Alcoa of Australia Limited

WGP00184 RSA 10 CONSTRUCTION DUST MANAGEMENT PLAN

WAGERUP REFINERY

July 2025

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A	18/11/2022	Issued for Approval	[redacted]		
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Contents

1. Scope

Alcoa and its Contractors recognise the criticality of minimising dust emissions from the Residue Storage Areas (RSA's) and associated works, including during the construction of new residue storage areas.

All residue construction projects produce and execute a detailed dust management plan (DMP) that details dust minimisation measures and controls for use during planning and implementing activities that may have the potential to generate dust directly or indirectly. This Construction DMP is based on the requirements of the Alcoa procedure *Large Projects - Dust Management Procedure (WAO) AUA-CDS-25451* and is aligned to Alcoa's WA residue dust management procedures.

This Construction DMP applies to the construction phase of the new RSA 10 project only. Once operational, RSA 10 will be integrated into the existing dust management procedures for the Wagerup Refinery residue area.

Similar to the operational phase, dust management during the construction of RSA 10 will align with Alcoa's WA residue management dust procedures and *Large Projects – Dust Management Procedure (WAO) AUA-CDS-25451.* This Construction DMP outlines the project specific preventative and reactive measures that will be in place throughout the construction phase of the RSA 10 project to minimise the risk of dust emissions.

This Construction DMP is based on proven dust management techniques utilised during other residue area construction projects (including Wagerup RSA9, ROCP3 and RSA7N, Pinjarra RSA 10, RSA1N, S&E and DAR conversions, Kwinana Area N) and residue operations. The plan will be adapted to include any new methods that are developed, trialled and introduced as the project progresses and any changes will be reviewed and agreed by the Project Team and the Wagerup Refinery Environmental Manager before implementation.

2. Site Characteristics

2.1. Location

The Proposed RSA 10 is located at the northwest extremity of the existing Wagerup Refinery Residue Storage Area. The new RSA 10 is to be constructed within Alcoa's current grazing farmlands with new embankment walls adjoining the existing residue area stack.

Local communities in the proximity of Wagerup Refinery include Yarloop (approximately 3 km south of the Refinery), Hamel (approximately 5 km to the north of the Refinery) and Waroona (approximately 8 km north of the Refinery). Nearest receptors locations are shown in Figure 1 (Katestone, 2023).

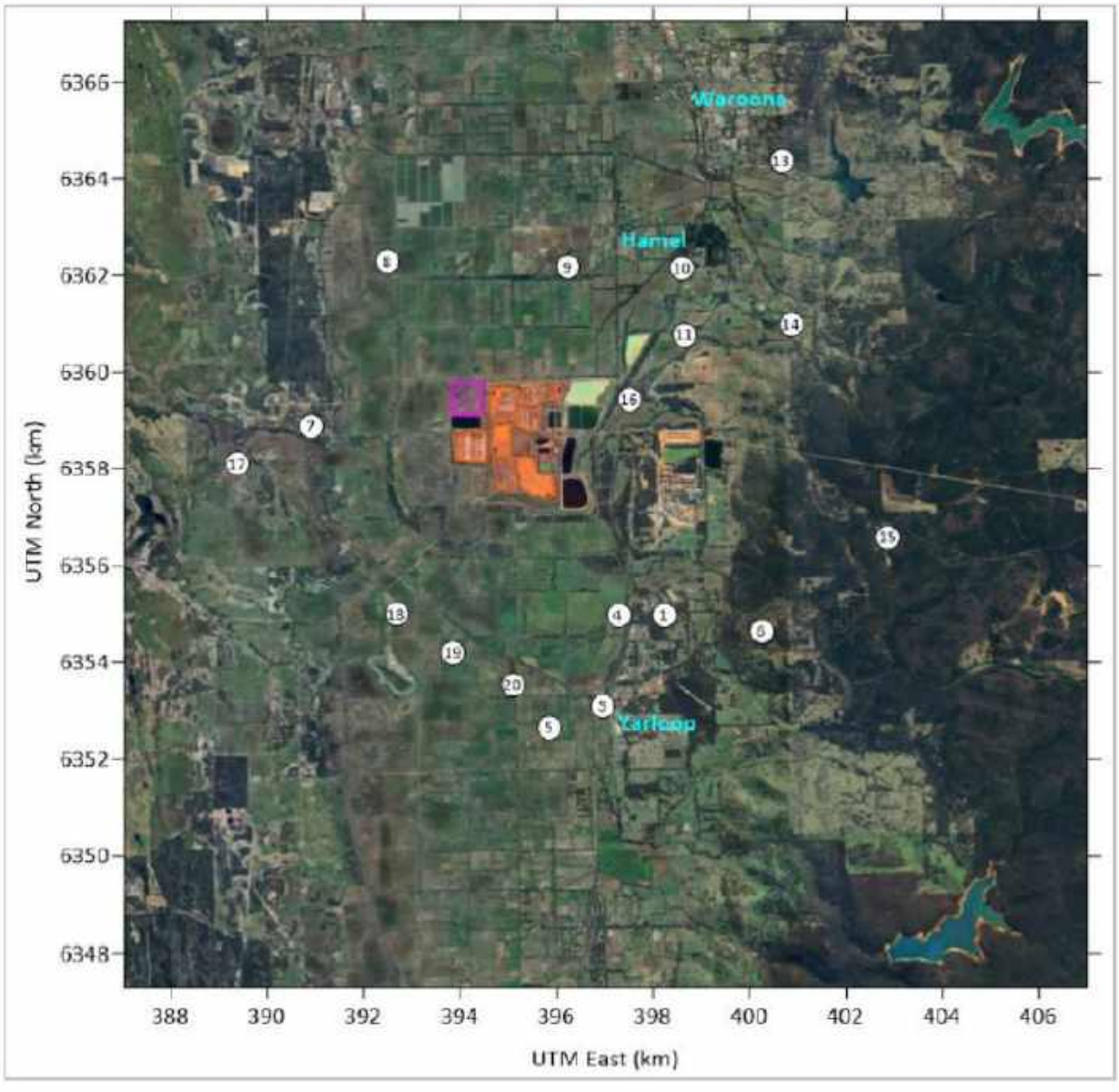

Figure 1: Discrete Sensitive Receptors and RSA 10 Footprint.

