

REPORT 10-8328-R2

Revision 0

# Mt Piper Power Station Extension Noise Impact Assessment Peer Review

PREPARED FOR

NSW Government Department of Planning  
Major Infrastructure Assessments  
23-33 Bridge Street  
SYDNEY NSW 2001

27 OCTOBER 2009

**HEGGIES PTY LTD**

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# Mt Piper Power Station Extension

## Noise Impact Assessment Peer Review

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## 1 INTRODUCTION

Delta Electricity (Delta) seeks Concept Plan Approval for the proposed Mt Piper Power Station Extension (the Project) which is state declared critical infrastructure. Heggies Pty Ltd has been engaged by the Department of Planning (DoP) to conduct an independent peer review of the noise impact assessment undertaken for the Project, including review and comment on:

- The technical adequacy and completeness of the Proponent's noise impact assessment including methodology and modelling assumptions;
- The adequacy of mitigation measures identified for the respective projects considering reasonable and feasible criteria; and
- Recommended conditions that may be applied to the projects to minimise, mitigate and/or manage noise amenity impacts to achieve regulatory and best practice standards.

The documents examined as part of this independent peer review include (but not limited to):

- Chapter 8 Noise Impacts - Mt Piper Power Station Extension Environmental Assessment (EA), Main Report dated September 2009, prepared for Delta by Sinclair Knight Merz (SKM).
- Appendix D - Mt Piper Power Station Extension Operational and Construction Impact Assessment (NIA) dated September 2009, prepared for Delta by SKM.

The scope of the review did not involve site inspection or vetting the Project noise model (or the like) but solely on the information presented in the Project EA.

### 1.1 Technical Completeness and Mitigation Adequacy Assessment

Technical completeness and mitigation adequacy has been generally determined by comparison to the Director General Environmental Assessment Requirements dated 4 July 2009 Noise Impacts as presented in EA Chapter 8 and reproduced as **Table 1**.

Table 1 Environmental Assessment Requirements - Noise Impacts

| Issue           | Noise Impacts                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Noise | The Environmental Assessment must include a comprehensive operational noise impact assessment for the project, prepared in accordance with <i>NSW Industrial Noise Policy</i> (EPA,2000) considering worst case operating scenarios and meteorological conditions and cumulative impacts from surrounding power stations (including Mount Piper and Wallerawang) and the Western Rail Coal Unloader. |
| Operating Noise | The assessment must consider the potential for low frequency noise generation and peak noise events with the potential to cause sleep disturbance. The Environmental Assessment must also consider the potential for:                                                                                                                                                                                |
| Construction    | construction noise impacts considering potential cumulative impacts from the concurrent construction works (eg Western Rail Coal Unloader) consistent with the DECC's "construction noise existing guidelines" available electronically at <a href="http://www.environment.nsw.gov.au/noise/constructnoise/htm">http://www.environment.nsw.gov.au/noise/constructnoise/htm</a> .                     |
| Vibration       | vibration impacts during construction and operation consistent with <i>Assessing Vibration: A Technical Guideline</i> (DECC, 2006); and                                                                                                                                                                                                                                                              |
| Traffic         | traffic generated noise during construction and operation consistent with <i>Environmental Criteria for Road Traffic Noise</i> (EPA, 1999)                                                                                                                                                                                                                                                           |
| Mitigation      | The Environmental Assessment must include a framework for the mitigation, management and monitoring of noise impacts, particularly with respect to sensitive receptors likely to be significantly impacted by cumulative noise impacts in the local area.                                                                                                                                            |



In addition, the DECCW has specifically requested the following assessment requirements:

- Assessment requirements for potential noise from increased rail movements on the NSW Rail Network can be provided if rail transport is proposed as part of the application.
- Levels of operational noise and vibration from any existing power station on the licensed premises needs to be presented, together with predicted levels for any new power station; and,
- The combined operational noise and vibration from both existing and proposed power stations on the licensed premises, not just solely from the proposed power stations alone, needs to be compared against the relevant criteria.
- Cumulative noise and vibration impacts are to be assessed by consideration of noise from other premises.

## 2 EXISTING ENVIRONMENT

The Proponent has identified four residential assessment localities as summarised in **Table 2** generally in accordance with the requirements of the NSW Industrial Noise Policy (INP). The near-point distances to each receiver locality are extracted from EA Appendix D Table 7.2 which nominates residential receivers in Portland (Location A) and Pipers Flat (Location C) to be within 2 km of the Project.

