



Parramatta Eels Centre of Excellence

Construction Air Quality Management Plan

Kane Constructions Pty Ltd

2 John Street
Waterloo NSW 2017

Prepared by:

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SLR Project No.: 610.031438.00001

8 September 2023

Revision: 1.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	8 September 2023	Danny Echeverri	Ali Naghizadeh	Ali Naghizadeh

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Kane Constructions Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Kane Construction Pty Ltd (Kane Constructions) to prepare a Construction Air Quality Management Plan (CAQMP) for the construction of the Parramatta Eels Centre of Excellence (the Project), as per Development Consent (SSD 24452965) conditions C13, C14 and C15.

The construction works to which this CAQMP relates, includes (but is not limited to) the construction of state-of-the-art facilities which enable physical recreation opportunities in conjunction with improved facilities for staff, players and existing users of the Project site. The proposed development will be integrated with the existing recreational landscape of the site and complement the upgrades to the existing playing fields being undertaken by Council. It is noted that the construction of the Centre of Excellence and Community Facility will be staged. It is anticipated that construction of the Community Facility will be completed over approximately 10 months. Construction works for the Centre of Excellence will begin after the completion of the Community Facility construction and is anticipated to take approximately 13 months.

Kane Constructions have been contracted by Parramatta National Rugby League Club Pty Ltd to undertake the construction works.

1.1 Objectives of the CAQMP

The objectives of this CAQMP are as follows:

- Maintain acceptable levels of amenity for surrounding residents.
- Maintain an effective response mechanism to deal with issues and complaints relating to emissions of dust and other air pollutants from the construction works.
- Outline roles and responsibilities in relation to the management of dust and other air pollutant emissions during construction; and
- Promote awareness of the Project's air quality impacts and responsibilities among employees and subcontractors.



2.0 Statutory Requirements

The requirements relating to air quality management stipulated by Development Consent (SSD 24452965) for the construction of the Project, and where they have been addressed in this CAQMP are shown in **Table 1**.

Further information on relevant ambient air quality standards and guidelines are detailed in **Section 5.0**.

Table 1: Air Quality Management Conditions

Conditions	Section Reference
Condition C13	
a) prepared by a suitably qualified and experienced expert in accordance with the EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (the Approved Methods);	Prepared by SLR's specialist air quality consultants
b) relevant environmental criteria to be used in the day-to-day management of dust and volatile organic compounds (VOC/odour),	Section 8.0
c) mission statement,	Section 1.1
d) dust and VOCs/odour management strategies consisting of: i) objectives and targets, ii) risk assessment, iii) suppression improvement plan, iv) monitoring requirements including assigning responsibility (for all employees and contractors), v) communication strategy, and vi) system and performance review for continuous improvements.	This report
e) be consistent with and incorporate all relevant recommendations and mitigation measures detailed in the Air Quality and Odour Assessment, prepared by SLR, dated March 2022	Section 7.0
Condition C14	
The AQMP must detail management practices to be implemented for all dust and VOC/odour sources at the site. The AQMP must also detail the dust, odour, VOC and semi-volatile organic compounds (SVOC) monitoring program (eg. frequency, duration and method of monitoring) to be undertaken for the Project.	Section 8.0 and Section 11.0
Condition C15	
The Applicant must also develop and implement an appropriate comprehensive Reactive Air Quality and Odour Management Plan which will incorporate an Ambient Air Monitoring Program and Reactive Management Strategy to ensure that the assessment criteria are met during the works.	Section 12.0



3.0 Project Overview

3.1 Project Site Location and Context

The Project site is located at 8 Memorial Avenue, Kellyville NSW, approximately 36 km northwest of the Sydney Central Business District (CBD) and 13 km Northwest of Parramatta CBD. **Figure 1** illustrates the location of Project site.

The land to which the development consent relates comprises Lot 60 DP10702 and Lot 1 DP167535.

Figure 1: Project Site Location



3.2 Surrounding Land Uses and Receptors

The area surrounding the Project site includes lands zoned as local centre, commercial core, mixed use, general residential, public recreation and infrastructure, as seen in **Figure 2**. neighbouring sensitive receptors are shown in **Figure 3**.

