Port Waratah Coal Services Limited

Environmental Assessment
Kooragang Coal Terminal
Proposed Fourth Rail Loop Realignment

June 2011

Umwelt
Environmental Consultants

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Proposed Fourth Rail Loop Realignment

Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Port Waratah Coal Services Limited

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1.0 Introduction

Port Waratah Coal Services Ltd (PWCS) operates the Kooragang Coal Terminal (KCT) on Kooragang Island (refer to **Figure 1.1**). PWCS is undertaking ongoing expansion of KCT to develop the coal terminal to a maximum throughput capacity of 120 Million tonnes per annum (Mtpa) in accordance with existing approvals including the KCT 120 Mtpa Project Approval (06_0189), granted by the Minister for Planning in April 2007. PWCS obtained a modification to this approval being the KCT 120 Mtpa Modified Project Approval (06_0189 MOD 1) in 2010 to provide for additional coal handling infrastructure at KCT, known as the Stage 4 Project. As part of the Stage 4 Project, PWCS was granted approval to construct a fourth rail loop and the fourth dump station servicing KCT.

PWCS is currently completing the detailed design for the rail loop works at KCT, which has identified a proposed realignment of the departure tracks associated with the fourth rail loop associated with the Stage 4 Project (PA 06_0189 MOD 1). The proposed realignment to the approved fourth rail loop is generally consistent with the alignment provided for by existing approvals, and will include extending outbound tracks of the fourth rail loop prior to rejoining the main departure line from Kooragang Island. The benefit of the proposed rail realignment is that it will provide for the minimisation of potential operational disruption of the existing rail loops servicing KCT during construction, and will improve operational aspects of the rail loop servicing the approved fourth dump station.

PWCS has consulted with the Department of Planning and Infrastructure (DP&I) in regard to the proposed rail loop realignment works and confirmed that the 2007 Project Approval (Approval No. 06_0189) can be modified under section 75W of the EP&A Act to enable these works. Consequently, PWCS seeks a modification of the 2007 Project Approval for the proposed rail loop realignment works. The Minister for Planning is the approval authority for this proposal.

1.1 Project Background and Need

In 2010, DP&I granted approval for the KCT Stage 4 Project (PA 06_0189 MOD 1) which involved the construction and operation of additional coal handling infrastructure to provide 'sprint capacity' to meet the overall approved 120 Mtpa throughput at KCT, known as the Stage 4 Project. As part of the Stage 4 Project, PWCS have approval to construct a fourth rail loop to the fourth dump station to improve the efficiency of coal unloading at KCT (refer to **Figure 1.2**).

As shown on **Figure 1.2**, the approved rail loop alignment includes the rejoining of the departure track from the fourth dump station to the existing rail loop servicing KCT, which is operated by the Australian Rail Track Corporation (ARTC). Through the detailed design process PWCS have identified that the construction of the approved realigned departure tracks from the fourth dump station would require significant disruptions to the current operation of the rail loop servicing KCT.

As part of the detailed design process, PWCS has identified the benefit of realigning the departure tracks associated with the fourth dump station as shown on **Figure 1.2**. The realignment of these departure tracks will provide for reduced interactions with the users of the existing rail loop through minimising disruptions during construction. In addition, the proposed realignment of the departure tracks from the fourth dump station provides an opportunity for PWCS to operate the fourth rail loop, which will provide for improved efficiency in train unloading at KCT.

Source: Google Earth (2009)

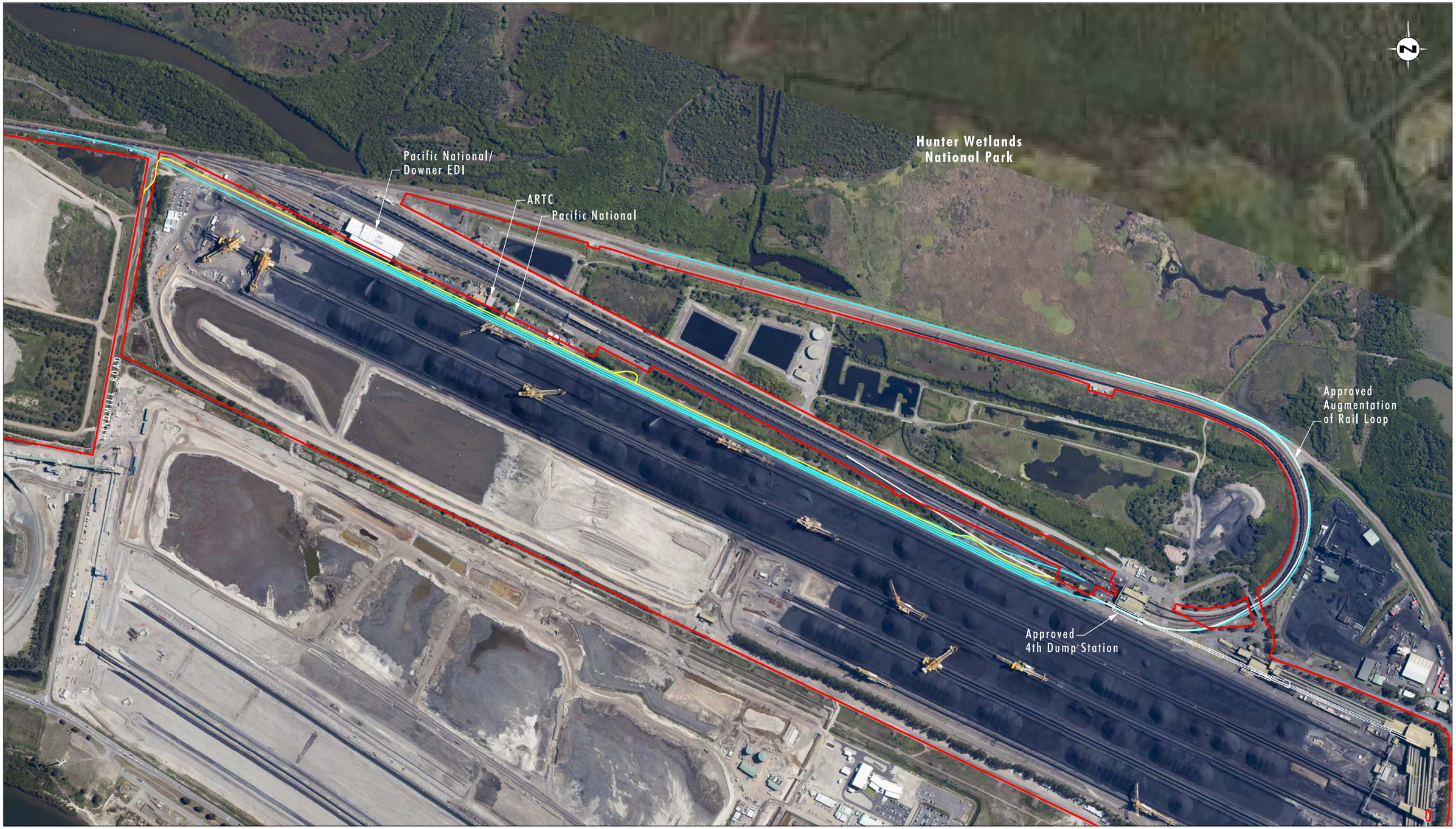
0 1.0 2.5 5.0km
1:100 000

Legend

Kooragang Coal Terminal

FIGURE 1.1

Regional Setting



Source: Google Earth, PWCS (2010 & 2011)

0 100 200 400m
1:7500

Legend

- Kooragang Coal Terminal
- Approved Stage 4 Project Infrastructure
- Proposed Rail Loop Realignment
- Proposed Access Road

FIGURE 1.2

Proposed Rail Loop Realignment

There are two other users of the existing rail loop servicing KCT, including ARTC and Pacific National (PN). As part of these current uses of the rail loop, ARTC and PN have train servicing facilities located on the rail loop (refer to **Figure 1.2**). PWCS have consulted with ARTC and PN in relation to the proposed rail loop realignment works, which will be continued throughout the finalisation of detailed design, construction and operation of the proposed rail loop realignment works.

This proposal will not alter the approved 120 Mtpa throughput capacity of KCT and as such, there will be no increase in the number of trains servicing KCT as part of this proposal. The proposed rail loop realignment works will provide for improved efficiency of the rail loop servicing KCT further assisting in improvements to 'sprint capacity' provided for by the Stage 4 Project approval (PA 06_0189 MOD 1).

The Stage 4 Project Environmental Assessment (EA) (Umwelt 2009), prepared to support the approved project, comprehensively assessed potential on site and off site impacts associated with the construction and operation of the approved fourth rail loop. The proposed rail loop realignment works are generally consistent with the approved rail loop alignment approved as part of the Stage 4 Project (PA 06_0189 MOD 1) and will be readily managed by PWCS in accordance with this approval and the supporting EA.

The proposed rail loop realignment works will be primarily located within the approved KCT footprint (refer to **Figure 1.3**). As shown on **Figure 1.3**, part of the proposed realigned outbound departure track crosses two parcels of land that are not currently listed on the Stage 4 Project approval (PA 06_0189 MOD 1) schedule of lands. These parcels are owned and managed by Newcastle Port Corporation (NPC) and PN. As these parcels are not currently listed on the Stage 4 Project approval (PA 06_0189 MOD 1) schedule of lands, a minor modification of this approval is required for the proposed rail loop realignment works.

1.2 Site Context

KCT operations are located on Kooragang Island on the lower reaches of the Hunter River approximately 2 kilometres north of Newcastle (refer to **Figure 1.1**). Kooragang Island is essentially reclaimed land created by joining Dempsey, Moscheto and Walsh Islands. The area was originally developed in the early to mid 1900s as the industrial centre for Newcastle. Officially named in 1968, Kooragang Island has a total area of approximately 2600 hectares and is bounded by the South and North Arms of the Hunter River. The northern extent of Kooragang Island includes Kooragang Nature Reserve (KNR), which forms part of the RAMSAR listed Hunter wetlands. The southern portion of Kooragang Island is effectively reclaimed land for industrial purposes. KCT is strategically located in the south-eastern portion of Kooragang Island, providing ready access to sea going vessels via the Hunter River and Newcastle Harbour (refer to **Figure 1.1**).

