 vehicle trips per day.

An increase in traffic volumes is expected during maintenance which would take place every 2 to 3 years.

The Draft TMP outlines a range of management measures for the Project. which is currently being discussed between AGL and Council. The plan outlines various management measures to ensure that the safety and amenity of the community will be appropriately managed.

The draft TMP outlines the controls and monitoring that would be installed during the construction in order to mitigate the impact of the increase traffic associated with the Project.

Continuous monitoring throughout the construction phase would be maintained to ensure that construction traffic was compliant with the requirements of the TMP.

In addition on site vehicular safety assessments would be carried out and logged daily by the site foreman and weekly by the project safety officer.

Traffic management performance on the project would be audited against the requirements of AS/NZS ISO 9001 - 2008, additionally all major contractors and suppliers operating would be audited at an early stage of their works and at critical times throughout the project to ensure compliance.

The TMP would be reviewed regularly to ensure that the mitigation remains effective.

Socioeconomic Impact

3.10.3 Agency Submissions

The **Upper Lachlan Shire Council** requested consideration of a community enhancement program:

Submission 19969 (ULSC): "The EA fails to recognise the existence of Council's Development Control Plan, in which Council, at the time of exhibition of this project, has endorsed Part 3 Submitting a Development Application - Sections 3.17 Community Enhancement Program and Appendix B Power Station Planning Agreement of Upper Lachlan Development Control Plan 2010. The EA makes no mention of its corporate responsibility to the immediate area other than a motherhood statement of creating economic benefits both for the state of NSW and AGL Therefore, a condition requiring the proponent to provide a contribution in accordance with Section 3.17 of the Upper Lachlan Development Control Plan 2010 should be included in the determination if approved.

Upon review of the Draft Response to Submissions Report, Council noted AGL had not considered the DCP. DP&I confirmed the need for clarification around this issue during the review of the draft Submissions Report in October 2011 (refer to correspondence presented in Appendix B-2)

3 Response to Submissions

3.10 Traffic Impacts

3.10.4 Community Submissions

"Although a commitment has been given regarding negotiating a VPA, further detail should be given regarding a range of potential community initiatives and/or community enhancement funding directly related to the project." – DP&I (2/12/2011)

Response

AGL has an active community engagement philosophy that involves support of particular community initiatives, and is currently in discussions with the Upper Lachlan Shire Council about an appropriate level and type of involvement within the community.

At the present time, AGL has expressed to the ULSC that AGL community activities are supported in two ways;

- Wind Farms - Nominated community fund plus sponsorships
- All other Generators (Gas/Hydro/others) - Grants and sponsorships

AGL believes the above approach is representative of most generation owners. The practice of setting up specific community funds for wind farms mirrors overseas practice. Specific nominated community funds for industrial facilities such as gas fired power stations are not believed to be common place.

While the commitment of community funds for industrial developments during the permitting process is not usual in NSW or other Australian states in which AGL operates, AGL has agreed to make a commitment in response to requests by ULSC. AGL propose the following;

- A community fund administered similarly to AGL's wind farm community funds is proposed, as described below;
  - Council advertises for community groups to submit proposals on an annual basis
  - Applications vetted by 3 person committee consisting of one representative from Council, AGL and community respectively
  - Preference is given to projects which have a sustainability focus
  - Recurrent funding of projects is avoided to ensure equitable and sustainable allocations
  - Funds are paid directly by AGL by cheque
  - First round of community funding would commence at the being of the construction period.

For the Dalton Power Station community fund, AGL has proposed the allocation of equal funds to Dalton and Gunning projects. The total amount of the fund would be $50k p.a., indexed annually at cpi. This compares favourably to equivalent wind farm community funds.

Pending project approval for the Dalton Power Project, AGL would finalise these details with Council in consultation also with DP&I.

3.10.4 Community Submissions

Community **Submissions 19998, 20034** and **20042** addressed the issue of the impact of the development on land values:

Submission 19998 stated informal discussions with real estate agents revealed an expected 25% to 30% deprecation in property values. The submission comments that "realistic compensation should be provided to affected residents'.

3 Response to Submissions

3.10 Traffic Impacts

3.10.4 Community Submissions

Submission 20034 commented that " .. The land will now be effectively worthless - there is unlikely to be any interest from anyone in purchasing the land. While it has some use as grazing land, its main benefit was its peace and quiet - and with at least one power turbine installed (and more planned) - that peace and quiet will be gone forever.."

Submission 20042 contended: "The Proponent must acknowledge that the proposed facility could seriously negatively affect the value of our property. The Proponent should be prepared to compensate affected residents for any devaluation independently assessed to be directly attributable to the facility. We cannot accept that we should bear the financial cost of any such devaluation when we are to receive none of the benefits of the project. This is a cost that should be internalised and for which AGL shareholders should be liable. The EA contains many other issues that we have not had time to address. This is very distressing, given that this is our only opportunity to express our concerns. The Proponent has, by the inadequacy of the EA, denied us the proper opportunity to identify and address matters of concern that will impact us. There are many costs associated with this proposal, which the Proponent seeks to externalise. We don't believe that we should have to pay the significant personal cost for the financial benefit of AGL shareholders. We trust that our concerns will be afforded the serious consideration that they deserve."

Submission 20042 stated: The E

A identifies no positive local impacts for Dalton. Any jobs created during the construction stage are likely to be short term, and workers will "most likely be sourced from Goulburn". The EA states that "…the local population is not expected to be impacted by the project as the employment numbers during operation are not significant…" (EA, ES 16). That is the extent of the discussion in the EA of the socio-economic impacts of this proposal on Dalton. There is very little unemployment in Dalton. The employment impact, if any, will be negligible. The only other assessment is on economic contribution at a national level. It is submitted that a significant socio-economic impact resulting from this proposed facility will be the reduction in the value of our properties. Apart from those born here, residents of Dalton have chosen to live here for the rural ambience, clean air and serenity. People like us would not choose to live in the shadow of the largest gas-fired power station in NSW. There will be a dramatic decrease in demand for Dalton real estate at current market valuations. We will lose value in our homes through none of our own doing. There will be no offsetting increase in demand due to job creation.

Submission 21194 strongly urged AGL "to make a significant capital contribution to the proposed augmentation and upgrade of the Gunning-Dalton water supply infrastructure".

Response

As presented in Chapter 19 of the Environmental Assessment, AGL is committed to examining how to continue its active community engagement philosophy whereby AGL supports particular community initiatives.

AGL has an active community engagement philosophy that involves support of particular community initiatives. Examples of this are:

- Project Pelican at the AGL owned and operated Torrens Island Power Station (TIPS). This project looks after and rehabilitates injured seabirds. This project has been ongoing for many years;

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- Hallett community fund supporting community activities;
- AGL support of the Audax Alpine classic Cycle Ride;
- AGL Support for the Panda enclosure at the Adelaide Zoo;
- AGL support for the reburial of the Kaurna Aboriginal Ancestral Remains that had been held at the South Australian Museum in the Torrens Island Conservation Park; and
- AGL's Warmth in Winter program that support Homeless shelters by contributing to paying for some their winter heating bills.

AGL has committed to examining potential involvement in community engagement initiatives within the local communities in which it would operate the Dalton Power Project.

Construction of Stage 1 is expected to create up to 250 jobs and deliver economic benefits to the state, region and local area.

AGLs recent experience on other construction projects has seen many local people employed. AGL considers that it is more cost effective for a construction contractor to employ local people with relevant skills rather than bringing in external resources.

Local businesses would also benefit from the flow-on economic activity generated, plus there would be opportunities for ongoing provision of goods and services to the project site.

Subsequent project stages would provide further employment and economic stimulus for the region.

The economic assessment concluded that the total benefits of the Project include the employment of approximately 250 workers during each construction stage, with 5-10 employees required during the operational phase of the Project. With a total estimated construction value of approximately $1.5 billion, it is estimated that the total Project would result in total combined value added GDP effects of $403 million (for both the construction and operational phases of the Project) and combined household income effects of $82.5 million (for both the construction and operational phases of the Project).

AGL has received a number of enquiries from the local community about opportunities for employment and AGL will preferentially source labour from the local area. AGL will engage directly with the local community in relation to employment and other service provision opportunities that will arise through delivery of the Dalton Power Project.

AGL notes that property prices are complex and are influenced by many factors.

Factors potentially impacting land values include:

- Changes in income earning potential of properties;
- Aesthetic appearance - impact on scenic views;
- Changes to the road network and accessibility;
- Aesthetic impact of vegetation clearing;
- Noise impacts; and
- General trends in property prices in the area independent of the proposal.

AGL submits that the construction of the power station would not affect an observable downward effect on land values given these two main factors:

— the power station will not impact the ability of the surrounding lands to sustain agricultural production;

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3.10.4 Community Submissions

— potential amenity impacts (visual and noise) are significantly mitigated due to the substantial buffer distance of the proposal to the nearest residential properties.

The Environmental Assessment has considered the likely project impacts upon amenity (predominantly noise and visual but also in terms of road access changes and traffic impacts) and describes the measures AGL is committed to implementing to limit these amenity impacts in the short term and longer term. AGL has consulted directly with residents to discuss vegetation screening to reduce visual impacts where this measure would be beneficial. Further discussion of the transport management plan is offered in section 4 of this report, with the current draft TMP currently tabled with ULSC and pending finalisation.

Future movements in the value of land are difficult to anticipate and decisive data on this subject are difficult to obtain due to the numerous factors influencing property value trends. Project amenity impacts however can and will be adequately managed by AGL and their contractors, therefore amenity impacts are unlikely to cause land value decreases. Of great significance is that the proposal is located within a much larger AGL owned area of over 508 ha. AGL has purchased a considerable amount of the land adjoining the power station. This will enable AGL to maintain the large buffer area between the power station and surrounding properties. Given that AGL has purchased a substantial area of adjoining land, there would be an absence of subsequent property transfer activity in the immediate vicinity of the Project into the future.

Submission 20034 raised the issue of compensation:

Submission 20034: "AGL has been careful not to make any commitment to local owners or communities on what it would provide to them in the way of compensation. This contrasts very poorly with Transfield Energy and the planned Collector Windfarm. Transfield has been up front that it will make a substantial amount of funding available to the local community. In its February 2011, Collector Wind Farm Community Newsletter, Transfield noted: "As part of our commitment to the local community, Transfield Services is proposing to establish a Community Investment Fund and contribute approximately $180,000 to the fund each year."

AGL has done nothing of this sort - the website contains platitudes about a community charter. Under Section 94 of the ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979, Contribution towards provision or improvement of amenities or services, the Act states: the consent authority…may grant development consent subject to a condition requiring ... the payment of a monetary contribution.

In addressing potential water supply options, ***Submission 21194*** *strongly urges AGL "to make a significant capital contribution to the proposed augmentation and upgrade of the Gunning-Dalton water supply infrastructure".*

Response

AGL noted above that it is prepared to enter into a voluntary planning agreement with the Minister and Upper Lachlan Shire Council once an appropriate contribution has been negotiated.

AGL has an active community engagement philosophy that involves support of particular community initiatives, and is currently in discussions with the Upper Lachlan Shire Council about an appropriate level and type of involvement within the community.

A community submission raised issues regarding job opportunities for the community.

Submission 20501 noted that. "AGL have said the project will provide job opportunities for the community. The reality is however that AGL will tender for a company to construction the power station and there is no guarantee that jobs will go to locals. The tender will most likely be won by a company located outside the Dalton area, with expertise in building open cycle gas fired power stations.

When the plant is operating, it is largely unmanned (with 5 to 10 employees) and controlled remotely. It is unlikely that local residents will have the specific skill sets required to find employment at the power station when it is operating. "

Response

The job opportunities for the community relate predominantly to the construction phases. Approximately 250 workers would be employed by the Project during each construction stage. AGL have received a number of enquiries from the local community about opportunities for employment. AGL will engage directly with the local community in relation to employment and other service provision opportunities that will arise through delivery of the Dalton Power Project.

3.11 Heritage Impacts

3.11.1 Agency Submissions

The OEH submission (20897) confirms that the Heritage Assessment carried out for the Project and included within the EA meets the OEH's requirements to assess the likely impact to Aboriginal Cultural Heritage by the proposal. Further to this the submission notes that:

- OEH is satisfied that the Aboriginal consultation process for the Dalton Power Project is consistent with the "Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (DEC, July 2005); and
- OEH concurs with the recommendations in the above reports and the management actions recommended in the reports and replicated in the draft Statement of Commitments.

Response

AGL notes OEH's acceptance of the heritage findings and support of proposed mitigation and management measures.

3.11.2 Community Submissions

None of the community submissions received made comment or mention about the heritage assessment, findings or proposed mitigation measures.

3.12 Consultation

3.12.1 Agency Submissions

Agency submissions did not raise any issues about consultation.

3.12.2 Community Submissions

A number of community submissions commented on the consultation undertaken in relation to the Project. These included:

Submissions 20501 stated that AGL has not conducted adequate consultation and has not contacted all affected landowners. It requested informational letters about the project be sent to all residents within a 6 km and 10 km radius.

Submission 20501 commented that AGL has undertaken inadequate community consultation, with impacts on the community not properly identified and disclosed. It has been requested that "A letter (is sent) to all residents within a 6km radius informing them of AGL's proposal to build the Dalton power station. The letter needs to inform the public about the potential negative impacts for neighbouring properties and the measures AGL is taking to ensure negative impacts are minimised. Also we ask that residents 10 km away, identified as impacted with peak levels of pollutants from the power station, are contacted and given an assurance that pollution levels will be well below recommended levels.

Response

As noted in Section 6.2.2 of the Environmental Assessment, AGL has been, and is currently, engaged in an ongoing program of community consultation to ensure that a proactive dialogue is maintained between the wider community in Dalton and AGL. AGL has engaged in community consultation since 2008, through face to face meetings, newsletters, and facilitating community comments through the establishment of a public webpage.

The first Open Day was held, on Saturday, 16 April 2011 and the second during exhibition on Saturday 27 August 2011. Prior to the event, Australian Post mail drops were organized to provide a newsletter to residents in proximity to the Site, as well as wider areas of Dalton, Gunning and Biala. The newsletter provided an outline of the proposal and an update on progress, as well as extending an invite to the planned Community Open Day. Following advice from Australia Post, the mail drops were targeted by post code to include all residents living in Dalton, Gunning and Biala as the nearest townships to the Proposal, and to ensure a broad coverage for the mail drop, all PO boxes were also included. Over 400 letters and newsletters were posted out on both occasions.

The Community Open Days were also advertised through the newsletter distribution, as well as through advertisements placed within the Yass Tribune and the Lions Club of Gunning Noticeboard to ensure that all interested persons within the wider area were informed and were provided with contact details should they require further information.

The Open Day provided the community with direct access to AGL representatives who were able to engage on a one-on-one basis with residents to provide project information and address specific concerns. AGL ensured that representatives across the business were available, from personnel

3 Response to Submissions

3.12 Consultation

3.12.2 Community Submissions

involved at the feasibility and design stage of power projects, through to construction manager representatives. AGL representatives particularly encouraged people to utilise the feedback forms if their questions could not be addressed immediately, or if they required AGL to respond to their query prior to the release of the full EA during the public exhibition period.

AGL has also maintained a public website (www.agl.com.au/dalton) since March 2010 to facilitate public comment and requests for project information. AGL has responded to each website enquiry in a timely matter. Where AGL could provide responses prior to the completion of environmental studies, AGL has done so.

Section 6.5 of the EA states AGL is committed to maintaining regular contact with the regulatory authorities, neighbouring land owners, the Dalton community and other interested parties during the assessment of the Dalton Power Project. While the initial phase of consultation completes the planned consultation activities for inclusion in the EA, AGL will continue to respond to concerns raised by the community. AGL will maintain ongoing dialogue with affected stakeholders to effectively monitor and manage the social and environmental impacts of the development over time. This may include initiatives such as:

- Notifying adjoining landowners and the Dalton community of when construction is likely to be initiated;
- Reporting progress via the local community newspaper, and
- Maintaining project information on the AGL's dedicated project website.

Submission 20501 stated that no notification by mail was sent to the affected land owners, prior to the initial public meeting in April 2011.

