CENTRAL TIPPER HIRE LTD

DUST & EMISSION MANAGEMENT PLAN

(DEMP)

VERSION NUMBER: 1

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Issue and Revision Record

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1. Introduction

The site is located off the Alcester Road, at Boeley, Redditch in the County of Worcestershire at National Grid Reference SP 408640 271030.

The site is set at an elevation of 156m AOD.

The site location is presented at Figure 1.1 and covers 0.65Ha.

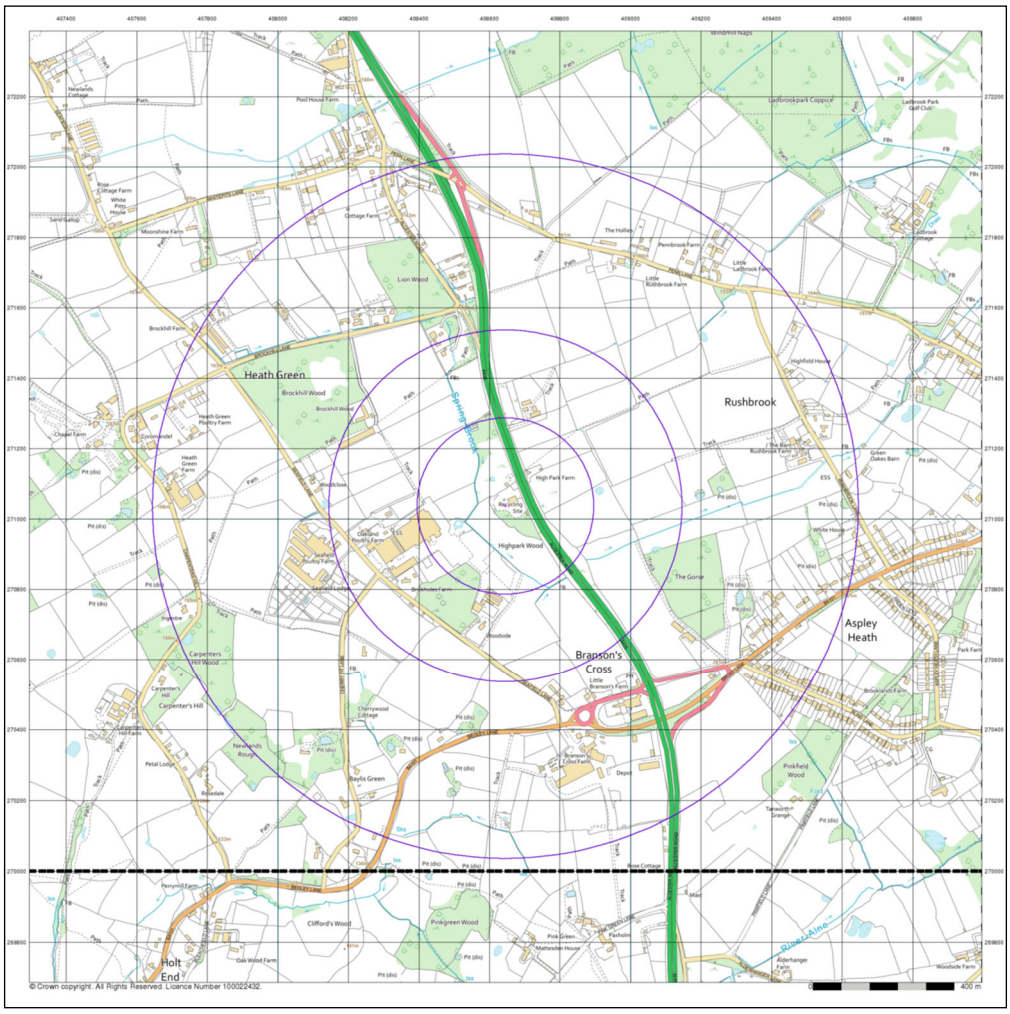


Figure 1.1: Site Location

The site is in Worcestershire. The site is not within an Air Quality Management Area.

The site has trees round the treatment facility of the landfill.

This document was requested by the Environment Agency to accompany the Permit application.

The DEMP is part of the Amenity Risk Assessment for the permit.