2.2. Soil Types

The Wagerup Refinery and residue area overlie the sedimentary units of the Perth Basin, with a shallow stratigraphic sequence beneath the Wagerup Refinery consisting mainly of a discontinuous layer of land fill (sandy clay and small amounts of ironstone gravel) and a thin layer of Guildford Formation (<2–3 metres thick) overlying the Yoganup Formation. The Yoganup Formation has a maximum thickness of around 10 metres near the refinery and consists of clayey sand that grades downwards to sand. These superficial formations are sedimentary deposits ranging from dense clay to coarse sands and gravel (Rockwater, 2023).

Construction of RSA 10 is expected to encounter this range of soil types which each have unique characteristics and dust emission risks. Section 6.4 outlines how these soils will be classified for dust management.

Soil types to be encountered during the construction of RSA 10 within the defined location will include but not be limited to:

- Imported clean fill sands, limestone and gravel for external road construction and hardstands.
- Location specific topsoils which will be removed, stockpiled and used for vegetation regrowth.
- Site specific extraction of clean clayey sand for haul routes, embankment walls, and clay liners.
- Use and/or disturbance of residue sands within internal containments for drainage layers and internal crest roads.

2.3. Meteorology

Winds in the vicinity of the Wagerup Refinery are controlled by synoptic weather patterns, local topography, and sea and land breezes (Environmental Technologies and Analytics, 2024). Summer is characterised by high-pressure systems passing to the south, generating synoptic easterlies over the region. Winter is characterised by passing cold fronts and low-pressure systems which generate more frequent westerly synoptic flows between periods of lighter winds.

Wagerup Refinery is located at the base of the Darling Escarpment, which is a low escarpment that runs in a north-south direction. This local topography modifies the larger scale winds, especially the generation of strong local foothill winds during summer, particularly over-night and in the early morning. Other topographic effects include:

- Generation of rotors that reverse the wind near the foothills under moderate to strong easterly winds
- North westerly winds are channelled and deflected by the escarpment, resulting in northerly winds, particularly at night under stable atmospheric conditions
- Denser air drains down the escarpment due to cooling air near the ground under light winds and clear night skies.

3. Licence Conditions

This Construction DMP has been developed to complement existing dust management practices and enable compliance with Wagerup Refinery's Environmental Protection Act Licence (L6217/1983/15).

The Licence includes conditions for monitoring dust from the residue area and sets limits for residue dust emissions. These conditions specify the maximum target concentration of TSP as a 24-hour average, at licenced high volume air sampler (Hi-Vols) locations (Figure 2).

The existing ambient dust monitoring program implemented at the Wagerup residue area in accordance with the Licence will be supplemented by the installation of an early warning construction dust monitoring network for construction of RSA 10 (see Section 6.7).

Alcoa is currently implementing a plan to upgrade the existing Wagerup residue area dust emission monitoring network. This Construction DMP will be updated to reflect relevant changes implemented as required.

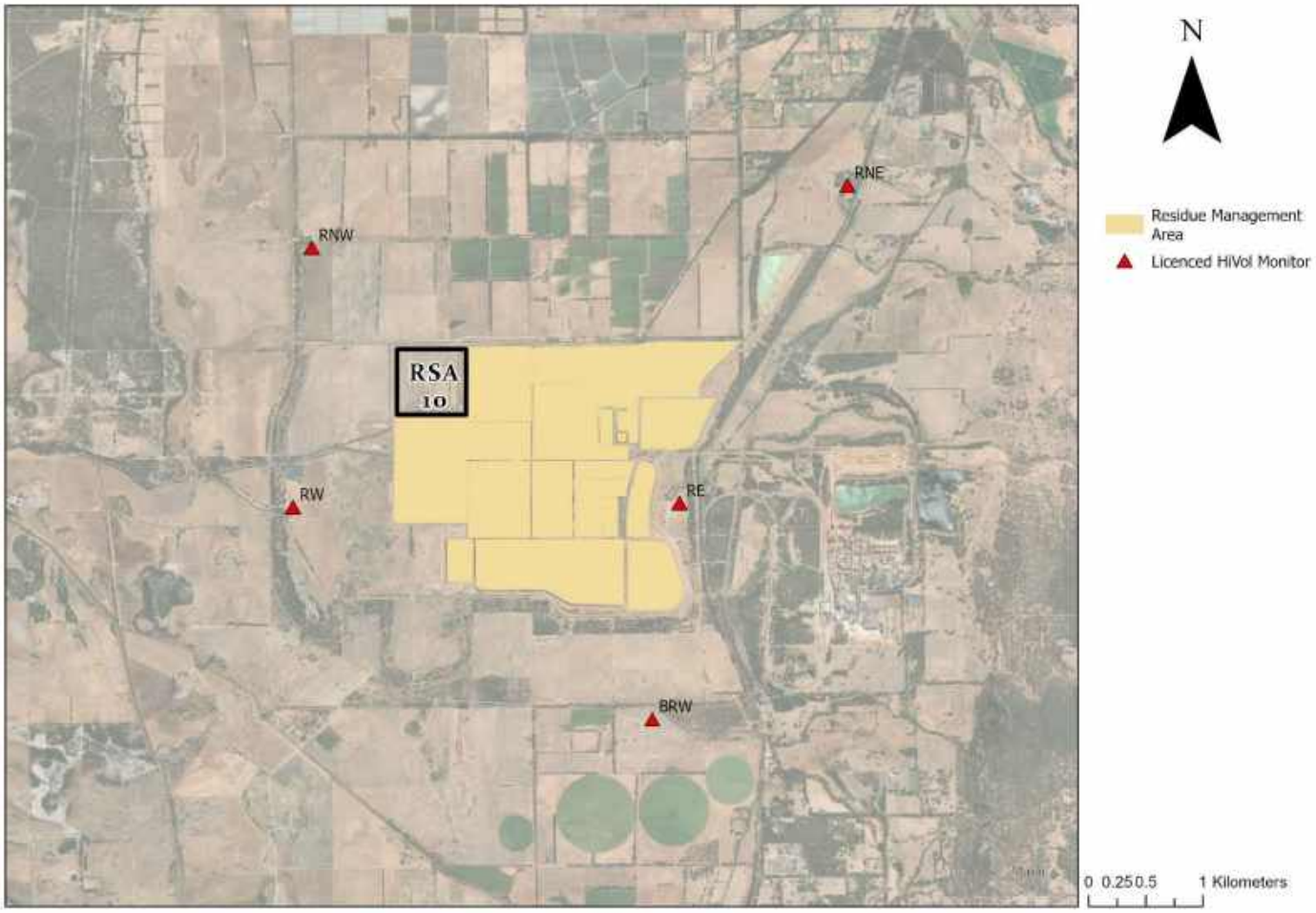

Figure 2: Residue Licenced Dust Monitor Network

4. Project Overview

Alcoa proposes to construct RSA 10 on the north-western corner of the existing residue management area (Figure 3). RSA 10 is planned to have an overall footprint of approximately 53 hectares (ha) providing an initial additional residue drying surface area of approximately 45 ha.