Submission 20501: "A number of affected land owners only heard about the proposal by word of mouth after the initial public meeting in April 2011. There was no notification by mail to affected land owners. Names and addresses of affected landowners could have easily been obtained from Council and the location of dwellings is well documented on the local Bushfire Brigade map. "

Response

AGL has been, and is currently, engaged in a program of community consultation to ensure that a proactive dialogue is maintained between the wider community in Dalton and AGL. As noted in Section 6.2.2 in the EA, prior to the initial public meetings, Australia Post mail drops were organised in April 2011 to provide a newsletter to residents in proximity to the Site, as well as within the wider areas of Dalton, Gunning and Biala. The newsletter provided an outline of the proposal and an update on progress, as well as extending an invite to the planned Community Open Day on 16 April 2011. In addition to the newsletter distribution, the event was widely advertised through advertisements placed within the Yass Tribune and the Lions Club of Gunning Noticeboard.

The Open Day was attended by at least 41 people who signed the attendance sheet, with 20 of those people indicating their interest in receiving future communication from AGL about the proposal. It is estimated that between 50 and 60 people dropped in during the course of the morning.

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3.12 Consultation

3.12.2 Community Submissions

AGL was made aware that some interested residents could not attend the community open day. AGL representatives have endeavoured to accommodate requests for alternative meeting times and have subsequently met with residents within Dalton as well as the Upper Lachlan Shire Council during the period of 28 – 29 April 2011.

Submissions 20034 and **20501** commented that the closest land owner to the site was not identified or contacted:

Submission 20034: "Consultation from AGL has been extremely poor, beyond invitations to meet at community consultation days no effort has been made to contact the closest land owner, while other property owners whose land is located further away from the site have been in regular contact with AGL."

Submission 20501: Some people were not identified as impacted. "Just a few months ago and after the first public meeting, when asked about the impact of the power station on the closest neighbour to the east of the site, AGL hadn't realised that the dwelling existed. AGL said they had thought the buildings to the east of the site were only sheds. It is almost unbelievable that a $1.5 billion project could get so far through the assessment process and not identify one of the closest neighbours, particularly given that consultation with the community is an essential part of the assessment. Serious inadequacies in the community consultation process are obvious with AGL failing to identify even their closest neighbours, and failing to contact all impacted residents."

Response

In response to submission 20034, AGL notes that multiple attempts were made by the Project Team to contact/ visit the closest landholder referred to. Numerous efforts were made by AGL between March and May 2011.

The oversight referred to above in Submission 20501 was immediately addressed by AGL as soon as information came to hand, and AGL ensured that significant effort has been made to remain in contact with this landowner since that time.

As noted in **Section 6.2.2 of the EA,** AGL has been, and is currently engaged in an ongoing program of community consultation to ensure that a proactive dialogue is maintained between the wider community in Dalton and AGL. AGL has engaged in community consultation since 2008, through face to face meetings, newsletters, and facilitating community comments through the establishment of a public webpage.

The first Open Day was held on Saturday morning, 16 April 2011 and a second during exhibition on 27 August 2011. Prior to the event, Australian Post mail drops were organized to provide a newsletter to residents in proximity to the Site, as well as wider areas of Dalton, Gunning and Biala. The newsletter provided an outline of the proposal and an update on progress, as well as extending an invite to the planned Community Open Day. The event was also advertised through the newsletter distribution, as well as through advertisements placed within the Yass Tribune and the Lions Club of Gunning Noticeboard.

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3.12.2 Community Submissions

AGL has also maintained a public website (www.agl.com.au/dalton) since March 2010 to facilitate public comment and requests for project information. AGL has responded to each website enquiry in a timely matter. Where AGL could provide responses prior to the completion of environmental studies, AGL has done so.

AGL reiterates the sentiment expressed within Section 6.5 of the EA - that AGL is committed to maintaining regular contact with the regulatory authorities, neighbouring land owners, the Dalton community and other interested parties during the assessment of the Dalton Power Project.

Submission 20050 stated some stakeholders have not been consulted about the project:

..“Dalton Public School and the Department of Communities and Education have not been consulted about this project.” ..

Response

As outlined in Section 6.2.1 of the EA, AGL is committed to meaningful stakeholder engagement and has worked in collaboration with relevant government agencies, and the local community, since late 2008 to identify issues that impact local environmental amenity. Additionally, throughout the project, AGL has offered face to face briefings with interested stakeholders should they be requested.

The Dalton Public School, as with other entities within the Dalton Community would be aware of the Dalton Power Station Project through the extensive advertising and general community consultation undertaken by AGL. The advertising in particular invited interested parties to contact the Project team for specific briefings, and no such request from these groups have been forthcoming. Notwithstanding this, AGL notes that a submission to the exhibited EA was received from the Dalton Public School’s Principal. AGL remains open to requests for additional information from the Dalton Public School, the Department of Communities and Education or any other community group or interested individual.

Submission 21194 commented on consultation required for the pipeline and transmission line infrastructure:

“AGL needs to closely consult with landowners with respect to obtaining any easements for the augmentation of existing gas pipelines and high voltage electricity transmission infrastructure to the proposed power station. AGL also needs to mitigate the productive and environmental impacts of any such upgrades.”

Response

AGL confirms that it has consulted with the relevant landholders over the course of the Project and, where required, has purchased land required for ancillary infrastructure/ or negotiated easements.

Submission 20042 commented that adequate notice should be given to all residents regarding future traffic disruptions on the Dalton-Gunning Road; and **Submission 20022** requests a commitment to a feedback process for residents on noise issues:

Submission 20042 noted: “Disruptions to traffic flows through road modifications and transportation of oversized loads will cause serious disruptions to our lives. The Gunning-Dalton Road is a vital link between Dalton and the rest of the world. Alternative access requires lengthy detours on sub-standard roads. Adequate notice must be given to all residents regarding all traffic disruptions. There should be undertakings regarding not causing disruptions during the morning and evening peaks and during school drop-off and pick-up times.”

3 Response to Submissions

3.13 Land Use

3.13.1 Agency Submissions

Submission 20022 stated that: "AGL should commit to strong community information, consultation, involvement and complaints procedures, and implementation of remedial measures in the event of exceedances, consistent with the statement in the noise assessment that noise impacts of the proposed construction and operation of the plant should not degrade the existing acoustic environment nor create annoyance to residents."

Response

As noted in Section 6.5 of the Environmental Assessment, AGL is committed to maintaining regular contact with the regulatory authorities, neighbouring land owners, the Dalton community and other interested parties during the assessment of the Dalton Power Project.

AGL will continue to respond to concerns raised by the community. AGL will maintain ongoing dialogue with affected stakeholders to effectively monitor and manage the social and environmental impacts of the development over time This may include initiatives such as:

- Notifying adjoining landowners and the Dalton community of when construction is likely to be initiated;
- Reporting progress via the local community newspaper, and
- Maintaining project information on the AGL's dedicated project website.

3.13 Land Use

3.13.1 Agency Submissions

The **Department of Trade and Investment** (**Submission 20511**) raised an issue in relation to agriculture issues.

Submission 20511 noted the Department's guidelines for relevant environmental matters to be considered for infrastructure developments.

Response

The Department's guidelines for infrastructure on rural lands outline five main areas of consideration:

- Development assessment guidelines;
- Resource loss and fragmentation;
- Impacts on farming operations and livestock;
- Increased biosecurity, pest and weed risks and impacts on livestock; and
- Site Rehabilitation.

AGL has considered the guidelines. The manner by which these have been addressed in the EA is:

1. Development assessment guidelines. This area of consideration in the guidelines aims to ensure that through landholder consultation, good design and effective planning controls, infrastructure proposals can be compatible with ongoing agricultural land use.

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3.13 Land Use

3.13.1 Agency Submissions

Landholder consultation: As noted in Section 6.2.2 of the EA**,** AGL has been and is currently engaged in an ongoing program of community consultation to ensure that a proactive dialogue is maintained between the wider community in Dalton and AGL. AGL has engaged in community consultation since 2008, through face to face meetings, newsletters, and facilitating community comments through the establishment of a public webpage.

The first Open Day was held on Saturday morning, 16 April 2011. Prior to the event, Australian Post mail drops were organized to provide a newsletter to residents in proximity to the Site, as well as wider areas of Dalton, Gunning and Biala. The newsletter provided an outline of the proposal and an update on progress, as well as extending an invite to the planned Community Open Day. The event was also advertised through the newsletter distribution, as well as through adverts placed within the Yass Tribune and the Lions Club of Gunning Noticeboard.

The Open Day provided the community with direct access to AGL representatives who were able to engage on a one-on-one basis with residents to provide project information and address specific concerns. AGL ensured that representatives across the business were available, from personnel involved at the feasibility and design stage of power projects, through to construction manager representatives. AGL representatives particularly encouraged people to utilise the feedback forms if their questions could not be addressed immediately, or if they required AGL to respond to their query prior to the release of the full EA during the public exhibition period.

AGL has also maintained a public website (www.agl.com.au/dalton) since March 2010 to facilitate public comment and requests for project information. AGL has responded to each website enquiry in a timely matter. Where AGL could provide responses prior to the completion of environmental studies, AGL has done so.

AGL is committed to maintaining regular contact with the regulatory authorities, neighbouring land owners, the Dalton community and other interested parties during the assessment of the Dalton Power Project. While the initial phase of consultation completes the planned consultation activities for inclusion in the EA, AGL will continue to respond to concerns raised by the community. AGL will maintain ongoing dialogue with affected stakeholders to effectively monitor and manage the social and environmental impacts of the development over time. This may include initiatives such as:

- Notifying adjoining landowners and the Dalton community of when construction is likely to be initiated;
- Reporting progress via the local community newspaper, and
- Maintaining project information on the AGL's dedicated project website.

Good design: As noted in Chapter 3 of the EA:

- Of the options considered for power generation, open cycle gas turbines are ideal to meet peak load demand and generally represent best practice technology for this type of use. The turbine would be fired by natural gas only.
- AGL has undertaken a comprehensive review of alternative sites in NSW at Dalton, Marulan, Moss Vale, Wollongong, Nowra, Wagga Wagga, Canberra, Lithgow, Albury and the Central Coast. No other region has the same concentration of gas pipelines, transmission and water as the Dalton site. Although it is possible to build connections to electricity, gas and water infrastructure these normally impose a burden on the community through which they pass and are cost prohibitive.

3 Response to Submissions

3.13 Land Use

3.13.1 Agency Submissions

- The proposed footprint within the Dalton Site was assessed as the favourable facility footprint from seven alternatives due to ideal topography and aspect. The site is well screened from potential visual and aural receptors.
- The proposed access road and pipeline infrastructure options and the location of the communications tower and associated infrastructure represent the best alternatives for the Project in terms of minimising the potential area of disturbance and in consideration of engineering constraints.
- Dry Low NO_x (DLN) technology has been selected as the most appropriate technology to limit NO_x emissions.
- Within the Dalton area, the Dalton Site was found to be most favourable as connection to the 330 kV transmission line and Moomba to Sydney Gas Pipeline are both located within close proximity to the Development Site. The Site is well removed from public viewing points and has sufficient extent to allow adequate buffer distances between the plant and from neighbouring boundaries.

Effective Planning Controls: As noted in Chapter 5 of the EA, the Dalton Power Project is subject to the development and assessment processes and requirements of Part 3A of the EP&A Act.

2. Resource loss and fragmentation. This area of consideration in the guidelines aims to direct infrastructure developments away from rural resource lands and critical faming infrastructure.

The proposal would result in changes to the land use of the site itself as the site is currently used primarily for grazing. However, the proposed site is located in an area that is zoned rural and development for the purposes of 'generating works' is permissible with development consent.

A Flora and Fauna Assessment (Appendix H to the EA) of the proposed development footprint was undertaken. The results of the assessment indicate that there are a number of ecological values associated with the Site, and a range of mitigation measures have been implemented to minimise impacts to native species within the locality.

In addition, to compensate for the loss of biodiversity, AGL proposes to a biodiversity offset area. Therefore AGL considers that the land use change would be an overall positive one, due to the higher conservation outcomes of the land use change from agricultural use and production to conservation.

3. Impacts on farming operations and livestock. This area of consideration in the guidelines aims to minimise interruptions to internal or external farm access and to farm services that may affect the efficient operation and sustainability of agricultural businesses.

AGL recognises the requirement for an effective Transport Management Plan to minimise impacts to the local community (including farmers). AGL commits to working with their contractors to ensure that the level of service of all roads and intersections involved with the Dalton Power Station will remain at Level A, which is the highest level of service.

The EA identifies the main impacts from construction traffic as likely to occur:

- during the morning peak between 7.00 AM to 9.00 AM when arrival of construction staff and early delivery vehicles coincide with the peak periods on the surrounding road network;
- through regular daily traffic generated by delivery trucks for equipment, plant and materials with intermittent peaks associated with concrete pours; and
- occasionally outside of peak periods, through the delivery of large equipment (turbines, generators and transformers) from arrival Port to the site.

3 Response to Submissions

3.13 Land Use

3.13.1 Agency Submissions

Management by experienced haulage contractors and liaison with the permit section of the RTA, NSW Police and local governments will be undertaken to ensure the safety and amenity of the greater community.

4. Increased biosecurity, pest and weed risks and impacts on livestock. This area of consideration in the guidelines aims to limit vehicle and people movements on rural properties to minimise weed (etc.) outbreak.

As part of the Flora and Fauna Assessment (Appendix H to the EA), a weed assessment was completed, and five declared noxious weeds for the Upper Lachlan Shire Council were recorded on Site. A Weed and Pest Management Plan will be developed and implemented to reduce the potential impact on biodiversity and livestock.

5. Site Rehabilitation. This area of consideration in the guidelines aims to reinforce the importance of site rehabilitation to prevent erosion and sedimentation of waterways and/or dams, limit weed germination and restore productive land use options.

As outlined in Section 13 of the EA, to minimise the potential impact of this Project, detailed recommended mitigation measures would be implemented. These measures include the production of management plans for the construction and operational stages of the project, clearing strategies, erosion and sediment control plans, a weed management plan, habitat replacement plans, and rehabilitation and land management strategies.

AGL has committed to developing a Complementary Planting and Rehabilitation Plan, which would be developed and implemented following construction. This would include strategies to utilise plant species to replicate Box Gum Woodland and Natural Temperate Grassland floristic composition. Planting of local provenance seed, propagules, or saplings would be undertaken where possible and utilise best practice bush regeneration techniques.

DP&I made additional comment on the EA at the draft Response to Submissions Report Stage regarding the need to assess the proposal against NSW Trade and Investment guidelines "Infrastructure proposals on rural lands":

> *"The agricultural impacts of the proposal as detailed in the NSW Trade and Investment guidelines "Infrastructure proposals on rural lands" need to be elaborated. The class of agricultural land and impact of the loss of this land to agriculture in the region should be quantified." (DP&I - 2/12/11)*

Response

AGL provides the following assessment of the proposal in relation to the recommendations deemed relevant to the proposal as set out in the Trade and Investment guidelines.

To minimise impacts on agricultural resources and enterprises from infrastructure development proposals, I&I NSW recommends that:

i) Proposals are clearly justified in a regional context and identify the merits and community benefit of the proposal.

> ***Response*** *- By positioning the project to minimise visual and ecological impacts, the Project has been justified within the wider regional context.*

3 Response to Submissions

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3.13.1 Agency Submissions

ii) Agricultural resource lands are identified and avoided. New infrastructure is located within existing infrastructure corridors wherever possible.

> ***Response*** *- The Project has been located on land that is either zoned for agricultural uses or is unzoned. Land that is owned by AGL extends over 2 Km beyond the footprint of the Project, this buffer acts to separate the Project from residential receptors and also from grazing activities beyond the site boundaries. As far as is possible, the placement of new infrastructure has been proposed in alignment to existing corridors. New infrastructure will not fragment existing agricultural thoroughfares or inhibit the movement of livestock or wildlife.*

iii) Land use conflicts are minimised.

> ***Response*** *- No land use conflicts are anticipated given that AGL has purchased a significant amount of land around the proposal.*

iv) Landholders are effectively consulted during planning, construction and rehabilitation works and the expectations of local communities are managed.