A fugitive dust risk assessment associated with the impacts of dust from the operational use of the Site as a non-hazardous Waste Recycling Facility on nearby sensitive receptors has been undertaken. This is based on the approach set out in the IAQM guidance on the assessment of mineral dust impacts for planning[3] , in the absence of any other appropriate guidance for assessing dust emissions from inert waste recycling facilities.

1.1 Sensitive Receptors

The nearest residential receptors are High Park Farm, 0.08 km to the north-east on the opposite side of Alcester Road and Woodside, on Seafield Lane, 0.35 km to the south, see Figure 1.2.

A windrose from the Pershore meteorological station for 2022 is provided in Figure 1.3 and shows that the prevailing winds in the area are from the southwest.

Precipitation is recognised to suppress dust and the IAQM guidance states that 0.2 mm of rainfall per day is considered sufficient to suppress windblown dust for a number of hours. However, to ensure a conservative approach to the assessment wind frequency alone has been used within the assessment without taking into account precipitation.

A review of 5 years meteorological data from the Pershore site (2018 to 2022) was undertaken and the frequency of winds from the 12 sectors are set out in Table 1.1.

Table 1.1: Wind Frequency Data		
Wind Direction (°)	**Total Frequency of Wind (%)**	**Total Frequency of Winds >5m/s**
0 – 30 (NNE)	5.1	0.1
40 – 60 (NE)	7.1	0.3
70 – 90 (ENE)	7.3	0.4
100 – 120 (ESE)	4.4	0.4
130 – 150 (SE)	5.6	1.3
160 – 180 (SSE)	7.5	2.0
190 – 210 (SSW)	21.7	6.9
220 – 240 (SW)	13.2	2.7
250 – 270 (WSW)	8.6	1.6
280 – 300 (WNW)	5.7	0.9
310 – 330 (NW)	8.4	0.6
340 – 360 (NNW)	5.2	0.2

