DB CARGO (UK) LIMITED

INERT AND NON-HAZARDOUS WASTE TRANSFER STATION

BARKING EUROHUB, BOX LANE, RENWICK ROAD, BARKING, IG11 0SQ

DUST AND PARTICULATE MATTER EMISSION MANAGEMENT PLAN (DEMP)

VERSION 1.3

Report reference: DBC/EU/AW/5671/01/DEMP
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1. Introduction

1.1 MJCA is commissioned by DB Cargo (UK) Limited (DB Cargo) to update the dust and particulate matter emission management plan (DEMP) for the waste transfer station operated by DB Cargo under Environmental Permit number EPR/GB3003GR (the permit) at Barking Eurohub, Box Lane, Renwick Road, Barking (the site). The location and boundary of the site is shown on Figure DEMP 1. The local authority for the site is the London Borough of Barking and Dagenham. The site has been operational since the permit was first issued in July 2018.

1.2 Version 1.0 of the DEMP was prepared in support of an application to vary the permit submitted to the Environment Agency on 18 September 2020 under report reference DBC/EU/AW/5636/01. Version 1.1 of the DEMP was submitted to the Environment Agency (EA) on 21 January 2021 in response to a Schedule 5 Notice issued during the determination of the application to vary the permit. Version 1.1 of the DEMP was approved by the EA and is listed under Table S1.2 Operating techniques of the permit which was issued on 16 February 2021 (EPR/GB3003GR/V003).

1.3 Version 1.3[1] of the DEMP has been prepared to address the following proposed changes the subject of an application to vary the pemit:

A. The addition of List of Waste (LoW) codes 19 12 12 and 19 13 02. It is proposed that these waste types will be stored in the northern half of the currently permitted site adjacent to, but segregated from, soil and stones waste categorised under LoW code 17 05 04 currently authorised to be accepted at the site. The area in which it is proposed LoW codes 19 12 12 and 19 13 02 are stored is marked on Figure DEMP 2.

B. The addition of a range of metal wastes specified under LoW codes 02, 12, 16, 17, 19 and 20 to Table S2.1 of the permit. Loose tipped metal wastes will be stored exclusively in the area to the south of the currently permitted area marked on Figure DEMP 1. This area of the site currently operates a similar activity under a T9 waste exemption for the storage and recovery of scrap

[1] Version 1.3 was provided to the Environment Agency during the Duly Making process for the permit variation application and replaces Version 1.2 that was submitted to the Environment Agency in January 2022.

metal. Once the varied permit has been issued it is proposed that the T9 exemption will be deregistered.

C. An extension to the Environmental Permit boundary.

1.4 The purpose of this document is to identify the operations at the site which may have the potential to have an impact on air quality as a result of emissions of particulate matter, to present the details of the operational controls which are implemented to minimise emissions and to describe the monitoring which is carried out to confirm the effectiveness of the management controls.

1.5 The DEMP forms part of the environmental management system (EMS) under which the site is operated.

1.6 The DEMP has been prepared based on the guidance presented in the relevant sections of the following documents and guidance:

- Environment Agency - Control and monitor emissions for your environmental permit.[2] (the emissions guidance)
- Environment Agency internal guidance template entitled "Dust and emission management plan" (Version 10 dated October 2018)

1.7 The activities with the potential to generate and/or release dust and particulate matter are identified in Section 2 of this document. The locations of potential receptors are identified in Table 1, are shown on Figure DEMP 1 and are discussed in Section 2 together with the potential pathways for linkage of the sources and receptors.

1.8 In Sections 3 and 4 of this document the management techniques that are used at the site to minimise the potential for dust and particulate matter emissions from the site are set out and the monitoring undertaken to confirm the effectiveness of the management techniques is specified. In Section 5 details are presented of how DB Cargo engage with the local community together with details of the procedure for reporting and responding to complaints. An action plan which will be implemented in the unlikely event that there is the potential for a significant emission of dust or

[2] Available at https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit

particulate matter from the site or if a complaint regarding dust or particulate matter is received is presented in Section 6.

