



# AIR QUALITY MANAGEMENT PLAN

## Contents

Definition .....	5
1. INTRODUCTION.....	6
1.1 Purpose .....	6
1.2 Background .....	6
1.3 Scope .....	6
1.4 Objectives.....	6
2. RESPONSIBILITIES.....	8
3. LEGISLATIVE AND OTHER REQUIREMENTS .....	9
3.1 Legislative Requirements .....	9
3.1.1 Protection of the Environment Operations Act 1997 .....	9
3.1.2 Protection of the Environment Operations (General) Regulation 1998 .....	9
3.1.3 Protection of the Environment Operations (Clean Air) Regulation 2010.....	9
3.2 Environmental Protection Licence (EPL No. 1625).....	9
3.3 Department of Planning, Industry and Environment: 2009 Approval Conditions....	10
3.3.1 Condition 7 – Impact Assessment Criteria .....	10
3.3.2 Condition 8 and 9 – Operations .....	11
3.3.3 Condition 10 – Air Quality Monitoring Program .....	12
3.3.4 Condition 11 – Meteorological Monitoring .....	12
3.4 Policies and Standards.....	13
4. EXISTING ENVIRONMENTAL CONDITIONS .....	15
4.1 Sensitive Receivers .....	15
4.2 Meteorology.....	15
5. SITE OPERATIONS.....	17
5.1 Potential Air Quality Risks .....	17
5.2 AIE Site Interactions with PKCT .....	17
6. MANAGEMENT STRATEGY .....	20

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**AUTHORISED BY:** Michael Curley, Health Safety Environment & Risk Lead - **Date Authorised:** 29/08/2023

6.1	Environmental Aspects and Impacts .....	20
6.2	Air Quality Management and Improvement Programs .....	20
6.2.1	Environmental Management System (EMS) .....	20
6.2.2	Air Quality Management and Controls .....	20
6.2.2.1	Environmental Management and Controls .....	21
6.2.2.2	Plant and Equipment Management and Controls .....	21
6.2.2.3	Traffic Management and Controls .....	22
6.3	Management Strategy and Effectiveness.....	22
7.	EVENT MANAGEMENT .....	23
7.1	Emergency Response and Investigation.....	23
8.	MONITORING .....	24
8.1	General.....	24
8.2	Air Quality Monitoring Review .....	24
8.2.1	Air Quality Monitoring Network – 2009 to 2020 .....	24
8.2.2	Air Quality Monitoring Network – 2021.....	27
8.3	Air Quality Monitoring Program.....	31
8.3.1	General.....	31
8.3.2	Need for protocols .....	31
8.3.3	Relevant properties of PKCT handling operations and materials (Katestone, 2009) 32	
8.4	Deposited Dust Monitoring.....	33
8.5	TSP and PM <sub>10</sub> Monitoring.....	33
8.5.1	Air Quality Monitoring Protocol 1 – Deposited Dust .....	34
8.5.1.1	Siting.....	34
8.5.1.2	Methodology .....	34
8.5.1.3	Evaluation against Criterion .....	34
8.5.1.4	Reporting.....	35
8.5.2	Air Quality Monitoring Protocol 2 – PM <sub>10</sub> and TSP .....	35
8.5.2.1	Siting.....	35
8.5.2.2	Evaluation against triggers/limits.....	36

8.5.2.3	Reporting.....	37
8.5.3	Air Quality Monitoring Protocol 3 – Meteorological Monitoring.....	37
8.5.3.1	Siting.....	37
8.5.3.2	Methodology .....	38
8.5.3.3	Maintenance .....	38
8.6	Air Quality Monitoring Program Implementation .....	38
9.	REPORTING .....	39
9.1	Monitoring Data and Exceedances of Criterion Limits .....	39
9.2	Auditing .....	39
9.3	Corrective Actions .....	39
9.4	Review .....	40
10.	COMPLAINTS RECORDING AND REPORTING .....	41
11.	REFERENCES .....	42





**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 6 of 46

## Definition

**DECC** refers to the Department of Environment, Climate Change and Water

**DPIE** refers to the Department of Planning, Industry and the Environment

**EES** refers to the Environment, Energy and Science Group (part of DPIE)

**EPA** refers to the Environment Protection Authority

**EPL** refers to Environment Protection Licence

**NSWP** refers to NSW Ports

**OEH** refers to the Office of Environment and Heritage

**PKCT** refers to Port Kembla Coal Terminal

**PRP** refers to Pollution Reduction Program

**WCC** refers to Wollongong City Council

Version	Date	Reviewer	Comments
10	6 <sup>th</sup> September 2017	Luke Pascot	Review following 2017 Triennial Independent Audit recommendations.
11	28 <sup>th</sup> December 2018	Luke Pascot	Annual review
12	21 <sup>st</sup> August 2019	Luke Pascot	Review following submission of AEMR, updates to roles were made
16	9 <sup>th</sup> September 2020	Luke Pascot	Review following 2020 Triennial Independent Audit recommendations. Tidied up version number, headers and footers based on findings.
17	12 <sup>th</sup> February 2021	Luke Pascot	Review and update following DPIE RFI and PKCT site separation for AIE site
18	9 <sup>th</sup> September 2022	Michael Curley	Annual review – no changes made.
19	21 <sup>st</sup> August 2023	Luke Pascot	Annual review – minor updates only to Document ID/numbers.

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**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 7 of 46

## 1. INTRODUCTION

### 1.1 Purpose

The purpose of this Air Quality Management Plan (AQMP) is to set out the requirements for the management and monitoring of air quality associated with Port Kembla Coal Terminal (PKCT)'s site operations. The AQMP addressed the requirements for an Air Quality Monitoring Program.

This plan has been prepared in accordance with the Department of Planning, Industry and Environment (DPIE)'s Consent Condition 10 (Section 3 – Specific Environmental Conditions).

### 1.2 Background

PKCT provides a coal product receipt, storage and shipping loading service to its customers. PKCT is located on north side of the inner harbour and operates premises leased from the Port Kembla Port Corporation.

The PKCT has been in operation since 1990 and operates under an Environmental Protection Licence (EPL No. 1625) in accordance with the *Protection of the Environment Operations Act 1997* (POEO Act). An important environmental aspect associated with PKCT's activities is to prevent/ minimise dust emissions and mitigate its impact on air quality. This is achieved through PKCT's environmental management system.

In October 2020, NSW Ports, PKCT and Australian Industrial Energy (AIE) agreed to a surrender of the southernmost portion of the PKCT site to AIE effective from 31<sup>st</sup> March 2021. This has resulted in a reduced operational footprint for the PKCT site, resulting in a change to the air quality monitoring requirements in accordance with PKCT's EPL No. 1625.

### 1.3 Scope

This AQMP applies to activities and aspects of PKCT operations with the potential to result in particulate emissions impacting on air quality on site, local community and stakeholders external to the PKCT site boundary.

This AQMP does not cover health aspects associated with particulate matter and respirable dust. PKCT has health and hygiene management processes and programs covered elsewhere within its management system.

### 1.4 Objectives

The objectives of this AQMP are to:

- Comply with all regulatory requirements set out in EPL 1625 and the DPIE approval conditions (refer Section 3.2 and 3.3)
- Define PKCT's environmental management system and the associated measures to control dust and minimise dust emissions compatible with efficient PKCT operations

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
Air Quality Management Plan



Management Plan  
MP.017  
Status: Approved  
Version: 19.0  
Doc ID: 386  
Page 8 of 46

- Define PKCT's Air Quality Monitoring Program and the process for assessing air quality data against standards
- Outline process for developing preventative, corrective and improvement actions to reduce emissions to thereby improve air quality
- Outline the process for investigating air quality complaints.

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**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 9 of 46

## 2. RESPONSIBILITIES

The roles and responsibilities relevant to the environmental management at PKCT are defined in Table 1 below.