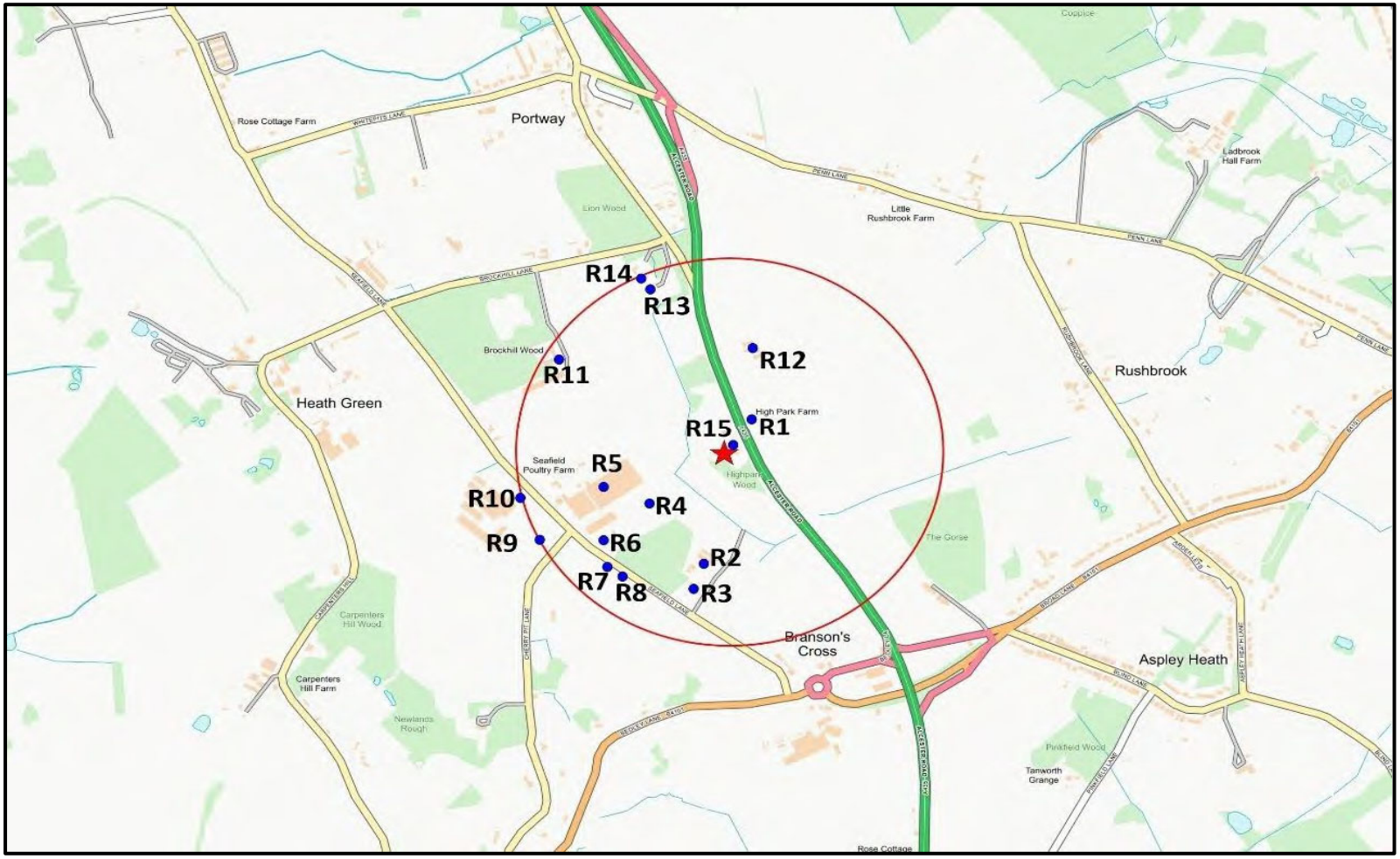


Figure 1.2: Nearby Sensitive Receptors

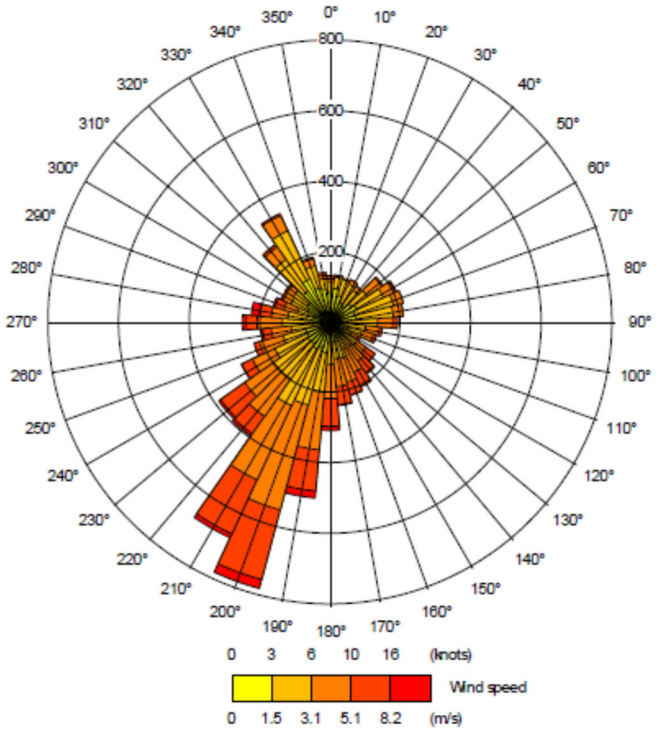


Figure 1.3: Wind rose showing the average wind direction and strength at Pershore

1.2 Dust Sensitive Receptors

The main air quality impacts that may arise as a result of the waste recycling activities are dust deposition resulting in the soiling of surfaces e.g. cars, windowsills, visible dust plumes and elevated PM_{10} concentrations. These dust emissions can give rise to annoyance at nearby receptors due to the soiling of surfaces by the dust.

Separation distance is also an important factor. Research indicates that particles greater than 30 µm, will largely deposit within 100 m of sources, while intermediate particles (10-30µm) can travel up to 200 – 300 m[23] . Particles of greater than 30µm are responsible for the majority of dust annoyance. Consequently, significant dust annoyance is usually limited to within a few hundred meters of its source. Smaller particles (<10µm) are deposited slowly and can travel up to 1 km; however, the most significant impacts on short-term concentrations of PM_{10} occur within a shorter distance from source. This is due to the rapid decrease in concentrations with distance from the source due to dispersion. As detailed within the IAQM guidance, '*adverse dust impacts from sand and gravel are uncommon beyond 250m and beyond 400 m from hard rock quarries measured from the nearest dust generating activities'.* A distance of 400m has therefore been used as a screening criteria to determine the need for a more detailed assessment due to the mixed nature of materials being recycled at the Site.