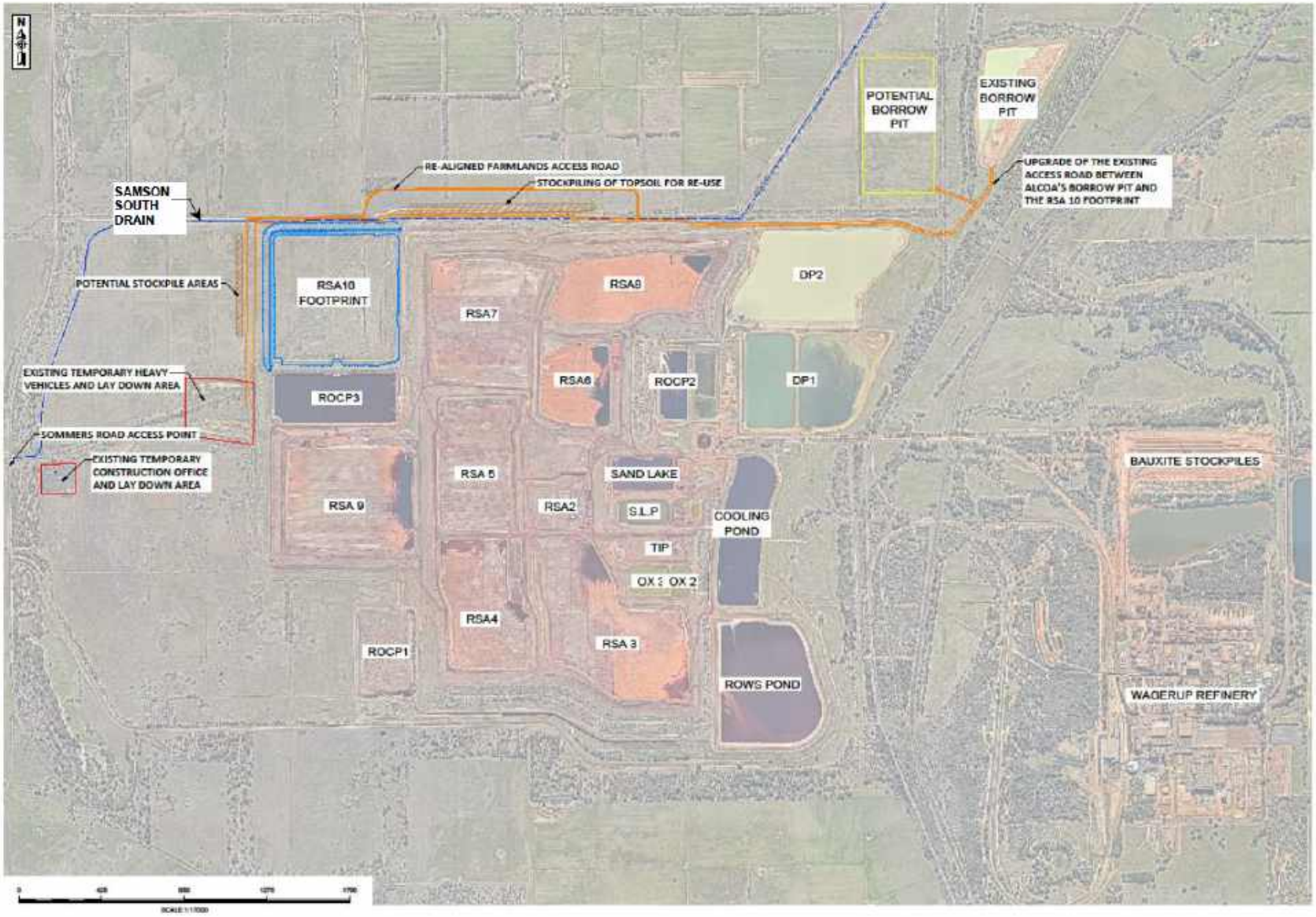

Figure 3: RSA 10 Existing and Proposed Infrastructure Locations

4.1. Civil Works

Civil works included in this Construction DMP are planned to be completed in two phases:

1) Pre-construction Works – these are works required to be completed prior to the RSA 10 construction scope of work and are excluded from the Works Approval.
2) RSA 10 Construction Works.

4.1.1. Pre-Construction Works (Excluded from Works Approval)

The pre-construction works outlined in this section are excluded from the Works Approval.

Foundation Work

- Installation of new groundwater monitoring bores.
- Decommissioning of existing groundwater monitoring and depressurising bores and other infrastructure within the RSA 10 footprint.
- Clearing and grubbing of approximately 60 hectares.
- Progressive removal of topsoil from RSA 10 footprint to stockpile area.
- Foundation earthworks to achieve desired ground level prior to composite liner works.

Farmlands Interface Works

- Realignment of the farmlands road to the north to allow for construction of the haul road and current planned topsoil stockpile location.
- Redirection of the Farmlands drainage channels.
- Development of a narrow section of the farmlands road to facilitate stock movement and bulk fill haulage.

Haul Road and Borrow Pit

- Expansion of the existing Borrow Pit, to enable extraction of bulk fill and clay.
- Rework and repair of approximately 4.5 km of existing haul road.
- Construction of new haul roads to go around RSA 10 footprint.
- Construction of a haul road crossing over Samson Brook South Drain (Diverted Section).
- Development of a potential borrow pit to the west of the existing borrow pit to provide additional fill if required.

Construction Surface Water Catchment Network

- Construction of a surface runoff catchment network consisting of sumps, windrows, pumps and transfer pipes to capture all runoff from the construction site and transfer this back to Detention Pond 1 (DP1) and Detention Pond 2 (DP2).

Construction Freshwater Supply to Support Dust Control and Conditioning

- Installation of a new freshwater supply pipeline and multiple reservoir tanks direct from DP1 so only freshwater is used on the RSA 10 construction site/unlined areas. This will include installation of truck fill points for dust suppression for construction works.

4.1.2. Construction Works

Embankment Wall Construction

1) Construction of new RSA 10 new starter embankment walls.
2) Construction of new RSA 10 access and crest roadways.