**Table 1 Environmental Management Roles and Responsibilities**

Role	Responsibility
PKCT employees, contractors and site personnel	<p>All PKCT employees, contractors and other site personnel are responsible to comply with this management plan.</p> <p>PKCT employees, contractors and other site personnel must take appropriate action detailed in this management plan in accordance with PKCT's legal and environmental obligations.</p>
Environmental Specialist	Is responsible to the HSER Superintendent for the coordination and implementation of the management plan to PKCT site operations.
Health Safety Environment and Risk (HSER) Lead	Is responsible to the General Manager for site monitoring and operation of environmental control systems.
Operations Manager	Is responsible for managing and supporting the shift and daywork teams to effectively and safely operate the business in line with customer, community and regulator expectations
Maintenance Superintendent	Is responsible to the General Manager for work execution ensuring environmental control equipment is maintained, reliable and effective.
Asset Manager	Is responsible for asset management and planning, ensuring environmental control equipment is fit for purpose, reliable and effective.
General Manager	Is accountable for PKCT's legal and environmental compliance.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 10 of 46

### 3. LEGISLATIVE AND OTHER REQUIREMENTS

#### 3.1 Legislative Requirements

##### 3.1.1 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is the principal legislation which governs the operational environmental management for the site. The POEO Act contains a core list of activities that require a licence issued by the NSW Environmental Protection Authority (EPA). An activity listed in Schedule 1 is referred to as a 'scheduled activity'. Under the POEO Act, if work is to be undertaken at a premises for a scheduled activity to be carried out (referred to as 'scheduled development work') then the person undertaking the work must hold an EPL issued by the EPA. Scheduled activities referenced on the EPL pertain to Coal Works and Shipping in Bulk.

The licencing schedule is based upon potential for environmental impact. PKCT must not cause air pollution in breach of sections 124, 125 or 126, or emit offensive odour in breach of section 129 of the Act. PKCT must also notify the EPA of pollution incidents causing or threatening material harm to the environment within the meaning of section 148 of the POEO Act meet the requirements of the POEO Act and the regulations made under that Act.

##### 3.1.2 Protection of the Environment Operations (General) Regulation 1998

The *Protection of the Environment Operations (General) Regulation 2009* (POEO Regulation) provides for the administration of Environmental Protection Licences (EPL) by methods of calculating licence fees, including load based licence fees, and environmental protection notice fees. The POEO Regulation prescribes requirements in respect of pollution incident response management plans. It prescribes the appropriate regulatory authority for certain activities regarding EPL non-compliance.

##### 3.1.3 Protection of the Environment Operations (Clean Air) Regulation 2010

The *Protection of the Environment Operations (Clean Air) Regulation 2010* (POEO Air) prescribes standards for certain groups of plant and premises to regulate PKCT air impurity emissions at the site.

#### 3.2 Environmental Protection Licence (EPL No. 1625)

PKCT is licenced by the NSW EPA under the POEO Act 1997. This licence is reviewed at least every 5 years after the issue of the EPL. The conditions of the EPL with respect to air quality monitoring and management are addressed in this AQMP. A copy of the EPL can be accessed via the NSW EPA web site.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 11 of 46

### 3.3 Department of Planning, Industry and Environment: 2009 Approval Conditions

On the 12<sup>th</sup> June 2009, the Minister for Planning approved a Project Application (08\_0009) which was submitted by PKCT to change receival arrangements. The project approved by the minister was defined as the development described in the environmental assessment.

The project was approved with conditions, including a requirement for PKCT to prepare and implement an Air Quality Monitoring Program. The program is to be developed in consultation with the EPA and submitted to the department 6 months from the date of approval. These conditions have been applied to:

- Prevent, minimise, and/or offset environmental impacts
- Set standards and performance measures for acceptable environmental performance
- Require regular monitoring and reporting
- Provide for on-going environmental management of the project.

#### 3.3.1 Condition 7 – Impact Assessment Criteria

Condition 7 below states PKCT shall ensure that dust generated by the project does not cause additional exceedances of the criteria listed in Table 3 to 5 at any residence. Table 2 below identifies the condition details and the area within this AQMP.

**Table 2 Condition of Approval (Condition 7)**

Condition Details	Area addressed in AQMP									
<p><b>7. The Proponent shall ensure that dust generated by the project does not cause additional exceedances of the criteria listed in Table 3 to 5 at any residence.</b></p> <p><b>Table 3: Long term impact assessment criteria for particulate matter</b></p> <table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>90 µg/m<sup>3</sup></td></tr><tr><td>Particulate matter &lt; 10 µm</td><td>Annual</td><td>30 µg/m<sup>3</sup></td></tr></table>	Pollutant	Averaging period	Criterion	Total suspended particulate (TSP) matter	Annual	90 µg/m <sup>3</sup>	Particulate matter < 10 µm	Annual	30 µg/m <sup>3</sup>	<p>Key references herein unless noted otherwise</p> <p>Section 5 and 8</p>
Pollutant	Averaging period	Criterion								
Total suspended particulate (TSP) matter	Annual	90 µg/m <sup>3</sup>								
Particulate matter < 10 µm	Annual	30 µg/m <sup>3</sup>								

**Table 4: Short term impact assessment criteria for particulate matter**

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm	24-hour	50 µg/m <sup>3</sup>

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**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 12 of 46

**Condition Details**

**Area  
 addressed  
 in AQMP**

**Table 5: Long term impact assessment criteria for deposited dust**

<i>Pollutant</i>	<i>Averaging period</i>	<i>Maximum increase in deposited dust level</i>	<i>Maximum total deposited dust level</i>
<i>Deposited dust</i>	<i>Annual</i>	<i>2 g/m<sup>2</sup>/month</i>	<i>4 g/m<sup>2</sup>/month</i>

**Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method.**

**However, if the Proponent has a written negotiated air quality agreement with any landowner to exceed the air quality limits in Table 3, 4 and/or 5, and a copy of this agreement has been forwarded to the Department and EPA, then the Proponent may exceed the air quality limits in Table 3, 4 and/or 5 in accordance with the negotiated air quality agreement.**

### 3.3.2 Condition 8 and 9 – Operations

Condition 8 and 9 identifies the key details required by PKCT to reduce dust emissions and generations at the site, the procedures required with trucks entering and exiting site to reduce dust emissions. These conditions are summarised in Table 3 below and identify where the condition details are addressed in the AQMP.

**Table 3 Condition of Approval (Condition 8 and 9)**

<b>Condition Details</b>	<b>Area addressed in AQMP</b>
<b>8. The Proponent shall:</b>	Key references herein unless noted otherwise
(a) <b>Ensure any visible air pollution generated by the project is both minimised and recorded, and that operations are modified as required to minimise any resultant air quality impacts on nearby residences;</b>	a) Section 5 & 8
(b) <b>Ensure that real-time air quality monitoring and meteorological monitoring data is assessed regularly; and</b>	b) Section 7
(c) <b>Where dust is generated by the project, that operations are modified and/or stopped as required to ensure compliance with the relevant air quality criteria to the satisfaction of the Director-General.</b>	c) Section 5 & 7

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 13 of 46

**9. During carrying out of the project, the Proponent shall ensure that:**

- (a) **All loaded trucks entering or leaving the site have their loads covered; and**
- (b) **Trucks associated with the project pass through a truck wash before entering the public road network to the satisfaction of the Director-General.**

DPIE letter  
 10/12/09  
 Drivers Code of  
 Conduct  
 Implementation  
 Plan

### 3.3.3 Condition 10 – Air Quality Monitoring Program

Condition 10 identifies the key details required by PKCT implement and air quality monitoring program. These conditions are summarised in Table 4 below and identify where the condition details are addressed in the AQMP.

**Table 4 Condition of Approval (Condition 10)**

Condition Details	Area addressed in AQMP
<b>10. The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Director-General. This program must:</b>	Key references herein unless noted otherwise
(a) <b>Be developed in consultation with EPA;</b>	
(b) <b>Be submitted to the Director-General for approval within 6 months from the date of this approval, or as otherwise agreed with the Director-General</b>	a) & b) references DPIE letter 10/12/09 (n.b. EPA letter of 19/11/09)
(c) <b>Include:</b>	
I. <b>Real-time sampling to monitor the dust emissions of the project;</b>	I. Section 8.3
II. <b>An air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in this approval; and</b>	II. Section 8.3
III. <b>Reasonable and feasible best practice emissions mitigation measures to ensure project specific assessment criteria are met.</b>	III. Section 6

### 3.3.4 Condition 11 – Meteorological Monitoring

Condition 11 details the meteorological monitoring required by PKCT, the condition is summarised in Table 4 below and identify where the condition details are addressed in the AQMP

**Table 5 Condition of Approval (Condition 11)**

Condition Details	Area addressed in AQMP
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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 14 of 46

**11. During the life of the project, the Proponent shall ensure that there is a suitable meteorological station on or in the vicinity of the site that generally complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.**

Key references  
 herein unless  
 noted otherwise

Section 7.3.6

### 3.4 Policies and Standards

PKCT is managed by South32 (Illawarra Coal) and has a management system in place which operates in accordance with its Sustainable Development Policy (PO.003), Environment Policy (PO.002) and Quality Policy (PO.004). These policies are summarised in Table 6 below.