As shown on **Figure 1.1**, the nearest urban areas are Fern Bay located approximately 1.7 kilometres to the east; the suburb of Stockton (North), located approximately 1.5 kilometres to the south-east of the site; and Mayfield located 1.7 kilometres to the south-west. The former BHP steelworks and current OneSteel operations are located to the south and south-west, across the South Arm of the Hunter River, as shown on **Figure 1.1**.

The proposed rail loop realignment works are located within previously disturbed land which consists of the existing rail loop, an existing sealed access road and other operational areas. The land within this area is industrial in nature and consists of a number of rail related facilities, located on the existing rail loop, and infrastructure associated with the current approved KCT.

Source: Monteah & Powys (2010), Land & Property Management Authority (2010)

Legend

- Kooragang Coal Terminal
- NSW Maritime
- Newcastle Port Corporation
- Australian Rail Track Corporation
- Port Waratah Coal Services
- Newcastle City Council
- Pacific National
- Stage 4 Project Infrastructure
- Proposed Rail Loop Realignment
- Additional Parcels

FIGURE 1.3

KCT Schedule of Lands

File Name (A3): R01/2933_009.dgn
20100909 9.40

1.3 Land Ownership and Schedule of Lands

KCT operates on land owned by PWCS as well as land leased through agreements with Newcastle Port Corporation (NPC), by delegation of the Minister for Commerce. The rail line and loop utilised to transport coal to the KCT facilities is operated and maintained by the Australian Rail Track Corporation (ARTC).

The proposed rail loop realignment works will be primarily located within the approved KCT footprint and on land owned and managed by PWCS, and land associated with the current rail loop (refer to **Figure 1.3**). As shown on **Figure 1.3**, the proposed realigned outbound departure track crosses two parcels of land that are not currently listed on the Stage 4 Project approval (PA 06_0189 MOD 1) schedule of lands. These parcels are owned and managed by NPC and PN.

PWCS has also entered into a purchase agreement for the parcel of land associated with Windmill Road, which is currently managed by NPC. Whilst this purchase agreement is being executed, PWCS have sought land owners consent from NPC for undertaking the works on this parcel of land as part of this proposal. In addition, PWCS is currently seeking land owners consent for the additional allotment of PN land on the updated schedule of lands for KCT.

Full property descriptions for the updated schedule of lands for KCT are provided in **Appendix 1**.

1.4 Report Structure

This Environmental Assessment (EA) has been prepared by Umwelt (Australia) Pty Limited (Umwelt) on behalf of PWCS to accompany the application to DP&I to modify the 2007 Project Approval (PA 06_0189).

The purpose of this EA is to provide the relevant background and overview of the proposed rail loop realignment works and the identification of any alterations to environmental impacts as assess as part of the Stage 4 Project EA (Umwelt, 2009). An overview of the layout of this EA is provided below.

Section 1.0 provides background and context for the Project.

Section 2.0 contains a detailed description of the existing and approved KCT operations and PWCS' approach to the continued development of KCT.

Section 3.0 contains a detailed description of the proposed rail loop realignment works.

Section 4.0 describes the consultation undertaken for the proposed rail loop realignment works.

Section 5.0 contains a review and assessment of key environmental issues associated with the proposed rail loop realignment works to identify any new impacts or changes to existing impacts, and the existing environmental management and monitoring strategy and the environmental and community performance of existing operations.

Section 6.0 contains a conclusion.

Section 7.0 a list of references referred to in the EA.

2.0 Existing and Approved Operations

2.1 Description of Existing and Approved Operations

PWCS receives, stockpiles, blends and loads coal onto ships for export. It currently serves approximately 20 coal producers who operate mines in the Hunter Valley, Gunnedah, Ulan and Lake Macquarie regions.

The layout of current and approved operations is shown on **Figure 2.1.** All coal is delivered to the terminal by rail and is discharged from rail wagons within the enclosed rail receival station. Coal is then transferred by conveyors to the stockpile areas, referred to as the stockyard. Contractual arrangements with customers require that coal cargoes be assembled by PWCS before the relevant ship comes into the port for coal loading. All inbound coal can be sampled for quality as it leaves the rail receival station and before being loaded onto the ship.

Stockpile Pads A and B and half of stockpile Pads C and D, are established and are being used during current operations. The full length of stockpile Pads C and D are approved for construction within the footprint shown on **Figure 2.1**. These remaining approved stockpile areas are currently under construction and will be commissioned to meet the demands of the export coal industry. In the stockyard, rail mounted luffing/slewing 'stackers' place coal in pre-designated pad areas. Different types and cargoes of coal are stacked into separate stockpiles. Cargo assembly is planned to maximise port throughput with cargoes being assembled in nominally three to 10 days dependent on source. The total existing working stockpile capacity is approximately 2 Mt and this will increase to a nominal 3 Mt when all stockpiles are operational.

Coal is retrieved from the stockyard by rail mounted 'bucket-wheel reclaimers'. It is then conveyed directly to the shiploading facility or recirculated within the stockyard for blending or cargo assembly. The terminal currently prepares and handles over 80 different coal types.

Coal is loaded onto ships at the berths by shiploaders. Each shiploader, and its associated system of conveyors, buffer bins and transfer stations, is referred to as a shiploading stream. Buffer bins allow continuous coal reclaiming and transfer during the changing of ship hatches by the shiploader.

All outbound coal is sampled for quality prior to shiploading. The average time to load and dispatch a ship is less than two days.

2.1.1 KCT Ongoing Expansion Program

In response to continuing demand for export coal, PWCS implements an ongoing process of approved expansion works at KCT. This process enables PWCS to progressively design, construct and operate plant to accommodate ongoing demand for export coal. This process has been reflected in the staged approach to development consents from the original Stage 1 and 2 consents through to the current Stage 3 development consent and 120 Mtpa approval (PA 06_0189 as modified).

The progressive expansion process not only enables PWCS to manage KCT operations in response to demand for export coal, but also provides for ongoing improvement in operational and environmental management systems. An example of this has been PWCS's implementation of the acoustical design, procurement, construction and commissioning process throughout expansion works that has provided for ongoing demonstrated improvements in noise mitigation and management. This process provides the basis for

Source: Port Waratah Coal Services Limited (2008, 2009)

0 0.5 1.0 2.0km
1:35 000

Legend
- Kooragang Coal Terminal
- Heavy Industry (Former BHP Steelworks and OneSteel)
- Newcastle Coal Infrastructure Group

FIGURE 2.1

Kooragang Coal Terminal

design specifications for yet to be constructed plant and equipment, which ensures that expansion works meet the current regulatory framework and community expectations. Further details on this process, along with other existing environmental management systems implemented at KCT, are provided in **Section 5.0**.

3.0 Project Description

Figure 1.2 provides an overview of the proposed rail loop realignment works at KCT. As shown on **Figure 1.2**, the conceptual design for the proposed rail loop realignment works includes:

- single inbound fourth rail loop to the approved dump station 4;
- outbound tracks with a reconnection to the rail loop to the west of KCT;
- provision of an additional outbound track for dump station 3 to provide flexible operational access to the proposed outbound track of dump station 4; and
- realignment of the existing private access road, known as Windmill Road, servicing the existing rail loop, including the construction of a fully controlled level crossing over the proposed outbound departure track of the fourth rail loop.

The proposed rail loop realignment works include an extension of the approved fourth inbound track to the fourth dump station, which is generally consistent with the alignment provided by the Stage 4 Project approval (PA 06_0189 MOD 1). The proposed extension of the fourth inbound tracks will be undertaken entirely within the current rail loop that services KCT and the alignment provided by the Stage 4 Project approval.

As part of the Stage 4 Project, the outbound tracks from the fourth dump station were approved to reconnect to the existing rail loop before departing Kooragang Island (refer to **Figure 1.2**). As shown on **Figure 1.2**, the proposed realignment of the fourth rail loop includes an extension of the outbound tracks via a new alignment that provides for the reconnection to the rail loop further to the west of KCT, prior to leaving Kooragang Island.

The extension of the outbound track includes the development of three tracks, to accommodate trains waiting to rejoin the main departure line prior to moving off Kooragang Island (refer to **Figure 3.1**). Additionally an interconnection line from the existing dump station 3 will also provide for connection to the proposed outbound tracks to enhance flexibility of operations. The proposed realignment of the private access road consists of a realignment to provide for an appropriate level crossing of the proposed outbound departure track, and relocation of the roadway immediately north of the proposed outbound tracks (refer to **Figure 1.2**).

As outlined in **Section 1.1**, there are two other users of the existing rail loop servicing KCT, ARTC and PN. As part of these current uses of the rail loop, ARTC and PN have train servicing facilities located on the rail loop, which are currently accessed via an existing private access road, known as Windmill Road (refer to **Figure 1.2**). Windmill Road also provides limited access to KCT, with the main access to KCT being provided from Curlew St.

The proposed realignment of the outbound tracks from the fourth dump station require a crossing of Windmill Road with a single outbound departure track prior to reconnection to the main rail line west of KCT (refer to **Figure 1.2**). The design of the proposed rail realignment has provided for the ongoing access to these existing users on the rail loop through altering the alignment of the private access road as shown on **Figure 1.2**. This includes the

Source: Google Earth, PWCS (2010 & 2011)

0 50 100 200m
1:4000

Legend

- Kooragang Coal Terminal
- Approved Stage 4 Project Infrastructure
- Proposed Rail Loop Realignment
- Proposed Access Road

FIGURE 3.1

Conceptual Departure Track Alignment

installation of a fully controlled level crossing, including the installation of appropriate traffic control measures such as signage, bells and lights, across the proposed realigned outbound departure track.

PWCS have consulted with both the ARTC and PN in relation to the proposed rail loop realignment and associated realignment of the private access road. This consultation will continue throughout the completion of detailed design, construction and operation of the proposed rail loop realignment works.

