



Newcastle Coal
INFRASTRUCTURE GROUP

Operation Noise Management Plan

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KEY ELEMENTS



The Key Elements provide a brief overview of this Management Plan. However, it is essential that all personnel familiarise yourself with the contents of the whole management plan

- The NCIG Coal Export Terminal has been designed and built to ensure compliance with noise limits are achieved. Verification testing is regularly undertaken to ensure ongoing compliance to these obligations.
- Maintenance activities will be planned so as to mitigate any potential noise activities. Portable equipment such as lighting towers, Elevated Work Platforms (EWPs) and noise generating activities such as abrasive blasting will be considered prior to planned maintenance shutdowns, particularly where these are planned at night.
 - Where necessary, these activities will be modelled within the NCIG Environmental Noise Model to assess the risk of noise contributions to be exceeded. Where these risks exist, maintenance activities will be modified to ensure compliance with noise limits.
- All NCIG site vehicles, including contractor vehicles, will be regularly serviced to ensure that they do not pose a noise nuisance.
- The Project noise monitoring will comprise six monthly attended monitoring at sites per Figure 2.
- An internal auditing process will occur on a six-monthly basis to assess performance of plant and equipment in relation to potential noise impacts. The plant and equipment that will be monitored by this auditing process includes all major static and mobile elements of the terminal operation.
- The HSEC Department will undertake regular auditing of noise management within the SDMP, including this Operation Noise Management Plan. This auditing is conducted in accordance with the NCIG *Audit and Inspection Procedure* (HSEC.PRO.15.01) and the annual HSEC Audit and Inspection Schedule.

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1. CONTEXT

Newcastle Coal Infrastructure Group (NCIG) is the operator of a Coal Export Terminal (CET) located in the industrial area of Kooragang Island in the Port of Newcastle. NCIG has approval to construct and operate a 66 Million Tonnes per Annum (Mtpa) CET, including associated rail and coal handling infrastructure and wharf/ship loading facilities.

NCIG's activities have the potential to impact local noise amenity. This can be from a number of activities, but most notably coal handling, maintenance and other operational activities.

This management plan outlines the ways in which NCIG plans, implements and monitors its activities to mitigate noise impacts. The plan is specifically developed to meet the needs and expectations of NCIG's stakeholders, as provided for in the overarching NCIG *Operation Environmental Management Plan* (HSEC.MP.12.01).

1.1 Purpose

The Operation Noise Management Plan (ONMP) has been developed in order to document the way in which NCIG manages activities that have the potential to create noise impacts. It outlines the system that identifies and assesses noise risks including statutory and approval requirements, the controls and procedures that manage these risks and measures to review the system including its effectiveness. Critical to this approach is business leadership and involvement, particularly at the planning and review stage to ensure that clear objectives and targets are established, and adequate resources are provided in order to achieve these.

The system outlined in this document is consistent with the framework established by the business, and contained within the NCIG *Sustainable Development Management Plan* (HSEC.MP.01). This framework (Plan-Do-Check-Act) is shown in more detail in the overarching NCIG *Operation Environmental Management Plan* (HSEC.MP.12.01).

1.2 Scope

This ONMP applies to the operation of the NCIG CET up to the maximum 66 Mtpa capacity (in accordance with Condition 1.1 of the CET Project Approval (06_0009)). It applies specifically to activities undertaken to operate the CET, including general operations, maintenance and administration activities. It does not apply to construction activities, as they are outlined within the NCIG Environmental Assessment and Project Approval (06_0009) and subsequent modification, or construction and maintenance activities undertaken within the NCIG Compensatory Habitat areas. These activities fall within a different set of management plans, which cover specific environmental risks. Despite this, management measures and controls are consistent between all areas under NCIG's operational control wherever practicable.

The NCIG CET operation is located on the south arm of the Hunter River. The following three major activities are undertaken during operations:

- Train Unloading – trains enter the NCIG site from the Kooragang mainline, travel along the rail spur and empty their coal wagons into one of two dump stations. Empty trains travel around the rail loop then rejoin the mainline.
- Coal Handling and Stockpiling – coal is transferred from the dump station, via a series of conveyors, to the stockyard for stockpiling. One of four stacker/reclaimers is used to stack coal onto the stockpile and reclaim coal via a bucket-wheel. Coal is reclaimed from the stockpile and sent to the wharf via an outbound series of conveyors.
- Ship Loading – Two ship loaders are available to transfer coal onto ships at berth, drawing from the buffer bins. There are three berths at the NCIG wharf, taking three ships at any one time.

The CET Operational site is shown on Figure 1 based on the maximum allowable coal throughput of 66 Mtpa.

Other key features of the NCIG CET include the water management system (including containment and reuse of water onsite), Administration, Store and Workshop Buildings, access roads and internal roads, utilities including electricity, water and sewer infrastructure, and site security features.

1.3 Structure

This ONMP is structured as follows:

Section 2 – Leadership and Commitment.

Section 3 – Planning and System Support, including existing environment and environmental assessment, risk management, legislative requirements and compliance obligations, and noise standards.

Section 4 – Operation and Implementation, including key operational controls and impact management.

Section 5 – Performance Evaluation and Improvement, including noise monitoring and reporting.

NCIG was granted Project Approval (06_0009) on 13 April 2007. This ONMP has been prepared in accordance with all conditions relating to dust and air quality in the Project Approval (06_0009).