Table 2 Noise Monitoring and Assessment Locality Summary

| ID | Monitoring Location             | Locality     | Receiver Type | INP Noise Amenity Zone |
|----|---------------------------------|--------------|---------------|------------------------|
| A  | Back Cullen Road, Portland      | 1700 m West  | Residential   | Rural                  |
| B  | Humphrey Street, Portland       | 2800 m West  | Residential   | Rural                  |
| C  | Irondale Road, Pipers Flat      | 1800 m South | Residential   | Rural                  |
| D  | Noon Street, Blackmans Flat     | 2800 m East  | Residential   | Rural                  |
| -  | Existing Mt Piper Power Station | -            | Industrial    | Industrial             |

**Comment:** The Proponent to confirm that the near-point distances provided in Table 7.2 are consistent with EA Appendix D Figure 1-1.

Unattended noise logging was conducted September to October 2005 and July to August 2006 at monitoring locations A to D together with operator-attended noise measurements. The Rating Background Levels (RBLs), operator-attended measured  $LA_{90}(15\text{minute})$  and  $LA_{eq}(15\text{minute})$  (all noise sources) and comments in relation to existing industrial noise levels are summarised in **Table 3**.



Table 3 Measured RBLs, LA90(15minute) and LAeq(15minute) Noise Level Summary (dBA re  $\mu$ Pa)

| Location       | Unattended Logger <sup>1</sup> - Rating Background Levels (RBLs) |                 |                 | Operator-attended <sup>1</sup> Night-time - all noise sources |                | Operator-Attended <sup>1</sup> Night-time                 |
|----------------|------------------------------------------------------------------|-----------------|-----------------|---------------------------------------------------------------|----------------|-----------------------------------------------------------|
|                | Daytime                                                          | Evening         | Night           | LA90(15minute)                                                | LAeq(15minute) | Industrial Noise Comments                                 |
| A              | 32                                                               | 34              | 31              | 24                                                            | 34             | -                                                         |
| A <sup>3</sup> | 31                                                               | 30              | 31              | 29                                                            | 33             | Mt Piper audible                                          |
| B <sup>3</sup> | 32                                                               | 31              | 30 <sup>2</sup> | 25                                                            | 29             | -                                                         |
| B              | 30                                                               | 30 <sup>2</sup> | 30 <sup>2</sup> | 32                                                            | 35             | Mt Piper audible                                          |
| C              | 34                                                               | 44              | 35              | 28                                                            | 30             | Mt Piper occasionally audible, estimated 27 dBA (neutral) |
| C              | 30 <sup>2</sup>                                                  | 30 <sup>2</sup> | 30 <sup>2</sup> | 24                                                            | 31             | Wallerawang audible, Mt Piper not audible                 |
| D              | 39                                                               | 36              | 32              | -                                                             | -              | -                                                         |
| D              | 41                                                               | 34              | 31              | 33                                                            | 49             | Wallerawang audible and dominant, Mt Piper not audible    |

Note 1: Time periods as defined by NSW INP.

Note 2: Where the RBL is calculated to be less than 30 dBA, then the RBL is set to 30 dBA in accordance with the INP.

Note 3: Shortened monitoring period due to logger malfunction.

**Comment:** The NIA Appendix A show the 2005 background noise surveys coincided with periods of unstable weather, resulting in several periods of noise logger data being discarded. The NIA does not graphically present the 2006 background noise surveys results (for verification).

Moreover, it would appear only single 15minute night-time operator-attended noise measurements were conducted at locations A to D with the industrial noise from Mt Piper and Wallerawang being audible at times but generally unquantified. At Location C, the Proponent estimates the existing Mt Piper noise level as 27 dBA during neutral meteorological conditions. This relatively modest set of operator-attended measurements and observations form the basis for the estimating the existing industrial amenity level (LAeq(period)) for each locality.

By adopting a somewhat minimalist approach to the background noise monitoring programme it follows that the incomplete or uncertain noise logger data (not supported by an adequate number of operator-attended noise measurements) must be foregone and default background noise levels used in the absence of any alternative and reliable data source (ie other EA results or the like).

## 2.1 Concept Plan Approval – Project Design Background Noise Levels

**Recommendation:** Unless demonstrated by further background noise surveys conducted in accordance with the INP, the Proponent shall adopt an RBL of 30 dBA throughout the daytime, evening and night-time at all residential assessment locations with the possible exception of Blackmans Flat.

The Proponent shall confirm by site inspection and operator-attended noise measurements that the daytime (RBL 40 dBA) and evening (RBL 35 dBA) background noise levels are elevated due to traffic and that all residential receivers are located adjacent to the roadway at Blackmans Flat.

Project compliance with an intrusive (night-time) criterion of 35 dBA (ie RBL plus 5 dBA) will also ensure Project's industrial amenity contribution is minimised to around 32 dBA.



