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**MOORHOUSE SANDPIT, WESTERHAM ROAD, MOORHOUSE,
WESTERHAM, KENT, TN16 2EU**

DUST MANAGEMENT PLAN

TECHNICAL REPORT: RFE-0235-19-02-DMP


DATE: JANUARY 2019



PROJECT TITLE: MOORHOUSE SANDPITS, WESTERHAM ROAD, MOORHOUSE, WESTERHAM

REPORT REF: RFE-0235-19-02-DMP

DATE: JANUARY 2019

| | Name | Position | Signature | Date |
|---|----------------|----------|--|-------------------------------|
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| DOCUMENT HISTORY | | |
|------------------|---------------------------------|----------|
| Status | Description | Date |
| 01 | Draft report for client comment | 25/01/19 |
| 02 | Final report issued | 25/01/19 |

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**MOORHOUSE SANDPITS, WESTERHAM ROAD, MOORHOUSE,
WESTERHAM
DUST MANAGEMENT PLAN**

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1.0 INTRODUCTION

1.1 RF Environmental Ltd (RFE) was commissioned by Essex Utilities in January 2019 to produce a Dust Management Plan to accompany an application for a permit from the Environmental Agency (EA) to import waste to the site at Moorhouse Sandpits, Westerham Road, Westerham, Kent.

1.2 Following submission of the permit application (Application Reference EPR/GB3708GR/A001), the EA requested the following:

Submit a dust and particulate emission management plan in line with our guidance.

Reason: Due to the activity type and the proximity of the air quality management area for PM10 and sensitive receptors a Dust Management Plan is required.

1.3 The purpose of this management plan is to identify the level of risk of adverse dust effects which may be caused by the waste processing operation and ensure that potential effects are appropriately controlled.

1.4 This document forms a record of the dust mitigation and management to be adopted during the site operation.

1.5 Details of the site and activities are described in the following section of this report. A risk assessment of potential dust risk effects is presented in Section 3, whilst dust control measures are listed in the management plan presented in Section 4. A list of useful acoustic terms is presented in Appendix A.



2.0 SITE DESCRIPTION AND ACTIVITIES

Site Description

- 2.1 The site is located on land off Westerham Road, Moorhouse, Westerham, Kent. The site has a net site area of 36 hectares. The National Grid Reference for the site is: 542475,154292
- 2.2 The site is situated to the north of the A25 Westerham Road on an industrial estate which, in addition to the Essex Utilities yard, contains a storage yard for buses and coaches, a building materials yard and a storage yard.
- 2.3 To the north of the site is the Clacket Lane Service Station, with the M25 motorway beyond. To the north west is Titsey Wood, which is a site of specific scientific interest (SSSi). To the west of the site is a large sand quarry, with the town of Limpsfield beyond, while to the east is open agricultural land.
- 2.4 A plan of the site is presented in Figure A1 of Appendix A.

Site Activities

- 2.5 The site activities involve the processing and storage of waste materials. The yard contains a number of open holding bays and enclosed holding bays, used for the storage of processed and unprocessed materials including tarmacs, sands and concrete aggregate. The materials and approximate volumes processed are presented in Table 2.1 below.

| European Waste Code | Product Description | Tonnes/Week |
|---------------------|---------------------|-------------|
| 170503 | Tarmac | 16-25 |
| 170504 | Stone | 32-64 |
| 170101 | Concrete | 16-20 |

TABLE 2.1: WASTE MATERIAL PRODUCT DESCRIPTION

- 2.6 Excavated spoil from Essex Utilities worksites are delivered to site via Hiab lorries and held in open storage bays.
- 2.7 The materials are screened and/or crushed using a single excavator with attachments. This process is usually undertaken in a single operation, which may last approximately 4 hours. Once processed, the material is moved to holding bays, prior to being loaded onto lorries using a wheeled-loaders and transported off-site for backfilling excavations at Essex Utilities works sites.
- 2.8 A plan of the site identifying the processes is presented in Figure A2 of Appendix A.
- 2.9 The current mobile plant on site comprises that presented in Table 2.2 below.