Figure 2: Land Zoning

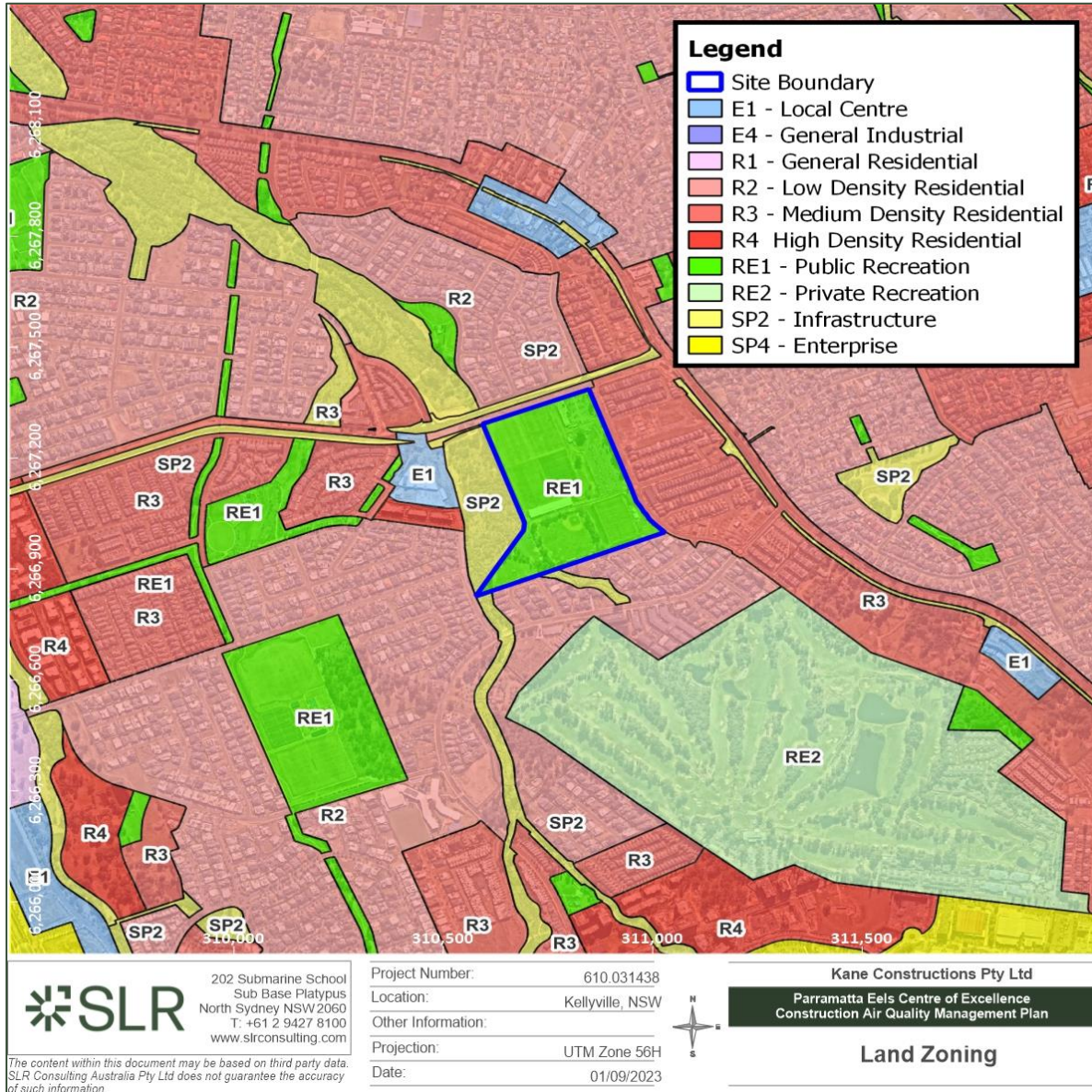
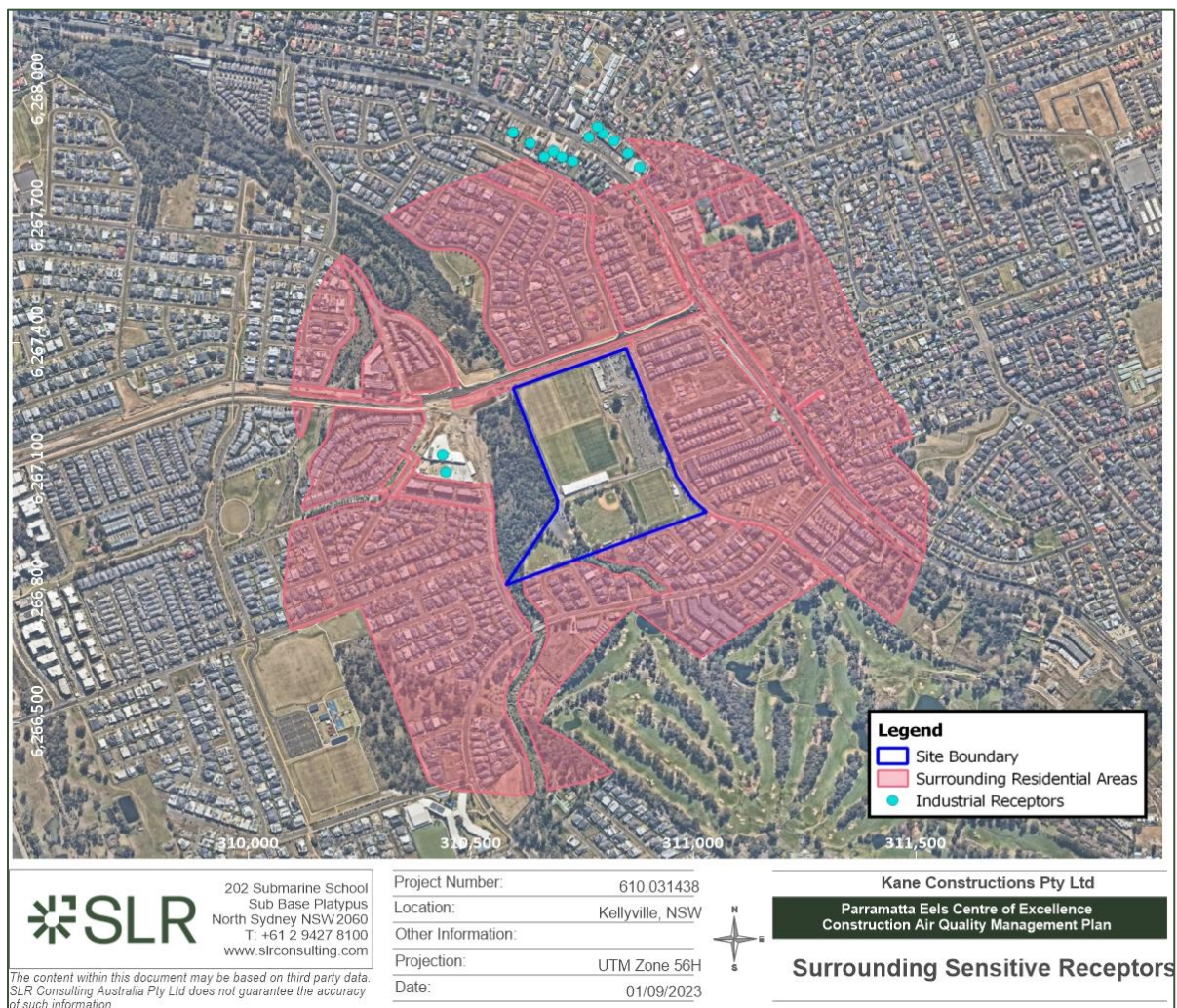


Figure 3: Sensitive Receptor Locations



3.3 Construction Activities

Construction works for the Project are summarised as follows:

- Construction of high-performance Centre of Excellence in the northeast of the Project site adjacent to Training Field 2. The Centre of Excellence is proposed to include:
 - Elite level gymnasium
 - Medical and rehabilitation facilities
 - Aquatic recovery and rehabilitation pools
 - Lecture theatre and meeting rooms
 - Player education and study areas
 - Administration offices for the Parramatta Eels
 - New female facilities including a dedicated female change room, cubicle toilets and showers
 - Balcony and terrace area



- End of Trip Facilities and bicycle parking
- Refuse Area
- Construction of a Community Facility, including a grandstand with approximately 1,500 seats in the centre of the Project site adjacent to the Main Playing Field 3. The Community Facility is proposed to include:
 - Unisex changerooms and amenities
 - Referee changeroom and amenities
 - First Aid/Medical room
 - Community gymnasium
 - Café/kiosk
 - Concourse terrace
 - Multipurpose community function room with kitchen and amenities
 - Refuse Area
 - Bicycle parking
- Solar arrays will be included on the roof of both the Centre of Excellence and Community Facility.
- Additional 40 car parking spaces for the s to operate in conjunction with existing at grade car parking already constructed by Council.
- Additional landscaping throughout the development footprint.
- Removal of a small number of trees internal to the site, however noting perimeter trees will be retained where not affected by the proposed building footprints.