### 3 CONSTRUCTION NOISE ASSESSMENT

#### 3.1 Construction Noise Criteria

The proponent has prepared a construction noise impact assessment generally in accordance with the Environmental Protection Authority's (EPA's) Environmental Noise Control Manual (ENCM) Chapter 171 Noise Control Guideline rather than the DECCW's Interim Construction Noise Guideline (ICNG). The now superseded ENCM and more recent ICNG assessment requirements are summarised in **Appendix A** with the ENCM guideline relatively more stringent by comparison. The nominated intrusive LA10(15minute) construction noise criteria are summarised in **Table 4**.

Table 4 Intrusive LA10(15minute) Construction Noise Criteria (dBA re 20 µPa)

| Location | Daytime <sup>1</sup> |
|----------|----------------------|
| A        | 37                   |
| B        | 35                   |
| C        | 35                   |
| D        | 44                   |

Note 1: Time periods as defined by EPA's ENCM.

**Comment:** Adopt an RBL of 30 dBA throughout the daytime, evening and night-time at all residential locations except Blackmans Flat (where a daytime RBL of 40 dBA and evening RBL 35 dBA applies) and utilise the DECCW's more recent ICNG noise assessment procedure.

#### 3.2 Construction Activities

The Proponent has identified a typical construction scenario and the items of equipment and allocated sound power levels are summarised in **Table 6**.

Table 5 Construction Mobile Equipment Nominated LA10 Sound Power Levels (SWLs)

| Type Description         | SWL per Item - LAeq dBA |
|--------------------------|-------------------------|
| Asphalt Pavers           | 100                     |
| Compressor               | 103                     |
| Excavator                | 108                     |
| Grader                   | 108                     |
| Mobile Crane             | 108                     |
| Vibratory Roller         | 110                     |
| Water Cart               | 111                     |
| Back Hoe                 | 111                     |
| Cement/Concrete Agitator | 112                     |
| Tip Truck                | 112                     |
| Compactor                | 113                     |
| Bulldozer                | 113                     |
| Front-end Loader         | 114                     |
| Concrete Pump            | 115                     |
| Pile Driver              | 120                     |
| <b>Total</b>             | <b>125</b>              |



**Comment:** At this stage the Proponent has identified a typical construction scenario and indicates that the scenario is not necessarily worst case but rather should be used as a guide only. While the allocated sound power levels (SWLs) appear generally appropriate for per item it is reasonable to anticipate that the actual construction scenario may comprise several items per type operating at anytime and therefore increasing the potential construction noise.

### 3.3 Construction Noise Assessment

The NIA Section 7 presents the predicted construction noise levels to locations A to D under neutral weather conditions being well less than 30 dBA (predictions are not provided during noise enhancing weather) and therefore and remain below ENCM construction noise criteria (as well as the more recent ICNG CNMLs).

The construction activities would take place predominantly during the recommended standard working hours (7.00 am to 6.00 pm Monday to Friday and 8.00 am to 1.00 pm Saturday). However oversized loads and emergency work may need to be conducted outside the recommended standard working hours. The construction noise assessment then goes on to suggest that specific “noisy activities” (ie impulsive, explosive or night-time works) may be up to 32 dBA however the associated noise parameter and weather conditions are unclear.

### 3.4 Concept Plan Approval – Project Design Construction Noise Levels

**Recommendation:** The Proponent shall adopt the CNMLs as presented in **Table 6** together with the DECCW’s sleep disturbance screening levels (SDSLs) for the purposes of construction noise impact.

Table 6 Construction Noise Management Levels (CNMLs) (dBA re 20 µPa)

| Receiver Area                              | CNML - LAeq(15minute)                  |                      |                         | LA1(60seconds)          |
|--------------------------------------------|----------------------------------------|----------------------|-------------------------|-------------------------|
|                                            | Daytime <sup>1</sup>                   | Evening <sup>1</sup> | Night-time <sup>1</sup> | Night-time <sup>1</sup> |
| Residential (Portland, Pipers Flat, other) | 40                                     | 35                   | 35                      | 45                      |
| Residential (Blackmans Flat)               | 50                                     | 40                   | 35                      | 45                      |
| Education, Hospital, Worship               | Internal 45 LAeq(15minute) when in use |                      |                         | -                       |
| Passive Recreation                         | External 60 LAeq(15minute) when in use |                      |                         | -                       |
| Active Recreation                          | External 65 LAeq(15minute) when in use |                      |                         | -                       |
| Commercial                                 | External 70 LAeq(15minute) when in use |                      |                         | -                       |
| Industrial                                 | External 75 LAeq(15minute) when in use |                      |                         | -                       |

Note 1: Time periods as defined by DECCW’s ICNG.

Furthermore, the Proponent shall establish typical worst case construction scenario(s) for the purposes of impact assessment and apply the more recent DECCW ICNG noise assessment procedure.

## 4 OPERATING NOISE ASSESSMENT

### 4.1 Operating Noise Criteria

The Proponent has endeavoured to prepare an operating noise impact assessment generally in accordance with the DECCW’s INP. The nominated project specific noise levels (PSNLs) and sleep disturbance screening level (SDSLs) are summarised in **Table 7**.