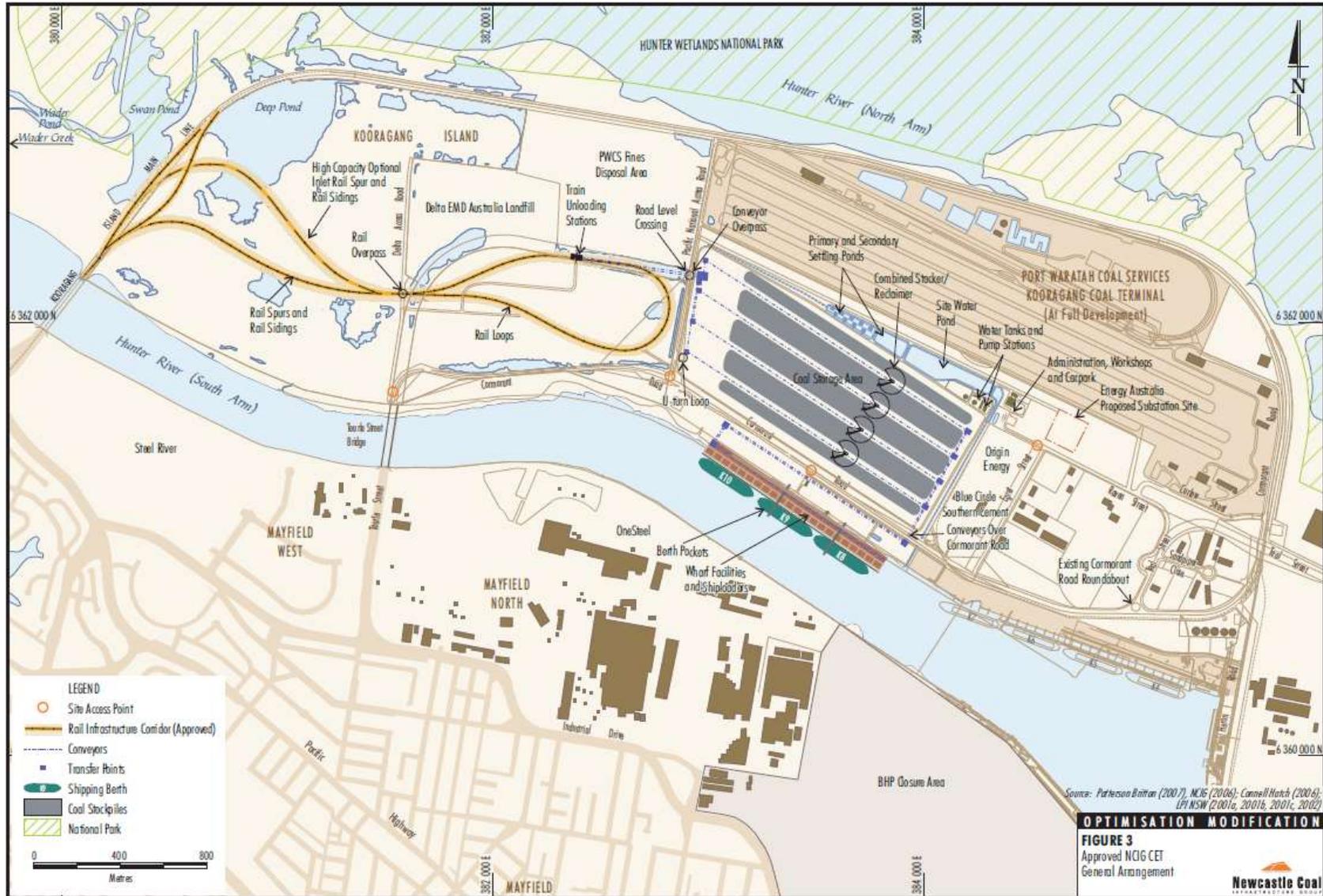


Figure 1: NCIG Project general arrangement

2. LEADERSHIP AND COMMITMENT

2.1 NCIG Sustainable Development Management Approach

NCIG's leadership commitment is provided in more detail in the NCIG *Operation Environmental Management Plan* (HSEC.MP.12.01). Beyond this, NCIG management provides support for the effective management of environmental issues by:

- providing adequate resources for the management of noise aspects;
- ensuring integration of noise management requirements throughout business processes, eg. risk assessment, procurement and acquisition;
- communication of noise performance and conformance with environmental requirements, eg. Quarterly HSEC Board Reports, internal communications; and
- ensuring that noise management is reflected across business and departmental objectives, through the development of objectives and targets during the annual business planning process – see Section 3.3.

NCIG strives to achieve best practice for environmental management, including noise management. For this reason, the NCIG SDMP, which includes this ONMP, aims to comply with the provisions of ISO14001:2015, which is supported and actively assisted by the Executive Leadership Team.

2.2 Roles, Responsibilities and Functions

Management of noise issues is regarded as the responsibility of all NCIG employees and contractors. As well as this, key environmental accountabilities fall with senior and environmental-specific roles within the organisation. Key accountabilities are outlined in the following sections.

2.2.1 Chief Executive Officer (CEO)

- Actively promote and support the effective implementation of this plan
- Ensure adequate resources are provided to manage noise aspects and impacts of the business

2.2.2 Manager – HSEC

- Ensure the adequacy of this plan to meet relevant approval and licence conditions, legislative requirements and other compliance obligations
- Ensure that the Sustainable Development Management Plan, which includes this management plan, complies with ISO14001.
- Ensure the plan is aligned with relevant NCIG policy and kept up to date with industry best practice
- Ensure noise risks are covered in Broad Brush Risk Assessments (BBRAs)
- Develop the plan in consultation with other NCIG Departments and, where relevant, other stakeholders, eg. government regulators
- Monitor the effective implementation of this plan
- Ensure adequate levels of noise management training for all levels of personnel
- Accountable for the timely and effective response of community enquiries, including complaints related to noise, in accordance with Condition 6.2, Schedule 2 of the Project Approval (06_0009)
- Principal point of contact for environmental regulators

- Ensure environmental performance is reported regularly to the ELT and Board of Directors through appropriate means, eg. Quarterly HSEC Report.
- Fulfil the role of Department of Planning and Environment (now Department of Planning, Industry and Environment)-approved Environmental Representative for the NCIG Project, including taking reasonable steps to avoid or minimise unintended or adverse noise impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on local noise amenity be likely to occur.