1.9 The DEMP comprises a living document and will be reviewed on an annual basis as part of the environmental performance audit or as required by the action plan. The review will include consideration of the results of dust and particulate matter monitoring and progress with any improvements identified as necessary. A review of the effectiveness of dust and particulate matter monitoring techniques will be undertaken and changes made to monitoring techniques as necessary.

2. Operations at Barking Eurohub (sources, pathways and receptors)

Sources

2.1 The latest variation of the permit issued on 16 February 2021 comprises a bespoke permit which authorises the site to accept up to 750,000 tonnes per year of inert and excavation waste. This DEMP (Version 1.3) has been prepared to support an application to vary the permit to include the changes set out under paragraph 1.3 of the introduction to the DEMP. There are no proposals to increase the permitted area. There are no proposals to increase the overall annual tonnage limit at the site or to include waste activities at the site additional to those already consented. There are no proposals to undertake the mechanical treatment of waste at the site. The activities it is proposed are undertaken at the site remain consistent with those specified in Table S1.1 of the permit. Consistent with the current waste operation, waste will continue to be received at the site by road and will be transferred from the site by rail.

2.2 A new site entrance has been created in the south eastern corner of the currently permitted area specifically for road access to the designated metal waste area as outlined on Figure DEMP 2. The new site entrance is marked on Figure DEMP 2 and will use the existing road network running from Box Lane along the southern boundary of the currently permitted area. The existing site entrances also accessed via Box Lane to the north west of the currently permitted area will remain unaffected and are shown on Figure DEMP 2.

2.3 The waste types currently permitted to be accepted at the site are specified in Table S2.1 of the permit and are reproduced in Table 2 of this DEMP alongside the new waste types to be added to the permit. Table 2 also provides an assessment of the potential for each of these waste types to generate dust. Wastes comprising solely or mainly dusts, powders or loose fibres are not accepted at the site. The waste materials are stored at the site prior to transfer off the site. All heavy goods vehicles (any vehicles over 3.5 tonnes unladen weight) entering or exiting the site carrying waste are instructed to sheet or otherwise contain their loads to minimise the potential for the release of dust or particulate matter.

2.4 Waste acceptance at the site is and will continue to be controlled by the waste acceptance and rejection procedures implemented at the site. Pre-acceptance

checks of information provided by the producer or holder of the waste shall be undertaken by the technically competent manager (TCM) or a suitably trained person instructed or managed by the TCM. The pre-acceptance checks shall be used to identify waste that is suitable for acceptance at the facility. Waste acceptance checks shall be carried out for all waste loads delivered to the facility to confirm that the load is consistent with the pre-acceptance information. The acceptance checks undertaken by suitably trained site personnel shall include the requirement for all delivery drivers to report to reception or a member of site personnel, inspection of the Duty of Care documentation and a visual inspection of the load prior to acceptance to confirm that the load is consistent with the Duty of Care documentation. In the event that unsuitable materials are delivered to the site, including wastes comprising solely or mainly dusts, powders or loose fibres, the load will be rejected. A secondary inspection will be undertaken during unloading of the waste within the site to confirm the findings of the inspections undertaken upon arrival of the load. If, based on the secondary inspection the load is identified as not suitable, arrangements will be made to remove the load from the site. Measures will be taken, for example damping down of the material, to minimise the potential for release of particulate matter from the load whilst collection is awaited. Key staff hold a relevant qualification under the approved CIWM/WAMITAB competence scheme appropriate to the waste operations conducted at the site.

2.5 The current permit specifies in Table S1.1 the limits of activities at the site which comprise treatment consisting only of manual sorting or separation of waste into different components for disposal or recovery. No physical treatment of waste (e.g. crushing and/or screening) is undertaken at the site. The site layout is shown in Figure DEMP 2.

2.6 The activities with the potential to generate and/or release dust and particulate matter include the following:

- Vehicles entering and/or leaving the site with mud or debris on their wheels.
- The release of dust, particulate matter and debris from waste loads as they are delivered to the site.
- The resuspension of dust and particulate matter on roads and site surfacing by vehicles.