The construction of the proposed rail loop realignment works will require minimal earthworks, including no areas of cut, given the current topography of the area and existing characteristics including the established rail loop and sealed access road servicing KCT. In general, construction activities will include:

- site preparation;
- construction of foundations and footings;
- assembly and erection of structural components;
- mechanical fit out;
- electrical fit out;
- installation of services e.g. power, water, fire systems, controls etc; and
- commissioning.

The proposed realignment to the rail loop will be constructed and operated in previously disturbed areas in the vicinity of KCT. The construction and operation of the proposed rail loop will be incorporated into existing environmental management systems at KCT. Specifically, this includes approved plans and procedures defined within the comprehensive PWCS ISO 14001 Environmental Management System (EMS), including the Environmental Management Plans required under PA 06_0189 and approved by DP&I. Further details on the environmental management of the proposed rail loop realignment works is provided in **Section 5.0**.

4.0 Consultation

PWCS has consulted with a number of stakeholders, including government agency and surrounding landowners, in relation to the proposed rail loop realignment works. The aim of consultation with the stakeholders was to notify, inform and receive feedback from key stakeholders on the proposed rail loop realignment works.

The DP&I have been consulted to confirm:

- the application of the Section 75W approval path for the Project;
- the key agency issues for assessment; and
- specific issues relevant to the Project.

In addition, PWCS have provided a briefing of the proposed rail loop realignment works to NPC in relation to potential interactions with NPC controlled land in the vicinity of KCT. This has included a briefing to NPC in relation to the proposed crossing of a small allotment

associated with Windmill Road. PWCS are currently obtaining land owners consent from NPC for this modification based on the need to undertake works within this parcel of land.

PWCS have also consulted with ARTC and PN in relation to the proposed rail loop realignment works. ARTC and PN have indicated their support for the proposal based on the benefit of minimising potential disruptions to the existing rail loop through the construction of the currently approved fourth rail loop and departure tracks. PWCS have maintained ongoing engagement with ARTC and PN as part of the detailed design process, which will be maintained throughout the construction and operation of the proposed rail loop realignment works.

The consultation with PN has included a briefing in relation to the proposed crossing of a small allotment associated with the existing rail loop servicing KCT, which is owned by PN. PWCS are currently obtaining land owners consent from PN for this modification based on the need to undertake works within this parcel of land.

5.0 Environmental Assessment

5.1 Preliminary Environmental Assessment

The proposed rail loop realignment works are located within a highly modified area, which comprises the existing rail loop servicing KCT, an existing sealed access road and existing operational areas within the vicinity of KCT. This area has been in this highly disturbed state since the early 1980s. All construction activities associated with this proposal shall be located within these previously disturbed areas.

Consequently, for the majority of environmental aspects, there will be no change in the potential impacts of the proposed rail loop realignment works from those identified in previous EAs and which are currently approved. A preliminary environmental assessment was therefore completed for the proposed rail loop realignment works to identify potential changes to approved impacts, which required further assessment as part of this EA. The findings of the preliminary environmental assessment are provided in **Table 5.1**, with reference to each of the environmental aspects potentially relevant to the Project, including those considered in previous EAs.

Table 5.1 – Preliminary Environmental Assessment for Proposed Rail Loop Realignment Works

Environmental Aspect	Preliminary Environmental Assessment	Further Assessment Required?
Groundwater	The earthworks associated with the proposed rail realignment will require no areas of cut and there is a minimal risk of intersection of groundwater and exposure of Acid Sulphate Soils (ASS). This will be readily managed throughout construction in accordance with the approved Construction Environmental Management Plan (CEMP) and ASS Management Plan and procedures for KCT.	**No**

Table 5.1 – Preliminary Environmental Assessment for Proposed Rail Loop Realignment Works (cont)

Environmental Aspect	Preliminary Environmental Assessment	Further Assessment Required?
Surface Water	The rail loop realignment will be readily accommodated in the KCT existing water management system, and there is no material modification required to the water management described in the Stage 4 Project EA and summarised in **Section 5.3**.	**No**
Noise	The changes in location of the proposed outbound tracks from the fourth dump station have the potential to alter the noise impacts of the Project.	**Yes, refer to Section 5.2.1**
Traffic	The proposed realignment of the existing private access road as part of these works has the potential to alter the impacts on traffic use of Windmill Road	**Yes, refer to Section 5.2.3**
Ecology	The proposed rail loop realignment works require the removal of small areas of vegetation and will also require completion of works outside of the approved disturbance area of KCT.	**Yes, refer to Section 5.2.4**
Air Quality	Air quality emissions associated with the construction of the rail realignment will be in accordance with current approvals and levels predicted in the Stage 4 Project EA (Umwelt 2009) and managed in accordance with the approved Construction EMP for KCT. PWCS do not propose any increase in throughput capacity associated with this proposal and the number of trains servicing KCT will remain within approved levels. Accordingly all air quality emissions from the operation of the rail loop will be in accordance with existing approvals.	**No**
Aboriginal Archaeology	There is no risk of in situ Aboriginal archaeological sites being located in this area as this area of Kooragang Island has been extensively filled to provide for developable industrial land.	**No**
Historical Heritage	The existing ancillary works and rail line features in this area have no historic value.	**No**
Visual Amenity	The proposed rail realignment will not be visible from surrounding residential areas and is consistent with the visual impacts associated with the approved Stage 4 Project as provided in the Stage 4 Project EA (Umwelt 2009) and the existing industrial nature of this area of Kooragang Island.	**No**
Greenhouse Gas and Energy	The proposed rail loop realignment works will not alter the approved throughput capacity of KCT. Construction works will be undertaken in accordance with the approved program of construction activities outlined in the Stage 4 Project EA. The proposed works will not result in additional greenhouse emissions from KCT.	**No**
Maritime Safety	The proposed rail loop realignment works will not alter the approved throughput capacity of KCT. All other aspects of KCT operations will continue in accordance with approved processes described in **Section 2.1**.	**No**
Socio-economic Assessment	The socio-economic impacts of KCT will remain substantially unchanged by the proposed works	**No**

As indicated in **Table 5.1**, the proposed rail loop realignment works have the potential to alter the approved impacts associated with the following environmental aspects, which require further assessment:

- noise – refer to **Section 5.2.1**;
- traffic – refer to **Section 5.2.2**; and
- ecology – refer to **Section 5.2.3**.

5.2 Review of Key Environmental Issues

5.2.1 Noise

5.2.1.1 Existing Noise Environment

The existing noise environment in areas surrounding KCT has been monitored on a regular basis by PWCS (refer to **Section 5.3**). In addition, further monitoring has been undertaken within the surrounding area as part of noise assessments for other projects on Kooragang Island. Relevant noise monitoring has used a combination of both unattended noise logging and attended noise measurements.

As shown on **Figure 1.1**, KCT is located within 2 kilometres of the residential areas of Fern Bay, Stockton, and Mayfield. **Table 5.2** details the receiver areas and the specific locations that are assessed for the purposes of this proposal in regards to potential noise impacts and the applicable noise impact assessment criteria.

Table 5.2 – Applicable Noise Limits and Meteorological Constraints (dBA re 20 µPa)

Receiver Area	Industrial Amenity Criteria		$L_{Aeq(15minute)}$ Construction Day[1]	$L_{Aeq(15minute)}$ Operation Day, Evening, Night[2]	$L_{Aeq(night)}$ Operation Night[3]	$L_{A1(1minute)}$ Operation Night[3]	Reference
	Acceptable	**Maximum**					
Fern Bay North	-	-	46	46	43	55	PA 06_0189
Fem Bay West	-	-	50	50	47	55	PA 06_0189
Fern Bay East	-	-	49	49	46	55	PA 06_0189
Stockton West	-	-	50	50	47	57	PA 06_0189
Stockton East	-	-	49	49	46	56	PA 06_0189
IB1 EDI Administration Building	70	75	-	-	-	-	INP

Notes

The maximum allowable noise contributions apply under:

a) Meteorological conditions of: wind speeds up to 3 ms^{-1} at 10 metres above ground level; or

b) Temperature inversion conditions up to 3°C per 100 metres and wind speeds up to NMS^{-1} at 10 metres above the ground.

For the purpose of assessment of noise from the project shall be:

c) Measured at the most affected point on or within the Site boundary at the most sensitive receiver to determine compliance with LAeq(15 minute) night noise limits;

d) Measured at one metre from the dwelling facade to determine compliance with LA1(1 minute) noise limits; and

e) Subject to the modification factors provided in Section 4 of the NSW INP, where applicable.

[1] 7 days per week, 0700 hours to 1800 hours.

[2] 7 days per week, 24 hours a day.

[3] Monday to Saturday 2200 hours to 0700 hours; Sundays and Public Holidays 2200 hours to 0600 hours.

5.2.1.2 Construction Noise Assessment

PWCS carries out construction noise monitoring in accordance with an approved Construction EMP approved by DP&I in 2011, with the approved construction noise limits generally consistent with OEH's Interim Construction Noise Guideline Policy.

A review of noise measurements during the previous Stage 3 and the current project construction phase confirms that noise emissions arising from construction activities are not discernible at the nearest residential receiver areas of Fern Bay and Stockton and any construction noise impacts are therefore minimal. As discussed in **Section 3.0**, the Project construction activities are consistent with approved daytime construction work. It is reasonable to anticipate intrusive construction noise emissions will remain indiscernible at the nearest residential receiver areas and below the approved construction noise limits. Hence, any construction noise impacts arising from the proposed rail loop realignment works are considered minimal.

Noise emissions associated with the construction of the proposed rail realignment works will be in accordance with current approvals and managed in accordance with the approved Construction EMP for KCT, approved by DP&I in 2011.

5.2.1.3 Operational Noise Assessment

PWCS do not propose any increase in the approved throughput capacity of KCT associated with this proposal and the number of trains servicing KCT will remain within approved levels. Potential noise impacts from trains on the ARTC managed rail loop servicing KCT were specifically included in the noise modelling scenarios presented in the Stage 4 Project EA (Umwelt 2009). As outlined in the Stage 4 Project EA, the intrusive noise levels associated with the Stage 4 Project are consistent and marginally less than the intrusive noise levels of the approved Stage 3 and 120 Mtpa projects.