2.2.3 Executive Leadership Team (ELT)

- Ensure this management plan is implemented in their area of accountability
- All direct reports adhere to the requirements of this plan
- All direct reports have sufficient resources to adequately comply with and continuously improve this plan
- All noise matters are brought to the attention of the Manager – HSEC

2.2.4 HSEC Department

- Ensure that this plan is developed to meet or exceed the requirements of relevant approval and licence conditions, legislative requirements and other compliance obligations
- Ensure that this plan is developed to address potentially significant noise impacts resulting from NCIG's operational activities
- Assist other departments in the implementation of controls outlined in this management plan, including provision of noise management training
- Organise noise monitoring as it is identified in this plan and maintain records of noise monitoring reports, noise complaints and noise-related incident reports
- Prepare relevant statutory noise reports, eg. Noise Audit Reports as required by the Project Approval conditions
- Monitor and review compliance of this plan, including auditing and compliance tracking required in Project Approval (06_0009)
- Any non-conformance of the plan is appropriately addressed through corrective actions, eg. incident or hazard reporting, review of action.

2.2.5 Superintendents/Team Leaders

- Ensure all direct reports are trained and adhere to the applicable requirements of this management plan

2.2.6 All Workers

- Actively apply and participate in the application of this procedure.

It is noted that, where relevant, these accountabilities have been formalised by NCIG management in the various Position Descriptions for NCIG personnel.

3. PLANNING AND SYSTEM SUPPORT

3.1 Noise Management Strategy

The noise management strategy for the NCIG Project is based on:

- Identification of potential noise sources;
- Assessment of potential noise impacts;
- Knowledge of plant and equipment design maximum sound power levels;
- Maintenance of plant and equipment;
- Noise propagation controls;
- Noise monitoring of plant and equipment;
- Noise monitoring at external locations to confirm compliance with conditions of Project Approval and licence conditions;
- Maintenance and calibration of noise monitoring equipment; and
- Cooperation with NCIG partners such as rail and shipping in transport noise control.

3.2 Potential Noise Generating Activities

Condition 7.6 (b) (i) of the Project Approval (06_0009) specifies that this ONMP must identify all relevant receivers and the applicable criteria at those receivers.

As part of the Project Environmental Assessment (EA), a Construction, Operation and Road Transport Noise Impact Assessment was undertaken by Heggies Australia (2006) in accordance with the requirements of the NSW Industrial Noise Policy (INP) (Environment Protection Authority (EPA) 2000), Environmental Noise Control Manual (EPA 2004) and Environmental Criteria for Road Traffic Noise (EPA 1999). The assessment included a noise impact assessment for the Project operations and a road noise impact assessment. Relevant noise receivers that were identified include the residential areas of Fern Bay West, Fern Bay East, Stockton West, Stockton East, Warabrook/Mayfield West, Mayfield and Carrington. Other receivers that were identified include Kooragang Island and Mayfield North (both zoned as Port and Industry areas under the Newcastle City Council local environmental plan). Condition 2.13, Schedule 2 of the Project Approval (06_0009) specifies that Project operations do not exceed the maximum allowable noise contributions specified in Table 2, at those locations and during those periods indicated. The maximum allowable noise contributions apply under the meteorological conditions below Table 2.

Table 2. Maximum allowable noise contribution (dBA) at relevant receiver locations specified by the Project Approval (06_0009).

LOCATION	DAY, EVENING, NIGHT	NIGHT	
	AT ALL TIMES	10.00PM TO 7.00AM MONDAY TO SATURDAY 10.00PM TO 8.00AM ON SUNDAYS AND PUBLIC HOLIDAYS	
	$L_{Aeq}(15 \text{ minute})$	$L_{Aeq}(night)$	$L_{A1}(1 \text{ minute})$
Fern Bay West	41	37	57
Fern Bay East	39	36	55
Stockton West	41	37	57
Stockton East	38	35	56
Mayfield West	45	40	55
Mayfield	44	39	62
Carrington	36	33	52

Where: (a) meteorological condition of: wind speeds up to 3ms⁻¹ (measured at 10 metres above ground level); or (b) temperature inversion conditions up to 3°C per 100 metres and wind speeds up to 2ms⁻¹ (measured at 10 metres above ground level).

3.2.1 Activities and Associated Noise Sources

Condition 7.6 (b) (ii) of the Project Approval (06_0009) specifies that this ONMP must identify all activities that will be carried out in relation to the NCIG Project and the associated noise sources. Details of activities carried out by NCIG are contained in Scope of this document (Section 1.2). Activities that will be carried out in relation to NCIG’s operations are generally discussed below as they relate to noise sources.

On site operations including rail movements, coal handling and shipping activities operate 24 hours per day, seven days per week. The CET will employ approximately 100 people at maximum throughput capacity of 66 Mtpa including a mixture of direct NCIG employees and contractors. Maintenance contractors are in addition to this manning number, with numbers fluctuating depending on maintenance and shutdown activities. Operational activities include noise from train unloading, coal transport via conveyor, transfer points and bins, stacking and reclaiming stockpiles and loading of coal via shiploaders. Table 3 presents a list of major plant items to be utilised during operation of the terminal.