- The release of particulate matter when waste loads are deposited or set down in stockpiles on the site.
- Wind whipping of materials stockpiled at the site.
- Loading of stockpiled materials onto train wagons for transfer off site.
- Particulate emissions from the exhausts of vehicles and plant on site.

2.7 The management techniques employed at the site to control dust and particulate matter are discussed in Section 3 of this document.

Pathways

2.8 Dust and particulate matter have the potential to be dispersed from the source to potential receptors by the wind. A wind rose for London City Airport for the period 2010 to 2014 is presented on Figure DEMP 1. The site is located approximately 6km north east of London City Airport. Based on the wind rose the prevailing wind direction is from the south west or west south west and therefore areas to the north east or east north east of the site are generally down prevailing wind of the site. As shown on Figure DEMP 1 there is a housing estate located to the north east of the site between 50m and 250m from the site.

2.9 Particle size is the key parameter when considering the transportation of particulate matter in air. Coarse particles have much faster settling rates than finer particles and will therefore settle out as deposited dust generally close to the source, whereas fine particulate matter may remain airborne for longer periods and travel greater distances. Based on information published by DETR[3] large particles (>30µm) mostly are deposited within 100m of the source, intermediate-sized particles (10µm to 30µm) are likely to travel up to 200m to 500m and smaller particles (<10µm) can travel up to 1km from the source, although very small particles can travel much further. TGN M17[4] states that:

[3] Department of the Environment, Transport and the Regions (DETR) (2000a) Controlling and mitigating the environmental effects of minerals extraction in England. Mineral Planning Guidance Note 11, consultation paper. DETR, London. Cited in Technical Guidance Document (Monitoring) M17 – Environment Agency March 2004.

[4] Technical Guidance Note (Monitoring) M17 Monitoring Particulate Matter in Ambient Air around Waste Facilities Environment Agency Version 2 July 2013.

'PM10 emissions from industrial combustion processes and road transport are considered to contain more fine material (i.e. PM2.5) than, for example, mechanically-generated particulates from quarries and construction sites'

'Waste management operations that involve mechanical generation of PM rather than combustion, are also likely to release predominantly coarse particles.'

2.10 As there are no physical treatment operations undertaken at the site the potential for the mechanical generation of particulate matter is limited to the loading and unloading of wastes hence the particle size fraction relevant to potential emissions from the site is at the upper end of the PM_{10} fraction and coarse particles greater than PM_{10}. Based on this assessment and based on the guidance presented in the Environment Agency internal guidance template entitled "Dust and particulate emission management plan" an initial search radius of 1km has been used when identifying potential receptors in the vicinity of the site.

Receptors

2.11 The potential receptors in the vicinity of the site are shown on Figure DEMP 1. The receptor type, distance and direction of the receptors closest to the site are listed in Table 1.

2.12 As shown in Figure DEMP 1 the site is located at a rail sidings in an area surrounded by commercial industry to the north west, south and south east and residential areas to the north east and south west. The site is located to the south of Ripple Road (A13) and to the east of Renwick Road from which the site is accessed via Box Lane. There are a number of commercial operations in the vicinity of the site which have the potential to contribute particulate matter emissions to local air quality. These operations are identified shaded in grey in Table 1. A large construction project (Barking Riverside, location 20) ongoing adjacent to Fielders Crescent approximately 400m to the south of the site also has the potential to contribute to particulate matter emissions in the local area.

2.13 The residential properties closest to the site are located on Levine Gardens and adjoining roads approximately 50m to the north east of the site and on Keel Close

approximately 130m to the south west of the site. Gale Street housing estate (located east and west of Gale Street) comprises a large area of domestic dwellings (with the closest houses approximately 550m to the north of the site) together with five schools, two care homes and three public health facilities between 250m and 500m north, north east and north west of the site. Castle Green Community School, including Castle Green Nursery lies approximately 320m to the north of the site.

2.14 The recreational/amenity area closest to the site is Barking Rugby Club approximately 300m north of the site. Adjacent to the rugby club and part of Castle Green Community School is Castle Green Leisure & Community Center approximately 370m to the north. To the north east of the site lies Scrattons Farm Eco Park approximately 100m from the site boundary.