An assessment of potential noise impacts associated with the operation of the realigned fourth rail loop confirms that the predicted noise levels at surrounding residential receivers is consistent with the predictions provided in the Stage 4 Project EA (refer to **Table 5.3** and **Appendix 2**).

Table 5.3 - Stage 4 Project (Rail Realignment) Night-time Intrusive Noise (dBA re 20 µPa)

Receiver Area	ID/Location	Calm[1]	Wind[1]	Inversion[1]	Inversion & Drainage[1]	Noise Limit
Fern Bay North	FN1 Bayway Village Nelson Bay Road	38	45	42	46	46
Fern Bay West	FW1 1 Fullerton Lane	41	48	45	49	50
	FW3 30 Nelson Bay Road	40	47	44	48	
Fern Bay East	FE1 21 Braid Road	40	49	45	49	49
Stockton West	SW1 284 Fullerton Street	39	49	45	49	50
	SW2 Cnr Pembroke and Fullerton Streets	36	46	42	46	
Stockton East	SE1 40 Eames Avenue	39	49	45	49	49

Note 1: Night-time meteorological parameters as described in the EA Report 30-1977-R2 dated 23 October 2009.

As outlined in **Table 5.1**, the proposed rail loop realignment works have the potential to change the predicted noise impacts of KCT on the closest industrial receivers, due to the realignment of the proposed departure rail tracks within closer proximity to the industrial

receivers as shown on **Figure 1.2**. Industrial receiver IB1 EDI Administration Building corresponds to the location of the ARTC and PN facilities located on the rail loop servicing KCT. An assessment of the potential noise amenity impacts to these industrial receivers has been undertaken (refer to **Appendix 2**). This assessment has taken a worst case approach to the prediction of potential noise amenity impacts at this receiver in that it is based on the following scenarios:

- All on-site installed, approved and proposed Stage 1, 2, 3 and 4 infrastructure operating within the KCT site including rail receival (coal wagon unloading), stacking, reclaiming and shiploading conveyor systems, transfer stations as well as mobile equipment (i.e. stackers, reclaimers and shiploaders) balanced across the KCT site. This specifically focussed on conveyor and yard machines operating in the vicinity of IB1; and

- Coal trains operating on the KCT rail loop including locomotives and wagon rakes assessed simultaneously with the KCT's operations, including average and peak train movements associated with current approved KCT operations.

The predicted noise amenity levels under this worst case scenario is provided in **Table 5.4**, along with the applicable noise amenity limits defined under the Industrial Noise Policy (INP) (DECC 2000). As outlined in **Table 5.4**, under a worst case scenario of multiple trains utilising the outbound tracks, the predicted noise at ARTC and PN receiver locations may exceed the acceptable noise amenity criteria for industrial receivers, but would remain below the maximum criteria provided by the INP.

Table 5.4 - Stage 4 Project Daytime, Evening and Night-time Noise Amenity Levels
(dBA re 20 µPa)

Receiver Area	ID/Location	KCT On-Site Noise[1]	KCT On-Site Rail	KCT Off-Site Rail	Total Noise Level	Acceptable Industrial Amenity	Maximum Industrial Amenity
Average Train Movement	IBI EDI Administration Building	70	68	63	73	70	75
	- ARTC						
	- Pacific National						
Peak Train Movement	IBI EDI Administration Building	70	70	66	74	70	75
	- ARTC						
	- Pacific National						

Note 1: Measured KCT on-site noise emission inclusive of conveyor and yard machine operations in the vicinity of the receiver.

The review of the potential noise emissions at the ARTC and PN facilities on the rail loop indicate the potential for exceedence of the acceptable noise amenity criteria during worst case operational conditions at these receivers. It is important to note that these receivers are industrial in nature and include a range of uses ancillary to the operation of the existing rail loop, including train servicing and refuelling activities. Accordingly, the potential for specific impact from the construction and operation of the proposed rail loop realignment works would not be significant at these industrial receivers. PWCS has consulted with both ARTC and PN in relation to the proposed rail loop augmentation works, which will be continued through the construction and operation of the proposal.

5.2.1.4 Noise Management and Monitoring Commitments

PWCS will manage any potential noise impacts associated with the proposed rail loop realignment works in accordance with approved noise mitigation and management

processes in place at KCT. The following is an overview of the key mitigation and management commitments, with further details provided in **Section 5.3**.

- Continued implementation of effective noise management and monitoring programs during construction activities in accordance with the approved Construction EMP, developed in consultation Newcastle City Council (NCC), Office of Environment and Heritage (OEH), and NSW Roads and Traffic Authority (RTA), and approved by DP&I in 2011; and

- Continued implementation of the Continuous Noise Improvement approach which has been very successful and it has been demonstrated that the Stage 4 Project will be designed, procured, constructed and commissioned using Best Available Technology.

- PWCS will continue to investigate reasonable and feasible measures to manage noise as part of the Continuous Noise Improvement Program.

5.2.2 Traffic

A comprehensive construction traffic assessment was undertaken for the Stage 4 Project EA (Umwelt 2009). The assessment provides details of existing traffic levels on the local transport network, and the impact that construction traffic may have on the local transport network.

As part of the assessment, the proposed Stage 4 construction traffic was modelled to ascertain potential impacts on the local road network. Based on the availability of numerous local access routes; the moderate construction traffic demands; the reduction in trip generation from adjacent local construction projects; and the significant capacity within the existing Kooragang Island area, it was concluded that the construction traffic generated by the Stage 4 Project will not have a significant impact on the local traffic network.

The proposed rail loop realignment works will be constructed as part of the ongoing construction program associated with ongoing expansion works at KCT, as detailed in Section 3.4 of the Stage 4 Project EA (Umwelt 2009). Accordingly the traffic generated is consistent with the levels assessed as part of the Stage 4 EA, and will not have a significant impact on the local traffic network. Construction traffic associated with KCT, including the proposed rail loop realignment works will continue to be managed by PWCS in accordance with the Construction EMP for KCT approved by DP&I in 2011.

As outlined in **Section 3.0**, the proposed rail loop realignment will result in a single outbound departure track crossing an existing private access road, known as Windmill Road (refer to **Figure 1.2**). Windmill Road comprises a sealed access road to the ARTC and PN facilities on the existing rail loop, as well as a controlled access point to KCT, and links directly with Cormorant Road to the south. The proposed rail loop realignment works have the potential to impact on the access to facilities currently utilised by ARTC and PN on the rail loop. PWCS has consulted with both ARTC and PN throughout the detailed design of the proposed rail loop realignment works to identify potential impacts on current access from Windmill Road.

A review of existing traffic along Windmill Road has indicated a low volume of traffic and that Windmill Road operates at a current Level of Service A with significant spare capacity. PWCS have specifically designed the rail realignment to minimise potential impacts, including installation of a fully controlled level crossing across the proposed outbound departure track and relocation of the existing access road to maintain current access to this area. In relation to these design aspects it is noted:

- traffic movements during construction of the proposed rail loop realignment will be short term in nature and will be readily managed through standard construction traffic controls which will not result in significant impacts to access from Windmill Road;

- the single departure track will be utilised for trains leaving KCT only and not for stationary trains, which will result intermittent and temporary traffic disruptions during operations that will be managed by the proposed fully controlled level crossing (including the installation of appropriate traffic control measures such as signage, bells and lights); and

- the realignment of the access road will be undertaken in previously disturbed areas and will provide for ongoing access to existing facilities off Windmill Road.

The proposed rail loop realignment works will not have a significant impact on traffic within the vicinity of KCT, and will be readily managed throughout the construction and operational phases of these works.

5.2.3 Ecology

The proposed rail loop realignment works do not propose to significantly alter the approved footprint of KCT. It is important to note that all proposed works are located in existing disturbed areas, with only very minor potential for ecological impacts in areas outside of the existing approved KCT footprint.

There are a number of existing planted areas within the highly modified area associated with the rail loop, which includes some native vegetation and minimal ground cover. This vegetation consists of areas of bitou bush, golden wreath wattle, willow bottlebrush and coast banksia, and has been assessed as not comprising a remnant of the pre-development mangrove and salt marsh vegetation of Kooragang Island. As part of the construction of the proposed rail loop realignment works minor clearance will be required in these planted areas.

It is noted that this area of Kooragang Island has been identified as providing potential habitat for the green and golden bell frog (*Litoria aurea*). The construction of the proposed rail realignment will specifically avoid areas of potential green and golden bell frog habitat. Due to this potential for this area to support important dispersal pathways, there is consequently a potential for these works to have a significant impact on this species. As a result of this, a site inspection was undertaken in March 2011 to identify potential impacts to this species as a result of the proposed rail loop realignment works. A Seven Part Test of Significance (under the *Environmental Planning and Assessment Act 1979*), as well as an Assessment of Significance (under the Commonwealth *Environmental Protection Biodiversity Conservation Act 1999*) were also undertaken (refer to **Appendix 3**). The Seven Part Test of Significance and Assessment of Significance both concluded that there will be no resulting significant impacts from the proposed rail loop realignment works to the green and golden bell frog (*Litoria aurea*).

The native vegetation within the areas of the proposed rail loop realignment is not expected to be habitat for any other threatened species.

Given the nature of the ecological features of this area of Kooragang Island, the ecological impacts associated with these minor areas of disturbance are not considered to be significant. There will be negligible ecological impact associated with the construction and operation of the proposed rail loop realignment, consistent with the approved Stage 4 Project.

5.3 Environmental Management and Monitoring

PWCS has designed and implemented a range of environmental management strategies and plans to effectively manage the impacts of KCT on the environment and local community. All management strategies and plans meet current regulatory and community standards. Central to the environmental management framework of KCT is an environmental management system (EMS) independently certified under the ISO14001 Standard. The PWCS EMS provides the framework for environmental management of KCT operations and construction activities.

The EMS incorporates a range of strategies and procedures that outline the specific processes implemented at KCT to manage, monitor and effectively minimise potential impacts of KCT operations on the surrounding environment. This includes a number of environmental management plans developed in accordance with the conditions of the existing Stage 3 consent and 120 Mtpa approval. These plans have been approved by relevant authorities including the OEH, DP&I and Newcastle City Council (NCC). This includes a suite of environmental management plans for the construction and operation of approved components of the Stage 4 Project as approved by DP&I in 2011.