Composite Liner System Installation

3) Construction of a low permeability soil liner equivalent to at least a 0.5m-thick layer of moisture conditioned mechanically compacted clay or manufactured geosynthetic clay liner (GCL), with a permeability coefficient not greater than 1 x 10-9 m/s.
4) Installation of a new 1.5mm HDPE liner to create a composite liner.
5) Excavation to expose the Runoff Collection Pond 3 (ROCP 3) and RSA 5, 7 and 7N existing composite liners.

Above Liner Underdrainage System Installation

6) Haulage and placement of a new sand underdrainage layer over the HDPE lining.
7) Sand to be either harvested from stockpiles within the residue management area or imported clean fill.
8) Construction of a new underdrainage system, inclusive of drain collector and header systems into the new pumping station.

Temporary Decant System Installation

9) Construction of a new temporary decant system within the RSA 10 footprint to collect alkaline surface water and transfer to the existing ROCP3.

Dust Control System (Sprinklers) Installation

10) Construction of new and/or extension of the existing sprinkler ring main and new RSA 10 dust control sprinkler infrastructure inclusive of laterals and risers within the new RSA floor.

Mud Distribution System Installation

11) Construction of new temporary mud header. The new RSA 10 header will be located on the existing ROCP3 or RSA7N embankment wall, and new RSA 10 western and northern embankment wall. This will include mud droppers, embankment erosion protection, sleepers and road crossing as required.

5. Responsibility

The Project Team and Construction Contractors will implement this Construction DMP for all areas of work associated with the construction of the RSA 10 project. The construction contractors may also assist with other dust control activities outside of construction zones as requested by the Residue Superintendent in a coordinated manner to achieve site wide dust control.

Regular construction reporting meetings will be held with the Construction Manager to review performance and adapt the Construction DMP if required.

5.1. Alcoa Dust Control Officer

An Alcoa Dust Control Officer (ADCO) will be appointed and agreed by the Residue Civil Engineer and/or Residue Superintendent and Project Manager.

The principal role of the ADCO is to review, manage and approve contractor dust control in accordance with *Large Projects - Dust Management Procedure (WAO) AUA-CDS-25451* and this Construction DMP during implementation of the project.

For every construction day there will be an approved designated Alcoa Dust Control Officer (ADCO) assigned by the Project Manager. If the ADCO is not in attendance on site for any reason a delegate ADCO must be assigned.

5.2. Contractor Dust Control Officer

A Contractor Dust Control Officer (CDCO) will be appointed and agreed by the Contractor Site Superintendent.

For every construction day there will be an approved designated CDCO assigned by the Contractor Site Superintendent. If the CDCO is not in attendance on site for any reason a delegate CDCO will be assigned.

The CDCO or delegate shall prepare a running three (3) day Dust Control Plan which is consistent with *Large Projects - Dust Management Procedure (WAO) AUA-CDS-25451*. The running three-day plan shall include a detailed twenty-four (24) hour plan and is subject to approval by the delegated ADCO daily during days of construction activity.

The CDCO will report directly to the Contractor Site Superintendent for the construction project.

The CDCO or delegate will:

1. Review the daily, 3-day and 7-day weather forecast for the residue area.
2. Review, in conjunction with Contractor Superintendent, the earthworks activities planned for that day and following days, to suit both the forecast weather and related expected haul road conditions.
3. Manage and coordinate dust suppressant supplies for planned construction activities.
4. Liaise with the Contractor Site Superintendent and the ADCO to review and update the daily Dust Control Plan in response to current and planned field activities.
5. Review dust control activities planned and carried out for the previous day, to ensure that they were appropriate for the weather conditions encountered.
6. Assist Contractor Site Superintendent with informing Residue Maintenance and Production Supervisors and plant operators at Pre-start, Toolbox and Safety Meeting forums of dust related issues and initiatives to promote their awareness and involvement.

7. Maintain a direct communication with ADCO to share the latest weather / dust related information and assist with coordination of the overall residue site dust management plan.
8. Attend the Residue dust control weekly meeting and drive around as required with the ADCO. Provide updates to the weekly minutes with actions to eliminate dust hazards related to the RSA 10 project. The progress and status of all activities to be communicated to the ADCO and Operations personnel in a timely manner; and
9. For days of construction inactivity greater than 2 days (i.e. public holidays, Christmas, Easter breaks), develop a plan to ensure areas requiring dust control will be treated in advance and resources are available to monitor and ensure sufficient controls remain in place during these periods of construction inactivity where required.

6. Impact Avoidance and Minimisation Measures

Alcoa is committed to minimising dust generation from the RSA 10 project by using both preventative and reactive actions to prevent and minimise the risk of dust emissions. These measures are outlined in the sections below.

6.1. Induction Training

All contractor employees and subcontractors working on the project will complete the location Environmental Awareness Training package and the RSA10 project induction that include information on dust management. Additional training related to this Construction DMP will be provided to relevant project personnel as required for implementation. Dust management performance and improvement opportunities will be communicated regularly, including at the RSA10 project Daily Construction Coordination Meeting.

6.2. Weather Forecasts and Dust Risk Ratings

Alcoa contracts a specialist meteorological service to provide detailed weather forecast information for Wagerup Refinery, with a focus on winds and dust risks. This service includes the calculation and reporting of a dust risk rating. This forecast and dust risk rating outlook is used to provide information for planning and decision making to avoid and mitigate the risk of dust emissions. The Action Plan in Section 6.9 details the response actions to be taken for each dust risk rating.

6.3. Weather Observations

SMS alerts are triggered for wind conditions that exceed pre-determined criteria, such as those defined as presenting a high or extreme dust risk. The Action Plan in Section 6.9 details the response actions to be taken when wind conditions reach high and extreme conditions.

6.4. Soil Classification

Construction of RSA 10 will require working with a range of soil types and prescribed surface finishes, each with unique characteristics and dust emission risks.

The characteristics of each soil type determine the dust emission risk of that soil. For example, cohesive soils generally present a lower risk of dust emission than non-cohesive soils as the fine particles in cohesive soils bind together when moist. Whilst vulnerable to wear, abrasion and desiccation, cohesive soils generally won’t mobilise in high winds for a sustained duration and are more readily controlled with the application of water than a non-cohesive.

Soils encountered during the construction of RSA 10 will be classified as follows:

- Type A - High risk.
- Type B - Low risk.
- Type C - Medium risk.

All soils encountered during the construction of RSA 10 will use the classification outlined in Table 1.