2.15 The London Borough of Barking and Dagenham (LBBD) has declared an air quality management area (AQMA) for Particulate Matter (PM_{10}) which encompasses the entire borough including the whole site.

2.16 The closest suburban background PM_{10} monitoring station is located at Scrattons Farm approximately 100m north east of the site. Air Quality statistics presented on the London Air Quality Network website[5] report that the daily mean and annual mean PM_{10} environmental objectives of 50µg/m^3 and 40µg/m^3 respectively, specified in the UK Air Quality Strategy were not exceeded in 2016, 2017, in 2020 or in 2021 at the monitoring station. No data are available on the website for 2018 or 2019.

2.17 The closest roadside and urban monitoring background PM_{10} monitoring station with publicly available data for 2019 and 2020 is located at Havering – Rainham approximately 5km east of the site. Air Quality statistics presented on the London Air Quality Network website[6] report that the daily mean and annual mean PM_{10} environmental objectives of 50µg/m^3 and 40µg/m^3 respectively, specified in the UK Air Quality Strategy were not exceeded in 2016, 2018, 2019 or in 2020 at the monitoring station. No data are available on the website for 2017 and 2021.

5 https://www.londonair.org.uk/london/asp/publicstats.asp?mapview=all&statyear=2020&MapType=Google&region=0&site=BG2&postcode=&la_id=&objective=All&zoom=9&lat=51.4750&lon=-0.119824&VenueCode=

6 https://www.londonair.org.uk/london/asp/publicstats.asp?mapview=all&statyear=2019&MapType=Google&region=0&site=HV1&postcode=&la_id=&objective=All&zoom=9&lat=51.4750&lon=-0.119824&VenueCode=

2.18 Defra[7] provide background maps to facilitate the review and assessment of local air quality. Annual mean background concentrations for PM_{10} are provided for each 1km x 1km grid for each local authority area. Estimated PM_{10} background concentrations for the years 2017 to 2020 for the 1km by 1km background data grid encompassing the site is presented in the table below.

Particulate Matter (PM_{10}) Annual Mean ($\mu g/m^3$)			
2017	**2018**	**2019**	**2020**
18.8	18.6	18.3	18.7

2.19 The data shows that estimated background PM_{10} concentrations in the vicinity of the site comprise less than half of the annual mean environmental objective of $40\mu g/m^3$ specified in the UK Air Quality Strategy.

[7] http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html last accessed 16 December 2021.

3. Dust and particulate management

3.1 Particulate matter at the site is controlled by a combination of measures relating to waste delivery and receipt at the site, site infrastructure and operational techniques employed at the site. The techniques selected for use at the site are based on well-established techniques to control the emissions of particulate matter.

Responsibility for implementation of this plan

3.2 The Technically Competent Site Manager (TCM) shall be responsible for the management of particulate matter and site staff will be trained appropriately. The TCM will appoint a suitably trained deputy to oversee the management of particulate matter at the site during operational periods when the TCM is not present at the site. The TCM will provide the training for the deputy. The training will include refresher training where appropriate however during the course of routine operation of the site the experience of the site staff, including the deputy, will comprise on the job training which will complement the refresher training as necessary.

Sources and control for fugitive dust and other emissions

3.3 The emissions guidance and the Environment Agency (EA) internal guidance template provide examples of a number of measures which may be appropriate for the control of emissions of particulate matter. The measures presented in Table 3.2 of the EA internal guidance template are reproduced in Table 3 of this DEMP together with comments on their relevance to the operations undertaken at the site. A variety of techniques are used at the site based on site specific circumstances. The principal particulate matter control measures are summarised below and the details of how these measures disrupt the source-pathway-receptor linkage in respect of the sources of particulate matter generation and release identified in Section 2 of this document are presented in Table 4.