3.4 Construction Hours

In accordance with the SSD approval, working hours between

- 7:00 am to 6:00 pm Monday to Friday
- 8:00 am to 1:00 pm Saturdays

Rock breaking, rock hammering, sheet piling, pile driving, and similar activities will only be carried out between the following hours;

- 9:00 am to 12:00 pm Monday to Friday
- 2:00 pm to 5:00 pm Monday to Friday
- 9:00 am to 12:00 pm Saturday.



3.5 Key Contact Details

Table 2 lists the key contacts during the construction.

Table 2: Construction Contract List

Role	Name	Company	Contact Details
Project Manager	Nathan Parris	Kane Constructions	0401 395 980
Project Manager	Michael Wright	Kane Constructions	0403 045 215
Site Manager	Andrew Baker	Kane Constructions	0400 743 356

4.0 Potential Sources of Air Emissions

Potential air emissions associated with the construction of the Project include:

- Fugitive dust emissions
- Products of combustion from construction plant, machinery; and
- Odours from contaminated soil material.

4.1 Fugitive Dust Emissions from Construction Activities

During the construction works, fugitive dust emissions are considered to have the greatest potential for off-site air quality impacts, which could give rise to nuisance and/or health impacts for the surrounding sensitive areas. Temporary elevation in the emissions of particulate matter and local dust is considered to be inevitable as part of the construction works, particularly where those activities are undertaken during periods of low rainfall and/or windy conditions.

The impact of elevated dust emissions is dependent upon the potential for particulates to become and remain airborne prior to being deposited as dust or experienced as an ambient particulate concentration. The key potential sources of dust associated with construction works at the Project site have been identified as:

- Dust emissions from earthworks activities (e.g. excavation and loading of soils to trucks and barges);
- Wind-generated dust from disturbed surfaces and stockpiles;
- Wheel-generated dust and particulate matter emissions in diesel exhaust emissions from on-site plant and equipment and construction traffic movements;
- Particulate matter associated with vehicle emissions from increased/congested traffic emissions due to road closures or diversions; and
- Dust generated from drilling, piling and hammering activities.

In addition to the construction activities being carried out at any point in time, a number of other environmental factors may also affect the generation and dispersion of dust emissions, including:

- Wind direction - determines whether dust generated at the Project site are transported in the direction of the sensitive receptors;



- Wind speed - governs the potential lift off and drift resistance of particles;
- Rainfall or dew - rainfall or heavy dew that wets the surface of the soil reduces the risk of dust generation.
- Surface type - more erodible surface material types have an increased soil or dust erosion potential;
- Surface material moisture - increased surface material moisture levels reduces soil or dust erosion potential.

4.2 Products of Combustion from Construction Plant and Machinery

Diesel and petrol fuelled trucks, excavators, dozers and other equipment associated with the construction of the Project site will emit products of fuel combustion. A review of the National Pollutant Inventory Emission Estimation Technique Manual (NPI EET) for Combustion Engines (DSEWPC 2008) identifies the primary pollutants from combustion engines as:

- Carbon monoxide (CO).
- Oxides of nitrogen (NO_x).
- Particulate matter less than 2.5 µm in aerodynamic diameter (PM_{2.5}).
- Particulate matter less than 10 µm in aerodynamic diameter (PM₁₀).
- Sulfur dioxide (SO₂).
- Total Volatile Organic Compounds (TVOCs).

Other substances are also emitted in trace amounts as products of incomplete combustion, such as metallic additives, which contribute to the particulate content of the exhaust (DSEWPC 2008).

4.3 Odours Emissions

According to the Air Quality Assessment prepared for the Project by SLR Consulting (SLR Consulting 2022) (hereafter, the Air Quality Assessment) at the SSDA stage found that that no significant sources of emissions of odour are expected during the construction phase of the Project. A preliminary site investigation (contamination) undertaken by Douglas Partners Pty Ltd (DP) for the Project found that there is a low potential for contamination associated with fill at the site (Douglas Partners Pty Ltd 2021). A subsequent detailed site investigation (contamination) undertaken by DP, that involved the collection and testing of 29 soil samples from test locations across the Project site found:

- Concentration of contaminants were below the relevant health investigation levels and health screening levels at all locations tested
- Concentrations of contaminants were below the relevant the ecological investigation levels and ecological screening levels at all but two locations. The two exceedances were deemed by DP as minor and not considered statistically significant.

Given the above, the risk of volatilisation of ground contaminants were considered by the Air Quality Assessment to be negligible. Nevertheless, to reduce the potential for any nuisance odours a number of mitigation measures have been adopted (refer **Section 8.0**).



5.0 Relevant Air Quality Criteria

The following sections outline the potential health and amenity issues associated with the particulate matter along with relevant ambient air quality criteria.

Note - in the event that additional monitoring of other pollutants is required, then the CAQMP is to be updated with relevant criteria.

5.1 Particulate Matter (Dust)

Airborne contaminants that can be inhaled directly into the lungs can be classified on the basis of their physical properties as gases, vapours or particulate matter. In common usage, the terms “dust” and “particulates” are often used interchangeably. The health effects of particulate matter are strongly influenced by the size of the airborne particles. Smaller particles can penetrate further into the respiratory tract, with the smallest particles having a greater impact on human health as they penetrate to the gas exchange areas of the lungs. Larger particles primarily cause nuisance associated with coarse particles settling on surfaces.

The term “total particulate matter” (TSP) refers to a category of airborne particles, typically less than 30 microns (μm) in diameter. Particulate matter with an aerodynamic diameter of 10 microns or less is referred to as PM_{10} . The PM_{10} size fraction is sufficiently small to penetrate the large airways of the lungs, while $\text{PM}_{2.5}$ (2.5 microns or less) particulates are generally small enough to be drawn in and deposited into the deepest portions of the lungs. Potential adverse health impacts associated with exposure to PM_{10} and $\text{PM}_{2.5}$ include increased mortality from cardiovascular and respiratory diseases, chronic obstructive pulmonary disease and heart disease, and reduced lung capacity in asthmatic children. In an urban setting, the emission of $\text{PM}_{2.5}$ is primarily associated with vehicles exhausts resulting from the incomplete combustion of diesel.