**Table 6 PKCT Policies and Standards**

Policy / Standard	Description
<b>Sustainable Development Policy</b>	<p>The sustainable development policy outlines the objectives PKCT undertake to ensure site operations are undertaken in a sustainable manner which considers the following key concepts:</p> <ul style="list-style-type: none"> <li>• The health and safety values of PKCT staff, contractors and site personnel</li> <li>• Set and achieve sustainable development targets with respect to energy and water efficiency targets which promotes the efficient use of resources and include reducing and preventing pollution throughout the lifecycle of PKCT products</li> <li>• Develop partnerships that foster the sustainable development of our local communities, enhance economic benefits from our operations</li> <li>• Ongoing consultation with customers, employees, indigenous land owners and the local community.</li> </ul>
<b>Environmental Policy</b>	<p>The environmental policy outlines PKCT's commitment to improved environmental performance and ensuring site operations are undertaken in an environmentally responsible manner which includes:</p> <ul style="list-style-type: none"> <li>• Understanding and controlling impacts of site operations on the environment and community</li> <li>• Maintain the highest possible standards of environmental management and monitoring</li> <li>• Compliance with regulatory requirements, conditions of approval and licence conditions</li> <li>• Ongoing consultation with customers, employees, indigenous land owners and the local community.</li> </ul>
<b>Quality Policy</b>	<p>PKCT Business Management System provides a framework for managing quality and establishing, achieving and reviewing quality objectives in compliance with the requirements of AS/NZS ISO 9001:2016 and ISO 14001:2015. PKCT staff,</p>

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**HSEC**  
Air Quality Management Plan



Management Plan  
MP.017  
Status: Approved  
Version: 19.0  
Doc ID: 386  
Page 15 of 46

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contractors and site personnel will fulfil the requirements detailed in the AS/NZS ISO 9001:2016 and ISO 14001:2015 and continually seek opportunities to improve system effectiveness.

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PKCT has an environment management system in place which is certified to ISO 14001:2015. The system includes documented policies and procedures, environmental aspects assessed and registered with processes for their control and continual improvement. The system is subject to audit and review including biannual surveillance visits by PKCT's external certifier (Lloyd's Register Quality Assurance Limited).

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 16 of 46

## 4. EXISTING ENVIRONMENTAL CONDITIONS

### 4.1 Sensitive Receivers

There is approximately 1.2 km of separation between the northern tip of the coal stockpiles and residences on Swan Street and Corrimal Street, directly north of the site. A sensitive receiver are locations where sensitive land uses take place such as residences, schools and hospitals. The closest sensitive receivers to the south of PKCT are located about 1.6 km to the southwest of the main stockyard, these receivers are primarily residential receivers. Directly west, several kilometres separate PKCT from residences on the western side of the Princes Motorway, and 1 km separation exists between the northern tip of the coal stockpiles and residences to the northwest near Springhill Road.

### 4.2 Meteorology

The meteorological conditions of the site were assessed during the Annual Environmental Monitoring Report (AEMR) prepared by Katestone in 2019. Wind roses showing the distribution of winds at C1 and C2 continuous monitoring sites are presented in Figure 1, the location of these sites are further described in Section 8.2. Figure 1 shows the diurnal distributions of winds and Figure 2 shows the seasonal distributions. Key features of the wind distributions include:

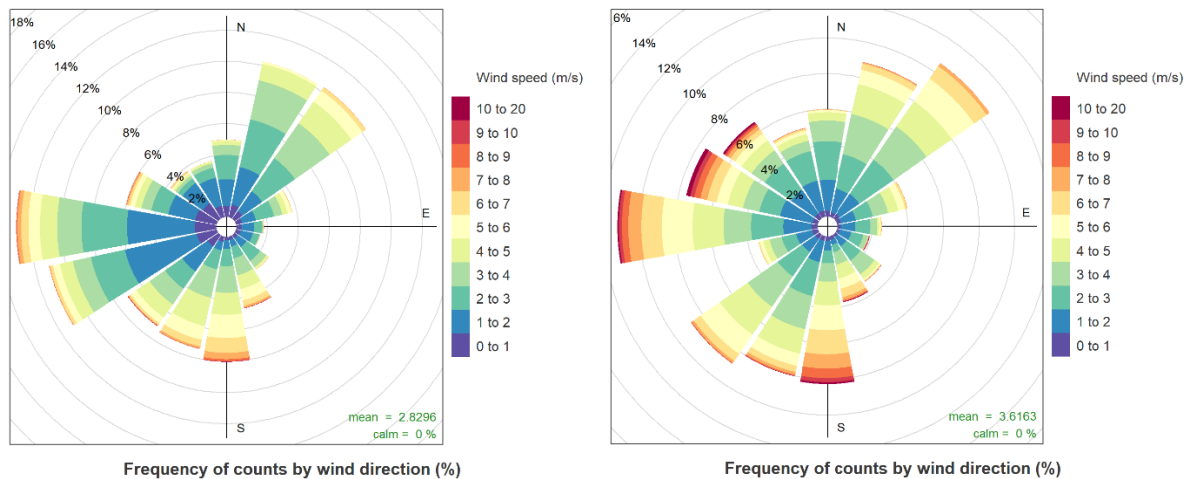
- Relatively high wind speeds, consistent with the proximity to the coast. Stronger winds are measured at the southern monitoring site due to its location closer to the coast than the northern monitoring site
- The annual wind distributions show predominant winds from the west, south and northeast, and very few winds from the east
- The diurnal wind distributions show predominant westerlies overnight (6pm – 6am) and a north-easterly afternoon sea breeze (12 - 6pm). Winds during the day are stronger than overnight. Strongest winds occur from the south, and west to northwest
- The seasonal wind distributions illustrate a more prevalent northeast sea breeze during spring and summer, and autumn and winter characterised by predominant westerlies.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan

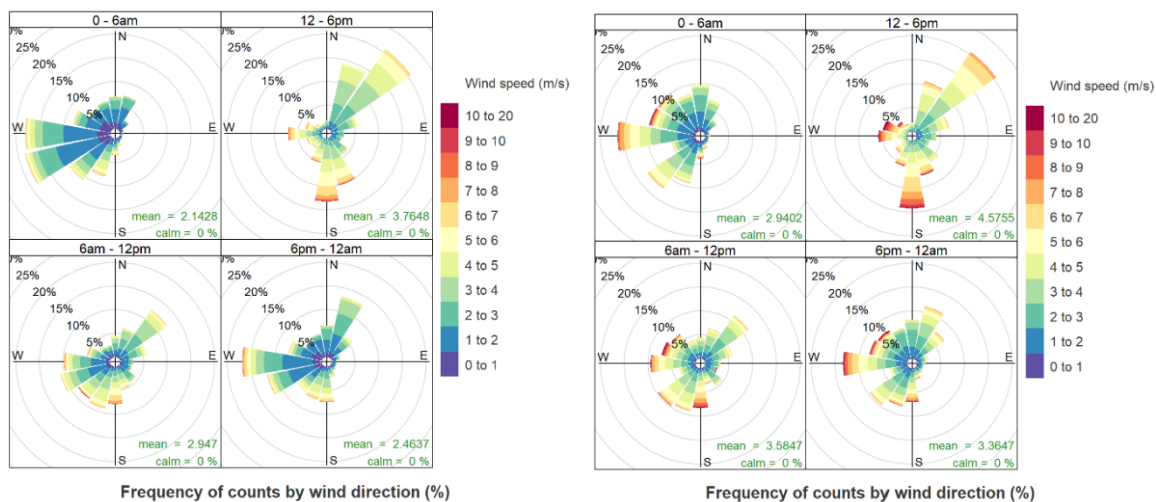


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 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 17 of 46

**Figure 1: Diurnal Wind Distributions at C1 and C2 monitoring locations**



**Figure 2: Seasonal Wind Distributions at C1 and C2 monitoring locations**



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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 18 of 46

## 5. SITE OPERATIONS

### 5.1 Potential Air Quality Risks

Primarily, activities and aspects of PKCT operations with the potential to result in dust emissions are summarised in Table 7 below.