3.4 Waste currently is stored on the tarmac surface shown hatched in light brown on Figure DEMP 2 prior to transfer from the site in rail wagons which are loaded at the rail siding locations on the southern and northern boundaries of the currently permitted area marked in red on Figure DEMP 2. The area to the north and north east of the currently permitted area referred to as Harry Sidings comprises a hardstanding surface consisting of compacted earth. The Harry Sidings area of the site is

authorised to accept and store the currently permitted wastes under the permit. There are no proposals to store any of the additional LoW codes the subject of the application to vary the permit within the Harry Sidings area of the site. The area of the site in which loose tipped metal wastes will be stored is marked with red hatching on Figure DEMP 1. LoW codes 19 12 12 and 19 13 02 will be stored on the Tarmac surface in the area to the north of the site as shown on Figure DEMP 2. Further details of the potential for dust generation from each of the waste types are included in Table 2 of the DEMP. The measures described below are implemented across the site.

3.5 Dust suppression is provided at the site by mobile water bowsers. The bowsers are employed to minimise the release of dust from site surfaces and stockpiled waste at the site. The bowsers each have a capacity of 1,000 litres and are refilled using mains water as necessary and by the end of each working day in preparation for use the next working day. In the unlikely event that a bowser runs dry during the working day, any waste loading or unloading activities for which dust suppression may be required at that time will temporarily cease whilst the bowser is refilled with water and the loading or unloading of waste will resume once the relevant bowser has been refilled and is available to provide dust suppression. Alternatively the other bowser will be employed, if available at that time, whilst the first bowser is being refilled. It takes approximately 15 minutes to refill each bowser with water. Prior to and during train wagon loading during weather conditions that may give rise to dust and particulate matter emissions a bowser will be employed to dampen waste and the site surfacing to minimise the potential for release of dust or particulate matter from the site. Employment of the water bowser has been an effective dust suppression technique employed at the site since the permit was first issued in July 2018 during which time there have been no complaints in respect of dust and particulate matter at the site.

3.6 The management controls employed to minimise the potential for the release of dust from the waste stockpiles at the site include minimising the height of the stockpiles, shaping of the stockpiles generally to be flat topped to minimise wind whipping and turning the materials where necessary to maintain an even distribution of moisture in order to prevent the outer surface of the stockpile drying out during dry warm weather and becoming friable and prone to dust blow during windy weather conditions. Waste stockpile heights at the site will be limited to 5.3m to minimise the potential for wind

whipping of the stockpile and to facilitate access for the water bowser and site mobile plant to reach the top of the stockpiles.

3.7 During windy conditions which coincide with periods of low rainfall increased dust suppression will be employed at the site at the discretion of the TCM to maintain the site surfacing and waste stockpiles in a damp condition to minimise the potential for the generation and release of dust. Employment of dust suppression will assist in minimising the potential for waste stored on the site to become friable. This process was followed during the extended dry, hot period experienced during the summer of 2018 shortly after the permit was issued and in the late spring of 2020. Sufficient water was available for dust suppression during these periods, no unacceptable visible emissions of dust were observed at the site and no complaints were received by DBC in respect of dust emissions from the site during these periods.

3.8 Decisions on the employment of dust suppression at the site will be made by the TCM as part of the site start up routine as well as ongoing consideration throughout the day based on the site conditions (dry, damp, wet) giving consideration to the weather conditions (windy, calm, etc) and the type, quantity and particle size of the waste on site. The overriding management principle of the site with respect to dust control is to operate the site in a manner which prevents or minimises the release of dust. If it is considered that the waste stored on the site or the site surfacing itself is in a condition that has the potential to release a significant quantity of particulate matter such that there is a potential for off site dust emissions, dust suppression will be employed in a manner proportionate to the risk. DB Cargo will cease waste handling, train loading or adding to stockpiles if weather conditions and ground conditions preclude effective dust control. A mobile water bowser will be employed as necessary on stockpiled materials during high winds.