Table 1: Soil Risk Classification for RSA 10 Construction

Type A – High Risk	Type B – Low Risk	Type C – Medium Risk
Residue Sand	Clay Silty Clay Sandy Clay Residue Mud**	Non-residue sand Limestone Gravel Basecourse Topsoil Residue Mud**

** To be determined on a case-by-case basis and signed off by the Alcoa Construction Team Leader.

These soil classifications form the basis of the surface treatments and management area targets described in Section 6.5.

6.5. Surface Treatments and Management Area Targets

Alcoa deploys a range of different surface treatment options for dust control. These surface treatment options are classified as follows:

- Class 1 (High Risk) – Bare soil, no treatment.
- Class 2 (Medium Risk) – mid-term treatment that is effective and durable.
- Class 3 (Low Risk) – long term treatment that is very effective and very durable.

Various surface treatment options are available for each of the different soil classifications. These soil classifications are described in Section 6.4. For each soil and treatment type, management area targets are set as a guide in *Large Projects - Dust Management Procedure (WAO) AUA-CDS-25451*. These targets have been proven over time to be both practical and effective in Alcoa WA refinery conditions.

The management area targets in *Large Projects - Dust Management Procedure (WAO) AUA-CDS-25451* are determined using the following basic principles:

- Class 1 should be kept as close to zero always if possible.
- Class 2 is primarily for active construction areas. These are opened and closed each day. Whilst Class 2 treatments provide effective dust control, these areas can be damaged in high and extreme wind events, particularly when these wind events repeat over consecutive days/nights.
- Class 3 are for inactive areas requiring long term reliable dust control.
  Note: there is no limit on area of Class 3 treatment, as by definition it is area with high quality treatment applied which is durable and able to maintain effectiveness over an extended period.

These targets are a recommended upper limit and where possible the total area of high and moderate risk areas should be kept to a practical minimum.

Relying on forecasted rain is not an acceptable dust control strategy. However, once the project area is saturated during rain events, a practical approach to applying dust suppressants in these conditions should be adopted, particularly for Type B and C soils.

The total area for Class 1, 2 & 3 will vary daily depending on the work being performed. Based on the latent weather conditions, areas may exceed the targets during the working shift, however the work site should meet the target criteria at the completion of the day's work.

At the direction of the construction team, high risk activities should be suspended or curtailed to a level that will not cause a problem in the event extreme or high-risk conditions are either forecast to occur or occur during work. Every effort should be made to be prepared beforehand rather than react.

The following sections outline the preventative dust suppression application measures that will be used.

6.5.1. Surface Spraying

The Contractor will progressively apply surface treatments to exposed sandy and silty surfaces that have the potential to generate dust. The types of surface treatments will vary depending on whether they are being applied to contained areas on the RSA10 lined footprint (once installed), or outside the lined footprint.

On areas outside of the sealed RSA10 footprint (including within the footprint prior to the installation of the liner), water carts will be the primary surface treatment, with dust control additives available for use as required.

Bitumen will be used within the lined footprint only. Surfaces will be sprayed, as appropriate, when progressively completing all stages of work or where the area open exceeds the capabilities of the onsite water carts to manage it. This preventative bitumen-spraying program will be carried out by suitably modified machine.

6.5.2. Blue Metal (Aggregate) Spreading

Blue metal spreading will be carried out on areas and stages of work as they are completed and can be quarantined from further activity. The Contractor will have all the necessary equipment to carry out this work available on site throughout the project and will have enough blue metal on site to treat areas as they become available.

6.6. Dust Control Planning

Effective planning is essential for the prevention and minimisation of dust emissions. Dust Control planning is primarily done through the development of the rolling Dust Control Plan and Daily Construction Coordination Meetings.

6.6.1. Dust Control Plan (Rolling 3 Day Plan)

The three-day Dust Control Plan is a rolling three (3) day plan. The rolling Dust Control Plan shall include a detailed twenty-four (24) hour plan and forecast planning for dust risk and mitigation likely to be required over the following two (2) days (three (3) days in total).

The Dust Control Plan will be provided to the ADCO daily during days of construction activity, and include a detailed list of activities for the following day which shall be influenced by:

- Daily site weather forecast (received by daily e-mail and available via continuously up-dated website).
- Forecast wind directions.
- Work activities planned for the 3 days ahead.
- Dedicated dust control equipment for plan period.
- Workforce resources required.
- Dust control materials for period.
- Performance auditing of control measures.
- Indicated previous day’s construction dust monitor/s readings, location, and operational status.

- Estimate of area dust control coverage against target by Classes 1 (Water), 2 (Bitumen, Surface binders), & 3 (Blue Metal, Grass, Mulch).
- Number of employees on site.

The Dust Control Plan will identify any “high risk” areas for dust emissions and management.

The Dust Control Plan shall be submitted to the ADCO each day. The Plan shall be reviewed and approved/signed by the ADCO or nominated delegate.

6.6.2. Daily Construction Coordination Meetings

Dust control is a critical agenda item for the Daily Construction Coordination Meeting. Key points for discussion at each meeting will include:

a) Nomination of the Alcoa and Contractor dust control officer for the day.

b) Review of the previous day’s performance (monitoring, visual inspections, complaints or general concerns).

c) Review of the latest weather forecast (next 24 hours, 3-day outlook and 7-day outlook). Review latent Weather Conditions on the day and expected weather looking 3 days and 7 days ahead considering the relevant dust risk.

d) Work activities planned on the day and next 2 days should be consistent with the expected weather conditions and suspended or modified if required.

e) The dust control resources (materials and equipment) available and associated with the works should be consistent with the requirements to stay fully compliant with the management area targets for Soil and Surface Treatment every day (see Section 6.5).

f) Process for responding to after hours’ alarms and complaints (including contact details).

6.7. Early Warning Construction Dust Monitoring Network

An early warning construction dust monitoring network will be used during the construction of RSA 10 Corridor to provide an early alert system for elevated dust emissions. This network will consist of six (6) temporary Early Warning Construction Dust Monitors (EWCDMs) that will be installed for the duration of the construction activities associuated with RSA 10. These monitors will be real time total suspended particulate (TSP) monitors programmed to send alarms when trigger levels are reached and the wind direction is approaching from the defined direction (Figure 4).

The wind directions and alarm settings for the EWCDMs will be reviewed and finalised once monitor siting studies are completed, and background data has been collected, however Table 2 provides indicative wind directions regarded as being downwind from the RSA 10 construction activities and indicative alarm settings based on previous successfully implemented projects.