> ***Response*** *- Consultation has been carried out with all local landholders and the wider community as part of the Assessment and Approvals Process. AGL has made commitments to ensure that meaningful consultation with the community would continue throughout all stages of the project, and is proposing the facilitation of a Community Consultative Committee for the Project, pending approval.*

To minimise resource losses and impacts on farm productivity consent authorities are advised to verify that infrastructure developments:

i) Consider agricultural land use and holding patterns in the locality, existing infrastructure and primary industry resources.

> ***Response*** *- The land on which the Project is situated has been owned by AGL since 2008, AGL currently allows neighbouring farmers to use the site for grazing. With the exception of the immediate site footprint and the Ecological Offset Area, this existing use would continue through the operational phase of the Project.*

ii) Identifies important agricultural resources and farm infrastructure, including surface and groundwater resources on which agriculture depends.

> ***Response*** *- A thorough assessment of groundwater and surface water resources has been conducted as part of the Environmental Assessment. There is no anticipated impact on other agricultural resources.*

iii) Minimises the footprint of proposed works and easements.

> *Response - All footprints have been minimised as far as possible.*

iv) Minimises further resource fragmentation and does not create lots smaller than the current minimum lot size for that zone.

> ***Response*** *- The Project has been located on land that is either zoned for agricultural uses or unzoned. Land that is owned by AGL extends over 2 Km beyond the footprint of the Project, this buffer acts to separate the Project from residential receptors and also allows local farms*

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grazing land beyond the boundaries. Existing agricultural uses will continue on the site with the exception of the immediate site footprint and the Ecological Offset Area.

v) Co-locates infrastructure within existing corridors (eg road or rail reserves or existing easements) where ever possible.

***Response** - The Gas supply to the Project Site has been located as close to the Walshs Road easement as practicable, and the plant has been located in direct proximity to the existing Transgrid transmission easement. These siting factors have indicated that the objectives of this requirement have been met.*

vi) Buries pipelines and cables where feasible, subject to appropriate land rehabilitation considerations.

***Response** - The pipeline is to be located below ground between the valve station and the facility. In addition, communications services between the plant and communications tower would also be location beneath the access track rather than above ground.*

Infrastructure proposals should:

i) Assess potential impacts on the safe use of farm machinery and routine farm activities. For instance crop dusting might be affected by the development of new power line routes.

***Response** - The current use of the land for grazing will be able to continue on the majority of the site once the Project enters the operational phase.*

ii) Avoid, or promptly mitigate significant changes to access to the road network, internal farm tracks and critical farm infrastructure (eg buried irrigation systems or phone lines).

***Response** - There are no anticipated changes to the road network as a result of the Project, and AGL has committed to the preparation of a Transport Management Plan to ensure impacts of the proposal are minimised.*

iii) Locate infrastructure developments in consultation with landholders. Siting facilities parallel to or immediately adjoining to existing farm infrastructure (eg fence lines or irrigation lines) is usually preferred.

***Response** - The Gas supply to the Project Site has been located alongside Walshs Road. The transmission lines associated with the Project are not expected to have an impact on the agricultural operations. To this end the objectives of this requirement have been met.*

iv) Plan the timing of construction operations and the location / design of temporary fencing and temporary access routes to minimise impacts on farm operations and livestock.

***Response** - The construction timeline for the Project will be dependent on the approval process. The Construction phase of the Project is not anticipated to have any impact on surrounding land holders.*

Consent authorities are advised to verify that development proposals appropriately identify:

i) Potential biosecurity risks such any increased vehicle movement onto and off farms that could spread animal or plant material or diseases. This is particularly critical if genetically modified (GM) crops or organic crops occur within or adjoining the proposed development route.

3 Response to Submissions

3.13 Land Use

3.13.1 Agency Submissions

Response *- No vehicular access to any of the farms surrounding the Project is expected. Should access be needed, for example for consultation purposes, appropriate decontamination measures will be engaged as per site access protocols to be developed during the construction period.*

ii) Significant weed species within the proposed development footprint and risk of spread.

Response *- A thorough ecological assessment was included as part of the Environmental Assessment.*

iii) The location, status and management of current and former livestock dip sites and other potentially contaminated sites within the infrastructure corridor or area.

Response *- Section 8.2.1 of the EA outlines that given the undeveloped nature of the Site, it is unlikely that soil has been significantly impacted by site based activities. As a result, it is unlikely that any soil contamination is present on the Site. Consequently, the guidance I not Applicable given the known history of the site.*

iv) Bushfire or other emergency management risks.

Response *- A thorough Hazard and Risk Assessment was included as part of the Environmental Assessment. A Preliminary Hazard Analysis has considered that further assessment around bushfire is not required to address fire as there are adequate design controls. Notwithstanding this, AGL have committed to further assessment of the impact of bushfires on the power station and bushfire ignition threats from the power station. Refer to* ***Chapter 18*** *of the EA.*

v) Impacts on livestock including the pollution of waterways and noise risks that may result in injury or escape.

Response *- A thorough assessment of the impact of the Project on waterways and of the Noise and vibration associated with the Project is contained within the Environmental Assessment.*

A Weed Management Plan should identify:

i) Notifiable and problematic environmental weeds that could affect farm productivity

ii) the additional risks resulting from the proposed development and their assessment. Advice is available from the local council weeds officer or on the website listed at the end of this guideline

iii) State, regional or local plan or strategies for relevant to specific weeds that occur on the property area or that may be transported to the proposed works from surrounding areas.

Response *- A Weed Management Plan will be included as part of the Flora and Fauna Management Plan (FFMP) this will include an identification of the above.*

v) Weed suppression, management and containment strategies for all disturbed areas. For instance soil stockpiles, roadsides leading to the landfill site and disturbed areas.

vi) Measures to limit the spread of existing weeds include cleaning vehicle tyres before moving from property to property, footwear checks, minimising and monitoring soil movement between properties.

3 Response to Submissions

3.13 Land Use

3.13.1 Agency Submissions

vii) Monitoring programs for noxious and problematic weeds on site and in the surrounding areas and proposed follow up controls if weed problems occur

> ***Response*** *- A Weed Management Plan will be included as part of the Flora and Fauna Management Plan (FFMP) this will include an identification of the above.*
>
> *Impacts from the construction process will be managed through the development of a Construction Environment Management Plan (CEMP).*

I&I NSW also recommends that consent authorities require infrastructure proponents on rural lands to develop protocols to:

i) Ensure effective consultation with landholders regarding the timing of operations, site access needs and any special measures to minimise impacts on livestock and crops. For instance the project design should seek to avoid or minimising the need to cut farm fences or traverse crops.

> ***Response*** *- The construction timeline for the Project will be dependent on the approval process. The Construction phase of the Project is not anticipated to have any impact on surrounding land holders.*

ii) Manage vehicle movements onto and across farms. This might include separating work sites from farm areas, restricting the number of vehicles accessing farm properties and monitoring vehicle movements on farms.

> ***Response*** *- No vehicular access to any of the farms surrounding the Project is expected. Should access be needed, for example for consultation purposes, appropriate decontamination measures will be engaged.*

iii) Avoid biosecurity risks and ensure appropriate decontamination of vehicles moving between properties if necessary.

> ***Response*** *- No vehicular access to any of the farms surrounding the Project is expected. Should access be needed, for example for consultation purposes, appropriate decontamination measures will be engaged.*

iv) manage wastes and pollution risks.

> ***Response*** *- Impacts from the construction process will be managed through the development of a Construction Environment Management Plan (CEMP).There would be no anticipated impact from the operational phase of the Project.*

v) Manage, mitigate and monitor emergency risks as part of emergency management planning for the proposed development.

> ***Response*** *- A Preliminary Hazard Analysis was carried out as part of the Environmental Assessment. A comprehensive hazard analysis will be conducted prior to the Project becoming operational.*

3 Response to Submissions

3.13 Land Use

3.13.1 Agency Submissions

Consent authorities are advised to ensure that proponents:

i) Develop appropriate rehabilitation objectives and strategies in consultation with landholders and relevant agencies (eg the local government weed authorities and catchment management authorities).

> ***Response*** *- Appropriate rehabilitation has been negotiated with the NSW Office of Environment and Heritage and with the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.*

I&I NSW additionally recommends that proponents are required to develop a comprehensive Environmental Management Plan that documents:

i) Environmental policies, rehabilitation objectives and strategies.

- Specific measures to protect catchment values and productive capacity including soil and erosion mitigation proposals

> ***Response*** *- Impacts from the construction process will be managed through the development of a Construction Environment Management Plan (CEMP).*
>
> *Operational impacts will be managed through the development of an Operational Environmental Management Plan (OEMP).*

- -Topsoil management proposals to make best use of this resource and maximise rehabilitation and revegetation success. Recommended practices include the removal of topsoil before disturbing sub-soils or erecting permanent structures. The immediate reuse of topsoil. If this is not feasible, topsoils should be temporarily stored in accord with best practices.

ii) Vegetation re-establishment strategies and actions. Recommended practices include:

- De-compaction of areas traversed by heavy machinery to encourage plant growth and minimise run off.
- Consideration of seasonal conditions and timing revegetation efforts to maximise success.
- Sowing of cover crops or pastures to stabilise disturbed sites and reduce weed growth.
- Using species suitable for the proposed end use and locality. A particular priority should be the use of clean seed and species with a low risk of contributing to weed problems.
- Rehabilitating unwanted tracks to reduce pest animal problems.
- Allowing for soil settling and provisions to refill disturbed sites.

> ***Response*** *- Impacts from the construction process will be managed through the development of a Construction Environment Management Plan (CEMP) with consideration to these recommendations above.*
>
> *Operational impacts will be managed through the development of an Operational Environmental Management Plan (OEMP).*

v) Monitoring proposals to assess the effectiveness of rehabilitation efforts and repair as required

> ***Response*** *- Impacts from the construction process will be managed through the development of a Construction Environment Management Plan (CEMP).*
>
> *Operational impacts will be managed through the development of an Operational Environmental Management Plan (OEMP).*

3 Response to Submissions

3.13 Land Use

3.13.1 Agency Submissions

vi) The responsible person and organisation for site management and remediation during and post construction

> ***Response*** *- During Construction, the site manager will be responsible for maintaining the standards set out in the CEMP/OEMP. During Operation, this role will be completed by the AGL Staff on site.*

I&I NSW recommends that consent authorities ensure that proponents:

i) Consult with relevant agencies such as the local government weed authorities and catchment management authorities on the design, construction and operation of the proposed infrastructure

ii) Consult with the owners and managers of affected and adjoining agricultural operations in a timely and appropriate manner about: the proposal, the likely impacts and suitable mitigation measures or compensation.

iii) Provide sufficient documentation to demonstrate that all significant impacts on current and future agricultural developments and resources have been identified and can be reasonably avoided or adequately mitigated

> ***Response*** *- Consultation has been engaged as part of the Environmental Assessment. There is no anticipated impact on current or future agricultural activities beyond the immediate footprint of the Project.*

iv) Minimise land use conflict.

> ***Response*** *- The Project has been located on land that is either zoned for agricultural uses or unzoned. Land that is owned by AGL extends over 2 Km beyond the footprint of the Project, this buffer acts to separate the Project from residential receptors and also allows local farms grazing land beyond the boundaries. As far as is possible, new infrastructure will be aligned to existing corridors. New infrastructure will not fragment existing agricultural thoroughfares or inhibit the movement of livestock or wildlife.*

DP&I made additional comment on the Response to Submissions Report dated 27.01.2012 noting that the class of agricultural land (as per the NSW Agriculture's agricultural land classification system) and impact of the loss of this land to agriculture in the region has still not be quantified. (DP&I - 8/03/12)

Response

AGL has purchased 573 ha of land, inclusive of lots through which ancillary infrastructure for the Project would be placed. The site itself, as assessed within the EA, comprises 508 hectares. The site is predominantly Class 4 land as per the NSW Agriculture's agricultural land classification system. This classification is based on a number of characteristics including slope, productive capacity of the land, existing land use, and potential suitability for other land uses. The class has also been discussed with a Resource Management Officer from the Department of Primary Industries who has confirmed that the whole area around the subject site is classified as Class 4 under the NSW Agriculture's agricultural land classification system.

Class 4 land is not ideal for cultivation. However, it has traditionally played a role in fine wool production on comparatively large areas. Production may be seasonally high but the overall production level is low as a result of major environmental constraints.

The proposal would result in changes to the land use of the development footprint itself (approximately 26 hectares) as it is currently used primarily for grazing purposes. An area of 195 ha (approximately 38.4 % of the Site) would form part of the Offset Area which would be conserved and managed appropriately. In order to improve or maintain the biodiversity of the offset site, grazing will be largely excluded from within the offset site to minimise impacts resulting from sheep grazing, which is listed as a threat to the two Threatened Ecological Communities present within the offset site. Livestock will be excluded from the offset site through the erection of stock-proof fencing in consultation and agreement with OEH/DSEWPaC.

Grazing activity would be largely excluded from an estimated total of 221 ha land. Considering a range of other land values, AGL considers that the overall land use change would be positive, due to the land use change from agricultural use and production to conservation purposes of 195 ha of land.

3.14 Other

3.14.1 Agency Submissions

The **Department of Trade and Investment** (Submission 20511) raises no issues in relation to forests, minerals and fisheries. This is noted. Their submission also states:

The Department notes the EA indicates that a licence under the Pipelines Act 1967 would be required for the new gas pipeline branch from the existing Moomba to Sydney Pipeline. It is understood that a variation of the existing Moomba to Sydney Pipeline Licence is likely to be sought under the Act to include the proposed 3km long new branch of the existing pipeline.

Response

Noted. AGL is currently engaged in negotiations with the operator of the Moomba to Sydney pipeline to seek access to the pipeline and a variation of its licence for the construction and operation of the pipeline branch.

Planning (Crown Lands) - Submission 20519 (Land & Property Management Authority): CLD is not a road construction and maintenance authority and is not funded for such work nor does it employ staff who can provide expertise is this area - this role is the province of Local Government. In addition Section 138 of the -Roads Act -1993 prohibits-person/s from undertaking works or erecting structures on or over a public road without first obtaining the consent of the appropriate roads authority. CLD is the responsible roads authority for Crown roads on behalf of the Minister administering -this legislation. As a consequence, CLD does not consent to any party undertaking works, including maintenance, on Crown roads. In this particular case, it is understood that the proponent (AGL Ltd) have entered a dialogue with Upper Lachlan Council with a view to Council accepting transfer of control pursuant to Section 151 of the Roads Act 1993 and such a request is imminent. Transfer to the affected roads will also allow "linking" of these roads with other Council roads in this immediate vicinity. Once the project construction is completed, it is CLD preferred position that any roads no longer required for access be closed and sold to adjoining landowners.

3 Response to Submissions

3.14 Other

3.14.1 Agency Submissions

Response

AGL is currently engaged in discussions with Upper Lachlan Shire Council regarding transfer of Crown Roads to the Council. The Council would then grant AGL permission to construction and maintain access roads and infrastructure on these former Crown roads. The Council and AGL intend that any such roads no longer required for access will be closed and AGL will apply to the lands and Property Management Authority for the roads to be transferred to AGL.

Planning (waterway access) - Submission 20519 (Land & Property Management Authority): Records available to this office suggest that parts of the waterway - Lachlan River adjoin the northern boundary of the Project area. Also in close proximity to the western boundary of the Project area is Jerrawa Creek which is a Crown waterway. All current access points to both waterways must remain and be available for public use. Any works and or operational activities must not impact on the bed and banks of these waterways, or affect the flows to or within the waterway/s.

Response

Noted. AGL commits to ensuring all current access points to both waterways will remain and be available for public use and that any works or operational activities will not impact on the bed and banks of these waterways or affect the flows to or within the waterways.

Planning (waterway access) - Submission 20519 (Land & Property Management Authority): If any disturbance or activities are to occur within the waterway and or access is required CLD must be consulted prior to any disturbance or activities. This is to ensure that there is no long term impact on the Crown waterway/s and any adjoining riparian zones.

Response

Noted. AGL commits to consulting with NSW Property and Lands Association (LP&A) prior to any disturbance or activities within the waterway.