1.3 Human Receptors

A 'human receptor', according to the IAQM guidance '*refers to any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to PM over a time period relevant to the air quality objectives, as defined in LAQM.TG(22)'.* Residential dwellings are considered to be high sensitivity receptors; shops and businesses are medium sensitivity receptors and industrial and agricultural properties are low sensitivity receptors.

The potential for dust impacts at off-site receptors will depend on their sensitivity to dust, their proximity to the site operations, the duration of potential exposure and direction of the recycling operations in relation to the receptor. Potential sensitive receptors within 500 m of the Site have been identified based on a desktop study and are shown in Table 1.2 below and identified in Figure 1.2. The red circle in Figure 1.2 represents the 500 m boundary area.

Table 1.2 Distances to Selected, Representative Sensitive Locations

Table 1.2: Sensitive Receptor Locations within 500m of the Site				
ID	**Receptor**	**Receptor Type**	**Sensitivity to Dust**	**Distance from Site Boundary (approx)**
R1	High Park Farm	Residential	High	35 m NE (from site entrance)
R2	Woodside Farm	Commercial	Medium	230 m S
R3	Woodside	Residential	High	310 m S
R4	RSG Scaffolding	Commercial	Medium	150 m SW
R5	Oakland International Ltd.	Commercial	Medium	150 m W
R6	Residential Farm Property 2 Seafield Lane	Residential	High	330 m SW
R7	Residential Seafield Lane	Residential	High	370 m SW
R8	Residential Seafield Lane	Residential	High	370 m SW
R9	Residential Cherry Pit Lane	Residential	High	450 m SW
R10	Seafield Farm	Residential	High	500 m SW
R11	Brookhill Wood	Residential	High	420 m NW
R12	Farm Buildings	Agricultural	Low	200 m NE
R13	Monarch Mount	Residential	High	420 m N
R14	Brockhill Lane	Residential	High	450 m N
R15	Monks Fuels Ltd	Commercial	Low to Medium	0m E

2. Operations at Highpark Wood Non-Hazardous Waste Treatment Facility

2.1 Waste Deliveries to Highpark Wood Non-Hazardous Waste Treatment Facility

Waste is delivered to site in lorries, mostly 15 tonne grabs and 18-19 tonne tipper lorries. Most of the vehicles arriving on site our Euro 5 and Euro 6. The loads are covered when coming on site.

All waste coming on site is inert or non-hazardous, but mostly inert.

All waste deliveries have either a Waste Transfer Note or are on a Season Ticket.

A copy is kept on site for all deliveries.

2.2 Overview of Waste Processing, Dust, and Other Emission Controls

The site will use a crusher and screener and the waste and processed materials are put in with an excavator and transferred using a loading shovel.

Table 2.1 Typical waste types brought to Highpark Wood Non-Hazardous Waste Treatment Facility

WASTE TREATMENT AREA

01	**WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING, AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS**
01 01	**wastes from mineral excavation**
01 01 01	wastes from mineral metalliferous excavation
01 01 02	wastes from mineral non-metalliferous excavation
01 04	**wastes from physical and chemical processing of non-metalliferous minerals**
01 04 08	waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	waste sand and clays
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 03	**bituminous mixtures, coal tar and tarred products**

17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 04	soil and stones other than those mentioned in 17 05 03
17 09	**other construction and demolition wastes**
17 09 04	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 09	minerals (for example sand, stones)
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS**
20 02	**garden and park wastes (including cemetery waste)**
20 02 02	soil and stones