5.3.1 Noise Management

PWCS undertakes an Acoustical Design, Procurement, Construction and Commissioning process throughout the progressive expansion of KCT to meet approved noise limits and ensure that the noise risk management procedure is consistent with current regulatory and community standards. This process includes:

- noise limits and acoustical specifications for all individual items of plant;
- off-site full load testing of significant items of plant prior to acceptance for delivery to site;
- desktop design validation and full load supplier shop testing during plant procurement;
- *in situ* acoustic performance acceptance testing during plant commissioning;
- ongoing acoustical modelling of the installed plant;
- regular on and off-site attended noise emission monitoring and reporting;
- identifying potential noise controls at the source and propagation path; and
- ranking and actioning the noise controls based on-site noise reduction cost effectiveness.

In many cases PWCS has gone well beyond Best Available Technology by promoting research and development of acoustical solutions not previously considered economically or practically achievable. In comparison to earlier operations, specific noise control achievements implemented during Stage 3 expansion have included a 15 to 18 dB(A) reduction in individual conveyor drive sound power levels, and a 13 to 14 dB(A) (per 100 metres) reduction in sound power levels of stockyard and transfer conveyors. PWCS is committed to the continuation of this noise attenuation program and will continue investigations to determine all reasonable and feasible options for the ongoing reduction in noise emissions from the KCT operations.

In addition to ongoing noise monitoring through the commissioning process, PWCS also undertakes a program of noise monitoring in surrounding community locations, including Stockton and Fern Bay.

5.3.2 Air Quality Management

A large array of dust controls and safeguards are currently in place to ensure that air quality within the site is controlled so that air quality outside KCT is not adversely affected by KCT operations. An integral part of the safeguards is the continuing implementation of an air quality monitoring program. The program was designed in consultation with OEH and NCC. The focus of the program is to monitor compliance with air quality standards in the nearby residential areas. The monitoring program also seeks to document the indicative contribution of the operations at the terminal to the air quality in the area in general. By doing so, the results of the monitoring program identify any need for further strengthening of dust controls in certain areas of the operation.

The primary dust control measure is a system of stockpile sprays capable of wetting the entire surface of all coal stockpiles and stockpile areas. The spray system is controlled by a microprocessor system which is activated by a weather station located at KCT. Spray cycles are automatically initiated under certain meteorological conditions. Manual controls are used to wet down specific stockpiles and override automatic controls on sprays when wind speeds are lower than trigger levels. The system has been designed to spray the entire coal stockyard over a one hour period. PWCS is currently undertaking a review of the stockyard sprays to ensure that they remain effective in managing potential dust emissions. In addition PWCS is also investigating the implementation of real time dust monitoring devices to enhance the proactive management of potential dust emissions.

The current dust management controls in place at the KCT facility also focus on the minimisation of dust emissions at their source. Dust control measures on coal transfer and handling infrastructure in place at KCT include:

- enclosure of and use of water sprays at rail receival and transfer stations;
- minimisation of the number of transfer points and enclosure of transfer points;
- partial enclosure of conveyors and the fitting of wind shields and belt cleaning systems to remove fine material adhering to the belt and return it to the coal flow;
- minimising the drop height from stackers to stockpiles;
- minimising the use of mobile equipment on stockpile pads and the fitting of dust control equipment to mobile plant;
- sealing of regular use internal service roads;
- washing and sweeping of roads to remove coal which could become mobile with traffic movements;
- placing the shiploader delivery chute inside the hatch when loading coal; and
- utilisation of high pressure water hoses in all cleaning operations.

Historically, early monitoring programs in the Kooragang and Stockton areas indicated dust levels (from all sources) well in excess of all current air quality goals. Over time, spanning three decades, the dust levels have been declining. The results of the current air quality monitoring program demonstrate that the regulatory air quality standards in the nearby residential areas of Fern Bay and Stockton are fully met.

A significant conclusion reached from the analysis of the monitoring results since 2000 is that the levels of particulate matter in the ambient air of the residential areas have not risen with

the increase in coal throughput at KCT. Detailed analysis has also been undertaken in relation to the amount of coal particles reaching the residential areas. This analysis indicates that the proportion of coal particles has remained constant (at approximately 20 per cent) despite the increased coal throughput at KCT.

5.3.3 Water Management

PWCS has established a closed water management system to meet the design requirement of a 1 in 100 year design storm event or equivalent. To enable greater water harvesting and reduce dependence on potable water, the water management system for the complete Stage 3 Expansion is being implemented, as part of the progressive expansion process at KCT (refer to **Section 2.1.1**).

The water management system collects water from operational areas and stormwater runoff for recycling. All areas of the plant, including the wharf, capture water and channel it back to settling ponds for clarification prior to being held in storage for re-use.

On site the key features of the water management system include two 12 megalitre (ML) settling ponds, two 10 ML clarified water ponds, and 4 ML and 2.5 ML water storage tanks. The ponds are located within the rail loop and are adjacent to large stormwater detention areas, which provide a further nominal 70 ML of storage, when needed. The 70 ML detention areas are utilised for the capture of stormwater from the KCT site and have a design capacity equivalent to the 1 in 100 year design storm event. The water from these additional storage areas can be recovered to the clarified water ponds for re-use as required.

Water only overflows from the ponds during extreme events which exceed the design capacity or prolonged wet weather. Overflows are controlled within an existing stormwater channel which provides a vegetated flow path to the North Arm of the Hunter River. The location of the rail loop embankment between the stormwater channel and the adjacent Kooragang Nature Reserve provides a barrier to protect the Kooragang Nature Reserve in the unlikely event that the capacity of the stormwater channel is exceeded.

Once the captured water passes through the clarifying ponds it is available for delivery to the pump house for reticulation across the site for wetting coal and stockpiles to control dust, wash down and clean up, fire fighting systems and landscape irrigation. The water quality is regularly monitored to ensure it is suitable for the purpose of recycling.

PWCS currently purchases a supply of potable water from Hunter Water Corporation for domestic use in the office areas and employee amenities. A small proportion is also used as make up water to supplement the recycled water from the KCT water management system.

5.3.4 Environmental Performance

An integral aspect of the environmental management system in place at KCT is the continuing implementation of an air quality and noise monitoring program. The existing noise and air quality monitoring locations are positioned to measure noise and dust emissions of the KCT facility in surrounding residential and industrial areas.

Environmental monitoring is undertaken on a regular programmed basis in accordance with government requirements, with monitoring results reported quarterly to OEH and DoP. The subsequent monitoring reports outline the methodology and results of the monitoring in relation to noise and air quality limits for KCT operations.

6.0 Conclusion

As part of the detailed design process for ongoing works at KCT, PWCS has identified the benefit of realigning the departure tracks associated with the fourth dump station as approved as part of the Stage 4 Project (PA 06_0189 MOD1). The realignment of these departure tracks will provide for reduced interactions with the users of the existing rail loop through minimising disruptions during construction. In addition, the proposed realignment of the departure tracks from the fourth dump station provides an opportunity for PWCS to operate the fourth rail loop, which will provide for improved efficiency in train unloading at KCT.

There are two other users of the existing rail loop servicing KCT, including ARTC and PN. As part of these current uses of the rail loop, ARTC and PN have train servicing facilities located on the rail loop. PWCS have consulted with ARTC and PN in relation to the proposed rail loop realignment works, which will be continued throughout the finalisation of detailed design, construction and operation of the proposed rail loop realignment works.

The proposed rail loop realignment will not alter the approved 120 Mtpa throughput capacity of KCT and as such, there will be no increase in the number of trains servicing KCT as part of this proposal. The proposed rail loop realignment will provide for improved efficiency of the rail loop servicing KCT further assisting in improvements to 'sprint capacity' provided for by the Stage 4 Project approval (PA 06_0189 MOD 1).

The Stage 4 Project EA (Umwelt 2010), prepared to support the approved project, comprehensively assessed potential on site and off site impacts associated with the construction and operation of the approved fourth rail loop. The proposed rail loop realignment works are generally consistent with the approved rail loop alignment associated with the Stage 4 Project (PA 06_0189 MOD 1) and will be readily managed by PWCS in accordance with this approval and the supporting EA.

The proposed rail realignment is located within a highly modified area, which comprises the existing rail loop servicing KCT, an existing sealed access road and existing operational areas within the vicinity of KCT. This area has been in this highly disturbed state since the early 1980s. The proposed rail loop realignment works have been located and designed to minimise potential environmental impacts associated with construction and operation.

This EA has been prepared to provide a review of the potential changes in approved environmental impacts associated with KCT resulting from the proposed rail loop realignment works. Where relevant, specific assessments of potential environmental impacts associated with the proposed rail realignment works have been completed and are detailed within this report.

Overall the assessment of potential impacts has indicated that the proposed rail loop realignment will be of minimal environmental impact and are generally consistent with the impacts assessed as part of the Stage 4 Project EA (Umwelt 2009). As such, the proposed rail loop realignment is consistent with the predicted impacts associated with the approved Stage 4 Project, and complies with relevant impact assessment criteria and management expectations. PWCS will readily manage all potential impacts associated with the rail realignment works in accordance with existing systems at KCT, including EMPs required by PA 06_0189 and approved by DP&I.

7.0 References

Department of Environment and Climate Change, 2000, Industrial Noise Policy.