| Description | Make | Model | Quantity | Owned/Hired? |
|----------------------|--------|-----------|----------|--------------|
| Grab Lorry with Hiab | DAF | - | 3 | owned |
| Excavator | Doosan | Dx140 LCR | 1 | owned |
| Screening attachment | - | - | 1 | owned |
| Crushing attachment | - | - | 1 | owned |
| Telescopic loader | JCB | 531-70 | 1 | hired |
| Wheeled loader | Bobcat | S130 | 1 | owned |
| Forklift Truck | Heli | | 1 | owned |

TABLE 2.2 CURRENT PLANT OPERATING ON-SITE

Site Constraints and Sensitive Receptors

2.10 Receptors identified as the closest and most sensitive to potential dust emissions from the site are listed in Table 2.3, including approximate distances to the site. A plan showing the location of nearby sensitive receptors in relation to the site is presented in Figure A1 of Appendix A.

| Receptor I.D. | Property | Approx. Distance from Site (m) | Receptor Type |
|---------------|---|--------------------------------|---------------|
| R1 | Cottages adjacent to Thames Water Pumping Station | 100 | Residential |
| R2 | Westwood Farmhouse | 265 | Residential |
| R3 | Titsey Wood | 150 | SSSI |

TABLE 2.3: SENSITIVE RECEPTORS AND APPROXIMATE DISTANCES FROM THE SITE

Hours of Work

2.11 Normal construction hours adopted for this project will be as follows:

- Monday to Friday 07:00 hrs to 16:00 hrs;
- Saturdays 07:00 to 12:00 hrs;
- Other: no works permitted on Sundays or Bank Holidays.

Local Air Quality Management (LAQM)

2.12 Tandridge District Council have not declared any AQMA's and therefore the site does not lie within a LAQM area. The closest LAQM to the site are the Sevenoaks District Council's AQMA2/NO2/2015 which is approximately 650m from the site and AQMA6/PM10/2006 which covers the Junction 5 to the Kent/Surrey border.

2.13 In the wider context of local air quality management, the main dust sources in the area are from vehicles travelling on the local road network, including the M25 to the north, from operational activities on the site and from activities on the other sites in the vicinity, in particular, the large Moorhouse Sandpit quarry located to the east of the site.

Additional Sources of Dust and/or Emissions



2.14 The main sources of dust and/or other emissions in the vicinity of the site are presented in Table 2.4.

| Company | Address | Type of Business | Distance from Essex Utilities (m) |
|---------------------|-----------------|-----------------------|-----------------------------------|
| BMI Redland | Moorhouse Depot | Roofing Suppliers | 80 |
| Bus and Coach | Moorhouse Depot | Bus and Coach Storage | 5 |
| Moorhouse Sand Pits | Westerham Road | Sand Quarry | 660 |
| Self-Storage Yard | Moorhouse Depot | Materials Storage | 100 |
| M25 - Motorway | N/A | Motorway | 550 |

TABLE 2.4: MAIN SOURCES OF DUST AND EMISSIONS IN VICINITY OF SITE



3.0 DUST RISK ASSESSMENT

Baseline Conditions

- 3.1 Although no baseline information is available for the site, the baseline airborne particulate dust environment is influenced by road traffic and dust from other sources. PM₁₀ data is not collected within Tandridge District, however, Tandridge District Council acknowledges in the LQMA Annual Status Report 2018 that at the three permanent monitoring sites in the South East region, the PM₁₀ concentrations complied with both the annual mean and 24-hour UK objective in 2017 and all the previous years at these sites.

Site Evaluation

- 3.2 The level of risk attached to the site is dependent not only on the size and scale of a process, but also the activities, the timing of works (seasonality) and the sensitivity of the surrounding area.
- 3.3 When defining the sensitivity of the area, consideration is given to three main areas: sensitivities of people to dust soiling, sensitivities of people to the health effects of PM₁₀ and sensitivity of receptors to ecological effects.
- 3.4 A receptor considered highly sensitive to dust soiling effects would include residential dwellings, while a receptor which is classified as highly sensitive to health effects would be where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀, with examples again including residential dwellings as well as hospitals, schools and residential care homes.
- 3.5 A list of representative receptors is presented in Table 2.3 of Section 2, including approximate distances to the worksite. A plan showing the location of receptors in relation to the site is presented in Figure A1 of Appendix A.
- 3.6 The distance from source to sensitive receptor is a key factor for determining the potential dust effects from a construction site. As a general guide, the main effects are at distances of less than 100 m. With the exponential decline in dust with distance from dust generating activities, it is considered that for receptors more than 350m from the site boundary, the risk is negligible. Furthermore, the risks at over 100m only have the potential to be significant in certain weather conditions, e.g. downwind of the source during dry periods.
- 3.7 The distances from source that dust effects are felt is also dependent on the extent and nature of mitigation measures, prevailing wind conditions and the presence of natural screening by, for example, vegetation or existing physical screening such as earth bunds.
- 3.8 The Titsey Wood SSSI is located a minimum of 150m north-west of the site. As the distance to the SSSI is less than 350m there is potential for the site's operations have a medium risk of impact on the SSSI, although at this distance, it is likely to be dependent on specific weather conditions and the implementation of appropriate mitigation.