**Table 7 Summary of Potential Air Quality Risks**

Site operation	Potential Air Quality Risk
Stockpile management	Control of dust from coal berth stockyards associated with lift off from stockpiles
Receivals and ship loading	Control of dust through the receival and ship loading process
Roads and unsealed areas	Control of dust associated with mobile plant and vehicles on roads and unsealed areas

The variable nature of wind velocity, duration and direction at the PKCT makes dust suppression, control and management activities difficult. The wind rose maps shown in Figure 1 and Figure 2 demonstrate this variability. Measures to effectively manage and control air quality risks are detailed in Section 6.2 below

The stockyards run north-south and southerly winds blowing across stockpile sprays can affect spray coverage. "Southerly busters" occur from time to time involving a southerly change usually travelling up the coast, entailing very strong, gusty winds. These wind patterns represent the most challenging wind conditions for Wollongong and the industrial precinct.

### 5.2 AIE Site Interactions with PKCT

AIE is working to develop Australia's first liquefied natural gas (LNG) import terminal at PKCT's Berth 101. PKCT has reached a commercial agreement with NSW Ports and AIE to surrender the southern area of its lease for AIE to construct and operate the LNG import terminal. The date of surrender is 31/03/2021. The revised site boundary for PKCT, as shown in Figure 3, has resulted in a change in PKCT's site operations, infrastructure and environmental management strategies.

The changes include:

- Reduced lease area due to the surrender of the Bulk Products Berth, Berth 101 and Seawall Road
- The removal of five (5) collection ponds / sumps and two (2) wet weather discharge points from the PKCT Contaminated Water Collection Treatment System (CWCT), which include:
  - Pump 1 – Southern Pond (wet weather discharge point)
  - Pump 8 – T3 Pond (wet weather discharge point)
  - Pump 9 – Conveyor C7 Sump
  - Pump 16 – Berth 101 North Sump

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**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 19 of 46

- Pump 17 – Berth 101 South Sump
- The addition of two (2) collection ponds / sumps and two (2) wet weather discharge points to the CWCT System, which include:
  - Pump 24 – TS8 Sump (wet weather discharge point)
  - Pump 25 – South Eastern Pond (wet weather discharge point)
- Amendment to the Air Quality Monitoring network which includes the relocation of the southernmost continuous dust monitor (nominated as C1)
- Traffic management and site access arrangements from the southern end of the revised PKCT site boundary.

PKCT and AIE will work collaboratively during the operation of the AIE site to ensure environmental obligations are met, site operations for PKCT and AIE can be run effectively and safely and any issues raised are dealt with in a timely manner.

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
Air Quality Management Plan



Management Plan  
MP.017  
Status: Approved  
Version: 19.0  
Doc ID: 386  
Page 20 of 46

**Figure 3: PKCT Site Layout**

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 21 of 46



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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 22 of 46

## 6. MANAGEMENT STRATEGY

### 6.1 Environmental Aspects and Impacts

Potential for dust lift off impacting on site and on the community is recognised as an important environmental aspect as identified in the *Environmental Aspects and Impacts Register* (RG.HS.2)

The air quality management strategy is based upon a best practice approach to ensure the site meets the conditions in accordance with the Major Project Approval, the site EPL and interaction with adjoining site boundaries and operations.

PKCT strategic reviews have concluded that the community will be increasingly seeking improvement in air quality and will have less tolerance for the neighbouring industrial precinct.

### 6.2 Air Quality Management and Improvement Programs

#### 6.2.1 Environmental Management System (EMS)

PKCT has an environmental management system (EMS) in place, certified to ISO14001:2015. The EMS is supported by quality, sustainability and environment policies (refer to Section 3.4) and an Environmental Aspects and Impacts Register which recognises air quality as a key aspect for the community.

The system is documented, controlled and supported by management plans and procedures with processes covering:

- Environmental aspects and impacts
- Planning and objectives
- Legal and other requirements
- Training and competency
- Emergency management and Investigation
- Monitoring, auditing and review

#### 6.2.2 Air Quality Management and Controls

Air quality mitigation and control measures will be implemented as required and their exact details will be based on a case by case situation depending on the issue and technical solutions available at the time. The objectives of dust control measures are to:

- Minimise emission of dust and other particulate matter beyond the site boundaries
- Reduce stormwater sediment load
- Protect local amenity.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 23 of 46

The equipment and processes established on site to control dust are described in the following sections.

#### 6.2.2.1 Environmental Management and Controls

- A Stockpile spray system installed around the Coal Berth stockyards. The system operates under manual and automatic control subject to wind conditions as follows:
  - Manual – Spray guns can be operated individually or in cycles to address any observed dust concerns
  - Automatic – Environmental Improvement Plan (U1) – Implement Stockyard Spray Optimisation System has resulted in the stockpile spray system being an automated network. Site personnel can set the dust risk rating level from low, medium and high. The system will utilise measured weathered conditions and evaporation rates to determine the amount water required on the stockpile.
- Road cleaning is carried out by a water cart (sealed and unsealed areas) and a road sweeper as required to minimise dust
- Asphaltic paving of roadways and around transfer stations
- Weather forecast monitoring is undertaken by Main Control Room personnel
- Weather alert subscription to monitor for rain, lightning and excessive wind speeds
- Dust generating activities are not undertaken during adverse weather conditions
- Air quality continuous monitoring capability from two monitors north and south of PKCT's site and alert system
- Environmental complaints are recorded and regular review and reporting of performance is undertaken.

#### 6.2.2.2 Plant and Equipment Management and Controls

Plant and equipment management and controls to mitigate air quality impacts at the site include the following:

- Coal berth road receival road sprays to be utilised when required
- Coal berth rail receival is enclosed within a building. Rail bins have sprays which can be activated if required to minimise dust
- Receival conveyors are fully enclosed within tunnels and transfer stations
- Coal berth stockyard conveyors and yard machines have wind guards
- All transfer points are enclosed except for TS6 which has an enclosed chute
- Coal berth NC14 conveyor has a belt washing station
- There are two truck washers at the coal berth road receival and at the southern end of the PKCT site
- Shiploader chutes are designed to discharge within ship's hatches reducing the impact of prevailing winds
- Variable height stackers minimise drop height and are used to load coal into stockpiles in the coal berth stockyard

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 24 of 46

- Coal berth conveyor sprays located at various locations on receival and ship loading flow paths
- Boom sprays on new stackers and reclaimers.

### 6.2.2.3 Traffic Management and Controls

- Truck driver rules and the Drivers Code of Conduct covering requirements, including the tarping of loads and truck washing
- Implement on site traffic and operational controls to prevent unnecessary dust generation
- Inspect incoming trucks, ensuring that trucks transporting material are covered and that tailgates are firmly fixed
- Limit vehicles to specified routes around the site and ensure speed limits are adhered to.

## 6.3 Management Strategy and Effectiveness

Improvement strategies are developed through PKCT's Business Planning process. External air quality consultant expertise is used where appropriate to identify improvement opportunities. Networking is also undertaken with other coal terminals and within the industry to:

- Ensure PKCT has up to date knowledge of best practice dust management methodologies when developing improvement strategies
- Benchmark dust deposition levels with other bulk terminals to check its dust performance.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 25 of 46

## 7. EVENT MANAGEMENT

### 7.1 Emergency Response and Investigation

PKCT has an emergency response processes in place in case of an air quality event which may be observed internally through site observations or through an external community or stakeholder complaint. These processes provide for action to be undertaken to mitigate impacts. Events are investigated to develop corrective actions. Events and actions are managed through PKCT's event management system.

The Emergency Management Plan (MP.001) outlines the emergency activation and response process at the PKCT site. The Emergency Management Plan is supported by the Pollution Incident Response Management Plan 2018 (MP.013) which outlines responses measures to environmental pollution event.



**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 26 of 46

## 8. MONITORING

### 8.1 General

Following the Major Project Approval in 2009, PKCT has monitored dust emissions through derived monitoring locations in accordance with the site EPL and to meet the requirements of Schedule 3 – Condition 10 of the Major Project Approval.

The current network of monitors and dust deposition gauges provide PKCT with monthly deposition rates and continuous measurements of TSP, PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1.0</sub> as well as meteorological data including wind speed and wind direction. Installation, maintenance, sampling, testing and reporting is carried out by ALS which is a NATA certified service provider. Since obtaining DPIE approval to undertake operations at the site, PKCT has engaged Katestone to develop and implement an air quality monitoring program. The key objectives of the air quality monitoring program are to:

- Obtain data as part of PKCT environmental management of site operations
- Meet DPIE and EPL requirements to prevent/ minimise dust and undertake associated monitoring
- Meet DPIE approval conditions which have set PM<sub>10</sub>, TSP and deposited dust limits focusing on residential area immediately north of PKCT.