PLUS

Sand and Gravel for sites in Worcestershire

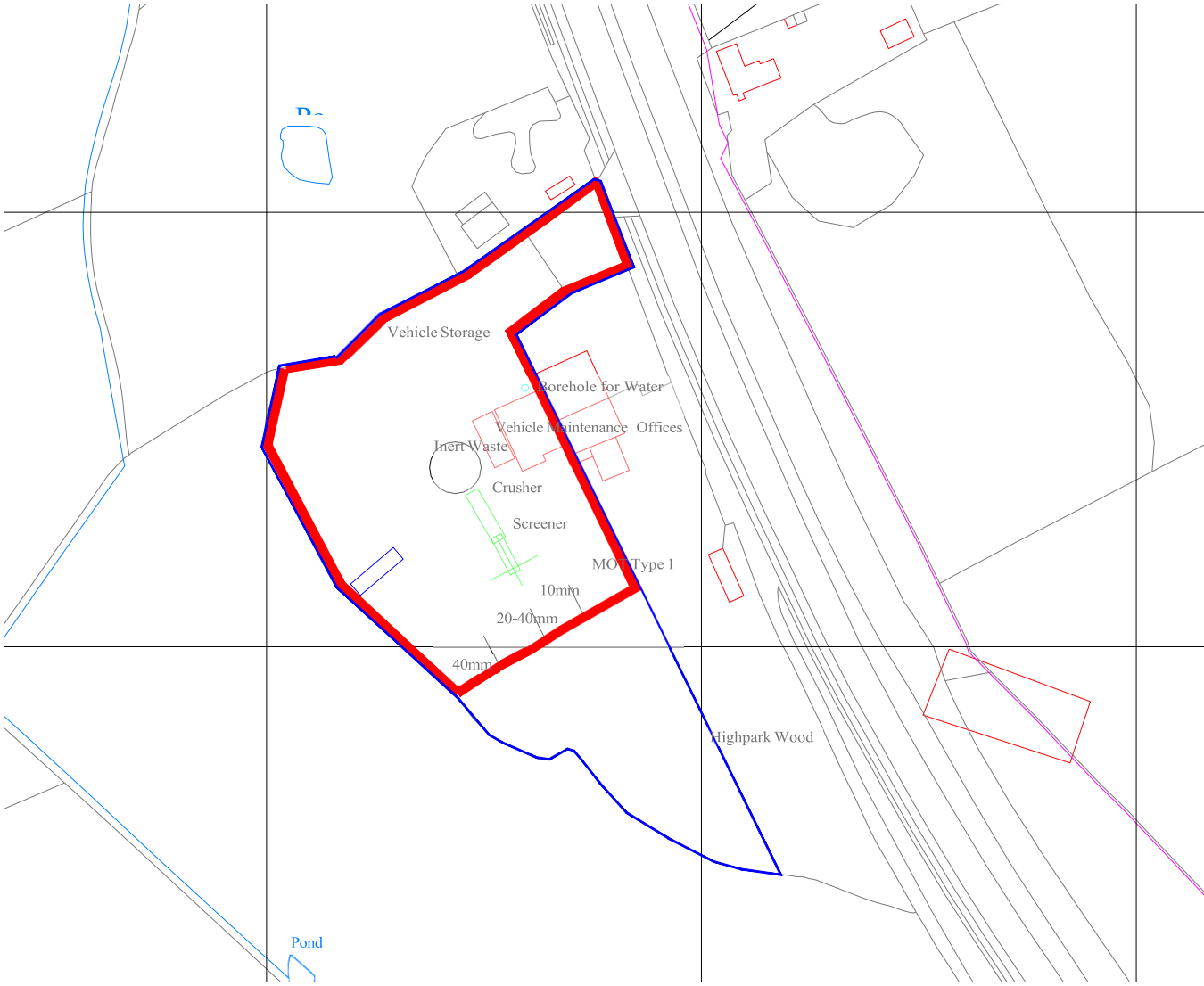


Figure 2.1 Site Layout

2.3 Mobile Plant and Equipment.

Nitrogen Dioxide gas is a by-product of internal combustion engines and the site uses several items of plant with internal combustion engines. The following table lists the type, mobile and emission ratings for the mobile plant and equipment used on site at Table 2.1:

Table 2.1

Description	Make	Model	Emission Rating
Track type dozer	Caterpillar	D6	Tier 3a
Loading Shovels	Volvo	LO61	Tier 3a
Hydraulic Excavator	Volvo	EC140	Tier 3a
Dump Truck	Caterpillar	D250	Tier 3a

The plant is owned by Central Tipper Hire Ltd. All plant is serviced every 250 hours on site

3. Dust and Particulate (PM_{10}) Management

3.1 Responsibility for Implementation of the DEMP

The Site Manger is responsible for the DEMP and making sure it works. The Technical and Compliance Manager also knows the workings of the DEMP.

It is reviewed every two years or if there is a complaint about dust.

Staff on the material recycling facility have been given a talk on the DEMP by the site manager.