- 3.9 Being located in a semi-industrial business park there are few sensitive receptors located in close proximity to the site. As such, the sensitivity of the immediate area to nuisance dust impacts is considered to be low.
- 3.10 The closest residential receptors are a minimum of 100m from the site. At this distance a medium risk of dust of impact exists, without the implementation of suitable mitigation.
- 3.11 However, with appropriate mitigation, the level of dust impact from the site can be reduced to low at all sensitive receptors around the site.
- 3.12 Further details on the management and mitigation of dust are presented in the following chapter, while full details of the risk assessment, with and without mitigation is presented in Table B1 of Appendix B.

4.0 DUST MANAGEMENT PLAN

4.1 The control measures detailed in this section have been developed based on the on-site plant and activities, which are summarised in Section 2 of this document and observations made during a site walkover and assessment.

Existing Topography

4.2 The site boundary to the north and east consists of a large earth bund, approximately 3m in height, which is lined with trees and shrubs.

4.3 This feature provides a strong buffer for dust deposition, with the foliage acting to trap excess dust leaving the site.

4.4 The low-lying position of the site and existence of the bund, along with the large commercial building along the western boundary does provide a great deal of protection to the site from the prevailing wind and therefore the airborne generation of dust is lower than would usually be expected.

Storage Bays

4.5 The storage bays used for holding the unprocessed and processed materials are made from solid concrete blocks, which provide a strong structure for containing the material and avoiding the spread of dust.

4.6 Some of the bays are covered with sheets and have a structure over the top which allows the top and sides to be sheeted with plastic. This is shown in Figure 4.1.



FIGURE 4.1: PHOTOGRAPH SHOWING COVERED STORAGE BAYS

4.7 It was observed during the inspection that the open bays are being filled to the top with material. This increases the risk of wind-blown dust generation and therefore it has been advised that the height of the bays be increased and a 'fill' line is introduced 0.5 m from the top. This is shown in Figure 4.2.



FIGURE 4.2: PHOTOGRAPH SHOWING OVERFILLED BAYS

Volume of Processing

- 4.8 The site and processing operations is small and the level of dust generated will be controlled to some degree by the minimal level of waste processed.

Dust Suppression

- 4.9 A mobile water bowser is hired into site during the dry months, to allow for damping down of the waste material to minimise dust generation.
- 4.10 Access roads are regularly damped down and cleaned to remove dust and avoid disturbance caused by lorry movements.

Site Specific Dust Control Measures to be Implemented

- 4.11 Below is a list of dust management controls which will be implemented as part of the DMP
- damping down of surfaces using mobile water bowser, particularly during dry weather;
 - potentially dusty activities located away from boundaries closest to residential receptors;
 - stock piles to be covered, where practicable;
 - stock piles to be kept a minimum of 0.5m below top of the storage bay;
 - effective cleaning methods and where possible hard surfacing for site haulage routes;
 - all loads entering and leaving site to be covered;
 - drop heights to be minimised during loading and unloading of materials and waste;
 - dust generated by the screening/crushing process will be suppressed via a fine directional spray jet of water aimed at the source, during dry weather;
 - immediate clean-up of spillages of dusty materials;



- wet brushing techniques will be used for cleaning;
 - regular checks for visual observation of dust and soiling from the site;
 - routine monitoring of dust at the site boundary and sensitive receptors; and
 - no vehicle/ plant idling on site at anytime.
- 4.12 The site-specific mitigation measures set out in this chapter are introduced in Table B1 of Appendix B, which sets out the dust risk assessment prior to and following the implementation of the mitigation measures.
- 4.13 The results of the risk assessment undertaken for site activities, with mitigation measures included indicate that dust can be adequately controlled and therefore significant impacts from dust at sensitive receptors should be avoided.
- 4.14 The site manager (or designated persons on site) will be responsible for the management of dust emissions and will be tasked with implementing the measures set out in this document.
- 4.15 All site operatives will be trained to ensure that best practicable means are implemented at all times, and to show due consideration to sensitive receptors. Accordingly, the relevant aspects of this document relating to the control of dust will be communicated to all site operatives.
- 4.16 Access to site will be facilitated at all reasonable times for inspection by Environment Agency personnel, following appropriate site-specific induction.