State air quality guidelines specified by the NSW Environmental Protection Agency (EPA) are published in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA 2022) (hereafter ‘Approved Methods’). The ground level air quality impact assessment criteria listed in Section 7 of the Approved Methods have been established by NSW EPA to achieve appropriate environmental outcomes and to minimise associated risks to human health as published in the Approved Methods. They have been derived from a range of sources and are the defining ambient air quality criteria for NSW, and are considered to be appropriate for the Project.

In addition to health impacts of particulate matter, nuisance impacts need also to be managed, mainly in relation to deposited dust. Dust can cause nuisance by settling on surfaces and possessions, affecting visibility and contaminating tank water supplies. High rates of dust deposition can also adversely affect vegetation by blanketing leaf surfaces. The rate of dust deposition is measured by means of a collection gauge, which catches the dust settling over a fixed surface area and over a period of about 30 days. Given the long sample times and delays between sampling and reporting of deposition levels, monitoring of dust deposition cannot be used for reactive dust management. The air quality goals adopted for the Project are summarised in **Table 3**.



Table 3: Project Air Quality Goals

Activity	Description	Timing
PM ₁₀	24 Hours	50 µg/m ³
	Annual	25 µg/m ³
Source: Approved Methods, (NSW EPA 2022)		

6.0 Receiving Environment

6.1 Local Meteorology

Local wind speed and direction influence the dispersion of air pollutants. Wind speed determines both the distance of downwind transport and the rate of dilution as a result of 'plume' stretching. Wind direction, and the variability in wind direction, determines the general path pollutants will follow and the extent of crosswind spreading. Surface roughness (characterised by features such as the topography of the land and the presence of buildings, structures and trees) will also influence dispersion.

Considering the distance and terrain features between the Project site and the nearest weather stations, the Air Quality Assessment, found that recordings from these stations are not a reasonable representation of the wind conditions in the area surrounding the Project site. Given this, the Air Quality Assessment used the Air Pollution Model (TAPM) meteorological model (Version 4.0.4) to compile a more site-representative dataset for the Project site.

A summary of the average annual and seasonal wind behaviour predicted by TAPM for the modelled years (2016-2020) at Project site is presented as wind roses in **Figure 4**.

Wind roses show the frequency of occurrence of winds by direction and strength. The bars correspond to the 16 compass points (degrees from North). The bar at the top of each wind rose diagram represents winds blowing from the north (i.e., northerly winds), and so on. The length of the bar represents the frequency of occurrence of winds from that direction, and the widths of the bar sections correspond to wind speed categories, the narrowest representing the lightest winds. Thus, it is possible to visualise how often winds of a certain direction and strength occur over a long period, either for all hours of the day, or for periods during the day.

The annual wind rose for the years 2016-2020 (**Figure 4**) indicates that throughout the year, winds are mostly light to gentle (between 1.5 m/s and 5.5 m/s) and blow from the northeast quadrant. Calm wind conditions (wind speed less than 0.5 m/s) were predicted to occur approximately 2.4% of the time.

The seasonal wind roses for the years 2016-2020 (**Figure 4**) indicate that:

- In summer, winds are predominantly from northeast quadrant, with few winds from the south-southwest to north-northwest directions. Calms were predicted to occur approximately 0.7% of the time.
- In autumn, winds are predominantly from the northeast and southeast quadrants and there is a higher frequency of winds from the south-southwest quadrant compared to summer. Calms were predicted to occur approximately 3.4% of the time.
- In winter, winds are predominantly from southwest quadrant with very few winds from the northeast to south-southeast directions. Calms were predicted to occur approximately 3.6% of the time.

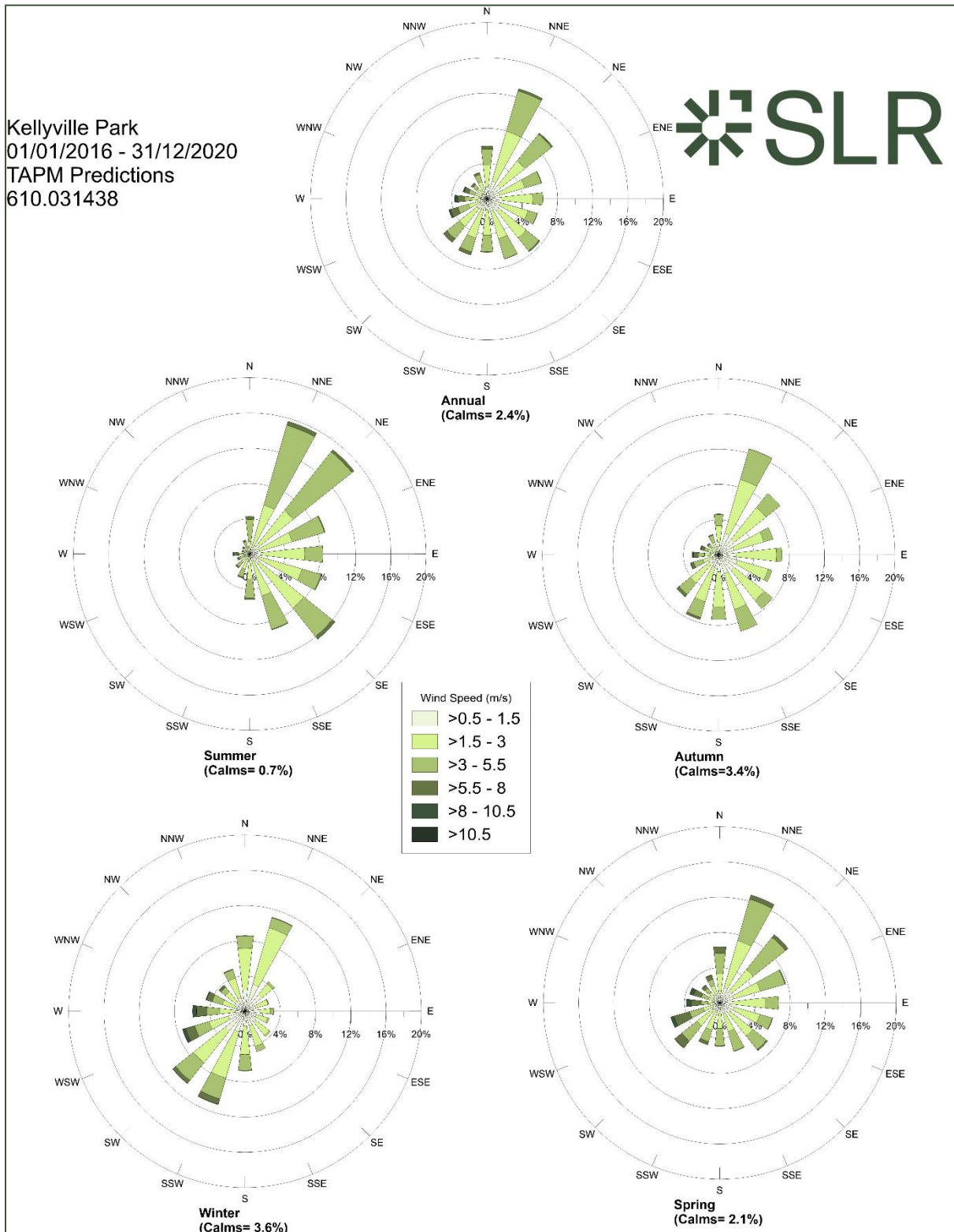


- In spring winds blow from all directions with the highest frequency of winds from the northeast quadrant and the lowest frequency from the northwest quadrant. Calms were predicted to occur approximately 2.1% of the time.