Umwelt, 2009, Environmental Assessment – Kooragang Coal Terminal Stage 4 Project. Prepared for Port Waratah Coal Services

APPENDIX 1

Updated KCT Schedule of Lands

APPENDIX 1 - Updated KCT Schedule of Lands

Lot	DP	Owner
20	262325	NSW Maritime
5	528326	Newcastle Port Corporation
2	573972	Australian Rail Track Corporation
3	573972	Australian Rail Track Corporation
1	608317	Newcastle Port Corporation
2	608317	Newcastle Port Corporation
3	608317	Newcastle Port Corporation
1	775772	Australian Rail Track Corporation
2	775772	Newcastle Port Corporation
3	775772	Australian Rail Track Corporation
6	775772	Newcastle Port Corporation
7	775772	Newcastle Port Corporation
11	775773	Newcastle Port Corporation
12	775773	Newcastle Port Corporation
13	775773	Newcastle Port Corporation
14	775773	Newcastle Port Corporation
17	775773	Newcastle Port Corporation
18	775773	Newcastle Port Corporation
22	775773	Newcastle Port Corporation
1	775774	Australian Rail Track Corporation
2	775774	Newcastle Port Corporation
3	775774	Australian Rail Track Corporation
4	775774	Australian Rail Track Corporation
5	775774	Port Waratah Coal Services
7	775774	Port Waratah Coal Services
8	775774	Australian Rail Track Corporation
1	775775	Port Waratah Coal Services
2	775775	Newcastle Port Corporation
4	775775	Newcastle Port Corporation
5	775775	Newcastle Port Corporation
7	775775	Newcastle Port Corporation
9	775775	Newcastle Port Corporation
10	775775	Newcastle Port Corporation
15	775775	Roads and Traffic Authority
31	775776	NSW Maritime
32	775776	NSW Maritime
33	775776	NSW Maritime
34	775776	NSW Maritime
35	775776	Newcastle Port Corporation
37	775776	NSW Maritime
39	775776	Newcastle Port Corporation
41	775776	Newcastle Port Corporation
44	775777	Newcastle Port Corporation
46	775777	Newcastle Port Corporation

Lot	DP	Owner
47	775777	Newcastle Port Corporation
48	775777	Newcastle Port Corporation
49	775777	Newcastle Port Corporation
50	775777	Newcastle Port Corporation
51	775777	Newcastle Port Corporation
53	775777	Newcastle Port Corporation
55	775777	Newcastle Port Corporation
1	775778	Newcastle Port Corporation
11	841542	Port Waratah Coal Services
1	869622	Port Waratah Coal Services
1	1015754	Newcastle Port Corporation
201	1017038	Newcastle Port Corporation
202	1017038	Newcastle Port Corporation
203	1017038	Newcastle Port Corporation
204	1017038	Newcastle Port Corporation
205	1017038	Newcastle Port Corporation
206	1017038	Newcastle Port Corporation
207	1017038	Australian Rail Track Corporation
208	1017038	Newcastle Port Corporation
209	1017038	Australian Rail Track Corporation
210	1018949	Newcastle Port Corporation
520	1018950	Newcastle Port Corporation
101	1018951	Newcastle Port Corporation
102	1018951	Newcastle Port Corporation
103	1018951	Newcastle Port Corporation
104	1018951	Newcastle Port Corporation
105	1018951	Newcastle Port Corporation
106	1018951	Newcastle Port Corporation
108	1018951	Newcastle Port Corporation
110	1018951	Newcastle Port Corporation
111	1018951	Newcastle Port Corporation
112	1018951	Newcastle Port Corporation
132	1018952	Newcastle Port Corporation
2	1097327	Australian Rail Track Corporation
13	1097330	Australian Rail Track Corporation
14	1097330	Australian Rail Track Corporation
362	1104196	NSW Maritime
6	1104199	NSW Maritime
18	1119752	Newcastle Port Corporation*
1	1097327	Pacific National*
5	1097327	Pacific National*
16	1097330	Pacific National*

*- Additional allotments for Fourth Rail Loop Realignment Works

APPENDIX 2

Review of Noise Impacts – Proposed Rail Loop Realignment

20 May 2011

630.02172 00600 KCT Fourth Dump Station 20110520

Port Waratah Coal Services Ltd
KCT Stage 4 Project
PO Box 57
CARRINGTON NSW 2294

Attention: Ms Samantha Spicer

Dear Samantha

Kooragang Coal Terminal (KCT) - Stage 4 Project
Fourth Dump Station - Proposed Rail Realignment

Port Waratah Coal Services Ltd (PWCS) obtained approval under Section 75W of the EP&A Act to construct and operate the Stage 4 project (as described by the Environmental Assessment dated February 2010 prepared by Umwelt Environmental Consultants) as per the Modified Project Approval (06_0189 MOD 1) dated 31 May 2010 (referred to as the KCT 120 Mtpa Modified PA).

As described in the Stage 4 EA, the Stage 4 project involves the installation of additional infrastructure as shown on the Schematic Equipment Layout attached as **Appendix A** necessary to improve KCT's coal handling efficiency and peak capacity while maintaining a nominal throughput capacity of 120 Mtpa, including:

- Augmentation to the KCT rail loop with an additional off-site inbound track
- Fourth dump station, inbound sample plant and inbound conveyors (8,500 tph)
- Augmentation to the KCT rail loop with two off-site outbound tracks

As result of subsequent design review, PWCS proposes to realign the two outbound tracks within the PWCS site, as shown on the Rail Loop Plan as **Appendix B**. Departing trains from the third dump station would also be diverted along the two outbound tracks as required and an additional siding would accommodate trains waiting to rejoin the main departure line before moving off Kooragang Island. The anticipated average and peak train movements are presented in **Appendix C** for each dump station.

SLR Consulting Australia Pty Ltd (formerly Heggies Pty Ltd) has been engaged by PWCS to assess any potential noise impacts associated with the proposed rail realignment and to ensure that the rail loop noise emissions at the nearest residential receivers (ie Fern Bay and Stockton) and industrial receivers (ie Downer EDI, ARTC and Pacific National) meet the relevant noise limits as presented in **Appendix D**.

Residential Receiver - Intrusive Noise Emissions

The KCT Stage 4 Project computer noise model was updated to incorporate the proposed rail realignment and the addition of a stationary train on the rail siding waiting to rejoin the main departure line before moving off Kooragang Island. The predicted night-time $L_{Aeq(15minute)}$ intrusive noise levels from the Stage 4 Project (inclusive of the proposed rail realignment) to the nearest residential receiver areas are presented in **Table 1** together with the PA 2010 intrusive noise limits.

SLR Consulting Australia Pty Ltd 2 Lincoln Street Lane Cove NSW 2066 Australia
(PO Box 176 Lane Cove NSW 1595 Australia)
T: 61 2 9427 8100 F: 61 2 9427 8200 E: sydney@slrconsulting.com www.slrconsulting.com
ABN 29 001 584 612

Table 1 Stage 4 Project (Rail Realignment) Night-time Intrusive Noise (dBA re 20 µPa)

Receiver Area	ID/Location	Calm[1]	Wind[1]	Inversion[1]	Inversion & Drainage[1]	Noise Limit
Fern Bay North	FN1 Bayway Village Nelson Bay Road	38	45	42	46	46
Fern Bay West	FW1 1 Fullerton Lane	41	48	45	49	50
	FW3 30 Nelson Bay Road	40	47	44	48	
Fern Bay East	FE1 21 Braid Road	40	49	45	49	49
Stockton West	SW1 284 Fullerton Street	39	49	45	49	50
	SW2 Cnr Pembroke and Fullerton Streets	36	46	42	46	
Stockton East	SE1 40 Eames Avenue	39	49	45	49	49

Note 1: Night-time meteorological parameters as described in the EA Report 30-1977-R2 dated 23 October 2009.

All predicted intrusive noise levels to the nearest residential receivers are generally unaltered by the proposed realignment and remain below the respective night-time PA 2010 noise limits.

Industrial Receiver - Noise Amenity Levels

The anticipated average and peak train movements (refer **Appendix C**) were used to calculate the daytime, evening and night-time noise amenity levels to the nearest industrial receivers as presented in **Table 2** together with the EA noise criteria.

Table 2 Stage 4 Project Daytime, Evening and Night-time Noise Amenity Levels (dBA re 20 µPa)

Receiver Area	ID/Location	KCT On-Site Noise[1]	KCT On-Site Rail	KCT Off-Site Rail	Total Noise Level	Acceptable Industrial Amenity	Maximum Industrial Amenity
Average Train Movement	IBI EDI Administraiton Building	70	68	63	73	70	75
	- ARTC						
	- Pacific National						
Peak Train Movement	IBI EDI Administraiton Building	70	70	66	74	70	75
	- ARTC						
	- Pacific National						

Note 1: Measured KCT on-site noise emission inclusive of conveyor and yard machine operations in the vicinity of the receiver.

All calculated noise amenity levels to the nearest industrial receivers are moderately above the acceptance industrial amenity level of 70 dBA but remain below the maximum industrial amenity level of 75 dBA. However, as all three industrial receivers are involved in rail related site activities it is likely that any noise impacts would be considered acceptable.