Dust Monitoring Procedure

- 4.17 As part of the overall management of dust effects, a programme of visual monitoring will be undertaken on a weekly basis within the site and records will be kept for inspection by the EA upon reasonable request. A monitoring template is presented in Figure A3 of Appendix A, while the designated monitoring positions are shown in Figure A4 of Appendix A.



5.0 CONCLUSIONS

- 5.1 A dust management plan has been prepared on behalf of Essex Utilities Ltd to assess the risk associated with the processing and storage of waste materials at the Moorhouse Sandpit site, Westerham Road, Westerham, Kent.
- 5.2 The outcome of dust risk assessment presented in Section 3 shows the risk to the Titsey Wood SSSI and the closest sensitive residential receptor is medium, without appropriate dust management measures in place.
- 5.3 Therefore, site specific mitigation measures have been developed, along with appropriate management and monitoring procedures.
- 5.4 The implementation of these control measures will minimise the dust generation from the site and ensure that the risk of dust impact is low at the closest sensitive receptors.



6.0 REFERENCES

1. Greater London Authority. *The control of dust and emissions during construction and demolition SPG*. 2014.
2. Institute of Air Quality Management: *Guidance on the assessment of dust from demolition and construction*. 2014.

APPENDIX A: FIGURES

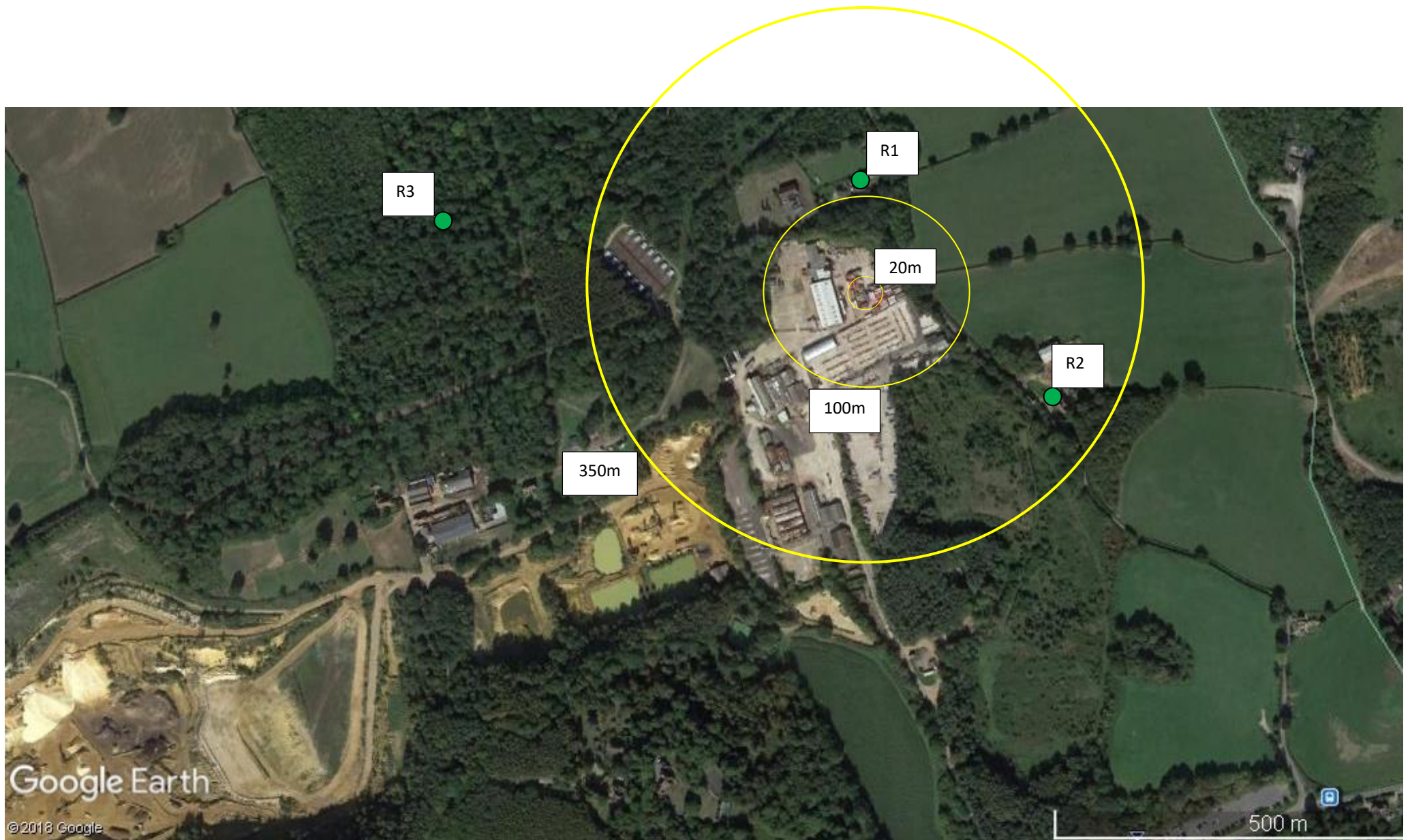


FIGURE A1: PLAN SHOWING SITE BOUNDARY AND CLOSEST SENSITIVE RECEPTORS

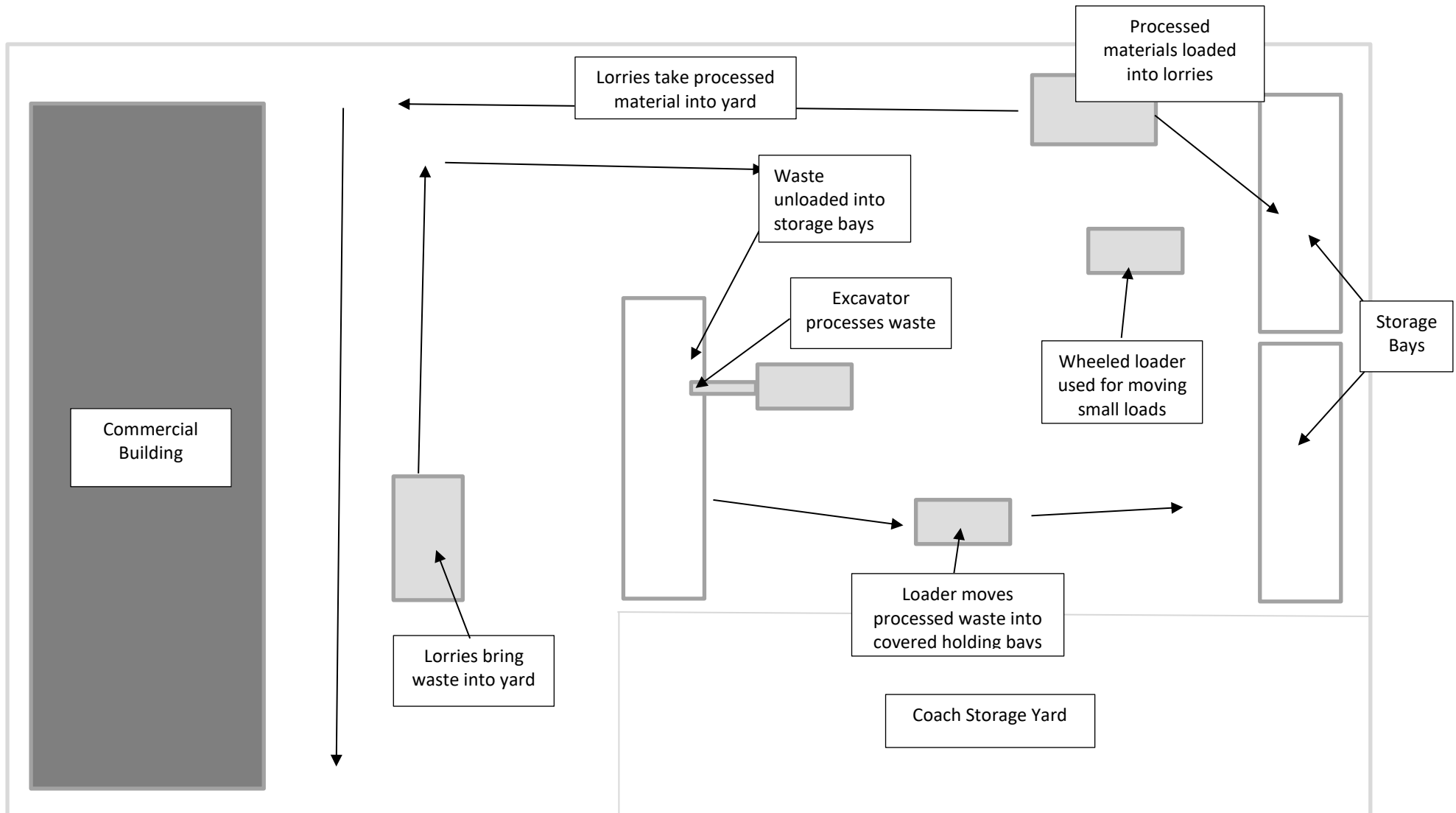


FIGURE A2: PLAN SHOWING WASTE PROCESSING ACTIVITIES

| DUST MONITORING REPORT - ESSEX UTILITIES LTD | | | |
|---|--|---------------------|--|
| MOORHOUSE SANDPIT SITE | | | |
| Doc Ref: | | Week No. | |
| Assessor: | | Report Date: | |
| Signed: | | Report Time: | |
| Weather Conditions | <i>Wind Speed</i> | | |
| | <i>Wind Direction</i> | | |
| | <i>Temperature</i> | | |
| | <i>Humidity</i> | | |
| | <i>General Comments</i> | | |
| Activity / Plant | <i>[plant and/or activity, location, details of any dust related issues]</i> | | |
| | | | |
| Monitoring Location | Observations | | |
| D1 - Northern Boundary | | | |
| D2 - Eastern Boundary | | | |
| D3 - Southern Boundary | | | |
| Mitigation Review | <i>[review of control measures employed at time of monitoring][Where appropriate state any measures not adopted]</i> | | |
| Corrective Actions: | <i>[Where appropriate state actions / measures employed to rectify any observations of high dust generation]</i> | | |