Table 3. Major items of operating plant and equipment at 66 Mtpa.

FIXED PLANT (RATING/MODEL)	CAPACITIES/SPECIFICATIONS	TOTAL
Rail Loops	Five sidings and two loops	2
Unloading stations	Nominally 8,500 tonnes per hour (tph)	2
Conveyor, including; Unloading Station to Coal Storage Area	Total conveyors approximately 13 km length	6
Stacking		4
Reclaim		4
Coal Storage Area to Buffer Bins		2
Buffer Bins to Wharf		6
Wharf		2
Coal Stockpiles (Single)	Up to 25m high Capacity 600,000 tonnes (t)	2
Coal Stockpiles (Wide)	Up to 25m high Capacity 1,800,000 t	3
Combined Stacker/Reclaimers	Boom length - 62.5 metres Stacking - Nominally 8,500 tph Reclaim - Nominally 8,500 tph	4
Transfer Stations	Various	10
Buffer Bins	2,500 t each	2
Sampling Stations	2 inbound and 2 outbound - enclosed Cut taken of belt tripper	4
Shiploaders	Nominal 10,500 tph Peak 12,500 tph	2
Berths	315m long each	3

Source: Heggies Australia (2006)

An acoustic model (Environmental Noise Model) was developed (Heggies Australia 2006) that simulates terminal components and noise source information (i.e. sound levels and locations). The sources of noise identified for the operation of the terminal include:

- Coal trains on the rail loops;
- Rail unloading stations;
- Conveyors;
- Coal stockyard stackers/reclaimers;
- Shiploading infrastructure; and
- Ship activities.

The model also considered meteorological effects, surrounding terrain, aspects of the built environment (i.e. existing buildings) and distance from source to receiver.

3.2.2 Assessment of Terminal Noise Impacts

Condition 7.6 (b) (iii) of the Project Approval (06_0009) stipulates that this ONMP must assess Project noise impacts at the relevant receivers against noise limits specified by the approval.

Noise data from 2003 and 2006 were processed in accordance with the requirements of the INP (EPA 2000) to determine the background noise levels for the Project acoustic assessment. The rating background level (RBL) is a calculated median background level representing each assessment period (day/evening/night) over the whole monitoring period.

Background noise surveys were conducted in April 2006 to characterise and quantify the existing acoustic environment in the vicinity of the Project. Ten unattended noise loggers were positioned at representative locations between 3 April and 16 April 2006. Operator-attended daytime, evening and night-time surveys were also conducted at all ten noise logging locations to supplement the unattended measures and assist in identifying the character and duration of ambient noise sources. In addition to the April 2006 ambient noise surveys, noise monitoring was reported by Heggies Australia in 2003 to establish background levels and measure industrial noise at one representative location in Carrington and at four representative locations in Mayfield.

Industrial noise is a feature of the night-time noise environment at all residential receiver areas in the vicinity of the Project and is particularly audible during lulls in transport, domestic and natural sources of noise. A description of industrial noise observed at these residential locations at night-time is provided below. The discussion below focuses on night-time industrial noise as some locations experience noise levels that approach the maximum amenity criterion of 50 dBA LAeq(period) under specific weather conditions at night-time. Industrial noise levels for the key localities were estimated in accordance with the methodologies described in the INP (EPA 2000). Industrial noise levels at the Steel River Industrial Estate are based on field observations made by Heggies Australia.

Fern Bay West/Stockton West (N1 and N3): Existing night-time industrial noise generally emanates from Kooragang Island and was estimated at 48 dBA at both receiver areas. The operator-attended surveys indicated that industrial noise is at least 5 dBA less in the absence of westerly winds and/or temperature inversions.

Fern Bay East/Stockton East (N2 and N4): Existing night-time industrial noise from Kooragang Island was estimated at 43 to 44 dBA during noise enhancing conditions (e.g. westerly winds). Industrial noise therefore attenuates by approximately 4 to 5 dBA from west to east at Fern Bay and Stockton. Industrial noise is at least 5 dBA less in the absence of westerly winds and/or temperature inversions. Ocean noise is also a feature of the area, particularly during north-easterly breezes.

Warabrook/Mayfield West/Mayfield/Carrington (N5 to N13): Existing night-time industrial noise generally emanates from the industrial areas located to the immediate north of these receiver areas and was estimated at 42 to 44 dBA. Due to the relatively close proximity of existing industrial developments to the receiver areas, noise enhancement due to weather effects is less significant in comparison to that experienced in localities to the east of Kooragang Island (Fern Bay and Stockton). Therefore, the industrial noise contribution is relatively more constant.

3.2.3 Predicted Operation Noise

The anticipated 66 Mtpa operation scenarios were assessed in Appendix A of the Project EA (Heggies Australia 2006). Two operational scenarios at 66 Mtpa capacity were assessed in the

Project EA. These scenarios were developed to be representative of worst-case noise emissions for noise sensitive receivers to the east and west, respectively.

The site noise model has since been updated to be more reflective of actual site operational scenarios. This includes 24m high stockpile arrangements at typical yard capacity, typical utilisation rates of machines, and accurate elevation of noise sources, as well as updated noise levels from recent on-site monitoring periods. Predicted operational intrusive and amenity noise emissions are below the relevant assessment criteria for all noise sensitive receivers under scenarios assessed.

