



## SECTION 2.0

### Existing and Approved Operations

## 2.0 Existing and Approved Operations

### 2.1 Development Consent History

The Minister for Public Works approved Stages 1 and 2 of the KCT operations in 1982. The approval was granted subject to 45 conditions and covered all aspects of the original development application except an area known as 'Area C' on Kooragang Island. Subsequent approvals for 'Area C' were received in August 1982 subject to a further 11 conditions. Stages 1 and 2 of the KCT operations consisted of the construction and operation of rail receipt facilities, coal stockpile Pads A and B and associated stackers and reclaimers, shipping berths K4 and K5, and associated conveyors, transfer stations, storage and buffer bins. The conditions of the consent limited the capacity of KCT operations to a nominal throughput capacity of 44 Mtpa.

An Environmental Impact Statement (EIS) for the Stage 3 Expansion of KCT operations was prepared in 1996 to accompany a development application (DA No. 35/96) to the then Minister for Urban Affairs and Planning in accordance with State Environmental Planning Policy No. 34. The Minister granted consent for the Stage 3 Expansion in late 1996 subject to 43 conditions. The consent was subsequently challenged in the Land and Environment Court by an objector, with the Land and Environment Court ruling confirming consent on 23 July 1997. A further challenge to the consent was lodged with the NSW Supreme Court of Appeal. The *Kooragang Coal Terminal (Special Provisions) Act 1997*, enacted by the NSW Parliament in late 1997, confirmed the original development consent subject to the original 43 conditions imposed by the then Minister for Urban Affairs and Planning.

The Stage 3 development consent issued in late 1997 provides the operating and development framework for the existing and approved KCT operations described in **Section 2.2**. The conditions to the Stage 3 development consent impose a range of criteria to be met during construction and through the operation of KCT in relation to noise and air quality limits, the preparation of environmental management plans and strategies, landscaping, surface drainage, monitoring, and community consultation. The development consent limited the capacity of the KCT operations to a nominal 77 Mtpa.

In 2006, Umwelt prepared an EA for PWCS's proposal to increase the approved capacity throughput to a nominal 120 Mtpa. On 13 April 2007 PWCS was granted a Project Approval under Part 3A of the EP&A Act to increase the approved capacity throughput of KCT to 120 Mtpa (hereafter referred to as the 120 Mtpa approval). The 120 Mtpa approval was granted subject to 48 conditions relating to the management of KCT operations at a throughput capacity of greater than 77 Mtpa. The 120 Mtpa approval specifies the relevant limits on environmental issues for noise, air quality and water and requires the preparation of environmental management plans and procedures for ongoing KCT operations. In addition, the 120 Mtpa approval requires the preparation and implementation of a number of environmental management plans specific to the construction activities associated with the 120 Mtpa project.

As outlined in **Section 1.0**, PWCS proposes to modify the 120 Mtpa approval for construction and operation of the Stage 4 Project.

## 2.2 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. During 2008, PWCS handled 74 million tonnes (Mt) of coal through the KCT facility.

The layout of current and approved operations is shown on **Figure 2.1** with the operational coal receipt, handling and shiploading facilities presented in schematic format on **Figure 1.3**. All coal is delivered to the terminal by rail and is discharged from rail wagons within the enclosed rail receipt station. Coal is then transferred by conveyors to the stockpile areas, referred to as the stockyard. Coal can also be conveyed directly from the receipt station to the shiploading facility, if required as a contingency for late train arrivals. Contractual arrangements with customers require that coal cargoes be assembled on the KCT stockpile before the relevant ship comes into the port for coal loading. Late coal arrivals therefore only occur under exceptional circumstances, i.e. if there is an operational or system issue. All inbound coal can be sampled for quality as it leaves the rail receipt station and before being loaded onto the ship.