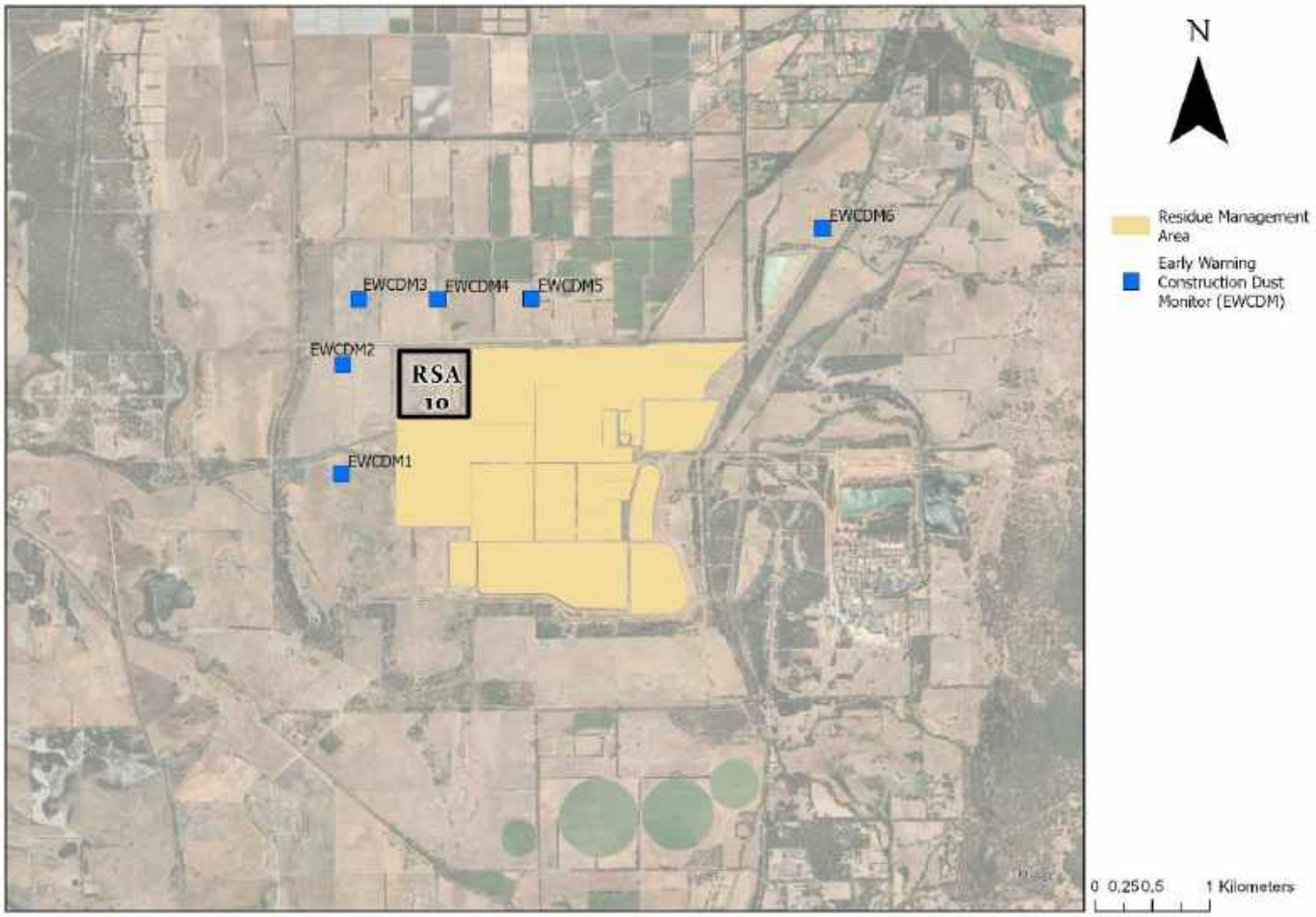

Figure 4: Indicative RSA 10 Early Warning Construction Dust Monitor Network

Table 2: Direction Monitoring Alarm Range for Proposed RSA 10 Construction Dust Monitoring Network

EWCDM Monitor Name	**Potential RSA 10 Construction Dust Source**	**Upwind Direction** (*For alarming only when wind is registering from directions within these ranges. These will be reviewed once final siting of monitor locations has been determined)*	**Dust Early Warning Alert Settings** *(Background corrected from upwind sources. These will be reviewed once siting and background levels are determined)*
EWCDM # 1	RSA 10 Footprint Haul Road	25^{o} through to 65^{o}	250µg/m^{3} per 15 minutes
EWCDM # 2	RSA 10 Footprint Haul Road	65^{o} through to 131^{o}	250µg/m^{3} per 15 minutes
EWCDM # 3	RSA 10 Footprint	114^{o} through to 160^{o}	250µg/m^{3} per 15 minutes
EWCDM # 4	RSA 10 Footprint	149^{o} through to 217^{o}	250µg/m^{3} per 15 minutes
	Haul Road	98^{o} through to 149^{o}	
EWCDM # 5	RSA 10 Footprint	207^{o} through to 249^{o}	250µg/m^{3} per 15 minutes
	Haul Road	100^{o} through to 207^{o}	250µg/m^{3} per 15 minutes
EWCDM # 6	Clay Borrow Pit Eastern section of Haul Roads.	207^{o} through to 241^{o}	250µg/m^{3} per 15 minutes

If monitoring indicates that the results exceed the alert settings for the prevailing wind direction defined in Table 2, the monitoring system will generate an alert. This alert will be communicated by SMS text message to the mobile phone of the:

1. CDCO;
2. Contractor dust phone (to be transferred between day and night shift water carts); and
3. ADCO.

Upon receiving an alert notification, the CDCO and/or Contractor Site Superintendent will investigate the source and implement controls and/or modify construction activities to minimise dust. The CDCO will provide a brief outline of the incident and actions taken to resume dust control on the Daily Dust Control Report which will be reviewed at the daily dust meeting with project team and operations.

The CDCO will notify the ADCO and the site environmental team of any information relating to dust exceedances on the temporary construction dust monitors and control plans to address and prevent reoccurrence. If the early warning alert is triggered on these monitor/s the details will be recorded on the Daily Dust Plan (including time, source of dust and corrective actions implemented). This process allows proactive management of construction equipment and dust suppression but will not be reported as an incident in the EHS Incident Management System.

6.8. Development of New Initiatives

All Alcoa reviewed and approved new dust suppression techniques or initiatives will replace, supersede, or augment those items above to continuously improve residue dust management. This document will be reviewed jointly by the RSA10 Project Team and Wagerup Refinery operations to reflect any new practices before implementation.