As identified in **Section 3.2**, the closest sensitive receptors are located to the north, east and south of the Project site. Winds blowing emissions from the site towards these sensitive receptors occur throughout the year.



Figure 4: Project Site Annual and Seasonal Wind Roses, 2016-2020



6.2 Background Air Quality

Air quality monitoring is performed by the NSW Department of Planning and Environment (DPE) at a number of monitoring stations across NSW. The nearest such station is located at Rouse Hill, approximately 6 km northwest of the Project site. The Rouse Hill AQMS was commissioned in June 2019 and is located on Cudgegong Rd at an elevation of 73 m. The following air pollutants are monitored at this station:

- NO, NO₂ and NO_x
- SO₂
- CO
- PM_{2.5} and PM₁₀

A summary of the monitored pollutant concentrations for the last four years (2019-2022) is summarised in **Table 4** and the data are presented graphically in **Table 4**. To be consistent with the annual NSW compliance monitoring reports, the data for gaseous pollutants are presented in parts per hundred million (pphm) or parts per million (ppm), rather than µg/m³ and mg/m³.

Exceedances of the 24-hour average PM₁₀ and PM_{2.5} criteria were recorded by the Rouse Hill AQMS each year over the period analysed except for 2022. A review of the available compliance monitoring reports indicates that these exceedances were primarily due to exceptional events such as bushfires, dust storms or hazard reduction burns. Very elevated PM₁₀ and PM_{2.5} concentrations were recorded along the east coast of Australia in late 2019 and early 2020 during the 'Black Summer' bushfire event.

Exceedances of the annual average PM₁₀ and PM_{2.5} criteria were recorded for the year 2019 only; these exceedances were primarily due to the above-mentioned bush fires, which impacted much of the state in late 2019 and early 2020.

Ambient concentrations of the gaseous pollutants SO₂, NO₂, and CO were all well below the relevant criteria for all years investigated.

Table 4: Summary of Rouse Hill AQMS Data (2019 – 2022)

Pollutant	PM ₁₀		PM _{2.5}		CO	NO ₂		SO ₂	
	Maximum 24-hour	Annual	Maximum 24-hour	Annual	Maximum 1-hour	Maximum 1-hour	Annual	Maximum 1-hour	Maximum 24-hour
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	ppm	pphm	pphm	pphm	pphm
2019	216.2 (24)	27.3	183.5 (24)	12.7	6.2 (0)	5.0 (0)	0.6 (0)	1.1 (0)	0.50 (0)
2020	220.3 (10)	18.3	61.3 (10)	7.1	12.0 (0)	3.4 (0)	0.5 (0)	2.8 (0)	0.50 (0)
2021	51.6 (1)	15.0	40.5 (4)	5.9	1.5 (0)	3.4 (0)	0.5 (0)	2.2 (0)	0.30 (0)
2022	23.8 (0)	11.8	14.8 (0)	4.6	0.9 (0)	3.3 (0)	0.5 (0)	0.9 (0)	0.30 (0)
Criteria	50	25	25	8	25	8	1.5	10	2
Notes:									
<ul style="list-style-type: none"> • red font indicates an exceedance of the relevant criterion • numbers in brackets represent number of exceedances of relevant criteria recorded each year 									



7.0 Assessment of Air Quality Emissions During Construction

The Air Quality Assessment's findings in relation to the predicted risk of air quality impacts on sensitive receptors after the implementation of mitigation measures (presented in **Section 8.0**) are presented in **Table 5**.

Table 5: Risk of Air Quality Impacts from Preliminary Risk Assessment from Construction Activities (uncontrolled)

Impact	Sensitivity of Area	Residual Risk			
		Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Negligible Risk	Low Risk	Low Risk	Negligible Risk
Human Health	Low	Negligible Risk	Negligible Risk	Negligible Risk	Negligible Risk

*Note Demolition works were previously considered in Air Quality Assessment (SLR Consulting Pty Ltd, 2022).

The mitigated dust deposition and human health impacts for earthworks and construction activities are anticipated to be *low* and *negligible*, respectively. For almost all construction activity, the IAQM Methods notes that the aim should be to prevent significant effects on receptors through the use of effective mitigation and experience shows that this is normally possible.

The Air Quality Assessment was based on the following assumptions:

- Demolition of total building volume of up to 20,000 m³ would be performed.
- 5 to 10 heavy earth moving vehicles active at any one time
- Total material moved between 20,000 tonnes (t) and 100,000 t.
- Total building volume to be constructed would be between 25,000 m³ and 100,000 m³.
- 10 and 50 heavy vehicle movements per day.

SLR understand that there are not demolition plans as part of the construction Project, apart from removal of trees, footpaths, kerbs and vehicle pavements. Further, it is understood that and the abovementioned assumptions remain relevant to the Project. Therefore, the overall risk from the Project construction activities remains unchanged from what was reported in the Air Quality Assessment.



8.0 Mitigation Measures

The air emissions during construction at the Project site and the potential impact (as discussed in **Section 4**) on surrounding sensitive receptors will be controlled through a range of mitigation measures, including good site management, good housekeeping measures, appropriate vehicle maintenance and applying appropriate mitigation measures where required. The dust and odour mitigation measures to be implemented during construction are detailed in **Table 6**.