Table 7 Project Specific Noise Levels and Sleep Disturbance Screening Levels (dBA re 20 µPa)

| Receiver Area | Intrusive <sup>1</sup><br>LAeq(15minute) |         |       | Acceptable Amenity <sup>1</sup><br>LAeq(period) |         |       | LA1(15minute) <sup>1</sup> |
|---------------|------------------------------------------|---------|-------|-------------------------------------------------|---------|-------|----------------------------|
|               | Day                                      | Evening | Night | Day                                             | Evening | Night | Night                      |
| A             | 37                                       | 39      | 36    | 50                                              | 45      | 40    | 46                         |
| B             | 35                                       | 35      | 35    | 50                                              | 45      | 40    | 40                         |
| C             | 35                                       | 35      | 35    | 50                                              | 45      | 40    | 38                         |
| D             | 44                                       | 39      | 36    | 50                                              | 45      | 40    | 46                         |

Note 1: Time periods as defined by NSW INP.

Note 2: Evening and night-time criteria determined in accordance with INP Application Notes.

**Comment:** Adopt an RBL of 30 dBA throughout the daytime, evening and night-time at all residential locations except Blackmans Flat (where a daytime RBL of 40 dBA and evening RBL 35 dBA applies) and associated modification of the proposed PSNLs and SDSLs.

## 4.2 Operating Activities

The Proponent has endeavoured to assess both the Coal Fired and Gas Fired power station alternatives. Nominated plant and equipment details for the Coal Fired station together the allocated Sound Power Levels (SWLs) are presented in **Table 8**.

Table 8 Coal Fired Power Station Nominated Sound Power Levels (SWLs)

| Equipment                               | Noise Source Type | SWL - LAeq dBA |
|-----------------------------------------|-------------------|----------------|
| Primary Air Forced Draft (FD) – Boilers | Building          | 104            |
| Bag Filters                             | Building          | 103            |
| Turbine Hall                            | Building          | 105            |
| ID Fan – Stack Noise                    | Stack             | 112            |
| Coal Pulveriser/Ball Mill               | Building          | 104            |
| Air Cooled Condensers                   | Area              | 120            |
| <b>Total</b>                            |                   | <b>121</b>     |
| Coal Loader Facility                    | Point             | 117            |

**Comment:** The Proponent has not identified any specific noise mitigation requirements for the proposed Coal Fired station and has determined a total SWL of 121 dBA. However, based on a similar proposal in the Hunter Valley for a 2000MW Coal Fired station it is reasonable to anticipate the source noise potential for the Mt Piper extension to be approximately 140 dBA (without mitigation) and approximately 125 dBA to 130 dBA (with mitigation). It appears the Proponent has potentially understated the Coal Fired station source noise SWL by at least 4 dBA (assuming full mitigation).

The Nominated plant and equipment details for the Gas Fired station together the allocated (SWLs) are presented in **Table 9**.



Table 9 Gas Fired Power Station Nominated Sound Power Levels (SWLs)

| Equipment            | Emission Height Range (m) | SWL - LAeq dBA |
|----------------------|---------------------------|----------------|
| Air Cooled Condenser | 12                        | 105            |
| Air Intake           | 14-25                     | 101            |
| Main Transformer     | 0-3                       | 97             |
| Stack Mouth          | 60                        | 94             |
| Lube Oil Cooler      | 2-4                       | 94             |
| Diffuser             | 0-7                       | 93             |
| HVAC System          | 0-3                       | 93             |
| Feed Water Pump      | 0-3                       | 90             |
| Turbine Building     | 0-23                      | 90             |
| <b>Total</b>         |                           | <b>108</b>     |

**Comment:** Similarly, it appears the Proponent has not identified any specific noise mitigation requirements for the proposed Gas fired station and has determined a total SWL of 108 dBA (ie equivalent to the only single item of construction equipment such as an excavator). Again based on a similar proposal in the Hunter Valley for a 2000MW Gas Fired station its is reasonable to anticipate the source noise potential of a 2000MW power station to approximately 140 dBA (without mitigation) and approximately 125 dBA to 130 dBA (with mitigation). It appears the Proponent has potentially understated the Gas fired station source noise SWL by at least 17 dBA (assuming full mitigation).

#### 4.3 Operating Noise Assessment

The NIA Section 5 (Coal) and Section 6 (Gas) presents the predicted operating noise levels at assessment Locations A to D under neutral and noise enhancing weather conditions. The predicted (cumulative) operating noise levels included the existing Mt Piper station, the proposed extension and the Western Rail Coal Unloader however individual project noise contributions are not provided.