Section 5.3 of the INP (EPA 2000) states that “wind effects need to be assessed where wind is a feature of the area. Wind is considered to be a feature where source-to-receiver wind speeds (at 10 m height) of 3 m/s or below occur for 30 percent of the time or more in any assessment period (day, evening, night) in any season.” Heggies Australia (2006) derived an assessment of prevailing wind conditions from meteorological data recorded adjacent to the Port Waratah Coal Services Kooragang Island Coal Loader off Curlew Street (Appendix C1 of Construction Noise Impact Assessment). Prevailing winds less than (or equal to) 3 m/s with a frequency of occurrence greater than (or equal to) 30% and considered to be relevant to the site in accordance with Section 5.3 of the INP (EPA 2000) are shown in Table 4.

Table 4. Prevailing wind conditions in accordance with the INP (EPA, 2000)

WINDS $\pm 45^\circ \leq 3$ M/S WITH FREQUENCY OF OCCURRENCE $\geq 30\%$			
SEASON	DAYTIME	EVENING ¹	NIGHT-TIME ¹
Summer	Nil	NE 35%, ENE 37%, E 36%, ESE 32%	Nil
Autumn	Nil	Nil	Nil
Winter	Nil	Nil	W 32%, WNW 38%, NW 37%
Spring	Nil	NE 33%, ENE 30%	Nil

Source: Heggies Australia (2006)

Section 5.2 of the INP (EPA 2000) states that “assessment of impacts is confined to the night noise assessment period (10.00 pm to 7.00 am), as this is the time likely to have the greatest impact - that is, when temperature inversions usually occur and disturbance to sleep is possible. Where inversion conditions are predicted for at least 30% (or approximately two nights per week) of total night-time in winter, then inversion effects are considered to be significant and should be taken into account in the noise assessment”.

An assessment of atmospheric stability conditions has also been prepared from the meteorological data set described above by Heggies Australia (2006). The winter evening and night-time frequency of occurrence of atmospheric stability classes are presented in Table 5, together with estimated environmental lapse rates (ELR).

Table 5. Atmospheric stability frequency of occurrence – winter evening/night-time.

STABILITY CLASS	OCCURRENCE PERCENTAGE	ESTIMATED ELR $^{\circ}\text{C}/100$ M	QUALITATIVE DESCRIPTION
A	0%	<-1.9	Lapse
B	0%	-1.9 to -1.7	Lapse
C	0%	-1.7 to -1.5	Lapse
D	25%	-1.5 to -0.5	Neutral
E	17%	-0.5 to 1.5	Weak Inversion

STABILITY CLASS	OCCURRENCE PERCENTAGE	ESTIMATED ELR oC/100 M	QUALITATIVE DESCRIPTION
F	57%	1.5 to 4.0	Moderate Inversion
G	1%	>4.0	Strong Inversion

Source: Heggies Australia (2006)

3.3 Legislation, Approvals and Licencing Requirements

There are a number of legislative and regulatory documents which apply to the way in which NCIG manages noise from its terminal facility. These are primarily broken down into legislation and policies, and approvals and licences. The majority of these are administered by state government departments, including the Department of Planning, Industry and Environment (DPIE) and the NSW Environment Protection Authority (EPA).

3.3.1 Legislation and Policies

Environmental Planning and Assessment Act 1979

The major development approval for the NCIG Coal Export Terminal is the Project Approval provided by DPE (PA 06_0009), including subsequent modifications (MOD1 and MOD2). This approval was provided under the now repealed Part 3A (Major Projects) of the *Environmental Planning and Assessment Act 1979*. The approval contains a number of conditions related to noise management which are explained in more detail in Section 3.3.2.

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations (POEO) Act 1997* is the primary piece of state legislation regulating pollution, including noise pollution. Part 5.5 of the Act specifically regulates noise pollution, including noise controls associated with the sale of articles, operation of plant and 'dealing' with materials. The Act also provides for the issuing of Environment Protection Licences (EPLs), which is covered in more detail in Section 3.3.2. The NSW EPA is the applicable regulatory authority, which regulates NCIG under this Act.

Protection of the Environment (Noise Control) Regulation 2008

The Noise Control Regulation provides regulatory measures for control of emissions typically from domestic activities. These measures in large part do not apply to NCIG activities, with the exception of motor vehicles.

NSW Industrial Noise Policy/ Noise Policy for Industry (NSW EPA)

The NSW Industrial Noise Policy (INP) was released in December 1999, following widespread public consultation on the draft policy. It aims to balance the need for industrial activity with the desire for quiet in the community. The current NCIG Coal Export Terminal approval has been granted based on assessment in accordance with this INP.

The Environment Protection Authority (EPA) has recently reviewed the NSW INP and it has since been replaced with the Noise Policy for Industry (2017). The updated guideline addresses identified issues, clarifies assessment processes and modernises the document without significantly altering the main principles and processes in the existing INP. It is noted that the Noise Policy for Industry (2017) will not apply to the NCIG Terminal, with the exception of major modifications requiring approval from the NSW DPIE.