Table 6: Air Emission Mitigation Measures

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Communications			
Kane Construction's Community Communications Strategy will be implemented.	Kane Constructions Project Manager and Site Manager	Prior to commencing construction and ongoing	SSD 24452965 Condition C13(v)
The name and contact details of person(s) accountable for air quality and dust issues will be displayed on site signage.			Best practice
The head or regional office contact information will be displayed on site signage.			
Complaints and enquiry procedures will be implemented.			Best Practice
Site Management			
Where excessive dust events occur (i.e. continuous monitor trigger or prolonged visual dust in a particular area), additional watering of dust producing activities will be undertaken or activities temporarily halted until such times that the dust source is under control.	Kane Constructions Project Manager and Site Manager	During excessive dust events	Best Practice
Nearest Bureau of Meteorology station (Sydney Olympic Park AWS) weather forecast will be reviewed daily (i.e. wind, rain) to inform site dust management procedures for the day.		Daily	
Preparing and Maintaining the Site			
Adequate measures shall be taken to prevent dust from affecting the amenity of the neighbourhood during construction.	Kane Constructions Project Manager and Site Manager	Ongoing	SSD 24452965 Condition C13



Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
All materials shall be stored or stockpiled at suitable locations and stockpiles shall be maintained at manageable sizes which allow them to be covered, if necessary, to control emissions of dust and or VOCs/SVOC and odour			Best Practice
The surface should be dampened slightly to prevent dust from becoming airborne but should not be wet to the extent that run-off occurs			Best Practice
Gates shall be closed between vehicle movements and shall be fitted with shade cloth			Best Practice
Cleaning of footpaths and roadways shall be carried out regularly			Best Practice
Dust generating activities in areas close to receptors will be closely monitored and additional mitigation applied as required to best manage potential dust emissions			Best Practice
Stockpiles that will be in place for more than 20 days and are not actively used as well as any stockpiles that are susceptible to wind or water erosion will be suitably protected from erosion within 10 days of the establishment of each stockpile. Temporary stabilisation of disturbed surfaces will be undertaken within two weeks of the stockpile being established.			
Site fencing and barriers will be kept clean using wet methods.			
Prioritise the replacement of highly odorous excavated soil material onto ground where possible to limit odour emissions.			
Excavated soil material is to be kept covered where possible to limit odour emissions.			
Operating Vehicle/Machinery and Sustainable Travel			
All vehicles carrying spoil or rubble to or from the site shall at all times be covered to prevent the escape of dust or other material	Kane Constructions Project Manager and Site Manager	Ongoing	Best practice



Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes	
All equipment wheels shall be washed before exiting the site using manual or automated sprayers and drive-through washing bays			Best practice	
All on-road vehicles will comply with relevant vehicle emission standards (prescribed by the NSW RMS), where applicable, and will be maintained in good condition, in accordance with manufacturer's specifications and relevant regulations.			Best practice	
Delivery trucks will switch off engines whilst undertaking a delivery on-site, if idling time is likely to exceed 5 minutes.				
Vehicle speed limit of 10km/h are implemented on site.				
Truck queuing and unnecessary trips will be minimised through logistical planning and by the identification and use of specific park up/hold areas away from the Project.				
General				
Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as filters or water sprays will be used.	Kane Constructions Project Manager and Site Manager	Ongoing	Best practice	
Adequate water supply will be available on the site for effective dust/particulate matter suppression/mitigation using a combination of potable and non-potable water sources.				
Water carts will be used on all denuded or exposed surfaces and unsealed roads to minimise dust emissions.				
Equipment, inclusive of, but not limited to Environmental spill kits will be readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.				
Works will be assessed during strong winds or in weather conditions where high levels of airborne particulates may potentially impact the sensitive receivers.		Continuously and during high winds		



Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Continual monitoring of wind speed and direction will be undertaken to guide this decision and ensure that adequate mitigation measures are undertaken			
Waste Management			
All trucks entering or leaving the site will have their loads covered.	Kane Constructions Project Manager and Site Manager	Ongoing	Best practice
No waste materials, timbers or any other combustible materials will be burnt on site.			
Earthworks			
Scopes of work will be planned in such a way to assist in minimising the duration that surfaces are left denuded	Kane Constructions Project Manager and Site Manager	Ongoing	Best practice
Rehabilitation of disturbed surfaces will be undertaken within 20 days of final construction levels.		Within 20 days of final construction levels	
If unanticipated strong odours or significant visual dust emissions are noted or observed on site, an investigation will be undertaken by the Project Manager to identify the scope of work or source of the emission prior to undertaking and applying any additional mitigation measures.		Ongoing	
Stockpiles			
Sand and other aggregates will not be allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Kane Constructions Project Manager and Site Manager	Ongoing	Best practice
Trackout			
Water-assisted road sweeper(s) will be used on an as required basis should any material be tracked out of the site.	Kane Constructions Project Manager and Site Manager	Ongoing	Best practice
Record all regular inspections and maintenance undertaken of site haul routes and Project related access roads in a site log book.			
A wheel washing system and/or cattle grid system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site) will be implemented.			



Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Demolition			
Ensure effective water suppression of dust is used during demolition operations.	Kane Constructions Project Manager and Site Manager	Ongoing	Best practice

9.0 Performance Objectives

Table 7 summarises the performance objectives identified to assess the effectiveness of the control measures shown in **Section 8.0**.



Table 7: Summary of the Parameters to Assess the Effectiveness of Control Measures

Parameter	Visible Dust	Odours and VOCs/SVOCs		PM ₁₀	Products of Combustion	Complaints
Key performance indicator	No visible dust leaving the Project site boundary	No odours detected at the boundary of the Project site		<50 µg/m ³ as a 24-hour average	No clearly visible exhaust emissions on any mobile plant or vehicles for a sustained period of 5 seconds when engine is idling ¹	No complaints related to dust or other air quality issues
Monitoring method	Visual inspection / observations	Field observations		Continuous Low Cost Sensor technology monitor	Visual inspection / observations	-
Location, frequency and duration of monitoring	Daily onsite inspection	Daily onsite inspection		Section 11.0	Daily onsite inspection	-
Record keeping	Section 8.0	Section 8.0		Section 11.0	Section 8.0	Section 8.0
Response procedures	Section 12.0	Section 12.0		Section 12.0	Section 12.0	Section 12.0
1. Adopted from https://www.nzta.govt.nz/resources/rules/vehicle-exhaust-emissions-2007/ #4						



10.0 Complaints Handling and Response Procedure

All complaints will be handled in accordance with the sections below.

10.1 Performance Objective

To ensure that all environmental complaints in relation to the air emissions from the construction activities are promptly and effectively received, handled and addressed.

10.2 Responsibility

The Project Manager is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint. It should be ensured that all site employees are aware of and understand their obligations for complaints response.

All employees who take receipt of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager, who will then contact the Project Manager.

10.3 Complaints Handling Procedure

Upon becoming aware of a complaint, the protocol outlined below will be followed.