DP&I noted that the AEMO updated its electricity statement of opportunities on 2 March 2012 and requested that AGL take account of this update within the Final Response to Submissions Report. – Email from Toby Philp 16.03.12

Response

AGL has addressed this in **Section 3.14.2** by adding detail to a previous response to a community submission 20501. Refer to page 121.

The **Department of Defence** (Submission dated 19th October 2012) raises no issues in relation to the Project. This submission states:

Defence has reviewed the documentation and can advise that it has no comments to make at this time.- Department of Defence, 19.10.12

Response

Noted.

3.14.2 Community Submissions

The community raised issues around selection of the site.

Submission 20019 stated: This project would be suited to an industrial area closer to a larger population, so the peak power produced would be provided closest to where it is needed, saving what would otherwise be lost in transmission from a more remote location such as Dalton.

Submission 20002 raised the question whether AGL considered an alternative site that did not impact on the population (such as on Wheeo Road 10km to the north east of the site). The advantages of this site are described as having little or no 'health impact' on Dalton or Gunning and 'the construction traffic passes up the Crookwell Road thereby avoiding Gunning altogether'.

Submission 20042 contended that: The Proponent has not clearly identified nor specified, amongst many other things failure to address electricity transmission losses in considering alternatives to the proposed facility. Proximity to areas of peak demand was stated to be a relevant, indeed important, consideration in the EA for the Leaf's Gully Project, yet the losses in transmission between Dalton and the areas of peak demand are not identified nor discussed.

Response

AGL completed a detail assessment of potential locations for a power station within NSW and identified these as:

- various locations between Young and Wilton;
- a corridor from Wilton through western Sydney;
- the Central Coast and Newcastle area;
- between Young and Culcairn;
- between Culcairn and Albury;
- south-west of Nowra;
- Nowra to Wollongong; and
- the Dalton / Gunning region.

The site selection parameters were:

- gas network connection;
- electrical network connection;
- availability of land;
- availability of water;
- altitude and climate; and
- potential environmental impacts.

The reasons for Dalton being selected as the preferred site include:

- Electricity: On site connection to 330 kV to Bannaby. Direct connection to load centre. Future additional load connection up to 500kV.
- Gas: Moomba Sydney pipeline connection within close proximity to site. Reliable, secure connection to a gas supply.
- Water: Variety of water options available upon preliminary analysis including connection to reticulated scheme, groundwater and rainfall storage.

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

- Land: the site is a large rural site. 1km to nearest house, 3km to Dalton. Approximately 1km to public road with topography and vegetation for screening. Expensive land. Some vegetation clearing required.

Based on the factors listed in the above, the Dalton area was ranked as the superior location for the gas-fired power station. Dalton is unique in that there is a corridor along which it is possible to locate a gas-fired power station where the necessary electricity network and a gas transmission pipeline is within close proximity to the site. Additionally, the Dalton site is well screened in terms of exposure to possible noise and visual receptors, and the site is relatively flat with little native vegetation needing to be removed to construct and operate the facility.

All other locations investigated required either transmission or pipeline easements or were located such that impacts on the surrounding community would be unacceptable. As such, Dalton remained the preferred site for the development.

It is noted that Submission 20002 questioned why the site was not located 10km up the road. Within the Dalton area, the Dalton Site was found to be most favourable as connection to the 330 kV transmission line and Moomba to Sydney Gas Pipeline are both located within close proximity to the Site. If the site was located 10km up the Wheeo Road as suggested in the submission, it would no longer be in close proximity to the 330kV transmission line and Moomba to Sydney Gas Pipeline. The Site is well removed from public viewing points and has sufficient extent to allow adequate buffer distances between the plant and from neighbouring boundaries.

Transmission losses from the Dalton Power Station are similar to other power stations in the NSW network and are conservatively estimated to be approximately 3-4%. Future upgrades of the NSW transmission network could result in decreases to these already low transmission losses.

Dalton Power station will be connected directly to Bannaby substation which forms part of the 500kV ring around Sydney. The Marginal Loss Factor for Dalton Power Station is forecast to be in the range 0.96 to 0.97 when allowance is made for likely future windfarm connections nearby. This represents incremental losses between Dalton and the NSW reference node at Sydney West of 3% to 4%. The Sydney West substation has been designated as the electrically central point in the NSW network by the National Electricity Market. The Marginal Loss Factor has been designed to reflect the incremental transmission losses and as such overstates the actual average transmission losses.

The Marginal Loss Factor for the Mt Piper/Wallerawang power stations are also in this range. The Marginal Loss Factor for Liddell Power Station (also on the 500kV Ring) is lower and the Marginal Loss factor for Eraring/Vales Point/Munmorah is higher.

TransGrid (in the current NSW Annual Planning Report) anticipates commencing a process in 2011/12 which is likely to result in a new 500kV line linking Bannaby to Sydney West which should reduce the losses between Dalton and Bannaby. TransGrid's long term plan is for a 500kV line from Bannaby to Yass which would reduce the transmission losses even further.

A community submission also commented on the cumulative impact of the project.

Submission 20501. Submission states that there are excessive cumulative negative effects of building Stage 1 and Stage 2 which effectively amounts to building two power stations on the one site with commensurate impacts on air quality, noise levels and scarce water resources….. On the basis of the review of the environmental assessment it is concluded that the proposal to build a 1500MW power

station at Dalton be opposed. The proposed Dalton power station would be the biggest gas fired power station in Australia. It is equivalent to two Uranquinty power stations being built on the one site. The cumulative negative impacts are too great for one community to bear."

Submission 20501: The "community (is) not aware of the wind turbines 5 km from the site. The EA states that other major projects in the Upper Lachlan Shire Council area are all wind farms between 5 and 20 km from the power station project (AGL and URS 2011, pES-16). The community are not aware of any wind farms 5 km from the site but for those residents sandwiched between the wind farms and the power station, the cumulative negative effect would be significant."

Response

The impacts of the Dalton power station have been detailed in the EA. Potential adverse impacts have been assessed and strategies to avoid, minimise and mitigate those impacts form a key part of the Environmental Assessment. The Project includes a number of commitments to manage environmental impacts during its construction and operation.

The EA has highlighted a range of issues which would be addressed through the careful design and operation of the Project.

The Environmental Assessment considered Stage 1 and 2 of the Project and on the basis of the studies detailed within the Environmental Assessment, and with the implementation of the recommended mitigation measures, the Project is justified.

A cumulative assessment was carried out for all major projects in the area. These were all wind farms. Based on the distance between the Dalton Power Project and the windfarm projects, the cumulative impacts were deemed negligible. This is a result of the differences in timing of construction between projects, and the differences in key environmental impacts between gas fired generation and wind generation.

One community submission commented on the need for the project.

Submission 20501.

This submission states that "there is no justification for the power station, and certainly not for one of this scale, on the basis of supply need in the electricity market. No additional capacity is needed in NSW for seven years".

"Error in the year when the LRC point is reached in NSW. The justification provided by AGL for the project is contained in Chapter 2: Project Need and Justification of the EA. Reference is made to the report issued annually by the Australian Electricity Market Operator (AEMO) entitled Electricity Statement of Opportunities 2010 (ESOO 2010) (AGL and URS 2011, p2-1).

The EA says the:

"The ESOO includes a supply-demand balance ....indicating the ....Low Reserve Condition (LCR), when additional capacity may be needed to maintain the established level of electricity supply reliability.

If no capacity in addition to that already committed is made available to the market, this point is reached for NSW somewhere around 2014 and 2015".

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

However this is incorrect. The ESOO 2010 says the LRC point for NSW is reached in 2016-17 for the medium and high growth scenarios and not until 2017-18 for the low growth scenario (ESOO 2010, Table 1). The latest ESOO (ESOO 2011)13 was released August 31, 2011 and pushes the LRC for NSW out to 2018-19 for all growth scenarios (ESOO 2011 Table 1, p10 Executive Summary). Therefore for at least for the next seven years (from 2011 to 2018) there is no need for this project to provide 'electricity supply reliability'. "

"Potential problems for the efficient operation of the electricity market if AGL holds a large amount of peaking plant. The other justification given by AGL for the project is that during peak periods AGL can incur heavy financial losses by having to pay other generators 200 times the cost of base load power. This amounts to AGL building capacity to strategically position itself in the electricity market. Further it raises questions about the efficient operation of the electricity market if one participant has control over the supply of such a large amount of peaking capacity in NSW. (The proposed 1500MW Dalton Power Station is the same size as the Murray Snowy Hydro).

Presumably there are hedging contracts available to AGL to manage peak demand price risk, instead of wasting resources building capacity before it is needed.

A better use of $1.5billion in the electricity market would be to upgrade customer metering equipment so customers can see and respond to price signals on the half hour and so reduce power demand in peak periods. "

Response

The Dalton Power Project would contribute to ensuring the adequate, reliable and consistent supply of electricity during times of peak demand / high price in NSW.

The Dalton Power Project is consistent with NSW Government policy indicating a preference for private investment in electricity generation. Further to this, peaking power generation enables AGL to manage its cost of electricity sold to consumers and minimises market exposure along with providing rapid start up generation capacity at times of reduced supply or generation capability from other plants or sources.

The report issued annually by the Australian Electricity Market Operator (AEMO) entitled Electricity Statement of Opportunities was a key document considered by AGL when determining the needs case for the Project. As stated in section 2 of the EA, this is only one of several factors that determine project need and timing. Other factors that determine the project need and timing include the retail position of AGL. AGL has increased it's number of electricity customers in NSW by 89,000 in recent months. This has increased AGL's exposure to electricity price volatility and increased AGL's need to construct and operate a gas-fired peaking power station.

As reported within Chapter 2 of the EA, both the NSW Government's Energy Directions Green Paper (2004) and Australian Energy Market Operator (AEMO) Statement of Opportunities (2010) predict that over the next decade rising electricity demand from the whole of NSW will exceed existing generation capacity. To meet the immediate growth in demand for electricity, a number of additional power plants will be required.

[13] http://www.aemo.com.au/planning/esoo2011.html

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

In response to the above submission, AGL notes that the 2011 ESOO provided an outlook of the supply-demand balance for the 10 years 2011-21. The submission correctly indicates that the low reserve condition or LRC point was predicted to be 2018-19. The LRC gives and indication of when further investment in generation may be needed to maintain electricity supply reliability, and according to the 2011 ESOO, the predicted timing for this requirement is 2018-19. This is in line with AGL's assertion that electricity demand from the whole of NSW will exceed existing generation capacity over the next decade without further generation capacity investment.

The Dalton Power Project would contribute positively to the NSW electricity market by providing a peaking plant to service demand in addition to minimising AGL's market exposure and complementing the introduction of intermittent renewable generation sources into the NSW electricity market.

AGL uses a mix of hedging contracts and ownership of generating plant to manage price risk and has done so since the start of the electricity market in Australia. Balancing this risk is a critical decision that each retail business must make for itself.

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

AGL has decided to invest its own money to construct a peaking plant at Dalton. The Dalton Power Station total development of 1500MW represents approximately 10% of the total generation capacity in NSW, significantly less than the Eraring and Bayswater Power stations located in NSW that each have a capacity of 2640MW.

The existence of a power station at Dalton will impact on the supply/demand balance at times of peak load in NSW. Peaking power generation enables AGL to manage its cost of electricity sold to consumers and minimises market exposure along with providing rapid start up generation capacity at times of reduced supply or generation capability from other plants or sources. In addition the Dalton Power Station will reduce upward pressure on peak electricity prices throughout the state. By providing additional generation capacity, the Dalton Power Station will assist the security of NSW's electricity supply.

Establishment of Dalton Power station will not give AGL any control over existing generation in NSW. AGL will gain no market power to reduce generation from the existing level. AGL will not be able to cause electricity pool prices to rise higher than they would be if Dalton Power station was not established.

DP&I noted that the AEMO updated its electricity statement of opportunities on 2 March 2012 and requested that AGL take account of this update within the Final Response to Submissions Report.

Under the Electricity Rules, AEMO is required to provide an update if there are changes to generation or demand forecasts, as there have been in the last seven months. Both annual energy and the forecast maximum demand have decreased since the publication of the Electricity Statement of Opportunities (ESOO) in August 2011. According to the AEMO, economic forecasts from March 2011 predicted stronger economic growth than what has eventuated. Revised projections across Eastern and South Eastern Australia have been influenced by a slower than expected recovery from the global financial crisis, a milder than expected summer, and an increasing end-use customer awareness of electricity prices and potential carbon pricing policies. The revised ESSO notes the following changes specifically for NSW:

- Average Annual change in maximum demand projections (MW): -86
- Resulting LRC Point: 2018-19 (no change)
- Resulting Reserve Deficit (MW): 104 (representing an 86 MW reduction)

AGL notes that the March 2012 update did not result in an update to the LRC point. As such, it remains the view of AEMO that further investment in generation by 2018-19 may be needed to maintain electricity supply reliability within NSW. AGL's needs case and justification for the Project remains in line with that presented in Chapter 2 of the EA.

Submission 20501 further noted that "Failure to identify Canberra and the ACT as a major usage area as a justification for the development. Electricity usage and the transmission network are discussed, in the chapter on project need and justification. The main centres of peak demand are identified as Sydney, Newcastle and Wollongong (AGL and URS 2011, p2-3). Surprisingly Canberra and the ACT aren't mentioned, particularly as one would think Canberra and the ACT would be the major usage area in the region. Is there a reason Canberra and the ACT aren't mentioned as demand centres for the region?"

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

Response

During times when the Dalton Power Station will typically be operating, electricity demand in NSW and the ACT would likely be high. At these times of high demand, the ACT load is typically supplied by energy flowing from Snowy Hydro and Victoria. The electricity generated from Dalton will typically flow north to Sydney.

The transmission system in NSW has evolved as a state based grid servicing a state based market. There is limited connectivity to the transmission networks in other states. The Australian Energy Market Operator dispatches generators within NSW as a single region to match total load each 5 minutes.

Electricity load within the ACT forms a significant part of the total State load. However, at times of peak loading (when Dalton Power Station can be expected to run), the total load at Canberra and Yass will be less than the power flowing north from the direction of the Snowy and Victoria.

The net flow in the Yass area at times of maximum demand in NSW will be towards Sydney.

A community submission also raised issues around the consistency of the project with the LEP.

Submission 20501 indicated that the proposal is inconsistent with the aims of Upper Lachlan Shire LEP 2010 to: "encourage conservation of natural resources"; and "promote the use of rural resources for agriculture and primary production", as electricity generation at the location risks depleting water resources that are currently available for interdependent ecosystems and agriculture.

Response

A discussion on the Upper Lachlan Shire LEP is provided in Section 5.4.2 of the EA which outlines how the proposed development is consistent with the aims of the LEP. **Table 3-3** provides an extract from the EA.

Table 3-3 Consistency with Upper Lachlan Shire LEP

LEP Objective	Project Consistency	Location within the EA
b) to encourage the sustainable management, development and conservation of natural resources	Natural gas is a clean burning fuel and has comparatively low greenhouse gas emissions. In terms of alternate power generation technologies, open cycle gas turbines present the best balance of outcomes between the imperatives of climate change mitigation and meeting peak electricity demand while managing the price of electricity for end use consumers.	**Chapter 3** Alternatives
c) to promote the use of rural resources for agriculture and primary production including fishing, forestry, mining and related processing, service and value adding industries	The Project benefits broader community services through the supply of electricity to the state of NSW and the National Electricity Market, and is expected to have positive economic and social impacts during both construction and operation phases with potential for a positive effect on the regional economy.	**Chapter 3** Alternatives **Chapter 16** Land Use and Property Impacts **Chapter 17** Socio Economic Assessment

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

Water demand for the plant would be met through the utilisation of existing water sources, therefore there would be no depletion of water for interdependent ecosystems and agriculture.

A community submission commented on the potential impact of earthquakes on the Facility.

Submission 20000 stated: "Seismologists from Geoscience Australia and the Australian National University predict that the Dalton-Gunning area is due for a very large earthquake. The area has more earthquakes than anywhere else in the country which led to Geoscience Australia maintaining a long term seismic station at Dalton. Submission 20000 asks whether AGL has factored an earthquake scenario into the Dalton Power Project and did they consult with Geoscience Australia?

Response

AGL confirms that the design of the power station has taken seismic activity in the area into consideration.