3.3.2 Approvals and Licences

Project Approval 06_0009, including subsequent Modifications

There are a number of conditions within the Project Approval pertaining to the management of noise from the terminal site. Specifically, these are:

- Condition 2.9 – minimisation of noise emissions from plant and equipment according to the principles in the INP.
- Condition 2.13 – Design, construction, operation, and maintenance of the site to ensure that noise contributions do not exceed maximum allowable noise contributions (table provided).
- Condition 2.14 – noise measurement conditions and the use of an alternative noise assessment method approved by OEH, i.e. noise model.
- Condition 2.15 – Necessary action required to ensure that trains operated at NCIG meet the noise performance criteria in the approval.
- Condition 3.6 – confirmation of noise performance during operating conditions (Noise Audit).
- Condition 3.7 – Reporting of the Noise Audit to the Director-General and addressing any corrective actions.
- Condition 3.8 – Repeating the Noise Audit approval conditions for subsequent operational stages of the NCIG Terminal, including after the construction of the Flyover.
- Conditions 4.1 a) and c) – sharing of noise monitoring data with the operator of Kooragang Coal Terminal, and coordination and cooperation in monitoring of ambient environmental impacts.
- Condition 4.3 – participation in any cumulative dust study that may be commissioned by DPE in consultation with OEH.
- Condition 7.6 b) – Preparation and implementation of an Operation Noise Management Plan, including monitoring, management procedures and measures to minimise total operation noise emissions from the NCIG Terminal. The plan is to include:
 - identification of all relevant receiver locations and applicable criteria;
 - identification of noise generating activities;
 - assessment of Terminal noise impacts at the receiver locations against the specified limits;
 - details of management methods and procedures;
 - details regarding the procurement process to guarantee the equipment levels meet the noise levels as provided in the Environmental Assessment;
 - development of strategies for dealing promptly with noise complaints;
 - noise monitoring and reporting procedures; and
 - regular internal audits of compliance of all plant and equipment with acceptable design noise.

Environment Protection Licence 12693

An Environmental Protection Licence (EPL) 12693 was obtained prior to construction of the project pursuant to the Protection of the Environment Operations Act 1997. Subsequent amendments to this licence have been made to reflect changes in site boundaries and activities. The key noise conditions in the EPL are:

- Condition L3 – Noise limits at receiver locations, consistent with the Project Approval, as well as times in which NCIG construction activities may be audible at receiver locations and when piling activities may occur.

4. OPERATION AND IMPLEMENTATION

NCIG manages noise from its operations with the regard to operational activities, including maintenance. This focusses primarily on management of plant and equipment, but also extends to the regular maintenance of site vehicles to reduce the potential for noise nuisance.

4.1 Noise and Vibration Emission Management Methods and Procedures

Condition 7.6 (b) (iv) of the Project Approval (06_0009) stipulates that this ONMP must include details of all management methods and procedures that will be implemented to control individual and overall noise emissions from the Site during the Project.

NCIG will adopt a range of noise and vibration control and management measures aimed at minimising noise and vibration emissions during the operation of the terminal.

In accordance with Condition 2.13, Schedule 2 of the Project Approval (06_0009), equipment has been designed and maintained to ensure that the noise contributions from the Project do not exceed the maximum allowable noise contributions specified in Condition 2.13, Schedule 2 of the Project Approval (06_0009) (Table 2).

During the noise impact assessment undertaken by Heggies Australia (2006), a number of iterative steps were taken to develop noise mitigation measures for the Project, including:

- Preliminary noise modelling to identify potential areas of affectation;
- Further modelling incorporating various noise mitigation measures to assess their relative effectiveness;
- Consideration of various combinations of noise mitigation measures to minimise the potential noise affectation zone; and
- Adoption by NCIG of a range of noise mitigation measures that significantly reduce Project noise emissions.

Measures were also taken during construction of the CET to ensure that the maximum allowable noise contributions specified in Condition 2.13 of the Project Approval (06_0009) were not exceeded by operational activities. These measures involved:

- Determining from the acoustic model the noise signature of individual items of plant;
- Specifying noise limits as a component of tendering and plant acceptance criteria;
- Confirmation testing of noise signatures for plant and equipment prior to receiving; and
- Site acoustic monitoring to confirm compliance with acoustic model assumptions.

The noise mitigation and management measures included in the predictive modelling and which are to be adopted for the Project operation include:

- Source noise controls;
- Noise propagation controls; and
- Receiver noise controls.

These controls are discussed in further detail in the following sections.

4.2 Source Noise Controls

Condition 7.6 (b) (v), Schedule 2 of the Project Approval (06_0009) stipulates that this ONMP include details regarding the procurement process to guarantee that equipment levels meet the noise levels as provided in the documents listed in Condition 1.1. Fixed plant and mobile equipment have been commissioned and will be maintained to remain below specified maximum operating LAeq sound

power levels detailed in Table 6, which presents the design maximum LAeq sound power levels (SWLs) for all significant items of plant and equipment. The SWLs for plant are based on currently “achievable” low noise emission standards. Further reductions may be possible in the future. The Project’s noise control requirements will be delivered through the implementation of its design, procurement, commissioning and operating noise management plans.

Table 6. Equipment design maximum LAeq sound power levels (dBA re 10 pW).

EQUIPMENT	CAPACITY/SPECIFICATIONS	MITIGATION (OR EQUIVALENT)	OVERALL LAEQ SWL
RAIL RECEIVAL AND STACKING			
Conveyor Assembly	8500 tph	Aluminium Idlers	100 dBA/100 m
Conveyor Drive	630 kW	Low-noise Specification	100 dBA
Dump Station	8500tph	Soft flow chutes	102 dBA
Inbound Sample Station	850tph	Soft flow chutes	97 dBA
Transfer Tower	2 x 8500 tph	Soft flow chutes	99 dBA
STOCKYARD AND RECLAIMING			
Conveyor Assembly	10500 tph	Aluminium Idlers	101 dBA/100 m
Conveyor Drive	800 kW	Low-noise Specification	100 dBA
Transfer Point per Chute	10500 tph	Soft Flow Chute	100 dBA
Stacker/Reclaimer	10500 tph	Low-noise Specification	107 dBA
Buffer Bin	2500 t	Belt Feeder	103 dBA
Outbound Sample Station	850 tph	Soft flow chutes	99 dBA
Dozer	D11	Daytime use only	118 dBA
SHIPLOADING			
Conveyor Assembly	10500 tph	Aluminium Idlers	101 dBA/100 m
Conveyor Drive	800 kW	Low-noise Specification	100 dBA
Shiploader	10500 tph (peak 12500 tph)	Low-noise Specification	106 dBA
SEDIMENTATION			
Water Pump	3-4 MW	Cladded enclosure	100 dBA
RAIL LOOP AND SPUR			
Locomotive Low Idle	90 class	Partial barrier on rail loop	105 dBA
Locomotive High Idle	90 class		107 dBA
Locomotive on Arriving	90 class		106 dBA
Locomotive on Moving Off	90 class		109 dBA
Wagon - Creak	100 t	Partial barrier on rail loop	116 dBA
Wagon - Squeal	100 t		113 dBA
Wagon – Coupling Take Up	100 t		106 dBA