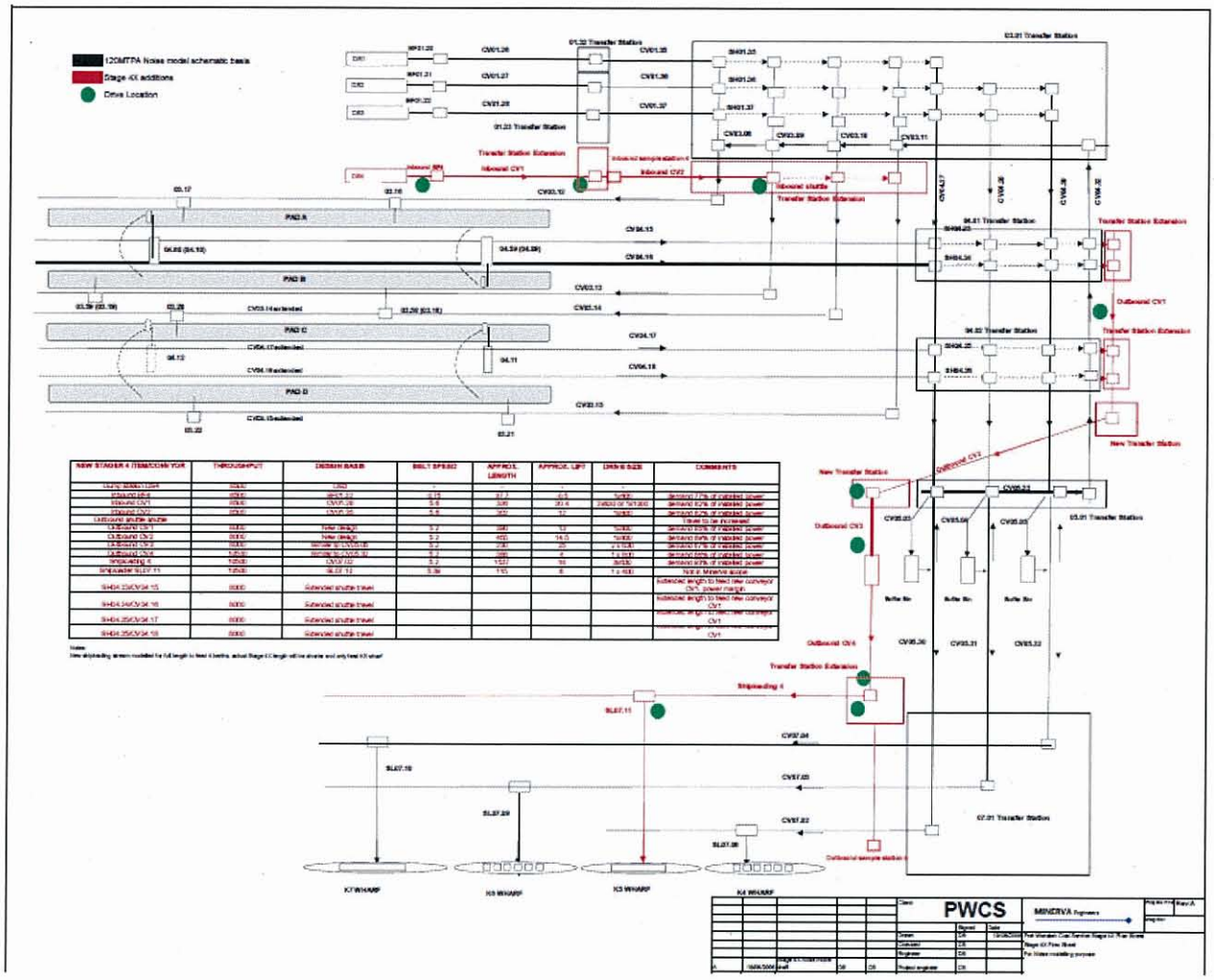
Should you wish to further discuss any of the foregoing please contact me or Nathan Archer at anytime.

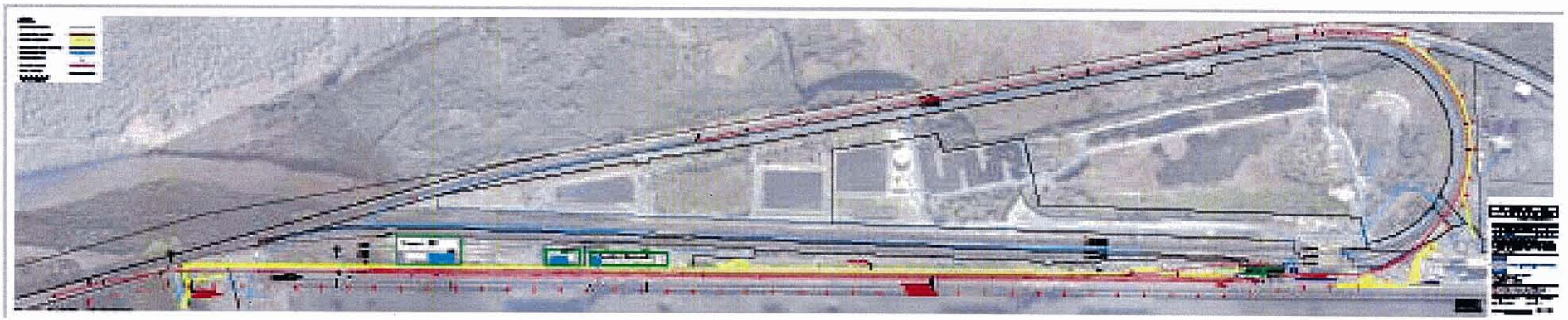
Yours sincerely

Glenn Thomas

GLENN THOMAS

KCT STAGE 4 PROJECT SCHEMATIC EQUIPMENT LAYOUT



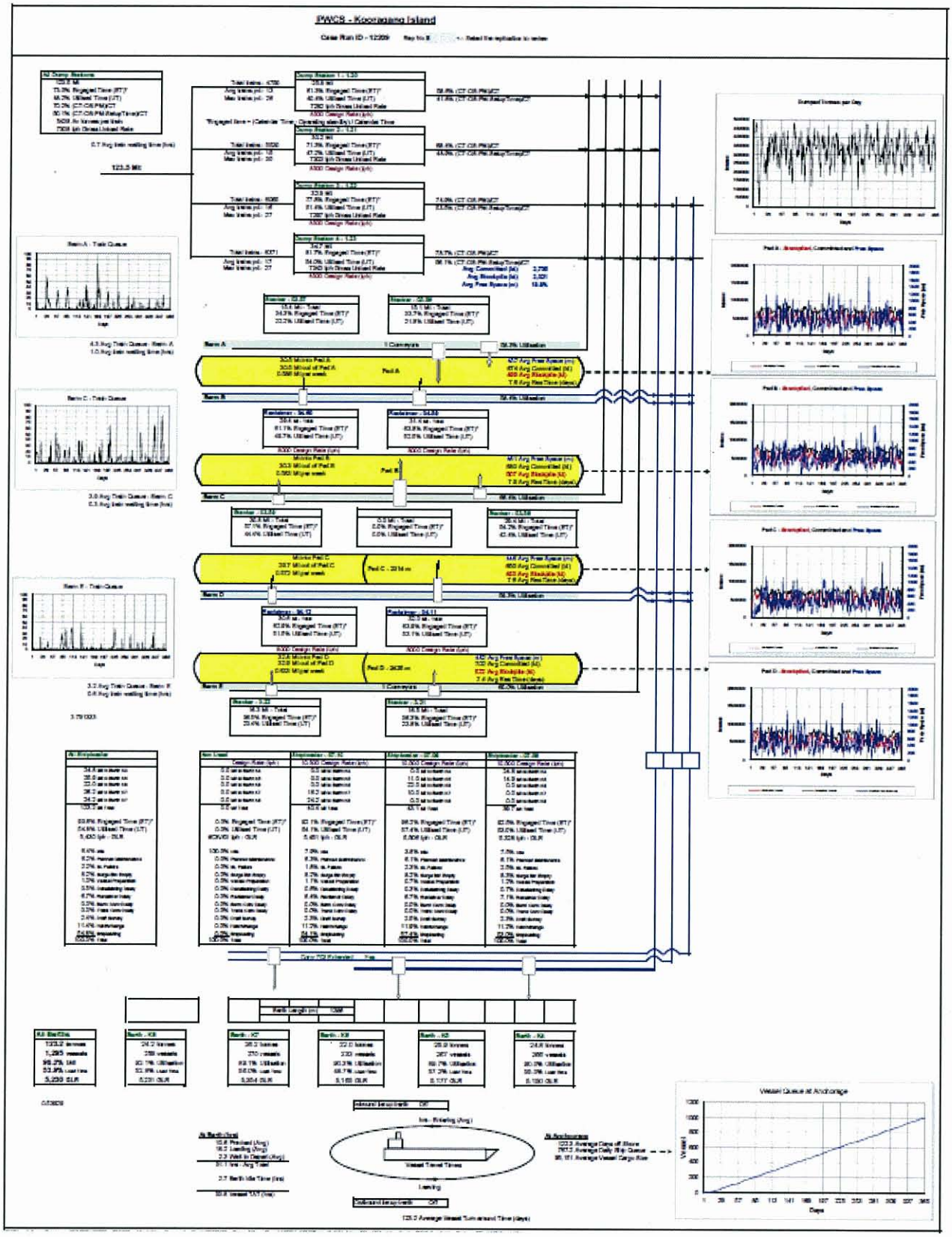


Appendix B

630 02172 00600 KCT Fourth Dump Station 20110520

RAIL LOOP PLAN

ANTICIPATED AVERAGE AND PEAK TRAIN MOVEMENTS



The KCT 120 Mtpa Modified PA residential noise limits and meteorological constraints are summarised and presented in **Table 1**.

Table 1 KCT 120 Mtpa Modified PA - Noise Limits & Meteorological Constraints (dBA re 20 µPa)

Residential Location	Construction Noise	LAeq(15minute) Operation[1] Daytime, Evening, Night[2]	LAeq(night) Operation[1] Night[2]	LA1(1minute) Operation[1] Night[2]
Fern Bay North	The Proponent shall only undertake construction activities associated with the project that would generate an audible noise at any residential premises between 7:00 am and 6:00 pm, seven days a week. Audible noise is defined as "noise that can be heard at the receiver".	46	43	55
Fem Bay West		50	47	55
Fern Bay East		49	46	55
Stockton West		50	47	57
Stockton East		49	46	56
Mayfield West		41	37	56
Mayfield		44	38	58
Carrington		42	38	52

Notes

The maximum allowable noise contributions apply under:

a) Meteorological conditions of: wind speeds up to 3 ms^{-1} 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} at 10 metres above the ground.

For the purpose of assessment of noise from the project shall be:

c) Measured at the most affected point on or within the Site boundary at the most sensitive receiver to determine compliance with LAeq(15 minute) night noise limits.

d) Measured at one metre from the dwelling facade to determine compliance with LA1(1minute) noise limits.

e) Subject to the modification factors provided in Section 4 of the NSW INP, where applicable.

Note 1: 7 days per week, 24 hours a day.

Note 2: Monday to Saturday 2200 hours to 0700 hours; Sundays and Public Holidays 2200 hours to 0600 hours.

Similarly, the KCT 120 Mtpa Modified Environmental Assessment (EA) non-residential noise criteria are summarised and presented in **Table 2**.