The Proponent notes the INP requirements with regard to modifying factor adjustments and the predicted levels include a 5 dBA penalty due to potential low frequency noise. (Note, this should not deter the Proponent from undertaking to address any potential low frequency noise during the preferred station project approval and detailed engineering design phase).

**Comment:** The INP requires an assessment of prevailing wind, temperature inversion (and combinations as appropriate) that have the potential to enhance noise emissions from the Project.

The noise assessment relies on the meteorological analysis reported at the Mt Piper station in 2001 with regard to frequency of occurrence of seasonal winds and atmospheric stability. The Proponent's wind analysis does not appear to be in accordance with the INP's requirements (perhaps) leading to the inappropriate conclusion that prevailing winds are not a feature of the area. However, moderate temperature inversions (F-class atmospheric stability 1.5°C/100 m to 4°C/100 m) and associated west southwest 1.5 m/s drainage flow are determined to be feature of the site.

In any case, the Proponent also includes INP's default meteorological parameters applicable to non-arid areas and applied the following noise enhancing weather conditions:

- Source to receiver winds 3 m/s; and
- F-class stability plus source to receiver winds 2 m/s



The Project's SoundPlan noise model utilising the CONCAWE algorithms has relatively less flexibility to adjust meteorological parameters by comparison with alternative noise propagation algorithms. It is assumed (but not confirmed) that the Proponent has applied the SoundPlan CONCAWE meteorological (MET) categories as presented in Error! Reference source not found..

Table 10 Proponents Application of SoundPlan CONCAWE meteorological (MET) Categories

| MET Category | Description            | Atmospheric Stability | Wind Speed (all directions) | Assumed Air Temp and RH |
|--------------|------------------------|-----------------------|-----------------------------|-------------------------|
| 4            | Calm (nertral)         | C, D, E               | 0 m/s                       | 20°C, 70%               |
| 5            | Wind                   | C, D, E               | 1.5 m/s (WSW)               | 20°C, 70%               |
| 6            | Wind                   | C, D, E               | 3 m/s                       | 20°C, 70%               |
| 6            | Inversion and Drainage | F, G                  | 2 m/s                       | 20°C, 70%               |

It should be noted that MET Category 6 results in the highest noise enhancement available within CONCAWE. However, experience suggests that MET Category 6 enhancement may marginally (say 2 dBA) understate the noise enhancement by comparison with the RTA's Environmental Noise Model (ENM) utilising a 3°C/100 m plus 2 m/s wind speed.

The Proponents predicted (cumulative) operating noise levels for the Coal and Gas fired power station alternatives generally range from 30 dBA to 36 dBA at locations A, B and D depending on the weather conditions and up to 40 dBA at location D. Adding 2 dBA to the Proponents intrusive noise levels gives a maximum intrusive emission of 42 dBA under inversion and drainage conditions and therefore up to 7 dBA above the PSNL of 35 dBA.

However, as stated above the Coal and Gas fired station source SWL's appear to be understated by at least 4 dBA and 17 dBA respectively. In the absence individual project contributions the effect of the understatement can not be estimated however it is reasonable to conclude that the predicted (cumulative) noise levels would increase appreciably at each assessment location.

#### 4.4 Concept Plan Approval – Project Design Operating Noise Levels

**Recommendation:** The Proponent shall adopt the project specific noise levels (PSNLs) as presented in **Table 11** together with the DECCW's sleep disturbance screening levels (SDSLs) for the purposes of operating noise impact.

Table 11 Project Specific Noise Levels and Sleep Disturbance Screening Levels (dBA re 20 µPa)

| Receiver Area                                              | Intrusive LAeq(15minute) <sup>1,4</sup> |         |            | Acceptable Amenity LAeq(period) <sup>1,4</sup> |         |            | LA1(60seconds) <sup>1</sup> |
|------------------------------------------------------------|-----------------------------------------|---------|------------|------------------------------------------------|---------|------------|-----------------------------|
|                                                            | Daytime                                 | Evening | Night-time | Daytime                                        | Evening | Night-time | Night-time <sup>3</sup>     |
| Residential <sup>2</sup><br>(Portland, Pipers Flat, other) | 35                                      | 35      | 35         | 32                                             | 32      | 32         | 45                          |
| Residential <sup>2</sup><br>(Blackmans Flat)               | 45                                      | 40      | 35         | 42                                             | 37      | 32         | 45                          |
| Education, Hospital                                        | Intrusive noise not applicable          |         |            | Internal 35 when in use                        |         |            | -                           |
| Worship                                                    | Intrusive noise not applicable          |         |            | Internal 40 when in use                        |         |            |                             |
| Passive Recreation                                         | Intrusive noise not applicable          |         |            | External 50 when in use                        |         |            |                             |
| Active Recreation                                          | Intrusive noise not applicable          |         |            | External 55 when in use                        |         |            |                             |
| Commercial                                                 | Intrusive noise not applicable          |         |            | External 65 when in use                        |         |            |                             |
| Industrial                                                 | Intrusive noise not applicable          |         |            | External 70 when in use                        |         |            |                             |

Note 1: Time period s as defined by NSW INP.