Source: Heggies Australia (2006)

The LAeq sound power levels presented in Table 6 do not include noise emissions which emanate from alarms. Alarms were subject to procurement specifications detailing variable volume, tone frequency, noise emission levels, directionality and coverage. They have been installed to optimise safety and to minimise off site noise leakage. In the unlikely event that alarm noise remains a source of disturbance, then further on site optimisation and fine adjustments will be examined to achieve further noise reductions without compromising safety standards.

4.3 Noise Propagation Controls

An earth bund approximately 1,500 m in length is constructed on the northern side of Cormorant Road. The bund is located east of the Pacific National access road between the coal storage area and Cormorant Road.

In addition, following noise modelling and Operation Environmental Risk Analysis, a further noise propagation control was identified and constructed comprising of an earth bund which is designed to mitigate the detrimental impact of rail noise on community receivers. This includes two earth bunds constructed immediately adjacent and south of rail infrastructure at the arrival and departure roads to and from the NCIG Dump Station.

4.4 Receiver Noise Controls

In the event that the Project specific criteria are exceeded by 1 to 5 dBA, then the noise impacts could range from negligible to moderate. Management procedures that can be implemented include:

- Noise monitoring on-site and within the community;
- Prompt response to any community issues of concern;
- Refinement of noise mitigation measures and operating procedures where practicable;
- Consideration of acoustical mitigation at receivers where substantiated by monitoring results; and
- Consideration of negotiated agreements with land owners.

4.5 Maintenance Activities

Maintenance activities will be planned so as to mitigate any potential noise activities. Portable equipment such as lighting towers, Elevated Work Platforms (EWPs) and noise generating activities such as abrasive blasting will be considered prior to planned maintenance shutdowns, particularly where these are planned at night. Where necessary, these activities will be modelled within the NCIG Environmental Noise Model to assess the risk of noise contributions to be exceeded. Where these risks exist, maintenance activities will be modified to ensure compliance with noise limits.

4.6 Vehicles

All NCIG site vehicles, including contractor vehicles, will be regularly serviced to ensure that they do not pose a noise nuisance.

5. PERFORMANCE EVALUATION AND IMPROVEMENT

5.1 Noise Monitoring

Condition 7.6 (b) (vii), Schedule 2 of the Project Approval (06_0009) stipulates that this ONMP include details on noise monitoring and reporting procedures. Details on noise monitoring (locations, instrumentation procedures and frequency), reporting procedures, and audits of compliance are discussed below.

5.1.1 External Noise Monitoring

The Project noise monitoring will comprise six monthly attended monitoring at sites per Figure 2. Six monthly monitoring will be conducted at up to seven locations. Noise monitoring will be conducted in accordance with Australian standard AS 1055-1997 Description and Measurement of Environmental Noise (Standards Association of Australia (SAA) 1997) and the INP (EPA 2000). Figure 2 shows the locations for monitoring. These locations include:

- Fern Bay West;
- Fern Bay East;
- Stockton West;
- Stockton East;

- Mayfield West;
- Mayfield; and
- Carrington.

Acoustic instrumentation used in noise monitoring will comply with Australian standard AS 1259.2:1990 Sound Level Meters (SAA 1990). The following information will be recorded:

- Operator's name and measurement location;
- Recording intervals;
- Local meteorological conditions (i.e. temperature, humidity, cloud cover and wind speed and direction);
- Instrument type and calibration details; and
- Statistical noise level descriptors together with notes identifying the principle noise sources



5.1.2 Internal Noise Monitoring

Condition 7.6 (b) (viii), Schedule 2 of the Project Approval (06_0009) requires regular internal audits of compliance of all plant and equipment with acceptable design noise. An internal auditing process will occur on a six-monthly basis to assess performance of plant and equipment in relation to potential noise impacts. The plant and equipment that will be monitored by this auditing process includes all major static and mobile elements of the terminal operation, including:

- Rail operations;
- Dump station;
- Conveyors;
- Transfer houses;
- Stacker/reclaimers;
- Buffer bin; and
- Shiploader.

This plant will be monitored during the audits using a consistent methodology to ensure there is no escalation in the associated acoustic signature which may lead to noise related issues and potential exceedance of the site noise criteria. Specialised monitoring equipment will be utilised by personnel trained in the requirements for site acoustic assessment to facilitate this process.

5.1.3 On-site Meteorology

Meteorological conditions will be recorded during the period of acoustic monitoring. This is to include wind speed and direction as well as data suitable for quantifying the presence or otherwise of temperature inversions. Under Condition 2.8, Schedule 2 of the Project Approval (06_0009), NCIG has installed a meteorological monitoring station to monitor weather conditions representative of the site. In accordance with Condition 3.1, Schedule 2 of the Project Approval (06_0009), the onsite meteorological monitoring station will continuously record and data log the following parameters at 15-minute averaging periods:

- Rainfall;
- Temperature at 10 m;
- Temperature at 2 m;
- Relative humidity;
- Net solar radiation;
- Sigma theta;
- Wind direction; and
- Wind speed.