3.9 Water used in dust suppression at the site is unlikely to generate run-off at the site. The purpose of the suppression is to dampen waste to minimise the potential for release of particulate matter and to target emissions from the rail loading activities employed at the site. The inert and excavation waste materials, identified in Table 2 as having the highest potential for release of particulate matter, will naturally absorb a significant quantity of the suppression water when dampened. Any excess suppression water which has not been absorbed will either be captured/used by the mechanical road sweeper which is used to clean the tarmac surface at the site or will

be captured by the site drainage system. Where waste materials are stored on hardstanding in the Harry Sidings area any excess water will soak away to ground. When considered in the context of annual rainfall at the site it is considered that the quantity of water used in dust suppression will have a negligible impact on drainage at the site.

3.10 The site is accessed from the site entrance on Box Lane to the west of the site as shown on Figure DEMP 2. The specific entrances to the northern half and southern half of the currently permitted area are marked on Figure DEMP 2. The site entrance, site reception area and areas of the site in which waste is stored are, with the exception of the Harry Sidings area, tarmac surfaced hence comprise a readily cleanable surface for the vehicles transporting waste to the site. Vehicles delivering waste to the site will remain on the tarmac surface for unloading of waste hence minimising the potential for mud to be tracked onto the site surfacing, or tracked out of the site onto the public highway. Harry Sidings is accessed from the south east of the site at the approximate location shown on Figure DEMP 2. Vehicles arriving from the site access road on Box Lane will drive along a road to the south of the tarmac area to reach the Harry Sidings entrance shown on Figure DEMP 2 and will leave Harry Sidings via the same entrance. The hardstanding in the Harry Sidings area comprises compacted earth which has the potential to be picked up by the wheels of vehicles in this area of the site. A wheel wash bath with shaker grids will be installed within the Harry Sidings area to clean the wheels of vehicles prior to exiting this part of the site. Vehicles leaving Harry Sidings will return to the road located to the south of the tarmac area before leaving the wider site via Box Lane.

3.11 A mechanical road sweeper is employed at the site to clean the tarmac surface at the site, including the area between the waste storage area and the site exit and the area between the Harry Sidings entrance/exit and Box Lane. The mechanical road sweeper will be complemented where necessary by manual sweeping by site personnel using brushes. The mechanical road sweeper is maintained in accordance with the manufacturer's recommendations and is topped up with clean water to provide effective surface cleaning. During and at the end of each working day, the water levels will be replenished to ensure that water is available to start cleaning the next working day. The mechanical road sweeper is subject to daily inspections including inspection of the water spray nozzles and brushes to ensure that the

performance of the road sweeper is optimised. Spare filters and brushes are kept at the site in the event that replacements are required.

Operational controls

3.12 All heavy goods vehicles entering or exiting the site carrying waste are instructed to sheet or otherwise contain their loads to minimise the potential for the release of dust or particulate matter. Vehicle drivers are instructed to un-sheet on site prior to unloading of the material at the site.

3.13 Waste received at the site is subject to pre-acceptance checks and acceptance screening comprising, where appropriate, visual inspection to confirm that the load is consistent with the waste types permitted for acceptance at the site. In the event that unsuitable materials are delivered to the site, including wastes comprising solely or mainly dusts, powders or loose fibres, the load is rejected.

3.14 In order to minimise the deposition of mud that may subsequently dry and generate particulate matter if disturbed such as when tracked over by vehicles, all vehicles delivering waste to the Harry Sidings area of the site will use the wheel wash facilities before leaving the site and wheel cleaning facilities will be available for vehicles travelling on the tarmac areas of the site. The wheel cleaning facilities are maintained in full working order. Tarmac areas at the site including the site access road are swept with a mechanical road sweeper throughout the working day.

3.15 Site speeds of vehicles and machinery will be kept to a minimum for safety reasons and in order to reduce the potential for the generation and release of particulate matter. A 10mph speed limit is imposed inside the rail sidings and a 5mph speed limit is imposed at the site entrance, weighbridge and exit point. Insofar as it is practicable all site vehicle exhausts will be upward pointing to prevent the disturbance of particulate matter from the road surfaces. A no idling policy is implemented at the site.

3.16 Consistent with the current observations at the site, it is considered that operational controls which are implemented to minimise the release of particulate matter and the generation of dust at the site will provide effective control of dust emissions at the site.