### 8.2 Air Quality Monitoring Review

#### 8.2.1 Air Quality Monitoring Network – 2009 to 2020

PKCT undertook a review of its air quality monitoring program in 2009 to address the following concerns raised by the EPA and DPIE. The network review was submitted to the EPA in accordance Condition U3.1 – Dust Management of the EPL.

The network review was submitted to the EPA in accordance with PRP U3.1 Dust Management. The key outcomes of the network review included:

- PKCT to continue to focus on the residential area immediately north of PKCT's site as the most sensitive and vulnerable to loss of amenity from PKCT's operations and the industrial precinct
- Current dust gauge data is of value and should continue and the current monitoring sites should be retained. Informally, continue in the short term with a number of sites which have been established in response to community complaints
- In relation to continuous dust monitors, undertake further work to identify supplementary methods for differentiating PKCT contribution to dust emissions from other dust emitters
- EPA EPL Dust Gauges locations:
  - On-site gauges – Continue with the existing dust gauges in their current locations i.e. P1- P8, P15
  - Off-site industrial gauges: Continue with the existing dust gauges in their current locations P9, P13

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 27 of 46

- Offsite residential gauges: P12 (residential), R1 (173 Corrimal Street, Wollongong NSW), a dust deposition gauge installed at Vikings Oval on Swan Street Wollongong as a residential site.
- DPE Approval Conditions include:
  - Deposited dust assessment: Use EPL residential dust gauge data
  - Undertake PM<sub>10</sub> and TSP assessment as per condition approvals
  - Use PKCT continuous dust data from monitors at their current locations.
- Continue discussions with BlueScope on environmental data sharing to improve respective air quality monitoring and develop synergies where opportunities arise.

The air quality monitoring network has incorporated the above recommendations at the PKCT site. Figure 4 below displays the locations of the air quality monitoring network and their locations between 2009 and 2020.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 28 of 46



Figure 4: Air Quality Monitoring Network (2009-2020)

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## 8.2.2 Air Quality Monitoring Network – 2021

The surrender of the southern area of the PKCT lease, as described in Section 5.2, has resulted in a change in site boundary and operational footprint at the PKCT site. A review was undertaken in 2020 by Katestone to assess the existing PKCT air monitoring network and determine the changes required to that network. Monitoring locations P1, P2, P3 and continuous dust monitor C1 would require removal and/or relocation in accordance with the new PKCT site boundary, as shown in Figure 5.

PKCT have undergone an options analysis to determine the most suitable location for continuous dust monitor C1. Three locations were considered which included:

- Southern Pond (current location)
- Southern Truck Wash
- Northern Breakwater Compound.

As an outcome of the options analysis, the PKCT Asset Management Team have determined that the preferred location is the Southern Truck Wash, on the following basis:

- PKCT would like to retain the dust monitor as a PKCT asset (not a shared asset with AIE)
- PKCT maintains full control of the asset and is not reliant on a third party power supply or a 4G connection for communications
- No access will be required to a third party asset location, eliminating possible delays for repair of the monitor or reinstatement of the power supply if issues arise
- A direct WiFi connection is available to the PKCT control system at the Southern Truck Wash (but is not pragmatic at the other locations)
- With integration into the PKCT control system, there will be improvements with alarming and information that is available to PKCT, enabling better management of the monitor.

In agreement with the EPA, the following changes are to be implemented for the PKCT site:

- Relocation of continuous dust monitor C1 to the Southern Truck Wash area within the PKCT site boundary
- Removal of monitoring locations P1 and P2 from the air quality monitoring network as specified in the site EPL
- Retention of monitoring location P3 along Seawall Road.

The revised air quality monitoring network, summarised in Table 8 and displayed in Figure 5, will continue to meet the objectives of the Air Quality Monitoring Program as described in Section 6.3.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 30 of 46

Table 8 Air Quality Monitoring Network

EPA Identification Number	Type of Monitoring Point	Site Number	Location Description and Coordinates
3	Dust Deposition Monitoring	P3	40m east of Bulk Products Berth stockyard Easting – 307198 Northing – 6184856
4	Dust Deposition Monitoring	P4	40m east of Coal Berth stockyard Easting – 307103 Northing – 6185818
5	Dust Deposition Monitoring	P5	Northern pond Easting – 306916 Northing – 6186282
6	Dust Deposition Monitoring	P6	40m west of Coal Berth stockyard Easting – 306908 Northing – 6185720
7	Dust Deposition Monitoring	P7	250m west of Coal Berth stockyard Easting – 306673 Northing – 6185865
8	Dust Deposition Monitoring	P8	Northern truck wash Easting – 306744 Northing – 6186371
9	Dust Deposition Monitoring	P9	Sydney Water recycled water plant Easting – 306936 Northing – 6186639
12	Dust Deposition Monitoring	R1	157 Church Street Wollongong Easting – 306520

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 31 of 46

EPA Identification Number	Type of Monitoring Point	Site Number	Location Description and Coordinates
			Northing – 6188025
15	Dust Deposition Monitoring	P10	North of planning office Easting – 306859 Northing – 6185458
17	Dust Deposition Monitoring	P11	Entry gate to Berth 109 Easting – 305867 Northing – 6185702
18	Dust Deposition Monitoring	R3	Links Seaside Apartments, 1 Ross Street, Wollongong. Easting – 306872 Northing – 6187535
19	Dust Deposition Monitoring	R2	Vikings Oval Easting – 306710 Northing – 6187446
20	Ambient Air Monitoring	C1	Southern monitoring site – Southern Pond Easting – 307081 Northing – 6184995
21	Ambient Air Monitoring	C2	Northern monitoring site – Sydney Water recycled water plant Easting – 307076 Northing – 6185305

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
Air Quality Management Plan



Management Plan  
MP.017  
Status: Approved  
Version: 19.0  
Doc ID: 386  
Page 32 of 46

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
Air Quality Management Plan



Management Plan  
MP.017  
Status: Approved  
Version: 19.0  
Doc ID: 386  
Page 33 of 46

**Figure 5: Air Quality Monitoring Network (2021)**

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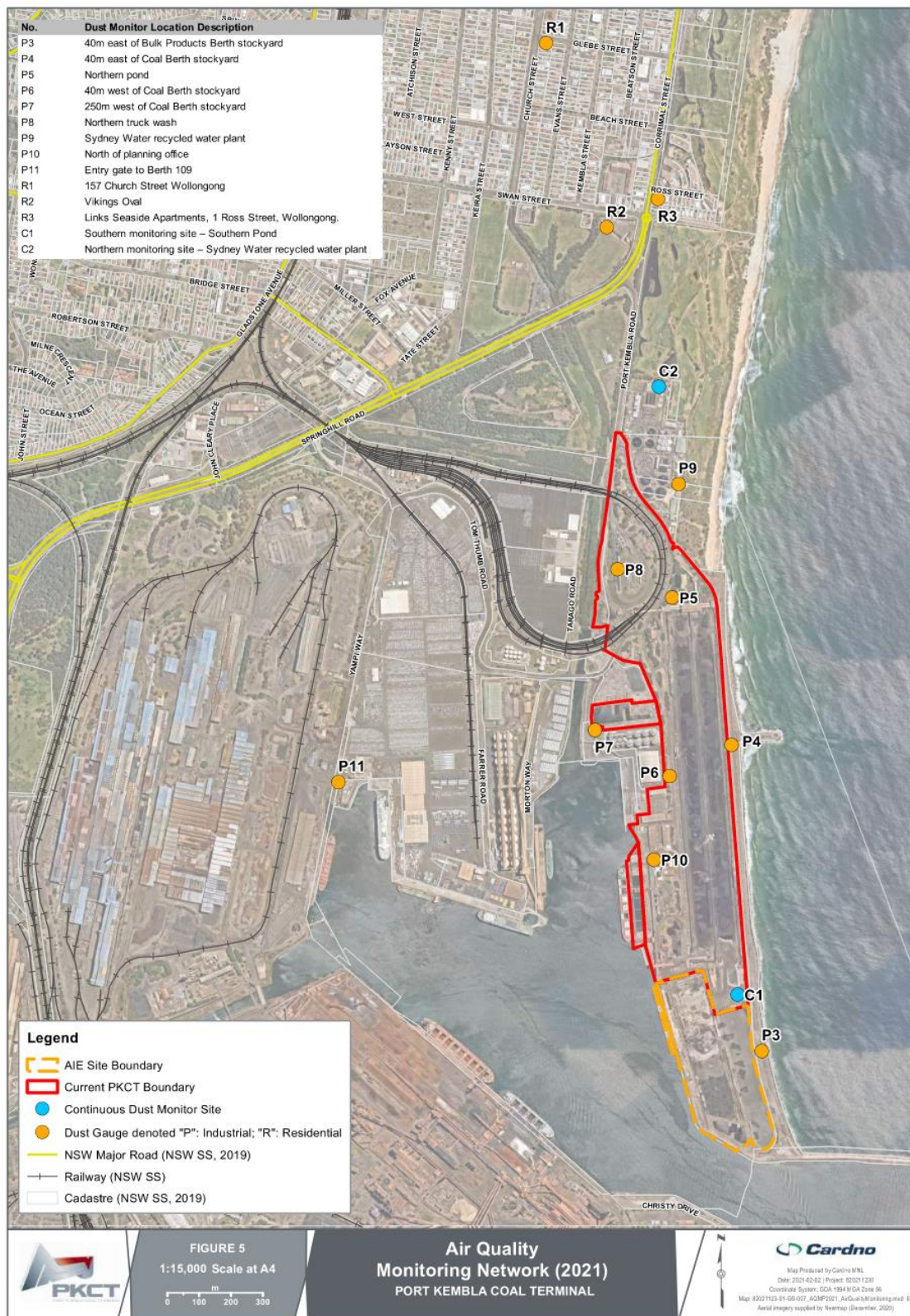
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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 34 of 46