Table 2 KCT 120 Mtpa Modified EA - Non-residential Noise Criteria (dBA re 20 µPa))

Non-residential Location	Land Use	Intrusive LAeq(15minute)			Acceptable Amenity LAeq(period)[1]			Maximum Amenity LAeq(9hour)
		Day	Evening	Night	Day	Evening	Night	Night
Mayfield West	Commercial Steel River	Intrusive noise not applicable			65	65	65	70
Kooragang Island	Industrial	Intrusive noise not applicable			70	70	70	75
Mayfield North		Intrusive noise not applicable			70	70	70	75
Any	School	Intrusive noise not applicable			External 45 when in use			50
Any	Hospital	Intrusive noise not applicable			External 50 when in use			55

Note 1: Daytime 0700 hours to 1800 hours, Evening 1800 hours to 2200 hours, Night-time 2200 hours to 0700 hours.

APPENDIX 3

Ecological Assessment of Significance

Appendix 3 - Seven Part Test of Significance
Environmental Planning & Assessment Act 1979

The proposed rail loop realignment works by Port Waratah Coal Services will involve the construction of a realigned rail track line and access road. These construction works will predominantly take place in areas of pre-existing disturbance with no vegetation present, however a small amount of work required to be undertaken may potentially require the removal of small amounts of vegetation and some ground disturbance. A site inspection was undertaken by two ecologists on 10 March 2011 to identify the ecological features of the works area.

The presence of the green and golden bell frog (*Litoria aurea*) is known within the vicinity of KCT. As a consequence of these known sightings of the green and golden bell frog; although no individuals were observed during the site inspection in March 2011, it is believed that there may potentially be dispersal pathways for the green and golden bell frog where the new track alignment and access roads are proposed. None of the areas inspected are considered to be core areas of green and golden bell frog habitat (*Litoria aurea*). This species is listed as endangered under the TSC Act.

Due to the planted and highly disturbed nature of the vegetation present, along with the small areas of disturbance required it is not anticipated that the proposed activities will have a significant impact on the green and golden bell frog (*Litoria aurea*).

Green and Golden Bell Frog

This threatened species typically inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.) and is often found in highly disturbed areas with unshaded water-bodies, diurnal sheltering sites and in proximity to grassy areas (DEC 2005a).

a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction;

This species was not recorded in any of the areas of proposed disturbance works during the inspection undertaken. However it has been recorded in the past in proximity to proposed works including water bodies from within the rail loop as well as in the water body located directly adjacent to proposed works, it is believed that the species is likely to use the area of proposed disturbance as a dispersal pathway to get to other areas of preferred habitat.

It is unlikely that this species would use the habitat provided within the proposed disturbance areas that are outside of the waterbodies and un-vegetated, as preferred refuge habitat or foraging habitat due to a lack of quality vegetation or appropriate available water-bodies. It is likely that the green and golden bell frog would use the habitat present as a ‘stop-over’ location when travelling between larger water bodies. As such, it is unlikely this species would use the habitats of the project area or local area for breeding. As such, it is unlikely the Project will disrupt the life cycle of the species such that a local viable population is likely to be placed at risk of extinction.

b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction;

Not applicable.

c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction; or

Not applicable.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

Not applicable.

d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed; and

The extent of habitat removal will be limited to potentially several small areas, which support vegetation which is largely from plantings or introduced, and not of a good quality. The removal of habitat present within areas to be disturbed will not significantly impact the green and golden bell frog population of Kooragang Island.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action; and

Given the already fragmented nature of the water bodies located within the rail loop area, and that the proposed disturbance works will largely be occurring within existing areas of disturbance from the current rail loop, no new areas of green and golden bell frog habitat will be fragmented as a result of the proposed rail loop realignment works.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality;

Considering the small area of proposed disturbance and the area of surrounding preferred habitat, the habitat to be impacted is considered unlikely to provide important habitat for the long-term survival of the green and golden bell frog in this area.

e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly);

There are no areas of critical habitat listed under the TSC Act in the area.

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan;

A draft recovery plan is available for the green and golden bell frog (DEC 2005b). This draft recovery plan recognises the following as key threats to the survival of the green and golden bell frog:

- Predation by the introduced plague minnow (*Gambusia holbrooki*);
- Alteration to natural flow regimes of rivers and streams and their floodplains and wetlands;

- Spread of the *Amphibian chytridiomycosis* disease;
- Clearing of native vegetation; and
- Predation by European fox (*Vulpes vulpes*)

Providing that the proposed rail loop alignment works seek to minimise disturbance where possible, the proposed rail loop realignment works will not promote any of the above threats to the green and golden bell frog (*Litoria aurea*).

Additionally to this, these proposed works will not cause any additional;

- habitat fragmentation or isolation;
- water quality or pollutant issues;
- significant habitat loss; or
- significant habitat modification or disturbance.

The above issues are also specified within the draft recovery plan for this species.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The proposed rail loop realignment works may constitute the key threatening process of 'clearing of native vegetation', however, the native vegetation to be cleared is disturbed and in some places has been planted and is therefore not considered to be significant habitat. The amount of native vegetation that will potentially be removed by the proposed realignment works is very small and is not reasonably expected to result in a loss of biodiversity.

Conclusion

A small fragment of potential habitat in the form of dispersal pathways across the site for the green and golden bell frog (*Litoria aurea*) is present along the southern areas of the proposed rail loop realignment works. However, it is highly unlikely that a significant impact on this threatened species will occur given that the extent of native habitat-appropriate vegetation clearing will be very minimal and that no hydrological changes to the drainage line present along the southern side of the rail loop will occur. In addition to this, no extra habitat fragmentation for this species will be experienced as a result of these rail loop realignment works.

References:

Department of Environment and Conservation (NSW) (2005a). Green and Golden Bell Frog Profile. NSW Threatened Species Website. Accessed on 11 March 2011 from: http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10483 (last updated 1 September 2005)

Department of Environment and Conservation NSW (2005b) Draft Recovery Plan for the Green and Golden Bell Frog (*Litoria aurea*). DEC NSW, Hurstville, NSW.

Assessment of Significance under the Commonwealth *Environmental Protection and Biodiversity Conservation Act* (1999)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires the completion of an Assessment of Significance relating to the potential impacts of a Project on listed matters of National Environmental Significance (NES).

As there is considered to be a potential for this proposed development to have an impact on threatened species, the green and golden bell frog (Litoria aurea), which is listed as a vulnerable species under the EPBC Act, an Assessment of Significance (according to the significant impact criteria for each matter of NES) is provided below for this matter of NES.

Assessment of Significance under *Environment Protection and Biodiversity Conservation Act 1999*

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), approval from the Commonwealth Minister for the Environment, Heritage and the Arts is required for any action that may have a significant impact on matters of National Environmental Significance (NES). These matters are:

- listed threatened species and ecological communities;
- migratory species protected under international agreements;
- Ramsar wetlands of international importance;
- the Commonwealth marine environment;
- World Heritage properties;
- National Heritage places; and
- nuclear actions.

An assessment of the impact on matters of NES with potential to be impacted by the Project is provided below. The aim of this assessment is to determine whether the proposed rail loop realignment works is likely to have a significant impact on matters of NES, thus requiring approval from the Commonwealth Minister for the Environment.

Vulnerable Species

The green and golden bell frog (*Litoria aurea*) has the potential to use the habitat of the proposed rail loop as part of a dispersal pathway or as a 'stop-over' location when travelling between larger water-bodies. This species was not recorded in the proposed disturbance area during the site inspection undertaken.

In this case, an *important population* is a population that is necessary for a species' long-term survival and recovery. This may include populations that are:

- key source populations either for breeding or dispersal; or
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

The green and golden bell frog (*Litoria aurea*) was not recorded within the proposed rail loop realignment area during the site inspection. Despite this, the species is known to occur in the water bodies available within the centre of the rail loop and has also been recorded in the past occurring in the small water body located to the south-west of the proposed rail loop indicated.

For these reasons, although the species has not been recorded in the areas of proposed disturbance, it is believed that there is potential for the species to use the habitat of the project area when dispersing between areas of preferred habitat.

An action has, will have, or is likely to have a significant impact on threatened species if it does, will, or is likely to:
• **lead to a long-term decrease in the size of an important population of a species;**
The population of the green and golden frog (*Litoria aurea*) is unlikely to be impacted by the construction and operation of the proposed rail loop realignment to the extent that they it lead to a long-term decline in the size of this important population.
• **reduce the area of occupancy of an important population, or;**
The population of the green and golden bell frog (*Litoria aurea*) on Kooragang Island is considered to constitute an *important* population. However given the small area of only potential and marginal quality green and golden bell frog (*Litoria aurea*) habitat within the proposed area of impact, the proposed disturbance is not likely to reduce the area of occupancy of an important population of this species.
• **fragment an existing important population into two or more populations, or;**
The population of the green and golden bell frog (*Litoria aurea*) on Kooragang Island is deemed to be an important population. Despite this, the proposed rail loop realignment works will not cause habitat fragmentation of currently connected areas of habitat, as the proposed works will primarily take place in areas of existing disturbance and will only encroach slightly on areas outside of the current approved areas of disturbance.
• **adversely affect habitat critical to the survival of a species, or;**
The habitats to be impacted by the proposed rail loop realignment works are unlikely to comprise habitat critical to the survival of this species, and it is not reasonably expected that the Project will adversely affect such habitat critical to the survival of this species.
• **disrupt the breeding cycle of an important population, or;**
It is considered to be unlikely that the proposed rail loop realignment works would cause a disruption to the breeding cycle of an *important population* of this species, given the very small amount of only potential and poor quality habitat available to the green and golden bell frog.
• **modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or;**
The proposed rail loop realignment works will not modify, destroy, remove, isolate, or decrease the availability or quality of habitat for the green and golden bell frog (*Litoria aurea*) to the extent that this species is likely to decline.
• **result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat, or;**
The proposed rail loop realignment works will not result in invasive species that are harmful to the green and golden bell frog (*Litoria aurea*) becoming established in their habitat.
• **interferes substantially with the recovery of the species.**
The proposed rail loop realignment works will not interfere substantially with the recovery of the green and golden bell frog (*Litoria aurea*).
Conclusion
The proposed rail loop realignment works is not likely to result in a significant impact on an *important population* of the green and golden bell frog (*Litoria aurea*) within the proposed area of works.

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