Note 2: Measured at the most affected point within the residential boundary or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary to determine compliance with the LAeq(15 minute) noise level.

Note 3: Measured at 1 metre from the dwelling facade to determine compliance with the LA1(1minute) noise level.

Note 4: Subject to the modification factors provided in Section 4 of the NSW Industrial Noise Policy where applicable.



The Proponent shall prepare a comprehensive meteorological assessment ideally based on temperature inversion measurements relevant to the local area or alternative reliable automatic weather station recordings guided by the requirements of the NSW INP as a basis for determining the relevant meteorological parameters (ie noise compliance design purposes) for the Project.

In the absence of such an assessment the Proponent shall design the Project to comply with the PNSLs and SDSLs as presented in **Table 11** under wind speeds and temperature inversion conditions as defined by the DoP in consultation with the DECCW.

The Proponent shall reconsider the allocated Coal Fired and Gas Fired power station SWLs and specific noise mitigation requirements when preparing a comprehensive plant and equipment sound power level and noise mitigation plan detailing all reasonable and feasible noise control and management measures necessary to demonstrate compliance with the PNSLs and SDSLs as presented in **Table 11** under the meteorological conditions determined for the Project.

The plan shall consider potential noise controls for all acoustically significant items of plant and equipment including (but not limited to) the Induced Draft (ID) Fan and Forced Draft (FD) Fan as well as the sound transmission loss performance of the proposed building enclosures.

The plan shall also identify the effectiveness of the proposed noise mitigation measures in reducing potential low frequency noise emissions from the Project to the nearest noise sensitive receivers to the satisfaction of the DoP in consultation with the DECCW.

## 5 CUMULATIVE NOISE ASSESSMENT

### 5.1 Cumulative Noise Amenity Criteria

The INP provides cumulative noise assessment guidelines that address existing and successive industrial development by setting acceptable (and maximum) cumulative LAeq(period) amenity levels for all industrial (ie non-transport related) noise in a receiver area. The INP's acceptable the noise amenity levels for rural residential areas are presented in Table 12.

Table 12 Rural Residential Acceptable Noise Amenity Levels (dBA re 20 µPa)

| Receiver Area     | Acceptable Amenity LAeq(period) <sup>1</sup> |         |       |
|-------------------|----------------------------------------------|---------|-------|
|                   | Day                                          | Evening | Night |
| Rural Residential | 50                                           | 45      | 40    |

Note 1: Time periods as defined by NSW INP.

Note, the INP does not set acceptable cumulative LAeq(15minute) intrusive criteria for all industrial noise sources in a receiver area, but rather seeks to control cumulative noise via its amenity criteria.

**Comment:** As discussed **Section 4.3** the Proponent has endeavoured to predict (cumulative) operating noise levels including the existing Mt Piper station, the proposed extension and the Western Rail Coal Unloader for comparison against the nominated intrusive noise criteria. However, the NIA does not include any appreciable cumulative noise amenity assessment but rather relies upon a relatively modest assessment of existing industrial amenity levels. As discussed in **Section 2** only single 15minute daytime and night-time operator-attended noise measurements were conducted at locations A to D forming the basis for the estimating the existing industrial amenity level (LAeq(period)) for each locality.



## 5.2 Concept Plan Approval – Project Design Cumulative Noise Amenity Levels

**Recommendation:** An RBL of 30 dBA produces a stringent intrusive criterion of 35 dBA. Project compliance with an intrusive (night-time) criterion of 35 dBA will also ensure Project's industrial amenity contribution is minimised to around 32 dBA.

Notwithstanding the recommended PSNLs (and SDSLs) for the Project (in isolation) the Proponent shall prepare a comprehensive cumulative noise amenity assessment of existing, approved and the proposed Project in the vicinity of the Project site relative to the nearest sensitive receivers.

## 6 OTHER ASSESSMENTS

### 6.1 Construction and Operating Vibration Assessment

A qualitative assessment of construction and operating vibration impact has been generally carried-out with respect the DECCW's "*Assessing Vibration: A technical guideline*" with minimal potential impact at the nearest residential areas.

### 6.2 Road Traffic Noise Assessment

Off-site construction and operating generated traffic noise has been generally assessed in accordance with the DECCW's *Environmental Criteria for Road Traffic Noise* (ECRTN) with any impacts being acceptable.

The Proponent advises any additional coal for the Coal Fired station would be supplied by conveyor from the Western Rail Coal Unloader and private and public road based deliveries would not increase (therefore not assessed).