3.2 Fugitive Dust Impact Assessment

3.2.1 Screening

Amenity Risk Assessment

Human Health Risk Assessment

Background PM_{10} concentrations in the vicinity of the Site are less than 17 µg/m³, therefore as concluded within the IAQM guidance, there is little risk of emissions from the on-site activities causing an exceedance of the relevant objective limits. Further assessment of health effects has therefore been screened out.

3.2.2 Amenity Risk Assessment

Dust Emissions Magnitude

The dust emissions magnitude was determined for each of the main operational activities as detailed in Table 3.1. The assessment indicates an overall medium dust magnitude.

Table 3.1: Residual Dust Source Emission Magnitude

Activity	Magnitude	Criteria
Material delivery and storage	Medium	Working area <1ha however, 200,000 tpa material handled per annum, mix of material with potentially low moisture content and high dust potential, storage in surge piles of >4m
Material handling and Processing	Medium	Processing between 200,000 tpa and 1,000,000 tpa with 5 loading plant (3no. hydraulic excavators and 2 no. loading shovels), plus screening machine and crushing machine, uncovered
		Mix of material, some with low moisture content and high dust potential

Stockpiles/Exposed Surfaces	Medium	Stockpiles with a total exposed area of <1ha, but storage of approx. 200,000 tpa ongoing for life of development therefore > 12 months Mix of materials including materials with low moisture content and high dust potential
Off-Site Transportation	Medium	80 HDV movements in any one day

Estimation of Pathway Effectiveness

The site-specific factors considered to determine the Effectiveness of the Pathway are the distance and direction of receptors relative to the prevailing wind directions. There are a few receptors within 400 m of the Site and therefore, each receptor has been considered separately.

For each receptor within 400 m of the site boundary, the wind direction for each has been determined and the data set out in Table 1.2 for wind frequencies greater than 5m/s used to determine the pathway effectiveness based on Table 1.2. These are shown in Table 3.2.

Table 3.2: Categorisation of Frequency of Potentially Dusty Winds

Receptor	OS Grid Ref	Wind Sector	Proportion of Time Receptor Downwind from Site (%)	Frequency
Human Receptors				
R1 – Higher Park Farm	408714, 271134	SSW/SW (190-230)	9.6	Moderately Frequent
R2 – Woodside Farm	408600, 270757	NNE (0-30)	0.1	Infrequent
R3 - Woodside	408576, 270693	NNE (0-30)	0.1	Infrequent
R4 – RSG Scaffolding	408471, 270913	NE (30-60)	0.4	Infrequent
R5 – Oakland International Ltd.	408365, 270957	ENE/ESE (60-100)	0.8	Infrequent
R6 - Residential Farm Property 2 Seafield Lane	408364, 270821	NE (30-60)	0.4	Infrequent

Table 3.3: Categorisation of Frequency of Potentially Dusty Winds				
Receptor	**OS Grid Ref**	**Wind Sector**	**Proportion of Time Receptor Downwind from Site (%)**	**Frequency**
R7 - Residential Seafield Lane	408374, 270751	NE (30-40)	0.4	Infrequent
R8 - Residential Seafield Lane	408408, 270727	NE (30-40)	0.4	Infrequent
R12 - Farm Buildings	408717, 271319	SSW/S W (190-230)	9.6	Moderately Frequent
R15 – Monks Fuel Ltd	408679, 271045	W (240 – 300)	3.1	Infrequent
Ecology Receptors				
E1 - Highpark Wood	408692, 270995 and 408594, 271224	N and S (300 – 30 and 100 – 200)	12.1	Frequent
E2 - Branson's Wood	408535, 270846	NE (10-40)	0.4	Infrequent
E3 - Lions Wood	408556, 271456	SE (150-170)	2.0	Infrequent
E5 - The Gorse	409054, 270887	WNW (280-310)	1.5	Infrequent

Each receptor has been categorised according to its distance from the dust source, and is provided in Table 7.4.