1. Record and Acknowledge

Any employee who takes receipt of a complaint, either verbal or written, is to immediately notify the Project Manager.

In the normal course of events, the first contact for complaints will usually be made in person or by telephone.

The complainant's name, address and contact details, along with the nature of the complaint, must be requested. If the complainant refuses to supply the requested information, a note will be made on the form and complainant advised of this.

2. Assess and Prioritise

The Project Manager will prioritise all complaints by considering the seriousness of the complaint including risk to health and safety and will attempt to provide an immediate response via phone or email.

3. Investigate

A field investigation will be initiated in an attempt to confirm details relevant to the complaint and the cause of the problem. Any air quality monitoring information and/or site records at and around the time of the complaint will be reviewed for any abnormality or incident that may have resulted in the complaint.



4. Action or Rectify

Once the cause of the complaint has been established, every possible effort will be made to undertake appropriate action to rectify the cause of the complaint and mitigate any further impact. The Project Manager will assess whether the complaint is founded or unfounded and delegate the remediation of the issue to the Contractor's Project Manager for action, as required.

As outlined in **Section 12.0**, if a complaint regarding air quality impacts is concluded to be substantiated, the need for any changes to the air quality mitigation measures identified for the Project in **Section 7.0** and/or the air quality monitoring programme outlined in **Section 11.0** is to be reviewed and, the CAQMP updated as appropriate.

5. Respond to Complainant

The Project Manager and the Contract Superintendent will oversee the rectification of the issue. The Project Manager will then respond to the complainant once the issue has been resolved.

6. Record

It is imperative that an investigation of the situation is carried out and proposed improvements documented in order to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in the Communications and Complaints Register.

7. Preventative Action

Once the complaint has been suitably handled, proposed improvements will be investigated and implemented to minimise the potential of re-occurrence. The Complaint Enquiry Form will not be closed out until the preventative actions are completed and recorded on the form.

10.4 Complaints Register

A Communications and Complaints Register will be maintained during construction and will contain the following:

- A copy of the environmental complaint handling procedure;
- A separate reference sheet containing the contact details;
- Details of of all complaints received.



11.0 Air Quality Monitoring Program

A summary of the proposed on-site dust monitoring programme to be undertaken at the Project site is shown in **Table 8**. The proposed locations of the air quality monitor is illustrated in **Figure 5**.

Table 8: Summary of On-Site Monitoring Programme

Pollutant	Equipment Used	Monitoring Sites	Criterion (Averaging Period)
Suspended Particulate Matter (PM ₁₀)	SiteHive Hexanode, multi-sensor monitor ^a	Location 1	50 µg/m ³ (24-hour average)
The SiteHive Hexanode system is non-compliant with the Approved Methods and is used as a management tool to proactively manage the onsite operations to reduce dust impacts.			

In addition, monitoring activities listed in **Table 9** will also be conducted in order to ensure appropriate management of mitigation measures.

Table 9: Additional Air Quality Monitoring

Environmental Management Control	Person Responsible	Timing/frequency	Reference
Perform on-site and off-site inspections where receptors (including roads) are nearby, to observe visible dust and odours travelling off-site, as well as smoky vehicle exhausts and confirm compliance with the relevant performance criteria in Table 8 . Record inspection results and make the log available to the local authority when asked.	Kane Constructions	Daily	Best Practice
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust/odour are being carried out and during prolonged dry or windy conditions.		Ongoing	



Figure 5: Proposed Monitoring Location



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12.0 Reactive Air Quality and Odour Management

The reactive air quality and odour management plan for construction at the Project site is shown in **Table 10**. Data from the monitoring program presented in **Section 11.0** in conjunction with site observations and complaints data will be utilised to inform the appropriate response.

Table 10: Air Quality Reactive Management Plan for the Construction of Parramatta Eels Centre of Excellence

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Visible dust leaving the site	Trigger	Daily inspections show that there is no visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site multiple times during a day OR from multiple locations within the site.
	Response	Continue monitoring program as normal.	Review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as: <ul style="list-style-type: none"> Deployment of additional water sprays, water trucks etc 	Undertake an investigation of the dust generating activities, and if necessary, temporarily halt the dust generating activities
Real-time suspended particulate matter monitoring (PM ₁₀)	Trigger	Running 24-hour average PM ₁₀ concentrations < 50 µg/m ³	1-hour average PM ₁₀ concentration >50 µg/m ³ but <100 µg/m ³	1-hour average PM ₁₀ concentration >100 µg/m ³
	Response	Continue monitoring program as normal.	Project Manager to review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as: <ul style="list-style-type: none"> Deployment of additional water sprays, water trucks etc Relocation or modification of dust-generating sources Record findings of investigations and actions taken to reduce dust levels 	<ul style="list-style-type: none"> Project Managers to review and investigate construction activities and respective control measures for the monitoring period, in an air pollution incident report.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
			<ul style="list-style-type: none"> Continue to closely monitor dust levels to ensure they are decreasing <p>If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the Project site to minimise cumulative impacts, but also record details of the cause of the elevated background levels.</p>	<ul style="list-style-type: none"> If it is concluded that construction activities at Project site were directly responsible for the elevated PM₁₀ concentrations, Kane Constructions to engage specialist air quality consultants to audit site activities and operator to implement additional mitigation measures (and possibly Australian Standard monitoring) based on audit findings.
Complaints received regarding nuisance dust or odour	Trigger	There are no complaints received during the construction	An air-quality related complaint is received from a nearby resident	Further complaints are received from the same complainant after the additional mitigation measures have been implemented
	Response	Continue monitoring program as normal.	<ul style="list-style-type: none"> Complaints are to be recorded in the site complaint register. To be provided to regulator upon request. Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc), where appropriate OR Implement additional odour remedial measures (cover odour generating stockpile, remove odour sources from site) 	<ul style="list-style-type: none"> Review real-time monitoring data at the existing continuous monitors to investigate the likelihood of onsite activities contributing to dust impacts. OR Undertake an investigation of the odour generating activities, and if necessary, temporarily halt the odour generating activities.
Odours detected off-site	Trigger	Daily inspections show that there are no off-site odour observations.	Daily inspections show that there are off-site odour observations.	<ul style="list-style-type: none"> Daily inspections show that there are off-site odour observations multiple times during a day OR from multiple locations within the site.
	Response	Continue monitoring program as normal.	Review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as:	<ul style="list-style-type: none"> Undertake an investigation of the odour generating activities, and if necessary, temporarily halt the odour generating activities.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
			<i>Covering of odorous stockpiles, removal of odour sources from site, etc</i>	