4. Particulate matter monitoring

4.1 Monitoring at the site will comprise a combination of qualitative visual monitoring for dust emissions and quantitative monitoring for particulate matter PM_{10}.

Visual monitoring

4.2 In TGN M17 it is stated that despite the subjective nature of the visual assessment of dust emissions:

> *'this simple, cheap and easy to implement assessment approach has the significant advantage of providing instantaneous information on problems (e.g. it may be possible to directly observe the source of the dust emission, such as a particular stockpile) allowing rapid actions to be taken to deal with the problem. Visual assessments therefore complement well other, more-quantitative dust monitoring that may take several weeks to produce results.'*

4.3 During all site operations continuous visual monitoring for emissions of particulate matter shall be undertaken by suitably trained site personnel. In addition to the continuous visual monitoring a specific routine monitoring schedule will be undertaken comprising visual monitoring at 7 specific on-site locations at least once per day while the site is active. The on-site monitoring locations are shown on Figure DEMP 3. The results of the on-site monitoring of visible dust will be recorded on the checklist presented at Appendix A of this DEMP. A final site walkover will be completed at the end of the working day to check that the site is in a condition that has a low potential to release dust outside of normal operational hours. Publicly available weather forecasts will be consulted by site staff to identify forecasts for extreme weather events or storms which may have the potential to increase the risk of release of particulate matter from the site outside of operational hours and additional control measures such as dampening or flattening of stockpiles prior to the end of the working day will be employed as necessary. Visual monitoring by suitably trained site personnel is the most effective method of detecting as quickly as possible emissions of particulate matter throughout the working day thereby facilitating the prompt assessment of such emissions and the selection and implementation of control measures as necessary. The effectiveness of the measures for controlling emissions shall be assessed during inspections undertaken at the site following

implementation of the control measures. Any problem that is observed will be reported to the TCM who will be responsible for investigating the cause and implementing any remedial action as necessary. The results of inspections and remedial measures taken will be recorded in the site diary.

4.4 Site staff will be trained to be aware of and to identify visible releases of particulate matter so that based on consideration of the location of the release and the prevailing wind direction the correct selection is made to implement the appropriate control measures for example instructing a vehicle to unload material in a different area of the site or using additional mobile dust suppression in a particular area. As explained above the visual monitoring will include monitoring around the perimeter of the site including the boundary located down prevailing wind of the site (see Figure DEMP 3). The results of the visual monitoring will be recorded on the form presented at Appendix DEMP 1. Consideration of the wind direction and wind speed will be based on the visual observations made by site staff with reference where necessary to publicly available weather forecasts (for example MET Office website, BBC weather website). Publicly available weather forecasts will also be consulted by site staff to identify forecasts for extreme weather events or storms which may have the potential to increase the risk of release of particulate matter from the site. The training will be provided by the TCM who is experienced in the visual assessment of particulate matter emissions from waste management operations. During the course of routine operations at the site the experience gained by site staff provides on the job training which complements the initial training. All staff are subject to continued performance reviews which includes assessment of their general environmental awareness.

4.5 In addition to the visual monitoring undertaken by site personnel during all site operations a final visual assessment is undertaken by the site staff at the end of each working day as part of the daily housekeeping and inspection procedures. The findings of the visual assessments are recorded on the form provided at Appendix DEMP 1. Any problem that is observed is reported to the TCM who is responsible for investigating the cause and implementing any remedial action as necessary. Incidents and remedial measures taken are recorded in the site diary.

4.6 The results of qualitative particulate matter monitoring are reviewed periodically to facilitate the review and assessment of operational activities as necessary. The review is carried out in conjunction with a review of meteorological data that are

available and the site operations that took place during the monitoring period together with any complaints regarding particulate matter emissions that have been received.

4.7 The overriding management principle of the site with respect to dust control is to operate the site in a manner which prevents or minimises the release of dust however in the event that based on the visual site observations there is the potential for an unacceptable dust emission from the site the particulate matter management and monitoring action plan will be implemented. The particulate matter management and monitoring action plan is presented in Section 6 of this DEMP.