Table 3.4: Categorisation of Receptor Distance from Source			
Receptor	**OS Grid Ref**	**Distance from Source (m)**	**Category**
Human Receptors			
R1 – Higher Park Farm	408714, 271134	35	Close
R2 – Woodside Farm	408600, 270757	230	Distant
R3 - Woodside	408576, 270693	310	Distant
R4 – RSG Scaffolding	408471, 270913	150	Intermediate
R5 – Oakland International Ltd.	408365, 270957	150	Intermediate
R6 - Residential Farm Property 2 Seafield Lane	408364, 270821	330	Distant
R7 - Residential Seafield Lane	408374, 270751	370	Distant
R8 - Residential Seafield Lane	408408, 270727	370	Distant
R12 - Farm Buildings	408717, 271319	200	Intermediate
R15 – Monks Fuel Ltd	408679, 271045	0	Close
Ecology Receptors			
E1 - Highpark Wood	408692, 270995 and 408594, 271224	0	Close
E2 - Branson's Wood	408535, 270846	180	Intermediate
E3 - Lions Wood	408556, 271456	360	Distant
E5 - The Gorse	409054, 270887	350	Distant

The pathway effectiveness has been classified using the frequency of potentially dusty winds from Table 3.4 and the receptor distance from source provided in Table 3.4 and is set out in Table 3.5.

Table 3.5: Pathway Effectiveness	
Receptor	**Pathway Effectiveness**
Human Receptors	
R1 – Higher Park Farm	Moderately Effective
R2 – Woodside Farm	Ineffective
R3 - Woodside	Ineffective
R4 – RSG Scaffolding	Ineffective
R5 – Oakland International Ltd.	Ineffective
R6 - Residential Farm Property 2 Seafield Lane	Ineffective
R7 - Residential Seafield Lane	Ineffective
R8 - Residential Seafield Lane	Ineffective
R12 - Farm Buildings	Moderately Effective
R15 – Monks Fuel Ltd	Ineffective
Ecological Receptors	
E1 - Highpark Wood	Highly Effective
E2 - Branson's Wood	Ineffective
E3 - Lions Wood	Ineffective
E5 - The Gorse	Ineffective

4.1.1 Estimation of Dust Impact Risk

The Residual Source Emissions (Table 7.2) and the Pathway Effectiveness (Table 7.5) were combined to predict the Dust Impact Risk as shown in Table 3.6.

Table 3.6: Estimation of Dust Impact Risk	
Receptor	**Dust Impact Risk**
Human Receptors	
R1 – Higher Park Farm	Low Risk
R2 – Woodside Farm	Negligible Risk
R3 - Woodside	Negligible Risk
R4 – RSG Scaffolding	Negligible Risk
R5 – Oakland International Ltd.	Negligible Risk
R6 - Residential Farm Property 2 Seafield Lane	Negligible Risk
R7 - Residential Seafield Lane	Negligible Risk
R8 - Residential Seafield Lane	Negligible Risk
R12 - Farm Buildings	Low Risk
R15 – Monks Fuel Ltd	Negligible Risk
Ecological Receptors	
E1 - Highpark Wood	Medium Risk
E2 - Branson's Wood	Negligible Risk
E3 - Lions Wood	Negligible Risk
E5 - The Gorse	Negligible Risk

4.1.2 Estimation of Likely Magnitude of disamenity Effects

The likely disamenity effect at each receptor has been determined based on the Dust Impact Risk (Table 3.6) and the Receptor Sensitivity.

Table 3.7: Estimation of Likely Magnitude of Amenity and Ecological Effects	
Receptor	**Dust Impact Risk**
Human Receptors	
R1 – Higher Park Farm	Slight Adverse
R2 – Woodside Farm	Negligible Risk
R3 - Woodside	Negligible Risk
R4 – RSG Scaffolding	Negligible Risk
R5 – Oakland International Ltd.	Negligible Risk
R6 - Residential Farm Property 2 Seafield Lane	Negligible Risk
R7 - Residential Seafield Lane	Negligible Risk
R8 - Residential Seafield Lane	Negligible Risk
R12 - Farm Buildings	Negligible Risk
R15 – Monks Fuel Ltd	Negligible Risk
Ecological Receptors	
E1 - Highpark Wood	Negligible Risk
E2 - Branson's Wood	Negligible Risk
E3 - Lions Wood	Negligible Risk
E5 - The Gorse	Negligible Risk

Overall, there is a slight adverse risk of amenity effects at the nearest residential receptor, Higher Park Farm, but a negligible risk at all other human receptors.

In respect of identified ecological receptors, due to the low sensitivity of the habitats (i.e. designated as priority habitats) the risk of effects from dust emissions is concluded as negligible.

3.3 Other considerations

Water usage/ availability:
Borehole on site used for dust suppression system, water bowser

In the event of a drought:
Water still available even during drought.