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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 35 of 46

### 8.3 Air Quality Monitoring Program

#### 8.3.1 General

The Air Quality Monitoring Program was developed in 2009 and has been incorporated into this AQMP to meet the approval conditions. Minor revisions have been made during this period to account for changes in operational conditions, incorporating DPIE reporting requirements and updates identified in the AEMR (Katestone, 2009). The features of the monitoring program detailed further in the sections below includes:

- Protocol 1 and 2 – Dust deposition, PM<sub>10</sub> and TSP
- Protocol 3 – Meteorological monitoring.

PKCT will ensure continuity of dust monitoring sites so that long air quality trends can be determined from collected data. This assists in interpreting data particularly when considering the variability of weather patterns. If required, gauges and monitor sites may need to change if it is deemed the existing locations are not suitable to capture the data relevant to air quality risks.

Figure 5 displays the current air quality monitoring network. These sites provide PKCT with monthly dust deposition rates and continuous measurements of TSP, PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1.0</sub>. Where it is considered appropriate, PKCT and BlueScope share air quality monitoring data.

#### 8.3.2 Need for protocols

The protocols mentioned above have been developed with the aim of evaluating compliance with the air quality impact assessment criteria detailed in the Major Project Approval and reproduced in Section 8.5 herein. The need for the protocol reflects the following key facts:

- Particulate matter is ubiquitous in the environment. There are many domestic, commercial, industrial and natural sources of particulate matter and all sources have the potential to contribute substantially to measured levels at times
- The monitoring techniques that are prescribed by the EPA for measuring environmental levels of particulate matter (namely: TSP, particulate matter < 10 µm (PM<sub>10</sub>) and deposited dust) differentiate particulate matter on the basis of the following:
  - Mass of particulate matter suspended in the atmosphere
  - Mass of particulate matter deposited per square metre
  - Aerodynamic size of the particle
  - The degree of insolubility/solubility and the ash/combustible components of the deposited dust.

Whilst these characteristics provide an indication of the source of the particulate matter.

The techniques are not definitive and hence, other information such as measurements of wind speed and wind direction, concurrent measurements of coarse and fine particulates, upwind and downwind measurements, petrographic analysis, statistical analysis and so on may need to be considered to improve confidence in source apportionment.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 36 of 46

The protocols have been developed in consultation with the EPA. The EPA has indicated that the protocol will not form part of PKCT's EPL. The protocols detailed in Section 8.5 would be subject to assessment of the available data with consideration of dust sources, respective contributions (including PKCT) and a determination of exceedances of the criterion. As such the protocols will require review and revision particularly as new and better analysis techniques are identified.

### 8.3.3 Relevant properties of PKCT handling operations and materials (Katestone, 2009)

In general, dust emissions can occur at any point where coal is picked up, conveyed, discharged, crushed or open to erosion by the wind. Whilst stockpiles are the primary source of dust due to wind erosion, secondary dust emissions can also occur due to wind action on material that has been spilled or deposited on structures.

External factors also contribute to elevated emissions of dust. Meteorological conditions at the terminal and in transit from the mine to the coal terminal have an important effect on the dustiness of coals during handling and storage at the port. Hot and dry conditions can enhance the dustiness during transit from the mine and can result in elevated emissions during unloading. Windy conditions can lead to erosion during stacking and reclaiming.

Activities that are associated with the most significant dust emissions from coal terminals are rail and road receipt, coal conveyors, coal stockpiles, stacking, reclaiming and ship loading. Minor amounts of wind-blown dust are also associated with vehicular activity on-site and wind erosion of dust from bare ground. Typically wind erosion of stockpiles, stacking and reclaiming will make up about 65-85% of emissions from a coal terminal depending on the stacking and reclaiming technique and the level of controls that are implemented. Approximately 50% of dust emissions are likely to be due to the stockpiles alone.

The majority of dust emission sources at a coal terminal will be influenced by the wind such that the rate of dust emission increases with the wind speed. Dust emissions from undisturbed coal stockpiles will be essentially zero at low wind speeds and will remain so until the wind speed exceeds a threshold that is specific to the particular coal type but is generally found to be above about 6 m/s.

Dust emissions at higher wind speeds are commonly found to be at least proportional to the wind speed. Dust emissions from exposed drop operations such as stacking will give rise to dust emissions under all wind speeds; however, higher dust emission rates will occur for higher wind speeds.

Dust measurements in relatively close proximity to an uncontrolled dust source that is subject to wind erosion show a typical profile of increasing dust concentration with wind speed particularly for wind speeds above about 6 m/s.

The air quality study conducted for the project found that approximately 46% of the TSP emitted from the coal terminal was likely to be in the form of PM<sub>10</sub>. Whilst the emission rate of finer material (PM<sub>2.5</sub>) was not quantified in the Project, recent studies conducted by the United States Environmental Protection Agency (USEPA) found that fugitive dust sources such as those generated from mining activities had an average PM<sub>2.5</sub> to PM<sub>10</sub> ratio of 0.1 (10%) and that this ratio declined with increasing PM<sub>10</sub> concentrations. The ratios ranged from 0.05 (5%) to 0.15 (15%) (USEPA, 2006). Hence, less than 7% of the dust emitted from the coal terminal is likely to be in the form of PM<sub>2.5</sub>.

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 37 of 46

This is important in considering the results of continuous monitoring that is conducted by PKCT to the north and south of the coal terminal. The relative size analysis shows that:

- Elevated levels of PM<sub>2.5</sub> and PM<sub>10</sub> associated with the coal terminal would necessarily be accompanied by elevated levels of TSP
- Elevated levels of PM<sub>2.5</sub> without correspondingly high levels of TSP and PM<sub>10</sub> would not be the result of fugitive coal dust emissions from the coal terminal
- Elevated levels of PM<sub>2.5</sub> are more likely to be associated with combustion activities, motor vehicles and salt spray.

#### 8.4 Deposited Dust Monitoring

PKCT currently has the following site infrastructure for dust deposition monitoring:

- Six onsite and industrial dust deposition gauges
- Six offsite dust deposition gauges.

These sites provide sufficient data to meet the requirements of the Air Quality Monitoring Program and are summarised in Table 8 and shown in Figure 5.

#### 8.5 TSP and PM<sub>10</sub> Monitoring

TSP and PM<sub>10</sub> monitoring is conducted using Osiris monitors at two locations to the north and south of the coal terminal, identified as monitoring points C1 and C2 respectively. The northern site is located on a building within the Wollongong Sewage Treatment Plant to the north of the coal terminal and the southern site is located within the coal terminal to the south of the stockpile areas as shown in Figure 5.