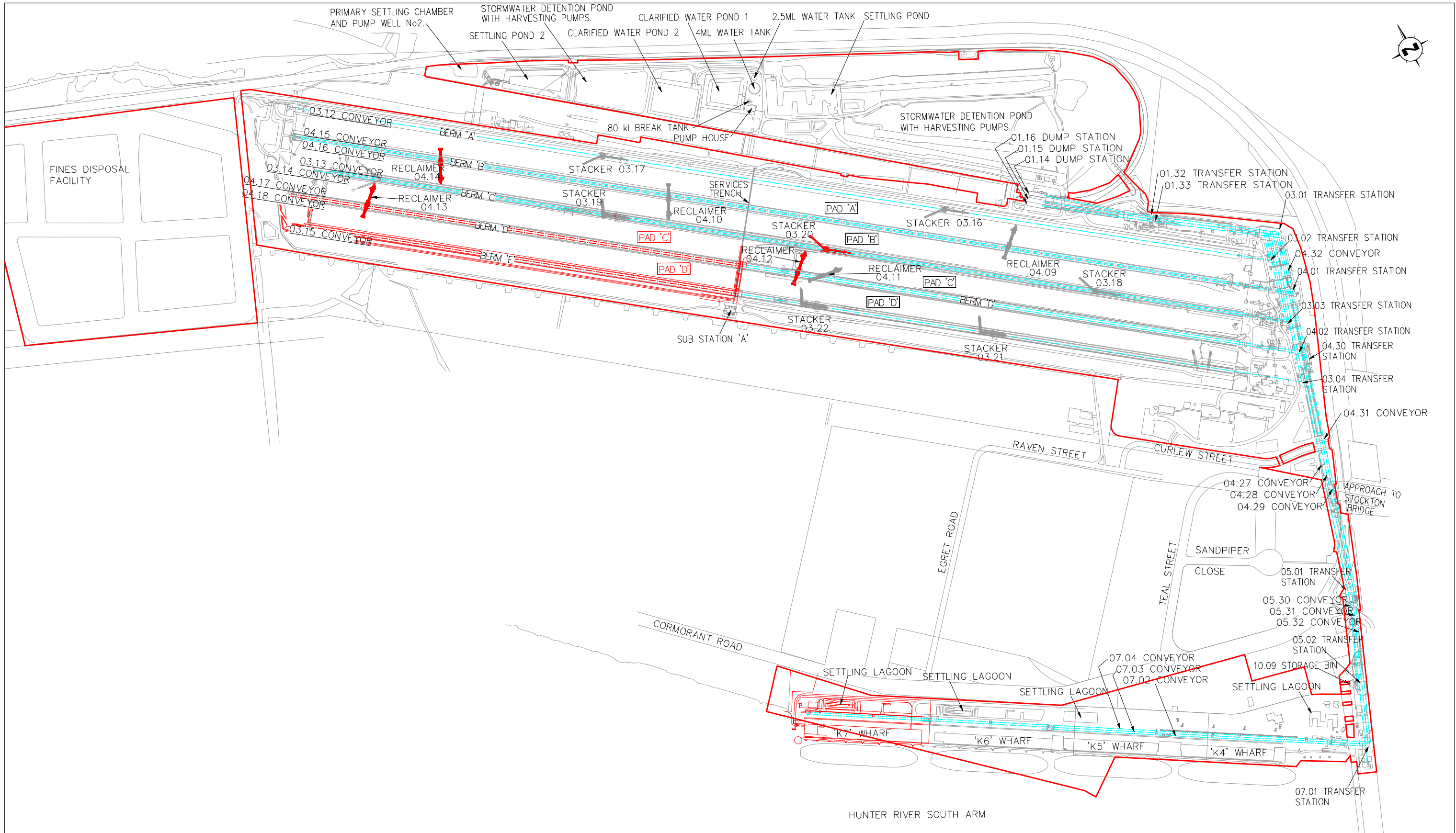
Stockpile Pads A and B and half of stockpile Pads C and D, are established and are being used during current operations. The full length of stockpile Pads C and D are approved for construction within the footprint shown on **Figure 2.1**. These remaining approved stockpile areas are planned to be established and operate progressively to meet the future 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 ten 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. The existing facility has three shiploaders and three berths; K4, K5 and K6. 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. PWCS has approval to construct a fourth shipping berth (K7) (refer to **Figure 2.1**). The existing shiploader for the third shipping berth (K6) will also service the fourth shipping berth (K7) when it is constructed, allowing for a higher utilisation of the shiploading systems during the period in which ships are being prepared for loading and dispatch.

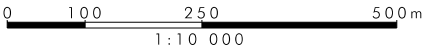
All outbound coal is sampled for quality prior to shiploading. The average time to load and dispatch a ship is less than two days.

As outlined in **Section 1.0**, PWCS obtained a Project Approval in April 2007 to enable an increase to the throughput capacity of KCT from 77 Mtpa to a nominal 120 Mtpa. The approved increase in throughput capacity is being achieved through upgrades to existing and approved plant, and does not require any changes to the size of the approved footprint or operational area or additional plant and equipment at KCT.