The main seismic area in New South Wales extends from Dalton to Lake George in a south southeast direction (Geological Society of Australia, 1969). This is further supported by the Earthquake Hazard Map of New South Wales, Victoria and Tasmania (Geoscience Australia, 2003) which designates the Dalton region with the highest hazard factor (Z = 0.12) in the state.

A Hazard Factor (Z) of 0.12 would be appropriate for the development site in accordance with Australian Standard AS 1170.4 – 2007 *Structural design actions – Part 4: Earthquake actions in Australia*.

The Facility would be designed and constructed in accordance with Australian Standard AS 1170.4 – 2007 Structural design actions – Part 4: Earthquake actions in Australia.

A community submission commented on potential 'geotech' problems that might confront the project.

Submission 20501: The "Site assessment identifies 'Geotech' problems for the site. In Table 3-15 the Dalton site is identified as having geotech problems. The status is identified as 'caution' stating that the site is feasible but there are potential constraints or significant costs with the site selection.

This is inconsistent with Chapter 8 which states "there appear to be no geotechnical aspects that would preclude the use of the site for a gas turbine power station" (p 8-4)."

Response

Table 3-15 presented within the EA is based on a preliminary assessment of potential issues for the range of sites being considered as alternatives for the siting of the power station and was necessarily a high level assessment for issues such as geotechnical constraints. The preliminary assessment identified caution indicating further investigation would be required.

Once the Dalton site was chosen as the preferred location, further studies were conducted. The assessment referenced in chapter 8 was a more detailed and site specific assessment of the site and as such superseded the preliminary consideration identified in the site selection assessment described in Table 3-15.

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

A community submission (**Submission 20501**) commented on AGL's environmental record:

"AGL's environmental record is in question. It is stated in the report that AGL's environmental record is supported by AGL never having proceedings brought against it in court. However this is incorrect. AGL is currently in court with AGL Energy's Gloucester coal seam gas project. The proceedings are being brought against PAC and AGL in the New South Wales Land and Environment Court by the Barrington – Gloucester – Stroud Preservation Alliance."

Response

An AGL entity is the second respondent in Land and Environment Court proceedings in NSW. The proceedings are civil proceedings, being a judicial review challenge to a planning approval of AGL's Gloucester Coal Seam Gas project under the EP&A Act. AGL notes that the referenced proceeding in Submission 20501 is not a prosecution or proceeding against AGL under environmental legislation.

Submission 20042 also commented on what the respondent viewed to be the general inadequacy of the assessment:

Submission 20042: The first point that must be made with respect to this EA is its inadequacy in terms of the objectives it is required to achieve. These objectives, as outlined by the Proponent (EA p1-9) include "…to provide the NSW Minister for Planning and Infrastructure with sufficient information to determine the environmental impacts and benefits of the Dalton Power Project", "…to provide the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities with sufficient information to determine the environmental impacts and benefits of the Dalton Power Project", and "…to inform the community about the Dalton Power Project".

It is submitted that the EA, in its lack of specificity and detail as to what is actually proposed, fails to satisfy these requirements. The Proponent has not clearly identified nor specified, amongst many other things:

- *the type of turbines and water required for the "efficient" operation of the facility.*
- *any consistent detail as to the operational time of the proposed project.*
- *how water will be sourced for the project.*
- *the routes to be taken and any associated road alterations or vegetation clearing necessary for the movement of these oversized loads.*
- *background, pre-development noise and air assessments for the site and for the village of Dalton or other "sensitive receptors".*
- *The Dalton Public School has not been considered as a "sensitive receptor".*

It is submitted that these inadequacies and inconsistencies, amongst others, in the EA are sufficiently serious as to fail to satisfy the Director General's Requirements and the EA's intended purpose. There is insufficient specificity to allow the relevant government departments to determine the project's environmental impacts. Further, the EA does not sufficiently inform the community about the project.

It is our submission that the EA is inadequate for the purpose for which it has been presented. We seek to have the decision as to its adequacy reconsidered, to have an EA presented in a form in which the issues are clearly identifiable, and to have an opportunity to properly assess and address these issues. Failing this, we seek to have the following issues addressed properly and obtain undertakings from the Proponent to provide the necessary information, to accept responsibility for the adverse impacts inherent in the proposal, and to commit to appropriate mitigation, remediation and compensation with respect to those impacts.

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

Response

The EA has been prepared in accordance with Part 3A of the EP&A Act and the Director-General's EARs. The EA was written to provide the Minister for Planning with the required information to determine the environmental impacts and benefits of the Dalton Power Project. The EA was also reviewed by the DP&I prior to exhibition to assess its adequacy for exhibition. The submissions received during the public exhibition period are responded to in this Submission Report. The DP&I will prepare an assessment report for review by the Planning Assessment Commission who will determine whether to grant Project Approval and specify the conditions under which the Project would operate in accordance with the EP&A Act.

The other 'general inadequacies' outlined in submission 20042 are responded to in earlier sections of this report including:

- the type of turbines and water required for the "efficient" operation of the facility (**Section 3.5 and Section 3.6**).
- any consistent detail as to the operational time of the proposed project (**Section 3.5**).
- how water will be sourced for the project (**Section 3.6**).
- the routes to be taken and any associated road alterations or vegetation clearing necessary for the movement of these oversized loads (**Section 3.5** and **Section 3.10**).
- background, pre-development noise and air assessments for the site and for the village of Dalton or other "sensitive receptors" (**Section 3.2** and **Section 3.3**).
- The Dalton Public School has not been considered as a "sensitive receptor" (**Section 3.2** and **Section 3.3**).

A community submission also commented on the image on the front cover of the EA.

Submission 20501: The image on the front of the EA which is presumed to be an artist impression of the proposed Dalton power station positioned in the landscape behind eucalypts, is in fact an image of the Leafs Gully power station near Appin, taken from the front cover the Leafs Gully Power Station 2009 Environmental Assessment. Leafs Gully is a 300MW power station. The proposed Dalton power station is a 1500MW power station, some five times bigger, therefore with a very different visual impact. Placing the Leafs Gully image on the EA documents and EA CDs is deceptive and very misleading to the public. The general reaction of the public looking at the image is that 'it doesn't look that bad' and 'perhaps there is nothing to worry about'. By not showing the public the true image and scale of the power station, AGL is avoiding scrutiny and failing in its obligation to consult."

Response

This photo used in both covers was intended to show what a typical gas fired power station looks like. It is representative of the type of development proposed. It is not the Leafs Gully Power Station near Appin, since this facility has not been built. Further representations of the Facility are detailed in Section 4, including a 3D model of the plant and elevation drawings (presented in **Appendix F**).

3 Response to Submissions

3.14 Other

3.14.2 Community Submissions

Submission 20501 commented on the review of existing gas turbine developments.

Submission 20501: "The EA states "AGL has undertaken a comprehensive review of existing gas turbine developments in Australia and has also reviewed more than 12 alternative sites for the proposed development in NSW" (AGL and URS 2011[14], pES-3). Yet the comprehensive review is not contained in the body of the report. Can the community get a copy of the comprehensive review? It would be valuable for the community of Dalton to examine AGL's review of existing gas turbine developments because of the adverse environmental impacts, particularly concerning low frequency noise and vibrations, which the residents of Uranquinty have experienced from the operation of the 640MW Uranquinty power station."

Response

A summary of this review is found in the EA Section 3.4.2. The review undertaken by AGL was through an internal process and is not available as a formal report.

Submission 20501 raised a question about the Uranquinty power station.

Submission 20501: "The Uranquinty power station is referred to as a "proposed development" in the report. Given AGL's comprehensive review of existing gas turbine developments, it is surprising that in the EA they discussed the Uranquinty power station as a "proposed development" when it was commissioned in 2009 (AGL and URS 2011, p3-20). This raises questions about what review of existing gas turbines has been done by AGL, if it is not known that the Uranquinty power station has been operating for 2 years."

Response:

This was an omission by URS and AGL. The Uranquinty Power Station should have been referred to as a 'development' not a 'proposed development'.

[14] AGL and URS (2011), AGL Dalton Power Project Environmental Assessment (2011) here forth referred to as AGL and URS (2011) or the EA report.

4

Preferred Project Report

4.1 Introduction

This section provides additional information on the Project, gathered or prepared as a consequence of consultation between AGL and stakeholders, as well as the submissions made to DP&I during exhibition of the Environmental Assessment.

- Section 4.2 presents changes to the proposal in response to stakeholder inputs. One change is proposed. This is the realignment of the gas pipeline (southern portion) to the west of Walshs Road.
- An additional element to be added to the Project Description is the utilisation of an on-site temporary concrete batching plant to service Project construction needs. Section 4.3 describes the batching plant and addresses additional assessments of impact undertaken since the exhibition of the EA.
- Section 4.4 presents new information obtained since exhibition of the EA. The findings of additional Spring fauna surveys that AGL committed to undertake are presented, and future additional survey effort to which AGL is committed is also confirmed.
- Section 4.5 presents details in relation to AGL's proposal to dedicate the biodiversity offset area within the proposal through a Conservation Agreement with NSW OEH.
- Sections 4.6 – 4.9 responds to DP&I requests for additional Project information in relation to potential visual, noise and traffic impacts.

It is noted that preceding sections of this report have noted two additional changes to the Proposal as presented within the EA. The two modifications are:

1. AGL is no longer seeking approval for the use of E Class turbines as part of this current project.. AGL has confirmed that the turbines to be used at Dalton will be F Class.
2. Onsite bore water is now the proposed source of operational water for the facility. The source has been confirmed through the successful drilling and testing of two bore wells within the Facility footprint. It is noted that the EA also examined other water source options for the supply of operational water, including the trucking of water to site. AGL is not currently proposing this option, and is not seeking this as part of this current approval. Should the trucking of water to site be reconsidered by AGL at some future date, a separate approval application would be prepared for this. AGL anticipates that the studies undertaken as part of the EA would be used in support of any such application.

4.2 Refinements and changes to the Project since exhibition – Gas Pipeline (southern portion) route amdnement

4.2.1 Background

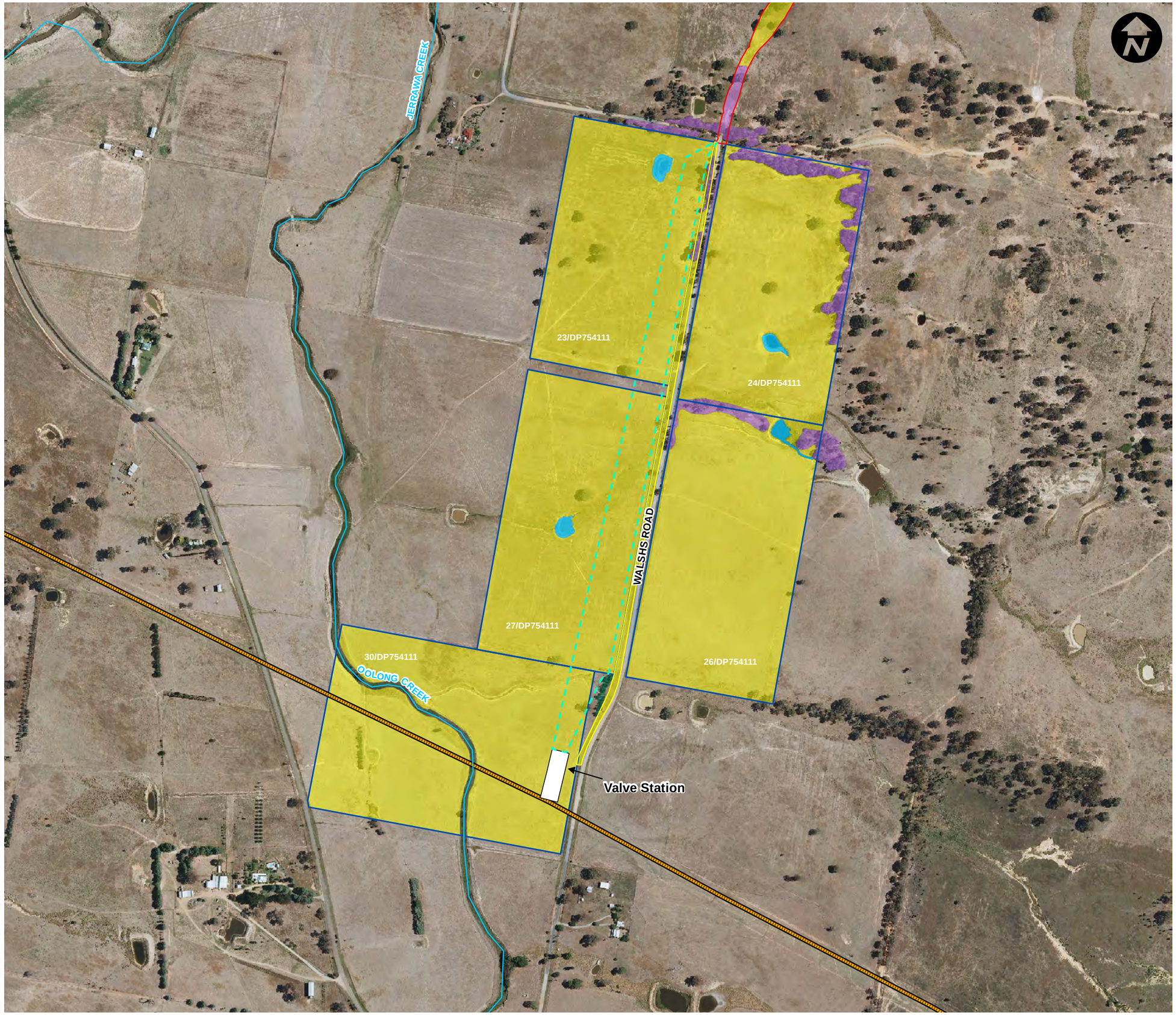
During consultation with AGL in August 2011 the Upper Lachlan Shire Council (ULSC) had indicated a preference for the Gas Pipeline (southern portion) to be sited outside of the road easement. This request was confirmed in the Submission received from the Upper Lachlan Shire Council in September 2011 (Submission 19969):

"The EA discusses that the pipeline would be constructed along Walsh's Rd, Unfortunately, the existence of approximately ten mature, protected white box and Blakely's Red Gum trees within the road reserve leave inadequate space for both the pipeline and the proposed widening of the road. If the pipeline was to be constructed underneath the road, extreme disruptions to traffic would occur for

duration of the construction work. The road reconstruction work would also become difficult as the pipeline would need to be buried at a significant depth to prevent damage to it by the anticipated heavy traffic."

To investigate available options to relocate the gas pipeline in accordance with Council's request, AGL commissioned further ecology and heritage investigations across lots adjacent to the gas pipeline route as proposed within the Environmental Assessment. The following properties formed the additional area investigated:

- Lot 23 DP754111;
- Lot 24 DP754111;
- Lot 26 DP754111;
- Lot 27 DP754111; and
- Lot 30 DP754111.The additional study area in relation to the original gas pipeline route is shown in **Figure 4-1**.



Legend

- Additional Survey Area Ecology and Heritage (August 2011)
- Gas Pipeline (northern portion) and Access Road
- Gas Pipeline (southern portion) Route as Proposed in EA
- Gas Pipeline (southern portion) Preferred Corridor Route Post Submission Stage
- Valve Station
- Moomba-Sydney Pipeline
- Waterways / Dams

Vegetation Communities (URS):

- Plantation
- Box Gum Woodland*
- Exotic Pasture

0 300

Metres

* TSC Act Listed Community

Source: Aerial Imagery from AGL

Drawn: SB	Approved: HQ	Date: 13/10/2011
Job No.: 43177661	File No.: 43177661.078.mxd	

Client

AGL

Project

DALTON POWER PROJECT
PREFERRED PROJECT REPORT

Title

REFERRED PROJECT GAS PIPELINE (SOUTHERN PORTION) REVISED ROUTE & AREA OF ADDITIONAL INVESTIGATION

Figure: 4-1

URS

The revised gas pipeline easement would be required to extend from the Valve Station to the Gas Pipeline (northern) and Access Road. Alternative easement placement options would therefore be constrained to the adjacent lots to the west or east of Walshs Road as shown in **Figure 4-1**.