FIGURE A3: TEMPLATE FOR VISUAL DUST MONITORING

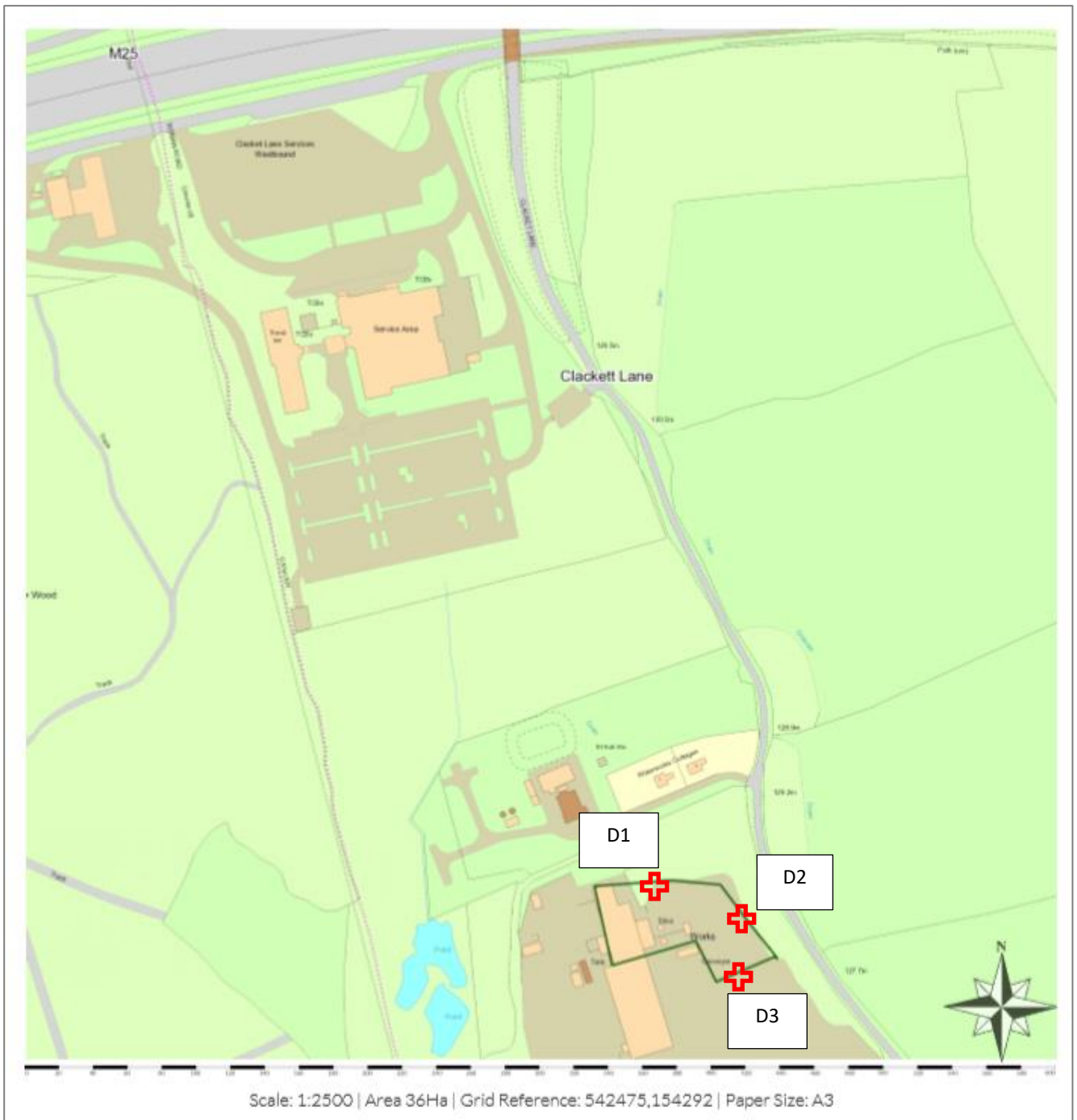


FIGURE A4: PLAN SHOWING DUST MONITORING LOCATIONS

APPENDIX B: TABLES

| Hazard | Receptor | Pathway | Scale of Dust Emission Risk Potential | Activity Specific Mitigation | Dusk Risk Category After Mitigation |
|------------------------------------|---|---|---|---|-------------------------------------|
| Screening/crushing of waste | Cottages to north and south east of site. SSSI to north west. | Wind-blown emissions to air | Medium risk - Dust could reach dwellings to north and SSSI particularly in dry conditions, however existing earth bund lined with trees and shrubs provides a good buffer to trap dust. | Visual dust monitoring during processing operation. Site manager is responsible for checking wind strength and direction, and will manage operations if necessary. Material to be kept damp at all times. Drop heights to be minimised. Limited activity duration due to small size of operation. | Low risk. |
| Lorry movements | Cottages to north and south east of site. SSSI to north west. | Wind-blown emissions to air and debris falling off lorries. | Low-Medium risk. Limited number of lorry movements per day, however, dust could accumulate on access roads, if not treated. | Access roads to be cleaned regularly and kept damped. All lorries carrying waste material into and out of site will be sheeted. Lorries to be cleaned down regularly to avoid dust build up on wheels etc. Drop heights minimised when loading/unloading lorries | Low risk |
| Storage of materials | Cottages to north and south east of site. SSSI to north west. | Wind-blown emissions to air | Medium risk - Storage of materials at top of open storage bays could lead to dust deposits at sensitive receptors, especially in strong winds. | Increase heights of storage bays. Introduce 'fill' lines 0.5 m below the top. Main storage bay to remain covered and protected by plastic sheeting. Storage piles to be kept damp. Regular damping during dry periods. | Low risk |
| Emissions from plant | Cottages to north and south east of site. SSSI to north west. | Wind-blown emissions to air | Low risk - Diesel emissions from plant could affect receptors, especially if plant allowed to idle, although limited number of plant and relatively short operating times would limit risk. | No plant to be left idling when not in use. All plant to be regularly serviced and maintained. All plant to comply with current regulatory controls. | Low risk. |

TABLE B1: SITE ACTIVITY DUST RISK ASSESSMENT