Source: Port Waratah Coal Services Limited (2009)

- Legend**
- Kooragang Coal Terminal
  - Existing Plant
  - Existing Conveyors
  - Approved Plant yet to be Built



**FIGURE 2.1**  
**Layout of Existing and Approved Kooragang Coal Terminal**

## 2.2.1 KCT Ongoing Expansion Program

In response to continuing demand for export coal, PWCS implements an ongoing process of 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 (refer to **Section 2.1**) from the original Stage 1 and 2 consents through to the current Stage 3 development consent and 120 Mtpa approval.

As outlined in **Section 2.1**, the Stage 3 development consent applies to all existing and approved, but yet to be constructed plant, as shown on **Figure 2.1**. PWCS plans to progressively design, construct and operate the remaining approved Stage 3 infrastructure to meet ongoing increasing demands of the coal export industry. Underlying the progressive approach to the design, construction and operation of KCT plant has been a long term capital investment commitment in the order of \$2 Billion, with specific components of the ongoing expansion program ranging between \$80 Million and \$450 Million in capital investment value.

As outlined in **Section 2.2**, the 120 Mtpa approval applies to all existing and approved plant at KCT and the 120 Mtpa throughput will be achieved through the optimisation of the capacity of the existing and approved plant. This will be achieved essentially by operational efficiencies and the implementation of a range of conveyor and drive changes to approved plant and equipment yet to be constructed, and by retrofitting of existing plant and equipment with upgraded components. All of these capacity improvement initiatives are located internally within the major approved coal terminal facilities.

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 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 2.3**.

## 2.3 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 Department of Environment, Climate Change and Water (DECCW), DoP and Newcastle City Council (NCC).

### 2.3.1 Current 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 dBA reduction in individual conveyor drive sound power levels, and a 13 to 14 dBA (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 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 locations, including Stockton and Fern Bay. Further details of the existing noise monitoring program and results are provided in **Section 6.3.2**.

### 2.3.2 Current 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 DECCW 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 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.

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 receipt 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%) despite the increased coal throughput at KCT. Further details of the existing air quality are provided in **Section 6.3.1**.

### **2.3.3 Current Water Management**

PWCS has established a totally 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 2.2.1**).

The water management system collects water from operational activities 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 ponds for re-use.

On site there are two 12 megalitre (ML) settling ponds and two 10 ML clarified water ponds. 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. Water only overflows from the ponds during extreme 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.

#### 2.3.4 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 basis in accordance with government requirements, with monitoring results reported quarterly to DECCW and DoP. The monitoring reports outline the methodology and results of the monitoring in relation to noise and air quality limits for KCT operations. The air quality and noise limits are specified in the current approval conditions and are discussed further in **Sections 6.3.1** and **6.3.2**, respectively.

Noise monitoring and modelling of the KCT facility confirm that the operations comply with current operational noise limits. This is also confirmed by the low level of community concern during the last five years. During 2008 and 2009, PWCS has received three noise related enquiries and one dust related enquiry from the community, however investigation revealed that none of these were attributable to PWCS operations or the source was unidentifiable. Although KCT operations have achieved compliance with relevant noise limits in surrounding residential areas, PWCS has implemented an ongoing noise reduction program using the best available technology to further minimise noise emissions (refer to **Section 6.3.2**).

The air quality monitoring program was designed in consultation with DECCW and NCC. The focus of the air quality monitoring program is to monitor compliance with air quality standards in the nearby residential areas of Fern Bay and North Stockton. The monitoring program seeks to document the contribution of KCT 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 air quality monitoring network consists of three High Volume Air Samplers (HVAS) and an array of 12 depositional dust gauges.

The air quality monitoring program measures depositional dust rates (which is the amount of dust settling within the surrounding environment) and dust concentration (the volume of dust in the air), in relation to PM<sub>10</sub> particles and Total Suspended Particulates (TSP). In addition, the monitoring program provides for a microscopic analysis of dust samples collected from surrounding residential areas to determine the proportions of coal particles in those samples.

In addition, PWCS operates an automatic weather station at the KCT site to monitor a range of meteorological conditions including wind speed and direction, rainfall and evaporation rates. As outlined in **Section 2.3.2**, the weather station is linked directly to the stockyard dust suppression system to ensure dust control measures are activated during periods of less favourable weather conditions.

Condition 32 of the 1997 development consent requires PWCS to undertake an independent environmental audit on an annual basis. Audit results have confirmed that the KCT operations are compliant with all of the conditions of the existing Stage 3 development consent. The audit report is made available to DoP, NCC and DECCW.