4.2.2 Additional Studies - Ecology

The aim of the ecology field survey was to map and describe ecological constraints within the above five lots, in order to guide AGL in the identification of potential alternative pipeline routes with the least ecological constraint, and the least ecological impact. A report prepared by URS providing the outcomes of this investigation is presented as **Appendix C1**, and this is summarised below.

Techniques used during the field survey included:

- Vegetation community mapping with a focus on the presence/absence of threatened ecological communities;
- Habitat resource mapping (presence of hollow bearing trees; coarse woody debris; rocky outcrops; stags; and water resources such as dams and creeks);
- Noxious weed mapping; and
- Threatened species habitat assessment.

Two alternative routes were considered: these were an alternative easement that would be located within the lots to the east of Walshs Road, and an alternative easement that would be located within the lots to the west of Walshs Road.

The study indicated that vegetation across the Study Area was either:

- exotic pasture, or
- White Box Yellow Box Blakely's Red Gum Woodland (referred to as Box Gum Woodland), as defined by the NSW *Threatened Species Conservation Act 1995* (TSC Act).

The distribution of this vegetation is illustrated in **Figure 1** in **Appendix C1.** Exotic pasture dominates the Study Area, and ranges in condition from entirely exotic species, through to exotic species with a scattering of native species.

Box Gum Woodland is listed under the TSC Act and EPBC Act as an endangered ecological community. This community is an important potential habitat resource for a number of threatened and common native fauna species. This community also provides a number of additional habitat resources, including coarse woody debris, hollow bearing trees, rocky outcrops and stags. It is likely to provide resources for local wildlife such as foraging, nesting and feeding resources throughout the year. The Box Gum Woodland surveyed in the study area did not meet the EPBC Act definition requirements for either patch size or understorey diversity, and therefore was assessed to be Box Gum Woodland of TSC Act status.

The distribution of habitat features including hollow bearing trees, coarse woody debris, rocky outcrops and stags and water features were recorded during the survey. They are presented in **Figure 1** in **Appendix C-1**.

4 Preferred Project Report

As a result of the ecology field survey undertaken by URS in August 2011, the following conclusions were drawn:

- The eastern alternative route would likely result in disturbance and clearing of the NSW *Threatened Species Conservation Act 1995* (TSC Act) listed Threatened Ecological Community Box Gum Woodland vegetation. Along with clearing of TSC Act listed Threatened Ecological Community vegetation, there would be disturbance to numerous habitat features identified that potentially provide habitat to a number of native fauna species.
- The western route option would not impact any TSC Act listed Threatened Ecological Community vegetation given the existing degraded nature of the exotic pasture within the Lots, and the lack of habitat resources present within the proposed route corridor.

Consequently the western route option was identified as being preferred.

4.2.3 Additional Studies – Heritage

Navin Officer Heritage Consultants carried out a site walkover for the additional area investigated for an alternative Gas Pipeline (southern portion) shown in **Figure 4-1**.

The results of the heritage field results are detailed in **Appendix C-2** and briefly summarised below:

Fieldwork involved inspection of all areas of ground surface visibility within the study area. Material evidence of Aboriginal occupation as revealed by surface artefacts and areas of archaeological potential unassociated with surface artefacts was identified.

No sites were recorded in Lots 23 DP754111, Lot 24 DP754111, Lot 27 DP754111 and Lot 30 DP754111. An area of archaeological potential (Dalton PAD3) was however identified within Lot 30 DP754111 near Oolong Creek. However, this area is about 270 m from the eastern fence of the lot, and therefore well outside the potential impact area of an easement running north from the Valve Station.

Navin Officer reported that while the artefact recorded at DGP1 (in Lot 26) was not re-found, another artefact was recorded about 10 m away from the original location (DGP1a). The location of these finds is shown in **Figure 4-2** below. This artefact is also located outside of any potential impact zone of a proposed realignment of the gas pipeline.

As a result of these surveys, it was concluded that there were no heritage related constraints to the selection of either option for the realignment of the gas pipeline.

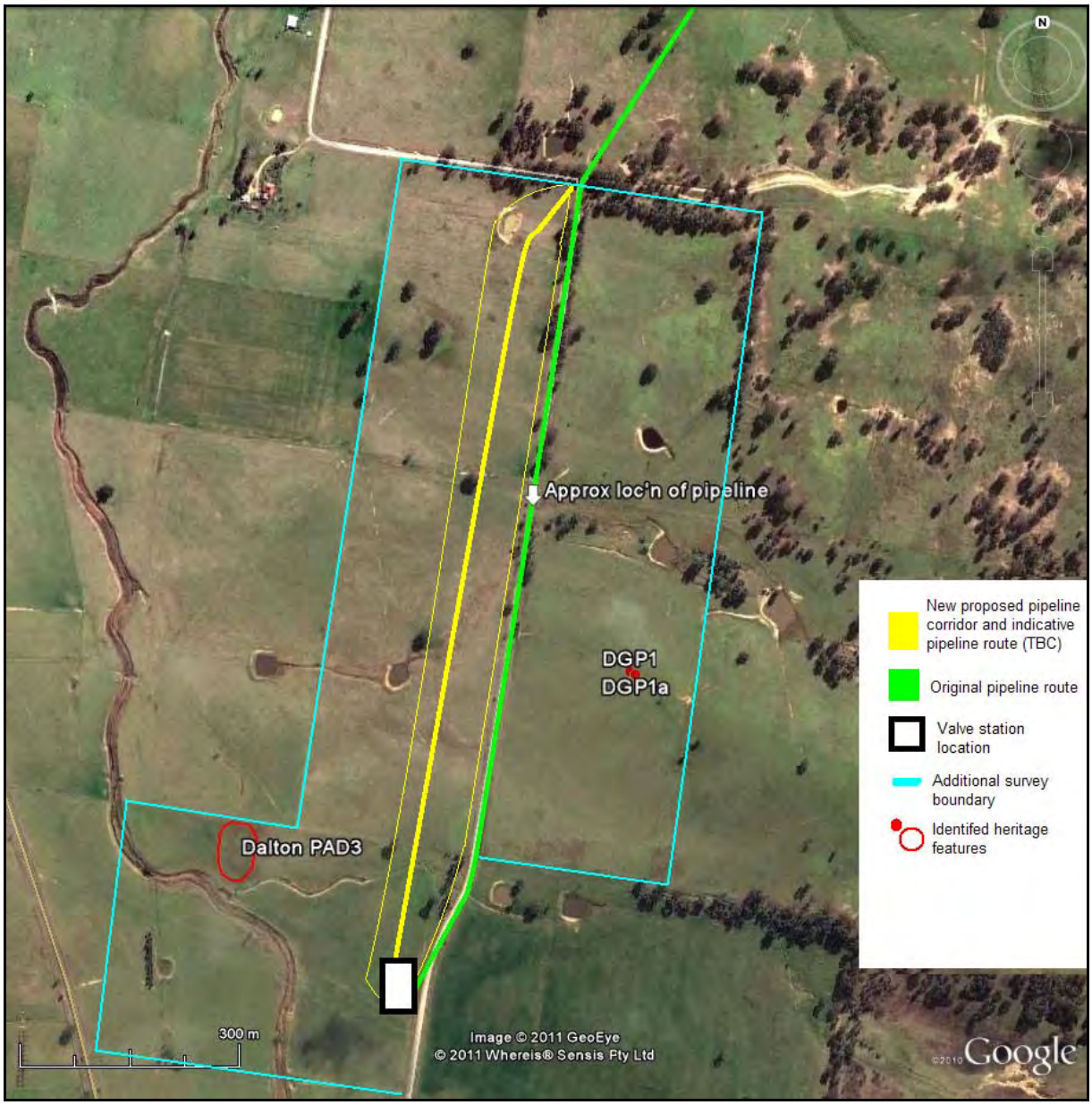
4.2.4 Preferred Project Amendment

The field investigations for ecology and heritage were carried out to identify any potential constraints for alternative sitings of the Gas Pipeline (southern portion). Council requested that AGL consider options to locate the easement beyond the road reserve onto private land to the west or east of the route that was proposed in the Environmental Assessment.

After these studies, AGL proposes to relocate the Gas Pipeline (southern portion) to a position west of the original proposal, as shown in **Figure 4-1 and 4-2**.

4 Preferred Project Report

Figure 4-2 Heritage features in proximity to amended pipeline corridor



Source: Amended from Navin Officer 2011

While ULSC expressed a preference for the gas pipeline to be on the eastern side of the road easement, it is considered that the western route or a better option because:

- Minimises potential impacts on ecology by avoiding impacts on Box Gum Woodland. The alternative western route now proposed reduces the area of impact of the Project on Box Gum Woodland (0 ha for revised portion of southern pipeline alignment compared to 0.106 ha of original portion of southern pipeline alignment).
- No heritage sites are impacted.

4.3 Refinements and changes to the Project since exhibition - Concrete Batching Plant

4.3.1 Description

The supply of concrete would be an essential ancillary work for the construction phase of the Project. The Environmental Assessment prepared for the Project assumed all concrete would be transported to site in ready mixed form. Since the exhibition of the EA, a reliable on-site bore water sourcing option has been confirmed for the Dalton site, and AGL and its contractors have noted that bore water is an acceptable source of mixing water for cement following a limited treatment. On-site concrete batching plants (CBPs) are a cost effective and more environmentally sustainable approach to supplying concrete to the project, and as such, is included as an option within the Preferred Project Section of this Response to Submissions Report.

The option to utilise a CBP has arisen in discussions with AGL's contractor for Stage 1 construction works. An onsite batching plant option would also be considered by AGL in the event that the Facility would be expanded to the full Stage 2 capacity. While the following discussion applies to proposed Stage 1 construction works, it is noted that a similar (yet smaller) materials demand would be required for Stage 2 construction works in the future if the Project was to progress to the capacity for which approval is currently being sought. The cumulative impact of a CBP for both stages does not need to be considered as construction impacts for Stage 1 would not coincide with Stage 2.

It has been estimated that construction of Stage 1 works (the installation of infrastructure to accommodate two turbines) would require approximately 9,000m^3 of concrete. AGL would require the CBP throughout the Stage 1 construction phase.

The CBP is to be a dry mix plant, where products are delivered to a concrete agitator/mixing truck for batching. The agitator/mixing truck then combines liquid (water) and dry products (aggregate, coarse river sand, cement) to form concrete. The CBP will operate on an as needs basis during Stage 1 construction, with a typical production capacity of approximately 80 m^3 per 11 hours. Under general operating conditions the plant will be operated by one staff member between the hours of Monday to Friday: 7.00am to 6.00pm, and Saturday: 7.00am to 1.00pm. No operation would be permitted on Sundays or Public Holidays. It is noted that additional volumes of material may be required to be mixed, and extended working hours may be required on occasion. AGL notes that additional concrete agitator trucks may be required on site at times to supplement production rates from the CBP.

The onsite batching plant would use an average of 200 litres of water to every 1m^3 of poured concrete which includes an allowance for aggregate wetting, dust suppression and truck washouts at the completion of concrete pours. This 1.8ML quantity is factored into the 25ML per annum Project water demand, and the addition of this project element does not increase the required quantity of water required for the Project.

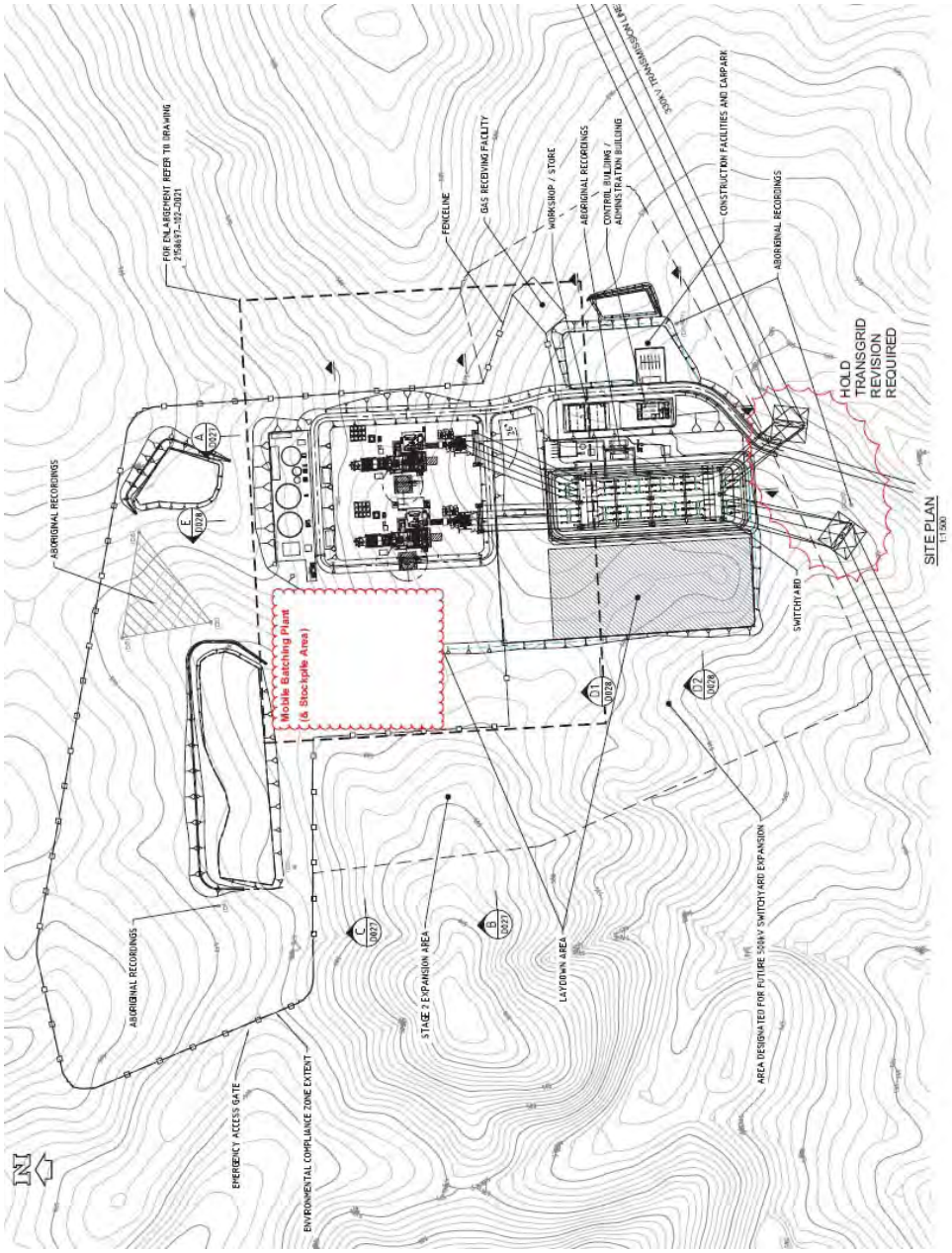
A typical concrete batching plant requires a land footprint to accommodate:

- cement materials;
- Silos;
- aggregate storage bins;
- drum mixer (with generator) or agitator/mixing truck; and
- materials storage facilities, truck holding bays and a weighbridge.

4 Preferred Project Report

The batching plant would be located fully within the plant footprint. Drawing 4-1 shows a preliminary view of the proposed location of a batching plant for Stage 1 construction works within the footprint. The proposed batch plant would occupy a minimum footprint of 100m x 100m to facilitate stockpile areas and batching plant elements as well as backup equipment and wash out tanks. Due to the strong safety essentials criteria adhered to by AGL's contractor, the layout of the batching plant footprint would be augmented to limit plant and vehicle contact, therefore the footprint could be as large as 150m x 100m as indicated in Drawing 4-1.

Drawing 4-1 Indicative layout of potential CBP during Stage 1 Construction



Source: GEL/ AGL 2012

Wastewater generated from batching would be discharged into agitator trucks and transported to temporary holding pits within a designated water storage area of the batching plant footprint as a preferred solution. Holding pits, appropriately designed constructed and lined, would encourage heavy sediment fallout. Sediment within the pit would be periodically removed, dried and reused on site or disposed of to a licensed landfill as necessary. In the event that site saturation conditions occur and waste water could not be managed in this way, some offsite water cartage may be required.