13.0 Roles and Responsibilities

The key responsibilities specifically for air quality management are as follows:

13.1 Project Manager

- Ensuring appropriate resources/plant/personnel are available for the implementation of this CAQMP;
- Assessing data from inspections and the monitoring program, and providing project-wide advice to ensure consistent approach and outcomes are achieved;
- Providing necessary training for Project personnel to cover air quality management;
- Reviewing and update of this CAQMP;
- Assessing and engaging (as required) additional mitigation controls to best manage the risks of elevated dust levels before commencing works each day and ensuring that the appropriate controls are implemented and effective;
- Ceasing particular scopes of works as required in the event of excessive dust generation due to extreme weather conditions or inadequately controlled construction activities (eg high winds, surface dirt accumulation, etc.); and
- In case of elevated odour emissions, implementing appropriate mitigation measures and/or ceasing particular scopes of works.
- In the event that an air quality complaint is received, the procedure in **Section 10.0** of this CAQMP will be implemented.
- Undertaking dust monitoring program;
- Review that control measures are working in accordance with the CAQMP;
- Alerting the Project Manager of any non-compliances with monitoring data;
- Reviewing weather forecasts daily and current observations of meteorological conditions (as recorded at Horsley Park AWS) and provide details of changing conditions to workforce;
- Throughout the day, visually assessing the dust levels and the effectiveness of any dust controls that have been implemented, which may include engaging additional resources to reduce or mitigate the risk of dust leaving the site;
- Performing on-site and off-site odour observations to ensure no odour impacts arising on neighbouring receptors.

13.2 All Workers on Site

- Observing any dust emission control instructions and procedures that apply to their work;
- Taking action to prevent or minimise dust emission incidents; and
- Identifying and reporting dust emission incidents.

14.0 Review and Improvement of the CAQMP

The review of the CAQMP will be undertaken annually and will include participation by Kane Constructions. The review will comprise, as a minimum, the following:

- Identification of areas of opportunity for ongoing improved environmental performance;
- Analysis of the causes of any recorded non-compliances, including those identified in environment inspections and audits;
- Verification of the effectiveness of corrective and preventative actions; and
- Highlighting any changes in procedures resulting from process improvement.

This CAQMP will also be reviewed and, if necessary, revised in the following circumstances:

- Where there is any change to the scope of the construction activities and/or disturbance footprint;
- Where it is identified that the environmental performance is not meeting the objectives of the CAQMP;
- In the event of a substantiated complaint being received regarding air quality impacts; and/or
- At the request of a relevant regulatory authority.

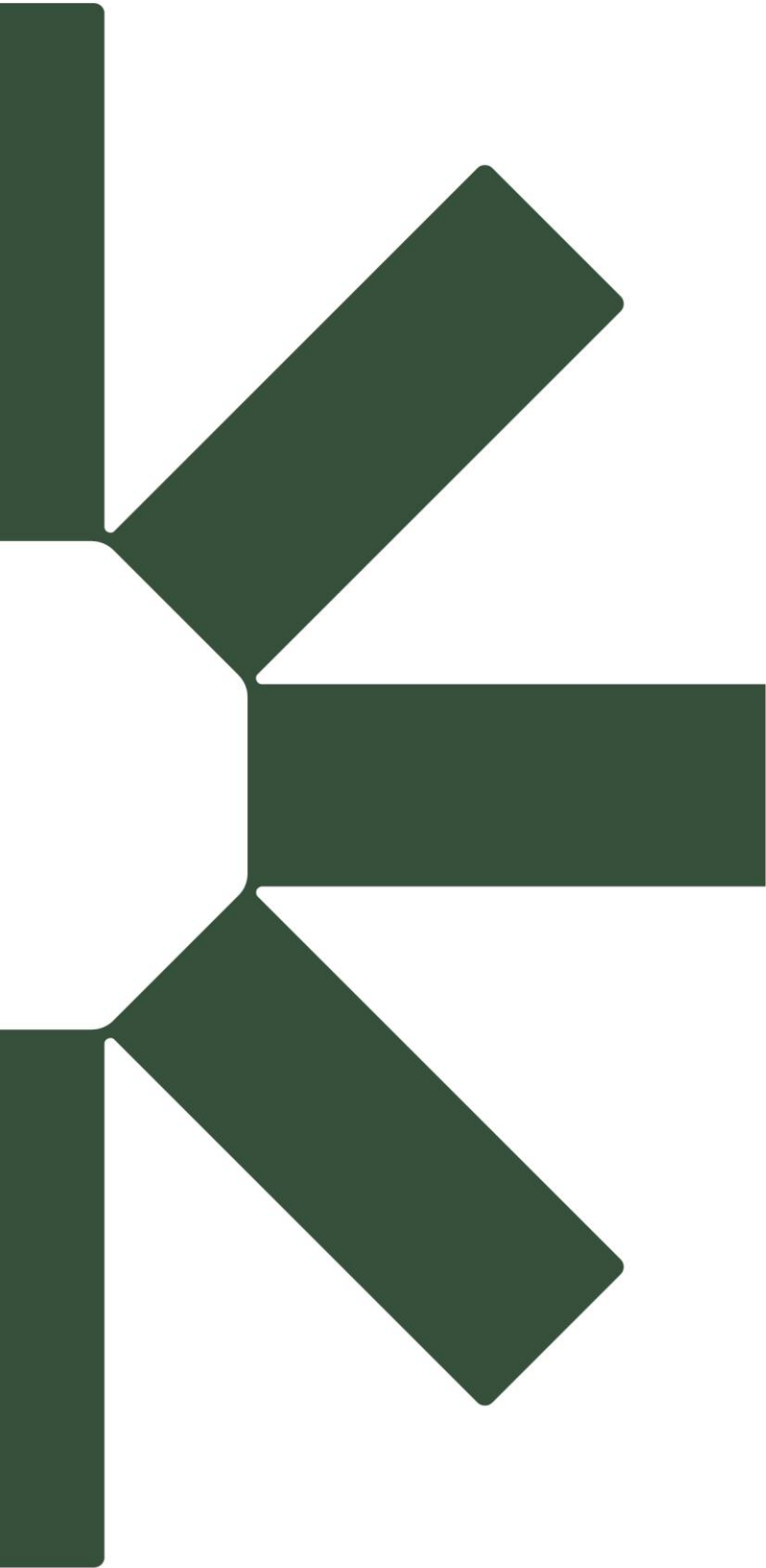
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