6.9. Action Plan

Table 3 details the indicators that will be monitored and the response actions that will be taken as part of this Construction DMP.

Table 3: Indicator and Response Actions for Dust Management

Outcome:	The construction of the RSA 10 project does not result in detectable increases in dust emissions from the Wagerup Residue Area			
Indicators	**Response Actions**	**Monitoring**	**Timing**	**Reporting**
Weather Forecasts				
Daily weather forecast indicates a "Low" Dust Risk Rating period.	**Forecast "Low dust risk":** • Assess open areas versus potential activity dust risk and classification area targets. • Conduct a visual inspection of all Class 2 and Class 3 treated areas to identify any retreatment required. • Ensure resources are available on stand-by and deployed as required to ensure moisture levels or dust suppressants are maintained in open areas.	Weather Forecasts	Daily	N/A
Daily weather forecast indicates a "Moderate" Dust Risk Rating period.	**Forecast "Moderate dust risk":** • Assess open areas versus potential activity dust risk and classification area targets. • Conduct a visual inspection of all Class 2 and Class 3 treated areas to identify any retreatment required. • Ensure resources are available on stand-by and deployed as required to ensure moisture levels or dust suppressants are maintained in open areas. • Where possible, treat any non-priority work areas with Class 2 or 3 dust suppressants, or ensure sufficient water carts are available to meet classification area targets.	Weather Forecasts	Daily	N/A

Outcome:	The construction of the RSA 10 project does not result in detectable increases in dust emissions from the Wagerup Residue Area			
Indicators	**Response Actions**	**Monitoring**	**Timing**	**Reporting**
Daily weather forecast indicates a "High" Dust Risk Rating period.	**Forecast "High dust risk":** • Assess open areas versus potential activity dust risk and classification area targets. • Conduct a visual inspection of all Class 2 and Class 3 treated areas to identify any retreatment required. • Reduce open and priority work areas where possible. • Reduce Class 1 open areas where possible by applying Class 2 or 3 dust suppressants. • Where active work areas remain, ensure resources are available and deployed as required to ensure moisture levels or dust suppressants are maintained in open areas.	Weather Forecasts	Daily	N/A
Daily weather forecast indicates an "Extreme" Dust Risk Rating period.	**Forecast "Extreme dust risk":** • Assess open areas versus potential activity dust risk and classification area targets. • Conduct a visual inspection of all Class 2 and Class 3 treated areas to identify any retreatment required. • CDCO to formulate and communicate a Dust Action Plan for each active work front. • Cease all active works and apply Class 2 or 3 dust suppressant wherever possible. Ensure classification targets are not exceeded. • Ensure resources are available and deployed as required to ensure moisture levels or dust suppressants are	Weather Forecasts	Daily	N/A

Outcome:	The construction of the RSA 10 project does not result in detectable increases in dust emissions from the Wagerup Residue Area			
Indicators	**Response Actions**	**Monitoring**	**Timing**	**Reporting**
	maintained in open areas throughout the extreme-dust risk period.			
Early Warning Construction Dust Monitors (EWCDM)				
EWCDM alarms	The CDCO and/or Contractor Site Superintendent will investigate the source and implement controls and/or modify construction activities to minimise dust. The CDCO will provide a brief outline of the notification and actions taken to resume dust control on the Daily Dust Control Report which will be reviewed at the daily dust meeting with project team and operations. The CDCO will notify the ADCO and the site environmental team of any information relating to dust exceedances on the temporary construction dust monitors and control plans to address and prevent reoccurrence. Escalate to the Construction Manager if there are any EWCDM alarms or dust emissions that cannot be controlled within 30 mins. Any offsite emissions must be escalated to the Construction Manager immediately.	EWCDM	Upon receiving an alarm notification	Record alarms and identified cause on the RSA 10 Project register.
Complaints				
Receipt of project-related dust complaint	• Initiate investigation of dust complaint. • Acknowledge complaint and commence investigation. • Conduct investigation in accordance with Alcoa incident management procedures.	N/A	Upon receipt of complaint.	In accordance with Alcoa incident management procedures.

7. Resourcing

Resources dedicated to dust control will be suitable to apply dust control measures to the appropriate standard and at the rates necessary to maintain compliance to the classification open area targets. The minimum resources required, and minimum inventories held on site of the relevant dust suppressant materials shall be defined in the Project's Dust Management Plan and reviewed daily.

NOTE

This equipment shall be used for dust control activities only. The dust control resources allocated for each project should have the required capability to meet the expected daily demands

Where possible Residue Operational dust control equipment shall not be used for construction activities as this may induce priority conflicts in extreme events.

Dust Control Resources should not be shared between projects as during extreme events this can lead to equipment shortages.

Contractors will supply a detailed schedule of plant and equipment to the Project Construction Manager at least seven (7) days prior to commencement of work. All equipment shall comply with site and other regulatory requirements.

Any amendments to the approved schedule, including addition or alteration of equipment to be used, must be approved by the Project Construction Manager prior to implementation.

This Construction DMP will be implemented and applicable to all works undertaken throughout the course of the project.

Open area beyond that which can be adequately controlled by water carts must have an appropriate alternate method of control, such as a surface spray.

7.1. Equipment

Required dust management equipment will be reviewed and further defined prior to the commencement of construction of the RSA 10 project and will align with the ratios contained in *Large Projects - Dust Management Procedure (WAO) AUA-CDS-25451* which are referenced below. The following types of dust suppression equipment will be available at all times during construction of RSA 10:

- Water carts – dedicated to spraying water and dust control additives for dust suppression. Water carts will be available for both active working areas and non-active areas.
- Bitumen cart – a suitably modified machine dedicated to spraying bitumen for dust suppression.
- Blue Metal Spreading Equipment.
- Mulch Spreading Equipment.

7.2. Minimum Inventory for Dust Suppressants

Minimum dust suppressant inventory requirements will be reviewed prior to the commencement of construction of the RSA 10 project.

7.2.1. Bitumen

To be determined prior to the commencement of residue sand placement construction. Reorder minimum quantities will be set prior to residue sand placement works and take into consideration supplier delivery capacities. It expected the minimum quantities during construction involving residue materials to be held on site will be 5KL unless alternative dust controls are available.

7.2.2. Dust Control Additives

Dust control additives such as Dustex and Gluon will be used as part of surface treatments for exposed sandy and silty surfaces that have the potential to generate dust.

The Contractor will maintain enough Dust Control Additives on site to treat areas as they become active.