4.3.2 Potential Impacts to consider

Water quality

During the construction phase, pollutants from CBPs such as sediment, soil nutrients and construction waste have the potential to enter drainage lines and stormwater systems, particularly during high rainfall events. Leakage of hydraulic and lubricating oil from plant and equipment, or rinse water from plant washing and concrete slurries, also have the potential to enter drainage lines.

Proposed mitigation measures to manage potential water quality impacts that may arise from a CBP would include:

- Installation of temporary erosion sediment and water quality controls
- Bunding of areas to prevent runoff offsite
- CBP site to be graded such that stormwater runoff would be diverted into a concrete lined pit
- Appropriate construction and lining of temporary holding pits if these are required for the treatment of wastewater slurry from concrete batching
- Stockpile areas to be covered
- Rehabilitation of disturbed areas

An additional Statement of Commitment has been added to Table 5-1 in Section 5 of this Report to reflect AGL's commitment to implementing appropriate water quality and sediment controls in relation to a CBP if this is required.

Traffic

The Traffic Impact Assessment presented as Appendix F to the EA estimated **7 concrete truck movements** to the site **per day** during the construction period for the delivery of ready mixed concrete and the pouring of this material (refer to Table 4-2, Appendix F EA). Given a CBP involves on-site storage of required materials, and given that adequate borewater is available for use on site, this option would generally result in a net reduction of the overall number of truck movements on local / regional roads when compared to trucking ready mixed concrete to site.

The CBP would require the initial delivery of plant to site, as well as ongoing truck movements associated with raw material supply. Cement, sand and aggregate would be transported to site and stored in Silos and stockpiles as appropriate. The volume of raw materials required to be brought to site would be comparable to the use of off-site batching plants. However, raw materials could be delivered to site in larger quantities, using fewer truck movements (approximately 8 semitrailer deliveries per week as an average), and potentially outside of peak traffic times due to the availability of ample storage capacity within the CBP footprint.

4 Preferred Project Report

Contingency would be made for the potential requirement of offsite waste water cartage if holding pits cannot be used and saturation conditions occur on site (such as experienced during recent rain events). If wastewater from the batching plant is required to be trucked offsite, the maximum amount of waste water generated based on a typical daily production level would be approximately 800L. This daily volume of wastewater would require 0.8 truck movements to remove and dispose of offsite.

The reduction in trucking volumes *per day* should the CBP option be adopted would be approximately 7 truck movements, with offsite ready mixed concrete delivery, versus 2.4 truck movements along the local road network for the CBP option.

A comparison of truck movements for both options being considered is provided below;

Table 4-1 Truck movement comparison

Daily truck movements (average)	Base Proposa l- no on-site CBP	CBP Option
Ready mixed concrete delivered to site	7	NIL
Raw materials to site	NIL	1.6
Waste water cartage off site*	NIL	0.8
Total	**7**	**2.4**

The need to cart waste water offsite is assumed to be a worst case situation where all waste water likely to be generated throughout Stage 1 of construction would require offsite disposal.

In terms of potential traffic impacts, it is noted that materials to service an on-site CBP would be transported in longer wheelbase trucks which typically cause less damage to roads than convoys of cement agitator trucks.

Following Project approval, AGL and its contractors would update the draft TMP prepared for the Project to incorporate the CBP throughout the construction period. This would be done in consultation with Council.

Flora and Fauna

Given that the CBP (if required) would be located fully within the plant footprint, no additional flora or fauna impacts associated with the use of this plant would be envisaged. AGL is not proposing to extend the footprint of works beyond the defined 20 hectare boundary assessed within the Environmental Assessment.

Landscape and Visual

No additional visual impacts would be associated with the addition of a concrete batching plant due to the comparatively reduced heights of trucks and other plant against other features of the proposed facility and construction plant and equipment which would be co-located on the site during the construction phase.

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Noise

Should the CBP be required, this would involve the addition of noise generating plant and equipment to site, and as such, may increase the construction noise levels assessed as part of the EA.

The following table lists the plant items or equipment that would be used for concrete batching on site and shows their estimated sound power levels.

Table 4-2 Estimation of Dalton CBP additional plant and machinery required

Activity	Quantity	Plant/Equipment	Sound Power Level (per unit), L_{Aeq}
Batch Plant and associated Laydown area	2	Front End Loader	110
	5-8	Cement Agitator Truck	103
	1	Water Truck	109

Noise from the other elements, truck holding bay, weighbridge, silos and stockpile areas is expected to be insignificant compared to the noise from the sources listed in the table above. The other items were therefore not considered necessary to be included in an additional acoustics assessment.

For the purpose of the additional acoustics assessment, the additional construction plant items listed above were assumed to be operating simultaneously.

Appendix G to the EA included the consideration of typical construction equipment expected on this construction site and corresponding noise levels (as summarised in **Table 5-14**) at receptor locations which were estimated to be not higher than 30 dB(A).

Considering the inherent conservatism of the original assessment to assume all plant and equipment would be operated simultaneously and continuously, the above additional noise generating equipment would be unlikely to result in the increase of the originally predicted construction noise level (reported in the EA) by more than 3 dB(A). Overall construction noise level would therefore not result in excess of the construction noise criteria.

Mitigation measures

The URS Acoustic Team carried out a desktop based assessment to check the modelled impacts with the additional of this equipment, and no exceedances of the noise criteria resulted at any of the receptor locations assessed.

The noise mitigation measures proposed for this additional project element largely reflect the mitigation measures proposed for all other construction work to be carried out as part of the Dalton Power Project.

Measures of particular importance/ relevance to the CBP include the following:

- Limit the operating hours to the daytime period, i.e. 0700 – 1800.
- Undertake regular maintenance of vehicles and machinery to ensure efficient operation.
- All temporary batch plant would be regularly inspected and tested to ensure the emission levels do not deteriorate over the life of the project.

Air and Dust

The CBP has the potential to emit particulate matter from the handling and storage of raw materials. Particulate matter emissions associated with concrete batching are fugitive in nature apart from transfer of materials to silos which can be considered as point sources, and are generally vented to a fabric filter or appropriate control device. Fugitive sources include:

- Transfer of sand and aggregate via mechanical devices i.e. conveyors and hoppers;
- Truck and mixer loading;
- Vehicle traffic on unpaved surfaces; and
- Wind erosion from raw material storage piles.

The moisture content of raw materials is a key factor affecting the quantity and potential of particulate matter releases. As dust emission from batching plants are fugitive in nature, emission releases can largely be contained through enclosures, dust suppression, wetting and good housekeeping and maintenance activities.

Whilst the CBP will likely result in particulate matter emissions, given the large buffer distances the potential for adverse air quality impacts at sensitive receptors is considered to be small, and manageable through the implementation of appropriate dust mitigation controls.

Mitigation Measures

Upon preparation of the detailed specification of the CBP, AGL propose to review dust mitigation measures incorporating the following into the plant specification:

- Dampening of raw materials as required to suppress dust emissions;
- Minimisation of drop heights at transfer points between conveyors;
- Maintenance of the exhaust systems of construction plant, vehicles and machinery to manufacturers' specifications to minimise exhaust emissions; and
- Covering or enclosure of delivered materials.

In addition, details of these measures will be incorporated into the CBP management procedures and the Air Quality Management Plan (AQMP) for the construction phase of the Project.

4.4 Additional Ecology Survey

4.4.1 Completed Threatened Reptile Surveys

The Flora and Fauna Assessment (FFA) presented as part of the Environmental Assessment highlighted that there was a requirement for additional threatened reptile surveys to occur during spring, given this was current a survey gap. Since the submission of the EA,AGL has committed and undertaken these additional surveys during spring. AGL now presents the results of these additional threatened spring reptile surveys which were carried out in September 2011 after the finalisation of the Environmental Assessment.

EnviroKey was engaged by URS Australia (URS) to undertake targeted spring surveys for the Pink-tailed Worm-lizard (*Aprasia parapulchella*) and Striped Legless Lizard (*Delma impar*) at the location of the proposed Dalton Power Project, north of Dalton, NSW. The Envirokey report is presented as **Appendix D-1** to this report.

4 Preferred Project Report

Targeted surveys for Pink-tailed Worm-lizard and Striped Legless Lizard were required to be completed in Spring to satisfy OEH and the Department of Sustainability, Environmental, Water, Population and Communities (SEWP&C) requirements. Surveys for these species have now been completed within and surrounding the proposed footprint and in the proposed offset area (EnviroKey 2011; URS 2011).

The targeted survey was conducted between the 25th – 29th September 2011 by a qualified and experienced Herpetologist, and an assistant Ecologist. The survey utilised a range of sampling techniques as required by OEH and as documented within issued guidelines for survey effort (DEC (2004)). Four methods were employed: Funnel trapping, Active hand searches, Walking Transects and Opportunistic surveys. Survey effort and timing is considered consistent with those outlined within 'Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (working draft)' (DEC 2004).

The methodology employed for the reptile survey was undertaken in consultation with the species specific guidelines published in (DSEWPaC 2011a). The survey was designed to utilise a range of sampling techniques as per the *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (*working draft*)" (DEC 2004) and relevant scientific articles in order to suit the environment at the Project site and increase the potential for detecting reptile fauna. Four key methods were employed, including:

- Funnel trapping;
- Active hand searches (rock turning);
- Walking transects; and
- Opportunistic surveys.

In particular, funnel trapping was considered to be a preferential survey technique instead of pitfall trapping at the Project site due to the:

- Effectiveness in capturing a wide variety of reptile fauna including pygopods (Denny 2005; Garden et al. 2007; Sass 2009; Thompson and Thompson 2007);
- Time efficiency with trap activation and their ability to minimise disturbance impacts to reptile habitats (Smith and Robertson 1999);
- Success with trapping Pink-tailed Worm Lizard (Wong et al. inpress) and *Delma sp* (Sass 2011a, Sass 2011b);
- Provision of shelter and protection against predation, which is an issue at the Project site with predators such as the Red Fox (*Vulpes vulpes*) and Australian Raven (*Corvus coronoides*) (NSW DPI and ARRP 2011). In addition Smith and Robertson (1999) have discovered evidence showing foxes travelling along pitfall trap lines, feeding from the pits and have suggested not using pitfalls to target Striped Legless Lizard;
- Suitability at the Project site due the hard ground, formed from years of grazing and farming practices as well as the surface and sub-surface rock outcrops both attributes making digging difficult;
- Lack of disturbance to flora and particularly the Commonwealth and NSW listed ecological communities featuring on site; and
- Success with reptile capture, previous studies have found that funnel traps have yielded a far greater number of reptile species than pitfall traps (Sass 2009).

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Results

Pink-tailed Worm-lizard or Striped Legless Lizard were not detected during this study.

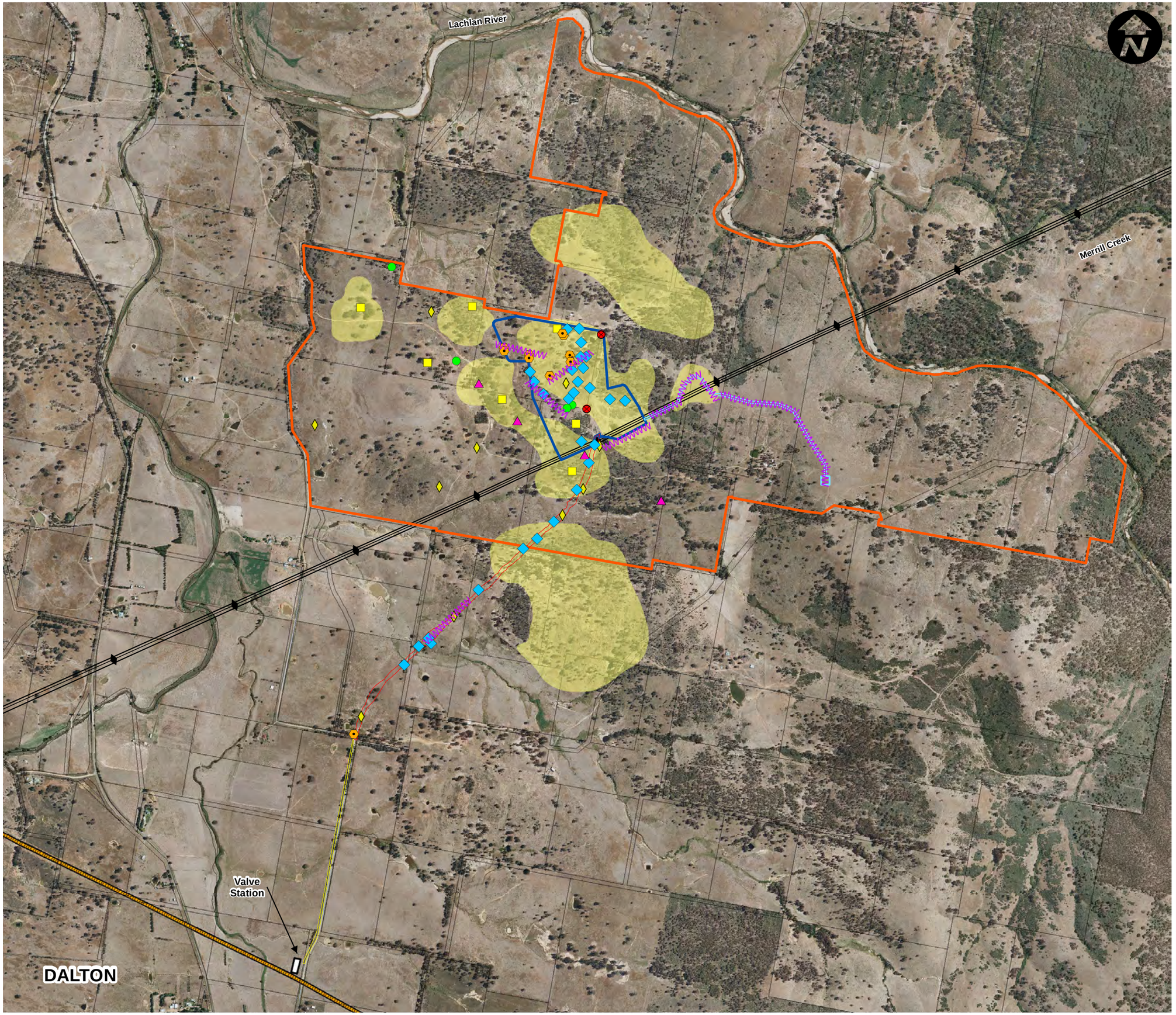
A number of other reptile species were detected during this study. A total of nine species of reptile were recorded comprising of:

- one species of gecko
- one species of legless lizard
- five species of skink
- one species of dragon
- one species of snake

No threatened reptile species were recorded.

A full list of reptile species recorded and their method of detection is provided in **Appendix D-1**.

Figure 4-3 shows the location of additional fauna survey effort across the Site.



Legend

- AGL Site Boundary
- Plant Footprint
- Gas Pipeline (northern) and Access Road
- Gas Pipeline (southern)
- Communications Tower and Hut Footprint
- Communications Tower Services and Access Track
- Moomba-Sydney Pipeline
- Transmission Line
- Walking Transects
- Diurnal Bird Survey

Fauna Survey Methods

- Active Hand Search
- Anabat
- Call Playback
- Funnel Trap Line
- Golden Sun Moth Active Search
- Infra-red Motion-sensor Camera
- Spotlighting

0 0.25 0.5 1

Kilometres

Source: Aerial Image from AGL

Drawn: SB	Approved: JM	Date: 11/10/2011
Job No.: 43177661	File No.: 43177661.061.mxd	

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ADDITIONAL FAUNA SURVEY SITES

Figure: 4-3

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Further Surveys

Threatened Flora

AGL/URS scheduled and completed additional spring surveys in order to meet additional survey requirements outlined in the EA Flora and Fauna Assessment (***Appendix H, Volume 2 Part 2***) within:

- Survey Limitations (Section 4.2.4);
- Threatened Flora (Section 6.1.1); and
- Impact Mitigation (Section 7.2.1; Table 7-1 and Vegetation Clearing Strategy, Pre-clearing Survey Strategy).