### 6.3 Railway Traffic Noise

The Proponent advises the Western Rail Coal Unloader has current approval to accommodate the additional train movements associated with the Project.

## 7 SUMMARY OF FINDINGS

### 7.1 Proposed Concept Plan Approval Conditions

Proposed Concept Plan Approval Conditions with respect to noise and vibration emissions and monitoring requirements are attached as **Appendix B** to this report.

## DECCW INTERIM CONSTRUCTION NOISE GUIDELINE

The table below presents a comparison of the EPA's ENCM (1994) Chapter 171 Noise Control Guideline and the DECCW's new interim guideline.

| Chapter 171 Noise Control Guideline                                                          | Interim guideline                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended standard hours                                                                   |                                                                                                                                                                                                                                                                                                                 |
| Monday to Friday 7am to 6pm<br>Saturdays 8am to 1pm<br>No work on Sundays or public holidays | No change from previous                                                                                                                                                                                                                                                                                         |
| Choice of assessment method                                                                  |                                                                                                                                                                                                                                                                                                                 |
| No choice - only numeric noise criteria given                                                | Choice of either qualitative assessment for projects under three weeks, or quantitative assessment for major projects                                                                                                                                                                                           |
| Noise levels                                                                                 |                                                                                                                                                                                                                                                                                                                 |
| Noise goal                                                                                   | Noise management level                                                                                                                                                                                                                                                                                          |
| 0 to 4 weeks<br>Background + 20 dB(A)                                                        | Short-term infrastructure maintenance<br>Qualitative assessment - apply work practices in checklist at all times of the day<br><br>Major construction projects<br>Recommended standards hours<br>Background + 10 dB(A) and $L_{Aeq}$ 75 dB(A)<br><br>Outside recommended standard hours:<br>Background +5 dB(A) |
| 5 to 26 weeks<br>Background + 10 dB(A)                                                       |                                                                                                                                                                                                                                                                                                                 |
| Greater than 26 weeks<br>Background + 5 dB(A)                                                |                                                                                                                                                                                                                                                                                                                 |
| Guidance on work practices                                                                   |                                                                                                                                                                                                                                                                                                                 |
| No guidance                                                                                  | Extensive list of options for work practices, based on world-wide review of best approaches                                                                                                                                                                                                                     |
| Examples on applying guideline                                                               |                                                                                                                                                                                                                                                                                                                 |
| No examples                                                                                  | Six case studies based on real-life projects<br>Also worked examples throughout the Guideline                                                                                                                                                                                                                   |
| Ground-borne noise levels                                                                    |                                                                                                                                                                                                                                                                                                                 |
| No guidance                                                                                  | Evening internal level $L_{Aeq}$ 40 dB(A)<br>Night internal level $L_{Aeq}$ 35 dB(A)                                                                                                                                                                                                                            |

PROPOSED CONCEPT PLAN APPROVAL CONDITIONS

**Project Design Background Noise Levels**

Unless demonstrated by further background noise surveys conducted in accordance with the INP, the Proponent shall adopt an RBL of 30 dBA throughout the daytime, evening and night-time at all residential assessment locations with the possible exception of Blackmans Flat.

The Proponent shall confirm by site inspection and operator-attended noise measurements that the daytime (RBL 40 dBA) and evening (RBL 35 dBA) background noise levels are elevated due to traffic and that all residential receivers are located adjacent to the roadway at Blackmans Flat.

**Project Design Construction Noise Levels**

The Proponent shall adopt the CNMLs as presented in **Table D1** together with the DECCW's sleep disturbance screening levels (SDSLs) for the purposes of construction noise impact.

Table D1 Construction Noise Management Levels (CNMLs) (dBA re 20 µPa)

| Receiver Area                              | CNML - LAeq(15minute)                  |                      |                         | LA1(60seconds)          |
|--------------------------------------------|----------------------------------------|----------------------|-------------------------|-------------------------|
|                                            | Daytime <sup>1</sup>                   | Evening <sup>1</sup> | Night-time <sup>1</sup> | Night-time <sup>1</sup> |
| Residential (Portland, Pipers Flat, other) | 40                                     | 35                   | 35                      | 45                      |
| Residential (Blackmans Flat)               | 50                                     | 40                   | 35                      | 45                      |
| Education, Hospital, Worship               | Internal 45 LAeq(15minute) when in use |                      |                         | -                       |
| Passive Recreation                         | External 60 LAeq(15minute) when in use |                      |                         | -                       |
| Active Recreation                          | External 65 LAeq(15minute) when in use |                      |                         | -                       |
| Commercial                                 | External 70 LAeq(15minute) when in use |                      |                         | -                       |
| Industrial                                 | External 75 LAeq(15minute) when in use |                      |                         | -                       |

Note 1: Time periods as defined by DECCW's ICNG.