7.2.3. Blue Metal

Blue metal spreading will be carried out to areas and stages of work as they are completed and can be quarantined from further activity.

The Contractor will maintain enough blue metal on site to treat areas as they become available.

7.2.4. Mulch

Mulch spreading will be carried out to areas and stages of work as they are completed and can be quarantined from further activity.

The Contractor will maintain enough mulch on site to treat areas as they become available.

8. Monitoring and Indicators

8.1. Daily Report

A daily statement of compliance in relation to this Dust Management Plan is produced by the CDCO and emailed to ADCO. An example template is provided in Table 4 below.

Table 4: Daily Compliance Email Template

		Daily Dust Compliance Update Date:	
		Total Project Area (Ha):	
Soil Type	**Surface Treatment**	**End of Shift Target (Ha)**	**End of Shift Actual (Ha)**
A	Class 1		
B	Class 1		
C	Class 1		
A	Class 2		
B	Class 2		
C	Class 2		
A	Class 3		
B	Class 3		
C	Class 3		
		Sufficient resources and operational equipment?	
		Planned disturbed area for tomorrow (Ha):	
		Complaint with Dust Management Plan?	
		Are EXTREME winds forecast for tomorrow?	
		Dust Risk Outlook for next 3 days:	
		General Comments:	

9. Auditing of control measures

The following Key Performance Indicators (KPI's) will be collected weekly to measure dust management effectiveness and performance. Results will be used, along with other data and observations, to improve and maintain control of fugitive dust emissions.

9.1. Lagging Indicators

							Target/ Expectation
	Dust KPI Lagging Indicators	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Total**	
1.	Number of complaints attributed to dust contributed to by the project	0	0	0	0	0	0
2.	Number of occasions where dust levels exceed the internal target (>90µg/m^3 daily average) at Alcoa BAM/HVAS monitors contributed to by the project	0	0	0	0	0	0
3.	Number of incidents where dust levels exceed the Licence limit (>200µg/m^3 daily average) at Alcoa HVAS monitors contributed to by the project	0	0	0	0	0	0
4.	Number of incidents where dust levels exceed the Licence limit (>260µg/m^3 daily average) at Alcoa HVAS monitors contributed to by the project	0	0	0	0	0	0
	TOTAL	**0**	**0**	**0**	**0**	0	**0**

9.2. Leading Indicators

							Target/ Expectation
	Dust KPI Leading Indicators	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Total**	
	Pro-Active Controls Measures	**Are controls working**					**Y/N**
1.	Project Daily dust plan updated and approved daily						Y
2.	Dust suppressant inventories OK. Blue Metal, Bitumen, Mulch, Additives						Y
3.	Estimated / Actual Water Usage kL per week						kL
4.	Estimated /Actual suppressant usage kL per week						kL
5.	Number of dust Alarms on the Construction Early Warning Monitor/s 250µg/m3 (15 min intervals)	0	0	0	0	0	**0**
6.	Number of times suspension of task due to dust. Monitor trend	0	0	0	0	0	**Trend**
7.	Availability – Construction site dust monitor/s	0	0	0	0	0	**95%**
8.	Availability - Water Trucks	0%	0%	0%	0%	0%	**100%**
9.	Availability - Surface Spray Trucks	0%	0%	0%	0%	0%	**100%**
10.	Availability - Water standpipes	0%	0%	0%	0%	0%	**100%**
11.	% of workgroups who have received dust control training.	0%	0%	0%	0%	0%	100%
12.	Residue Sand Work Front Open (must be less then 2Ha or Supervisor to sign)	0%	0%	0%	0%	0%	0%
13.	% Area Class 1 - (Water cart only)	0%	0%	0%	0%	0%	0%
14.	% Area Class 2 - (Mid Term Controls)	0%	0%	0%	0%	0%	0%
15.	% Area Class 3 - (Long Term Controls)	0%	0%	0%	0%	0%	0%

Note:

Class 1 – Area controlled only by water carts.

Class 2 – Mid-term surface spray treatments such as bitumen emulsion.

Class 3 – Long term treatment such as mulch, blue metal, and grass.

See Section 6.5 for more details.

9.3. Water Usage and Forecasting

Project Dust control activities consume large quantities of water which need to be monitored to proactively minimise water consumption yet provide comprehensive dust control. It will also be necessary to estimate forecast and actual water usage for project dust suppression and construction use on a weekly and Monthly basis to manage water supplies.

Size of Water Cart kL__ x__ Estimated Deployment rate per cycle time __x__ Forecast Equipment hrs __=__ kL for Dust suppression or Construction use.

Water usage/forecasting numbers will be provided to the Residue Chemical/Process Engineer on a weekly basis to help with the tracking of the site water balance and freshwater usage.

10. Incident Reporting and Investigation

In the event of an incident where dust levels recorded on the licenced dust monitors exceed the internal target of 90µg/m3 daily average or licence target of 200 and/or 260µg/m^3 24hr average, or a dust complaint is received, an Environmental Incident report will be raised and the incident fully investigated with the Residue Supervisor and the Environmental Manager, in accordance with Alcoa's incident management procedures. Where there is the potential for construction dust to have contributed to the incident, the Alcoa Construction Manager and CDCO and/or Contractor Superintendent will also be involved. Corrective actions arising from the investigation will be implemented to prevent reoccurrence.

11. Adaptive Management and Review

This Construction DMP is an adaptive management plan. Triggers to review this Construction DMP may include:

1) Updates to Alcoa procedures.
2) New Alcoa approved dust suppression techniques or initiatives.
3) Any shortage in availability of dust suppressants (e.g. blue metal, bitumen, mulch, additives)
4) Early Warning Construction Dust Monitor results that indicate unacceptable dust performance.
5) Amendments to the Wagerup Refinery Operating Licence.
6) Receipt of the RSA 10 Project Works Approval conditions.
7) Changes to the planned transition of Wagerup Refinery's new real-time ambient air monitoring network.
8) Changes to the planned construction methodology or timeline.

12. References

Environmental Technologies and Analytics (2024). *Wagerup Alumina Refinery Residue Storage Area RSA10 North Air Quality Assessment.* Prepared for Alcoa of Australia Ltd.

Katestone (2023). *Memorandum: Review of Sensitive Receptors (Final). Client Name: Alcoa of Australia Ktd.* Katestone Environmental Pty Ltd, 16 June 2023.

Rockwater (2023). *Wagerup Refinery and Bunbury Caustic Loading Facility Groundwater and Surface Water Management Review 2020-2022.* Report for Alcoa of Australia Ltd.