Timing for each of the threatened flora surveys is outlined below for each of the four species requiring survey:

1. Silky Swainson-pea (*Swainsona sericea*) – vulnerable, TSC Act. Optimal survey timing to be conducted in spring (DECC Profile: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10783);
2. Button Wrinklewort (*Rutidosis leptorrhynchoides*) – endangered, EPBC Act/TSC Act. Optimal survey timing varies between advice on the DSEWPaC website from October to April (DECC Profile: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10739); Sprat Advice, 2006g, Summer - December to February; Sprat Advice, 2005ae, December to April; Sprat Advice, 2006a, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=7384);
3. Yass Daisy (*Ammobium craspedioides*) - vulnerable, EPBC Act/TSC Act. Optimal survey timing to be conducted during September to November (DECC Profile: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10043); SPRAT Advice, 2008, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=20758); and
4. Hoary Sunray (*Leucochrysum albicans var. tricolor*) – endangered, EPBC Act. Optimal survey timing to be conducted during November to January (SPRAT Advice, 2003, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=56204).

Based on the OEH and DSEWPaC online advice, listed above, conversations with southern tablelands grassland expert, Rainer Rehwinkel (OEH), and utilising URS' botanical expertise, surveys were taken place for the threatened flora during the following periods:

- October 24, 25 and 26th, 2011;
- October 31st, November 1, 2, 3, 4th, 2011; and
- Periodically between November 2011 to January 2012, to coincide with Golden Sun Moth surveys (see below).

This survey timing ensured the capture of the Yass Daisy (*Ammobium craspedioides*), which was expected to be in full flower in the first week of November and Hoary Sunray (*Leucochrysum albicans var. tricolor*), which is in flower currently and continuing through until the end of January (R. Rehwinkel). In addition these survey times covered additional threatened species, considered less likely to be present, i.e. Silky Swainson-pea (*Swainsona sericea*), due to be flowering in Spring and Button Wrinklewort (*Rutidosis leptorrhynchoides*) during mid-season flowering period.

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Surveys for the four TSC Act and/or EPBC Act flora species were undertaken across grassland areas which cover approximately 115 hectares of land supporting potential habitat within the gas pipeline and access roads, development footprint and offset areas.

Threatened Fauna - Insects

AGL/URS has completed additional surveys to target Golden Sun Moth (*Synemon plana*) in order to meet the survey requirements for this species, and as outlined within the EA Flora and Fauna Assessment (***Appendix H, Volume 2 Part 2***):

- Methodology (Section 4.2.2, Golden Sun Moth Searches);
- Fauna Habitat (Natural Temperate Grassland);
- Threatened Fauna (Section 6.1.2);
- Impact Avoidance (Section 7.1); and
- Impact Mitigation (Table 7-1 and Pre-clearing Survey Strategy).

Surveys were conducted in line with DEWHA Guidelines (DEWHA 2009), in all key areas that have the potential habitat to support the Golden Sun Moth including the gas pipeline and access roads, development footprint and offset areas. Surveys were scheduled to take place during 'optimum flying period' (October – January), using suggested 'effort', during periods with appropriate 'conditions' (DEWHA 2009).

In addition to guidelines and information regarding GSM, URS have been in consultation with a range of experts and community groups to ensure that the GSM survey was conducted according to an agreed and robust methodology, during the optimum conditions at the appropriate time. Consultation has included but has not been limited to OEH staff, Friends of Grasslands, 'reference site' representatives as well as consultants in the region.

Prior to surveys being undertaken, the 'precautionary principle' was adopted in relation to potential presence as per DEWHA, 2009*, Background Paper to EPBC Act Policy Statement 3.12 – Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (Synemon plana),* i.e. presence has been assumed. A Significant Impact Criteria assessment, under the EPBC Act as well as an Assessment of Significance under the TSC Act, was undertaken and included as part of the FFA to address the likely impact on the GSM should it be found in the development area. In addition, a suitable offset for the GSM has been proposed, which will be protected through the CA, and additional project specific management measures will be implemented to address the GSM's protection, pending project approval.

Reporting / Project Approval

The requirement for additional flora and fauna surveys in terms of the decision on Project Approval by DSEWPaC is acknowledged. Surveys to meet these requirements were scheduled for, and completed between October 2011 - January 2012. Supplementary reports to outline the findings of these surveys have been provided directly to NSW DP&I, NSW OEH and DSEWPaC.

AGL/URS present the following brief summary of survey findings for the following species:

- Yass Daisy (*Ammobium craspedioides*): This species was not recorded.
- Hoary Sunray (*Leucochrysum albicans var. tricolor*): This species was located along the roadsides in Dalton and along Walshs Road, however no presence was recorded within the proposed development footprint or offset site. The locations of species recorded was mapped and considered by AGL and their contractor during refinement to traffic and access arrangements to the Site, and this information has also been communicated to OEH and DSEWPaC.
- Silky Swainson-pea (*Swainsona sericea*): This species was not recorded.
- Button Wrinklewort (*Rutidosis leptorrhynchoides*): This species was not recorded.

Appendix D-2 of this report presents the Supplementary Flora Survey results in full.

Following the review of the additional Spring Flora survey findings, URS notes the EPA's formal correspondence on these issues outlined in their letter to the DP&I (dated 22.02.2012) and presented in **Appendix B-3**:

> *"As requested by OEH in its submission on the Environmental Assessment, spring surveys were carried out by URS for the above threatened flora species and reported in the Submissions Report. None of the NSW listed threatened species (Yass Daisy, Silky Swainson-pea, Button Wrinkelwort) were detected on the project site or in the locality. The EPA concurs that it is unlikely there will be any significant impact on these species if the project were to be approved."*

Following the review of the additional GSM survey findings which noted no Golden Sun Month occurrences were recorded within the Dalton property, URS notes the EPA's formal correspondence on these issues outlined in their letter to the DP&I (dated 22.02.2012) and presented in **Appendix B-3.**

> *"The EPA has reviewed the report and found that an adequate survey was conducted. The prevailing weather conditions during the 2011/12 flying season resulted in a low number of moths seen at reference monitoring sites in the southern tablelands. The EPA is satisfied that the survey was conducted in accordance with the relevant guidelines and no moths were detected at the project site and associated infrastructure. Therefore the EPA concurs that it is unlikely there will be any significant impact on the Golden Sun Moth if the project were to be approved."*

4.5 Offset Area

As outlined in **Section 3.9.1**, following submission of the EA in July 2011, AGL can now confirm its commitment to enter into a Conservation Agreement (CA) with the NSW OEH that will secure the dedication in perpetuity of the proposed biodiversity offset area. The proposed offset area is shown in Figure 9 of the FFA (***Appendix H*** in the EA) and will be approximately 183.25 hectares in size.

The CA will be regulated and implemented under the *National Parks and Wildlife Act 1974* (NSW). As required under that Act, once entered into between AGL and the Minister for the Environment, the CA will be registered on the title of the land and will be binding in perpetuity on, and enforceable against, subsequent landholders.

The CA would require AGL to manage appropriately the offset area through the development of a management plan for this area. We note that the EA includes a commitment of financial resources to the support the implementation of management actions for the site (discussed further below). As described in the FFA (Section 7.3.2), management actions for the offset area will include, but not be limited to:

- Exclusion of grazing through stock proof fencing;
- Weed removal and control;
- Revegetation or assisted regeneration of disturbed areas;
- Retention of fallen timber, hollow logs, leaf litter, rocks and other habitat resources;
- Control of feral animals, where appropriate and practical;
- Erosion control, where appropriate and practical;
- Signage to indicate the offset area and to disallow access;
- Maintenance of existing fencing to control grazing pressures; and
- Ecological monitoring and reporting of biodiversity condition and effectiveness of mitigations measures over time.

Such management actions are expected, over time, to improve further the biodiversity values of the offset area.

The CA will meet OEH's recommended approach to ensure conservation of the land in perpetuity in accordance with "DECCW Principles for the use of biodiversity offsets in NSW" (2011), which states that "13. Offsets and their actions must be enforceable though development consent conditions, licence conditions, conservation agreements or a contract".

We note that discussions in relation to the establishment of a CA for the offset area are progressing with OEH.

4.6 Visual Assessment

The DP&I requested the following additional information about the Project:

- *3D images of what the power station project may look like;*
- *the inclusion of photomontages from surrounding receptors (R12, R13 and R14) and from Walshs Road looking towards the valve station, and a commitment towards implementing on-site screening measures, if required; and*
- *the inclusion of stack plumes in the photomontages and assessment of its visual impact*

Upon reviewing the Draft Response to Submissions Report, DP&I also requested further detail regarding elevations and site layout be presented within this report (DP&I 2/12/11).

Response

The EA noted that the proposed Dalton Power Station would be constructed within a much larger AGL owned site of over 500 ha. Given the significant buffer separating the power station from surrounding landowners, at the time of EA preparation, it was considered that the distant views (i.e. the actual visual impact of the development from receptor locations) would effectively demonstrate the degree of visual impact likely to be felt by residents and the general public travelling through the area.

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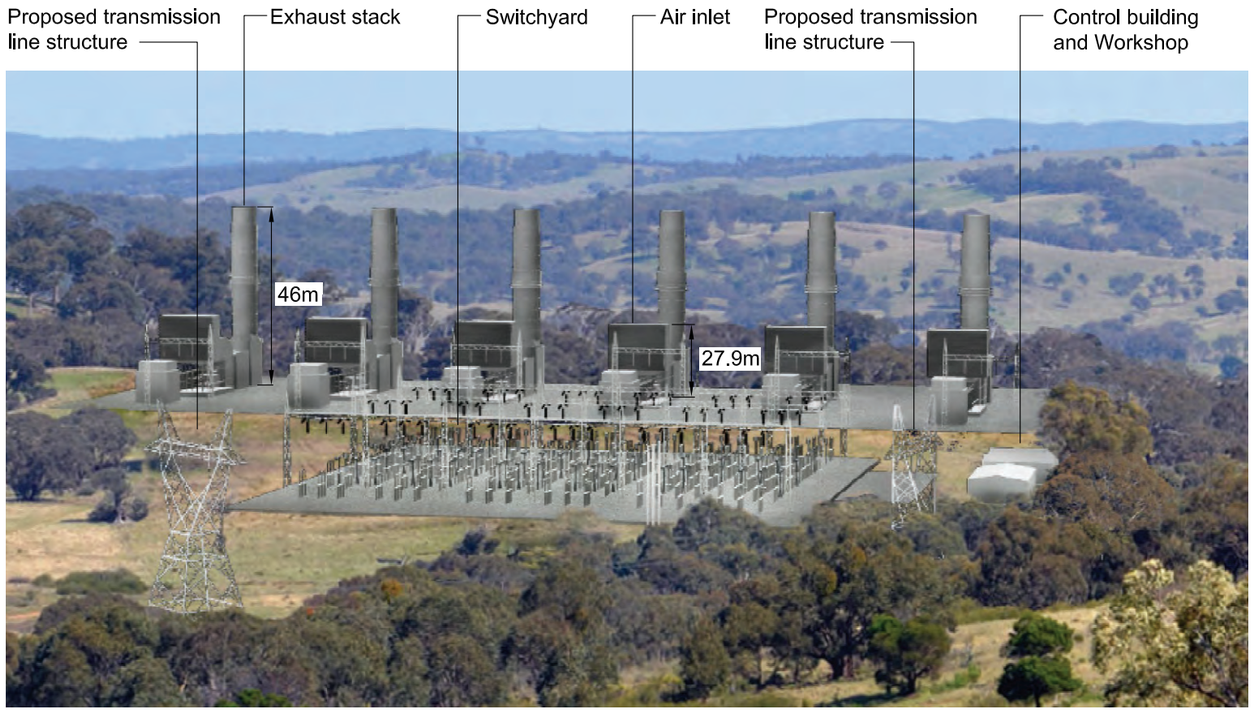
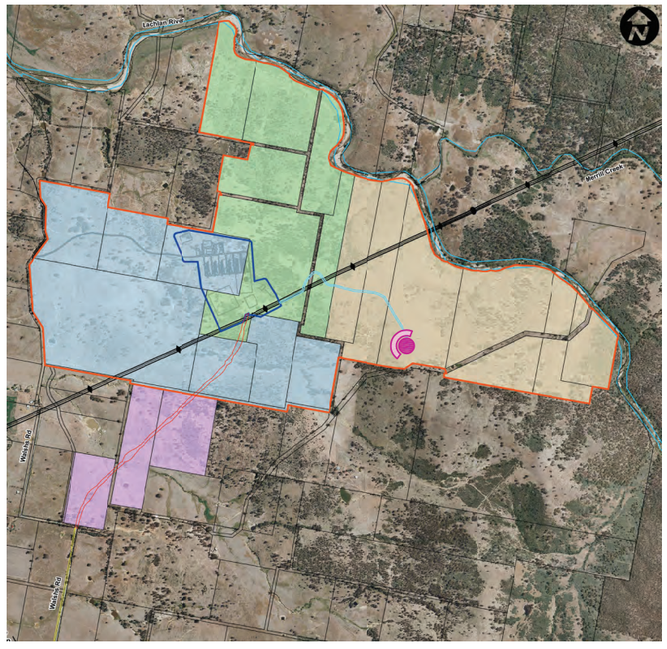
Since this issue has been raised within submissions, AGL has prepared a 3D model of the power station. The 3D model illustrates the facility and how it would appear in the landscape from within the AGL owned site. This representation is presented in **Figure 4-4.**

Figures 4-5, 4-6, 4-7 and **4-8** provide additional photomontages prepared from surrounding receptors (R12, R13 and R14) and from Walshs Road looking towards the valve station respectively. AGL will continue to consult with landowners at these locations in relation to preferences for vegetation screening. AGL is committed to providing vegetation screening at appropriate locations, as included in an additional commitment in **Section 5** of this report.

Proposed view toward the Dalton Power Plant site
(approximately 1.5km south east of the Dalton Power Plant site)



Detail view toward the Dalton Power Plant site



Photo/View Location

0 1
Kilometres

Legend

- AGL Site Boundary

Project Approval Boundaries

- Communications Tower and Hut Footprint
- Communications Tower Services
- Gas Pipeline (northern) and Access Road
- Gas Pipeline (southern)
- Communications Tower Services and Access Track
- Valve Station
- Transmission Line
- Waterway
- Moomba-Sydney Pipeline

AGL Owned Land

- Riverview
- Holmes
- The Elms
- Other

Photo location

Source: Aerial Imagery from AGL

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3D MODEL OF PROPOSED
POWER STATION PLANT
(VIEWED FROM SOUTH EAST)

Figure: 4-4

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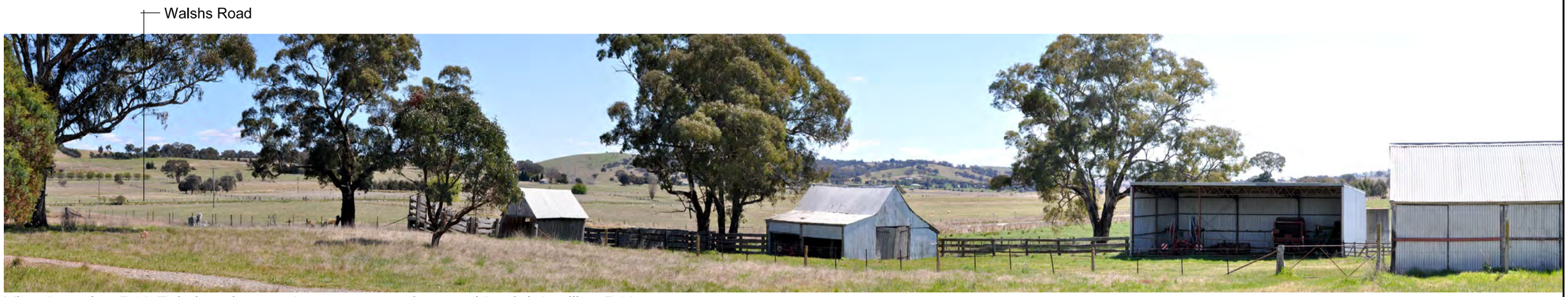

View Location R12 Existing view north west to west from residential dwelling R12

View Location R12 Proposed view north west to west from residential dwelling R12

View Location R12 Proposed view north west to west from residential dwelling R12 with screen planting

Source: Green Bean Deisgn