Furthermore, the Proponent shall establish typical worst case construction scenario(s) for the purposes of impact assessment and apply the more recent DECCW ICNG noise assessment procedure.

**Project Design Operating Noise Levels**

The Proponent shall adopt the project specific noise levels (PSNLs) as presented in **Table D2** together with the DECCW's sleep disturbance screening levels (SDSLs) for the purposes of operating noise impact.

PROPOSED CONCEPT PLAN APPROVAL CONDITIONS

Table D2 Project Specific Noise Levels and Sleep Disturbance Screening Levels (dBA re 20 µPa)

| Receiver Area                                              | Intrusive LAeq(15minute) <sup>1,4</sup> |         |            | Acceptable Amenity LAeq(period) <sup>1,4</sup> |         |            | LA1(60seconds) <sup>1</sup> |
|------------------------------------------------------------|-----------------------------------------|---------|------------|------------------------------------------------|---------|------------|-----------------------------|
|                                                            | Daytime                                 | Evening | Night-time | Daytime                                        | Evening | Night-time | Night-time <sup>3</sup>     |
| Residential <sup>2</sup><br>(Portland, Pipers Flat, other) | 35                                      | 35      | 35         | 32                                             | 32      | 32         | 45                          |
| Residential <sup>2</sup><br>(Blackmans Flat)               | 45                                      | 40      | 35         | 42                                             | 37      | 32         | 45                          |
| Education, Hospital                                        | Intrusive noise not applicable          |         |            | Internal 35 when in use                        |         |            | -                           |
| Worship                                                    | Intrusive noise not applicable          |         |            | Internal 40 when in use                        |         |            |                             |
| Passive Recreation                                         | Intrusive noise not applicable          |         |            | External 50 when in use                        |         |            |                             |
| Active Recreation                                          | Intrusive noise not applicable          |         |            | External 55 when in use                        |         |            |                             |
| Commercial                                                 | Intrusive noise not applicable          |         |            | External 65 when in use                        |         |            |                             |
| Industrial                                                 | Intrusive noise not applicable          |         |            | External 70 when in use                        |         |            |                             |

Note 1: Time period s as defined by NSW INP.

Note 2: Measured at the most affected point within the residential boundary or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary to determine compliance with the LAeq(15 minute) noise level.

Note 3: Measured at 1 metre from the dwelling facade to determine compliance with the LA1(1minute) noise level.

Note 4: Subject to the modification factors provided in Section 4 of the NSW Industrial Noise Policy where applicable.

The Proponent shall prepare a comprehensive meteorological assessment ideally based on temperature inversion measurements relevant to the local area or alternative reliable automatic weather station recordings guided by the requirements of the NSW INP as a basis for determining the relevant meteorological parameters (ie noise compliance design purposes) for the Project. In the absence of such an assessment the Proponent shall design the Project to comply with the PNSLs and SDSLs as presented in **Table D2** under wind speeds and temperature inversion conditions as defined by the DoP in consultation with the DECCW.

The Proponent shall reconsider the allocated Coal Fired and Gas Fired power station SWLs and specific noise mitigation requirements when preparing a comprehensive plant and equipment sound power level and noise mitigation plan detailing all reasonable and feasible noise control and management measures necessary to demonstrate compliance with the PNSLs and SDSLs as presented in **Table D2** under the meteorological conditions determined for the Project.

The plan shall consider potential noise controls for all acoustically significant items of plant and equipment including (but not limited to) the Induced Draft (ID) Fan and Forced Draft (FD) Fan as well as the sound transmission loss performance of the proposed building enclosures. The plan shall also identify the effectiveness of the proposed noise mitigation measures in reducing potential low frequency noise emissions from the Project to the nearest noise sensitive receivers to the satisfaction of the DoP in consultation with the DECCW.

### Project Design Cumulative Amenity Noise Levels

The Proponent shall adopt the INP's acceptable the noise amenity levels for rural residential areas are presented in Table D3 for the purposes of cumulative noise amenity assessment.

Table D3 Rural Residential Acceptable Noise Amenity Levels (dBA re 20 µPa)

| Receiver Area     | Acceptable Amenity LAeq(period) <sup>1</sup> |         |       |
|-------------------|----------------------------------------------|---------|-------|
|                   | Day                                          | Evening | Night |
| Rural Residential | 50                                           | 45      | 40    |

Note 1: Time periods as defined by NSW INP.

**PROPOSED CONCEPT PLAN APPROVAL CONDITIONS**

Notwithstanding the recommended PSNLs (and SDSLs) for the Project (in isolation) the Proponent shall prepare a comprehensive cumulative noise amenity assessment of existing, approved and the proposed Project in the vicinity of the Project site relative to the nearest sensitive receivers.