When used in conjunction with noise monitoring results, meteorological data will provide useful information for the review of noise control management practices.

5.1.4 Environmental Monitoring Assessment

Noise monitoring results and meteorological data may be used to analyse relationships between short-term variations in noise generating activities and monitoring results, and the frequency and distribution of any related complaints. This will be conducted using the NCIG Environmental Noise Model.

Data obtained from the noise monitoring program will be handled as follows:

- The results will be entered into the database (consolidated and managed by NCIG's noise consultant) on a six monthly basis, including observations made during operator-attended monitoring; and
- The data will be compared with relevant noise limits and vibration criteria and any exceedances noted.

- This data will be provided to the NCIG HSEC Department in a six-monthly Operations Noise Monitoring Report

In the event that an exceedance of the relevant noise criteria is attributed to NCIG operation activities, the HSEC Department will implement a management strategy or appropriate controls in accordance with Section 5.6 in consultation with the NCIG Assets Department.

5.1.5 Maintenance and Calibration of Noise Monitoring Equipment

All acoustic instrumentation employed for any monitoring program will be designed to comply with the requirements of Australian standard AS 1259.2-1990 *Sound Level Meters* (SAA 1990) and will carry National Association of Testing Authorities or manufacturer calibration certificates to verify compliance with design noise standards.

5.2 External Auditing

As outlined in Section 3.3.2, noise audits were to be conducted to check that the NCIG Terminal operates in within the noise contribution limits identified in the Project Approval. Noise Audits have already been completed for Stages 1, 2AA, 2F and full operational capacity including the Rail Flyover. All audits have identified that NCIG is operating within the identified noise contribution limits. In addition, regular noise monitoring compares operating noise levels with the approval noise limits.

5.3 Internal Auditing

The HSEC Department will undertake regular auditing of noise management within the SDMP, including this Operation Noise Management Plan. This auditing is conducted in accordance with the NCIG *Audit and Inspection Procedure* (HSEC.PRO.15.01) and the annual HSEC Audit and Inspection Schedule. Non-conformances will be recorded and appropriate actions taken to remedy.

5.4 Coordination

The monitoring and management of noise from the NCIG site will be undertaken in a coordinated approach with the adjacent coal terminal operated by PWCS. The manner in which the coordination will be conducted is outlined by the Coordinated Environmental Monitoring and Management Procedure.

5.5 Incident Review

Environmental incidents relating to noise management of the NCIG site are to be managed in accordance with NCIG *Hazard and Incident Management Procedure* (HSEC.PRO.13.01), including the Trigger Action Response Procedure. This includes recording the incident on the NCIG HSEC System, which is then forwarded to the Manager – HSEC and Environmental Advisor for action.

5.6 Corrective Action

If corrective actions are identified as a result of noise monitoring assessment, ONMP audit and inspection results, compliance tracking or community complaints regarding noise (see Operation Environmental Management Plan), the HSEC Department or Manager – HSEC will determine appropriate management strategies and implementation of contingency measures in consultation with other departments. This same process is applied as an outcome of management review of

environmental management measures, as discussed in Section 5.8. These will be in addition to those implemented as part of normal operational activities.

Corrective actions are also identified for environmental incidents. This process will be implemented in accordance with the NCIG *Hazard and Incident Management Procedure* (HSEC.PRO.13.01) including the Trigger Action Response Procedure.

5.7 Reporting

Noise reporting commitments are consistent with Section 5.9 of the NCIG *Operation Environmental Management Plan* (HSEC.MP.12.01).

5.8 General Review

Ongoing review and attainment of feedback in regard to environmental measures is undertaken to ensure that the SDMP is meeting its targets and objectives. Any improvements deemed necessary will be identified and SDMP documentation will be updated to reflect this.

5.8.1 Management Review

The ELT reviews progress and health of environmental management measures on a quarterly basis in line with the Quarterly HSEC Report prepared for the NCIG Board. In addition, Key Result Areas (KRAs) and objectives are set during the business planning process (see Section 3.3), to ensure that statements within the Sustainable Development Policy are being achieved. Information used to develop KRAs and objectives include:

- Legislative requirements;
- Performance against environmental objectives and targets in the HSEC Plan;
- Compliance assessment;
- Environmental monitoring results;
- Results of environmental auditing and trends of non-conformance;
- Monitoring of environmental statistics;
- Environmental incidents
- Corrective actions;
- Community complaints;
- Other current environmental issues and concerns;

The above is consistent with the NCIG *Management Planning, Monitoring and Review Procedure* (HSEC.15.02). As with general review of environmental management measures, improvements deemed necessary by management will be identified and SDMP documentation will updated to reflect this.

6. REVISION HISTORY

DATE	REVISION NO.	DESCRIPTION OF CHANGE	PERSONS INVOLVED
1/04/10	1 st Draft	Review of draft document	Brendan Logan Nathan Juchau
1/06/10	Final Draft	Final document for approval	Brendan Logan
1/05/12	Review 1	General revision	Phil Reid
1/05/13	Review 2	General Revision	Phil Reid
16/06/16	Review 3	Update ONMP to be consistent with revised SDMP framework, including environmental management component.	Phil Reid
15/05/17	Review 4	No changes	Phil Reid
2/06/20	Review 5	Merged ONMP to new NCIG document template, including the addition of the Key Elements section. Updates to outdated monitoring methodology and frequency. General revision with minor updates and formatting changes throughout.	Hayley Ardagh