The Osiris monitors do not provide a direct measurement of dust deposition and as such they are not approved by the EPA. The Osiris monitors provide cost effectiveness, portability and provide data covering a range of dust particle sizes (including TSP, PM<sub>10</sub>, PM<sub>2.5</sub>) together with wind speed and wind direction data. Data is recorded continuously and can be accessed in real time. The use of the Osiris monitors has been supported by the EPA and they recognise the purpose of the monitors to assist in more effective air quality management.

Data from the continuous monitors can be accessed manually in real time. The data obtained from the continuous monitors are linked to the PKCT control system and HMI as well as being accessed manually by the Main Control Room and other site personnel.

An alert system is also in place for the northern monitor during southerly winds where elevated dust levels are detected with the potential on impact on the residential area to the north of PKCT's premises.

Continuous dust data is included in annual air quality reports submitted to PKCT. PKCT prepares an Annual Environment Management Report (AEMR) which is published on the PKCT website. The AEMR is submitted to the DPIE and a report is forwarded to the EPA as part of the EPL annual return. The EPL annual return also includes PM<sub>2.5</sub> data which is a reporting requirement in PKCT's EPL.

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 38 of 46

## 8.5.1 Air Quality Monitoring Protocol 1 – Deposited Dust

### 8.5.1.1 Siting

Dust deposition gauges should be sited generally in accordance with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales*. The Approved Methods cites the following standard for siting dust deposition gauges:

*AS/NZS 3580.1.1:2007, Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment*

Key features of siting requirements are as follows:

- Clear sky angle of 120° above sampling inlet
- Unrestricted airflow of 360° around sample inlet
- 10 metres from drip line of trees
- No extraneous sources nearby
- Greater than 5 metres from source

Note that all components of the standard may not be achievable in all circumstances and compromises may need to be made to obtain representative dust levels. This needs to be considered in evaluation of the monitoring results, but minor non-compliances do not necessarily invalidate monitoring results.

### 8.5.1.2 Methodology

Dust deposition monitoring and analysis must be conducted in accordance with the standard method described in the Approved Methods:

*AS/NZS 3580.10.1:2003, Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method.*

### 8.5.1.3 Evaluation against Criterion

The air quality criteria for dust deposition is based on the average of 12 monthly measurements. Sampling is conducted over each calendar month. The air quality criteria for dust deposition would be found to have been exceeded by the Project if:

- The activities of PKCT alone caused the annual average dust deposition rate to exceed 2 g/m<sup>2</sup>/month. That is, the annual average coal dust deposition rate exceeds 2 g/m<sup>2</sup>/month
- The activities of PKCT caused a significant contribution (greater than 30%) to the annual average dust deposition rate exceeding 4 g/m<sup>2</sup>/month.

The standard dust deposition analytes of insoluble solids, ash and combustible matter provide an indicator of the amount and potential sources of deposited dust. However, these analytes do not provide conclusive information on the source of deposited dust. Petrographic analysis would be

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 39 of 46

required to quantify the component of insoluble solids that is coal dust. Hence, the following procedure will be followed in evaluating monthly dust deposition monitoring results:

- Insoluble solids less than 2 g/m<sup>2</sup>/month – no further analysis required
- Insoluble solids greater than 2 g/m<sup>2</sup>/month but combustible matter less than 2 g/m<sup>2</sup>/month – no further analysis required
- Combustible matter greater than 2 g/m<sup>2</sup>/month – petrographic analysis required.

Where the petrographic analysis shows that the monthly coal dust is likely to have contributed more than 1 g/m<sup>2</sup>/month to dust deposition levels in residential areas, a detailed review of site activities, continuous dust monitoring data and other information will be triggered under the site EMP to determine what activities at PKCT are likely to have contributed to the elevated measurements. The trigger level of 1 mg/m<sup>2</sup>/month has been chosen arbitrarily, but would represent the point where the contribution of the coal terminal may be considered to become moderate.

#### 8.5.1.4 Reporting

The results of dust deposition monitoring will be reported to PKCT on a monthly basis. Results will be included in the Annual Environmental Management Report (AEMR) forwarded to the DPIE in June each year (commenced in 2010).

### 8.5.2 Air Quality Monitoring Protocol 2 – PM10 and TSP

#### 8.5.2.1 Siting

TSP and PM10 monitors should be sited generally in accordance with the requirements in the Approved Methods. The Approved Methods cites the following standard for siting TSP and PM10 monitors:

*AS/NZS 3580.1.1:2007, Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment*

Key features of siting requirements are as follows:

- Clear sky angle of 120° above sampling inlet
- Unrestricted airflow of 270° around sample inlet with no obstruction between the major source and the sample inlet
- 10 metres from nearest object or drip line of trees that are higher than 2 m below the height of the sample inlet
- No extraneous sources nearby
- Greater than 50 metres from road.

Note that all components of the standard may not be achievable in all circumstances and compromises are often required in urban areas to obtain measurements. While compliance with the standard needs to be considered in the evaluation of the monitoring results, minor non-compliances do not necessarily invalidate monitoring results.

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 40 of 46

PM<sub>10</sub> and TSP concentrations are monitored by PKCT at a location to the north and south of the coal terminal. Katestone has reviewed the PM10 monitoring locations and has found these to be generally in accordance with the siting requirements.

Whilst, both monitoring stations may be influenced by dust sources extraneous to PKCT, co-located meteorological monitoring equipment and the upwind-downwind orientation of the monitors provide the ability to understand the contribution of extraneous sources to the measurements.

### 8.5.2.2 Evaluation against triggers/limits

Monitoring data from the northern and southern continuous dust monitor will be used to evaluate whether the coal terminal is in compliance with the air quality criteria specified in the Major Project Approval 08\_0009. The continuous dust monitors are not located within residential areas and hence do not provide a direct indication of the concentrations of PM<sub>10</sub> in residential areas. However, since the northern continuous monitor is located between the coal terminal and nearest residences, this monitoring site provides a representative upper bound indication of the PM<sub>10</sub> concentration in residential areas to the north. The significance of any non-compliance that is determined from the continuous measurements at the northern monitoring station needs to be considered with reference to the distance between the monitoring location and nearest residences.

The air quality criteria for TSP and PM<sub>10</sub> would be found to have been exceeded by the Project if:

- The activities of PKCT contributed significantly (greater than 30%) to the concentration of PM<sub>10</sub> at the northern monitoring station when the 24-hour average PM<sub>10</sub> criterion of 50 µg/m<sup>3</sup> was exceeded
- The activities of PKCT contributed significantly (greater than 30%) to the concentration of PM<sub>10</sub> at the northern monitoring station when the annual average PM<sub>10</sub> criterion of 30 µg/m<sup>3</sup> was exceeded
- The activities of PKCT contributed significantly (greater than 30%) to the concentration of TSP at the northern monitoring station when the annual average TSP criterion of 90 µg/m<sup>3</sup> was exceeded

The trigger level of 30% has been chosen arbitrarily, but would represent the point where the contribution from the coal terminal may be considered to become moderate.

Particulate matter occurs in the vicinity of the coal terminal due to industrial and domestic activities and also as a result of natural influences in the environment (e.g. Salt spray). The TSP and PM<sub>10</sub> measurements alone do not provide sufficient information with which to determine the source of the measured dust. A detailed analysis of particulate measurements from both monitoring stations will be required in conjunction with meteorological measurements to determine the extent to which PKCT may have contributed to elevated measurements. Hence, the following procedures will be followed to evaluate 24-hour TSP and PM<sub>10</sub> monitoring results:

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 41 of 46

- Calculate 24-hour average concentration of TSP. Where the 24-hour average concentration of TSP at the northern monitoring site is less than  $90 \mu\text{g}/\text{m}^3$ , no further analysis is required
- Where the 24-hour concentration of TSP exceeds  $90 \mu\text{g}/\text{m}^3$ , the following further analysis will be conducted considering 10-minute average measurements collected during the day when the threshold was exceeded:
  - Plot TSP concentration against wind direction and determine the frequency of time that the coal terminal was upwind of the northern monitoring station
  - Compare the measured concentration of TSP at the northern and southern monitoring stations
  - Quantify the proportion of TSP that is made up of  $\text{PM}_{10}$ ,  $\text{PM}_{2.5}$  and  $\text{PM}_{1.0}$
  - Quantify the contribution of PKCT to the measured TSP concentration on the day that the 24-hour trigger level of  $90 \mu\text{g}/\text{m}^3$  was exceeded.
- Where the above analysis shows that the coal terminal is likely to have contributed more than 30% to the concentration of TSP at the northern monitoring site, a detailed review of site activities, continuous dust monitoring data and other information will be triggered under the site EMP to determine what activities at PKCT are likely to have contributed to the elevated measurements.