3.4 Visual Dust Monitoring

On the basis of past experience at similar types of site, the nature of wastes anticipated to be delivered and the disposition of the site itself with respect to sensitive receptors, no particular measures are to be deployed for the routine monitoring of particulate matter emissions to atmosphere.

Nevertheless, the Company expects and requires its management, staff and site operatives to be vigilant in visually monitoring for and assessing the potential of off-site nuisance of particulate emissions and to take appropriate remedial and corrective action without unjustifiable delay. Such visual assessment for dust/particulates is to be undertaken at least on a working daily basis.

All such assessments and instances of remedial and corrective action are to be recorded in writing in the site diary.

Small particles like PM10 and PM2.5 affect human health but they are not visible by the naked eye so if you see dust this will include an element of PM2.5 and PM10. It also means that if you don’t see dust, there still might be high levels of PM10.

Dust assessments will be carried out by the Site Manager if required.

4. Particulate Matter Monitoring

The site is not in an Air Quality Management Area.

4.1 Monitoring Location

None

4.2 Quality Assurance/Quality Control and Record Keeping

Details of any dust monitoring will be kept on site.

4.3 Reporting of Data

Provide information to the Environment Agency when there is a dust complaint.

5. Actions when alarm is triggered.

The following actions are taken:

1. The Site Foreman assesses yard activities and the nature of the waste handling and deliveries immediately prior to the house saying dust from site is at house, to work out what has caused the alarm to be activated.
2. If the source cannot be ascertained with 100% confidence, the Site Foreman on duty suspends the **likely** dust/particulate generating activities, i.e. wash plant or crusher or both stopped.
3. If the source is within the site's control, the Site Foreman on duty takes appropriate action in terms of dust/particulate abatement, to ensure that the alarm is not re-activated. This may take the form of the following;

    (a) Investigating the source of the dust/particulates to prevent a re-occurrence.
    (b) Suspending operations which are not being conducted using best-practice controls as set out in Table 3.1.
    (c) Additional use of the dust abatement measures.
    (d) Logging findings of a – c in the site diary, and also in the reporting template within the relevant appendix of the Environmental Permit.

    In all cases, any new "lessons learnt" from the Site Foreman's investigations are considered by the company directors and implemented into dust & particulate emission management plan (if not already included), to prevent a re-occurrence of the alarm.

6. Reporting and Complaints Response

The site will respond to dust complaints using Appendix A.

Include a deadline of when you will complete an investigation into a complaint. 2 working days to respond to complaint.

6.1 Engagement with the Community

The site has periodic reviews of the planning permission and permit with the community at Site Liaison Meetings

6.2 Reporting of Complaints

The site will use Appendix 1 form for any dust complaint and this will be sent to the Environment Agency.

6.3 Management Responsibilities

Any complaints received about dust will be acted on by the Site Manager or Technical and Compliance Manager.

The site location and contact numbers have been sent to local residents to so that any dust complaints can be dealt with quickly.

6.4 Summary

The DEMP is to be used for the Material Recycling Facility for the ingress and exit of lorries, wash plant, crusher and screen and the waste brought to the site and the waste going out and material that is inert and has to go to landfill.

In the event of failures that seen by anybody in the Material Recycling Facility or the site manager the site will exercise its powers to get any works done as soon as possible.

If a complaint is received from one of the neighbours Appendix A will be used.

The site will have a new DEMP every two years or after a complaint about dust or if the site management think that a new DEMP should be produced.

APPENDICES

Appendix A - Dust Complaint Form

Customer Details	
Customer Name -	
Address – Postcode -	
Customer Contact Details -	
Tel -	
Email -	
Date -	
Complaint Ref Number -	
Complaint Details -	

Investigation Details	
Investigation carried out by -	
Position -	
Date & time investigation carried out -	
Weather conditions -	
Wind direction and speed -	
Investigation findings -	
Feedback given to Environment Agency and/or local authority -	
Date feedback given -	
Feedback given to public -	
Date feedback given -	

Review and Improve	
Improvements needed to prevent a reoccurrence -	
Proposed date for completion of the improvements -	
Actual date for completion -	
If different insert reason for delay -	
Does the dust management plan need to be updated -	
Date that the dust management plan was updated -	

Closure	
Site manager review date	
Site manager signature to confirm no further action required	