The following steps will be followed to evaluate  $\text{PM}_{10}$  monitoring results:

- Calculate 24-hour average concentration of  $\text{PM}_{10}$ . Where the 24-hour average concentration of  $\text{PM}_{10}$  at the northern monitoring site is less than  $50 \mu\text{g}/\text{m}^3$ , no further analysis is required
- Where the 24-hour concentration of  $\text{PM}_{10}$  exceeds  $50 \mu\text{g}/\text{m}^3$ , the following further analysis will be conducted considering 10-minute average measurements collected during the day when the threshold was exceeded:
  - Plot  $\text{PM}_{10}$  concentration against wind direction and determine the frequency of time that the coal terminal was upwind of the northern monitoring station
  - Compare the measured concentration of  $\text{PM}_{10}$  at the northern and southern monitoring stations
  - Quantify the proportion of  $\text{PM}_{10}$  that is made up of  $\text{PM}_{2.5}$  and  $\text{PM}_{1.0}$
  - Quantify the contribution of PKCT to the measured  $\text{PM}_{10}$  concentration on the day that the 24-hour criterion of  $50 \mu\text{g}/\text{m}^3$  was exceeded
- Where the above analysis shows that the coal terminal is likely to have contributed more than 30% to the concentration of  $\text{PM}_{10}$  at the northern monitoring site, a detailed review of site activities, continuous dust monitoring data and other information will be triggered under the site EMP to determine what activities at PKCT are likely to have contributed to the elevated measurements.

### 8.5.2.3 Reporting

The results of 24-hour TSP and  $\text{PM}_{10}$  monitoring is conveyed to PKCT via an email alert basis daily. Air quality reports are submitted to PKCT on an annual basis. Results are included in the Annual Environmental Management Report (AEMR) forwarded to the DPIE in July each year (commencing 2010).

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### 8.5.3 Air Quality Monitoring Protocol 3 – Meteorological Monitoring

#### 8.5.3.1 Siting

Wind speed and wind direction sensors for meteorological monitors should be sited generally in accordance with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales*. The Approved Methods cites the following standard for siting monitoring equipment for measuring wind speed and wind direction:

*AS 2923-1987, Ambient air - Guide for measurement of horizontal wind for air quality applications*

#### 8.5.3.2 Methodology

Wind speed and wind direction sensors for meteorological monitors should conform to the following standards:

*AS 2923-1987, Ambient air - Guide for measurement of horizontal wind for air quality applications*

#### 8.5.3.3 Maintenance

Wind speed and wind direction sensors for meteorological monitors should be maintained and calibrated in accordance with the following standards:

*AS 2923-1987, Ambient air - Guide for measurement of horizontal wind for air quality applications*

### 8.6 Air Quality Monitoring Program Implementation

Program shall be implemented as specified in Section 9.3, 9.4 and 9.6. PKCT shall ensure suitably qualified and certified external service providers and consultants are engaged for the following:

- Continuous monitors shall be sited, maintained, inspected, calibrated as specified, in accordance with the relevant Australian Standards and manufacturer's specification
- Dust gauges shall be sited, maintained, sampled, samples tested and reported as specified and in accordance with the relevant Australian Standards
- Data shall be gathered, analysed and reported and the air quality monitoring program reviewed to ensure its ongoing effectiveness.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 43 of 46

## 9. REPORTING

### 9.1 Monitoring Data and Exceedances of Criterion Limits

Data shall be recorded, assessed and reported as outlined in below and in accordance with DPIE approval conditions. Reporting of air quality monitoring results and exceedances of approved site criterion in accordance with Condition 8 and 9 of the Major Project Approval shall include:

- PKCT internal reporting (e.g. monthly and annual reports)
- Reports to Regulatory Agencies (e.g. EPL annual returns, Annual Environment Management Report)
- Community Reports (e.g. reports to community groups, monthly reports published to PKCT's web site).

Upon detecting an exceedance of the criterion in the Approval Conditions or the occurrence of an incident that causes (or may cause) material harm to the environment, PKCT shall immediately (or as soon as practical thereafter) notify the relevant agencies of the exceedance/incident.

### 9.2 Auditing

PKCT has a number of audit processes to check compliance, assess effectiveness and identify improvement actions. These processes include the following:

- Site level Task Observations i.e. "mini" audit
- Internal Audit Program (including ISO 14001)
- ISO 14001:2015 external surveillance audit- generally, 6 monthly, covering different aspects of PKCT's EMS
- DPIE Approvals Implementation: triennial external audit.

Task observations are entered into PKCT's event management system. They are supported by check sheets focusing on different HSEC aspects including:

- Dust observations covering roads, unsealed areas and stockpiles applying a dust emission rating system
- Truck Drivers Code of Conduct covering agreed rules including tarping and passing through an operating truck wash (refer to Condition 9 in Section 3.3.2 herein).

Results of audits and associated corrective actions are tracked by senior management through periodic Business Management System review meetings.

### 9.3 Corrective Actions

In the event that the Air Quality Monitoring Program, site assessment or a local community member identifies an exceedance of the dust criteria stipulated in the EPL and DPIE approval, the

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**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 44 of 46

Environmental Specialist will investigate the air quality source and appropriate corrective action will be undertaken.

In the event that the investigation determines that air emissions from PKCT operations is likely to be responsible for an exceedance of the air quality criteria at nearby residences, the Director-General of DPIE will be notified. Monitoring results will be published in PKCT's AEMR.

#### **9.4 Review**

The Air Quality Monitoring Program shall be reviewed in consultation with EPA and DPIE at a minimum every three years. The review shall consider monitoring results, changes in environmental expectations, technology and operational procedures. This process is undertaken as part of the required triennial independent audit.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 45 of 46

## 10. COMPLAINTS RECORDING AND REPORTING

PKCT has a 24 hour, 7 day free call community hotline number (1800 111448) and email link i.e. [communitylinks@pkct.com.au](mailto:communitylinks@pkct.com.au) which is advertised on the PKCT website (refer [www.pkct.com.au](http://www.pkct.com.au)). This provides a mechanism by which complaints and general enquiries regarding the environment or community issues associated with operational activities can be managed.

PKCT has a Stakeholder Management Procedure (PR.055) in place which ensures complaints are recorded, registered and investigated. Where appropriate, corrective actions are developed and implemented. If air quality criterion are exceeded, site specific aspects of operations will be reviewed to identify improvements. If concerns of air quality emissions at a particular location within the PKCT site or to adjacent properties via a complaint or by other means, PKCT may undertake site specific air quality monitoring to quantify the potential air quality impact.

**PORT KEMBLA COAL TERMINAL**  
**HSEC**  
 Air Quality Management Plan



Management Plan  
 MP.017  
 Status: Approved  
 Version: 19.0  
 Doc ID: 386  
 Page 46 of 46

## 11. REFERENCES

Katestone (2009), *Port Kembla Coal Terminal Dust Monitoring Program, prepared for Port Kembla Coal Terminal.*

Katestone (2020), *Port Kembla Coal Terminal – Monitoring Network Upgrade Advice.*

NSW EPA, *Environmental Protection Licence (EPL) 1625*, New South Wales Environment Protection Authority.

PKCT *Pollution Incident Response Management Plan MP.013* Port Kembla Coal Terminal.

PKCT *Emergency Management Plan MP.001* Port Kembla Coal Terminal.

PKCT *Environment Policy Statement PO.002* Port Kembla Coal Terminal.

PKCT *Environmental Aspects and Impacts Register RG.001*. Port Kembla Coal Terminal.

PKCT *Main Control Room Environmental Control Procedure PR.063*. Port Kembla Coal Terminal

PKCT *Stakeholder Management Procedure (PR.055)*, Port Kembla Coal Terminal

PKCT *Quality Policy Statement PO.004*. Port Kembla Coal Terminal.

PKCT *Sustainable Development Policy PO.003*. Port Kembla Coal Terminal.

PKCT *Air Monitoring Program Review – 2009 NSW DOP (2009) Project Approval 08\_009*. New South Wales Government Department of Planning.