4.8 Should the operations result in unacceptable emissions of dust beyond the site boundary or upon receipt of a complaint relating to dust this shall be recorded on a copy of an incident report form or complaint form provided at Appendix DEMP 2.

4.9 The TCM shall inform the EA within 24 hours of detection of the occurrence. Reporting of incidents to the EA and of any mitigating measures taken to reduce the impact shall be in accordance with the procedures set out in Section 5 of this DEMP and the reporting requirements specified in the permit.

Quantitative monitoring – suspended particulate matter PM_{10}

4.10 As the site is located within an AQMA declared for particulate matter PM_{10} it is proposed that quantitative monitoring for PM_{10} is undertaken at the site to confirm that the control measures are managing effectively particulate matter at the site and to confirm that the site operations are not having an unacceptable detrimental effect on local air quality.

4.11 A particulate matter monitoring device with the ability to record PM_{10} concentrations continuously will be installed and operated at the site. The device will include the ability to record the wind direction and wind speed to facilitate identification of the potential source of the emissions. Prior to commencement of operations in the Harry Sidings area of the site a particulate matter PM_{10} monitoring device will be installed at a suitable location on the down prevailing wind boundary of the site. Based on the prevailing wind direction which is from the south west or west south west as shown on the wind rose for London City Airport presented on Figure DEMP 1, the most appropriate location to install the monitor is on the northern boundary of the site between Harry Sidings and the Scratton Terrace housing estate. The most

appropriate location for the monitoring device including the proposed height of installation of the device will be confirmed with the technology provider during installation of the device.

4.12 It is proposed that background data will be collected prior to the commencement of activities in the Harry Sidings area of the site to determine typical background concentrations of PM_{10} at the site which will inform the derivation of the PM_{10} action level for the site. This DEMP will be updated as necessary following completion of the data collection exercise. Following installation and commissioning the selected technology provider will train DB Cargo site personnel in the operation of the monitor. The monitoring device will be maintained and calibrated based on the recommendations of the technology provider.

4.13 A site specific action level will be specified for the PM_{10} concentration recorded at the site. The purpose of the action level is to inform the operator that particulate matter concentrations at the site are at a level that may need action to control emissions to prevent an unacceptable release of particulate matter. In the event that the action level is exceeded the particulate matter management and monitoring action plan presented in Section 6 of this DEMP will be implemented.

4.14 Based on the guidance presented in the Environment Agency dust and particulate emission management plan template and Environment Agency Guidance for dust and particulate abatement techniques at Waste Management Facilities (Quick Guide 02_13) dated January 2013[8], an initial action level of 100µg/m^3 over a 5 minute average for PM_{10} is proposed. Following completion of the background particulate matter monitoring described above which will assess the background concentrations of PM_{10} at the site giving consideration to other particulate matter emitting operations in the vicinity of the site[9], the action level will be reviewed and confirmed or amended as necessary.

Record keeping

4.15 Particulate matter monitoring equipment typically is provided as part of a contractual arrangement between the operator and equipment manufacturer where the

[8] It is understood that this guidance has been withdrawn by the Environment Agency and no longer is available on the gov.uk website.
[9] The emissions from the currently permitted site will be taken into account when determining the action level.

equipment manufacturer will be retained to provide technical support including equipment maintenance, inspection and calibration. The instrument will be calibrated and inspected in accordance with the manufacturer's specifications and records of the calibration will be retained on site. The particulate matter monitoring data will be stored electronically using the software recommended by the equipment manufacturer. In the event that the action level for PM_{10} is exceeded a record of the action taken as outlined in the particulate matter action plan will be made in the site diary and operational procedures will be reviewed and amended as necessary.

5. Engagement with the Community

5.1 DB Cargo is conscious of the potential impact on the environment of its activities and strives to manage and minimise those impacts. DB Cargo recognises the importance of community engagement and has built a positive working relationship with local residents and businesses since operations commenced at the site in 2018. Contact details for the site manager have been provided to local businesses and contact details for the site are displayed on the signage at the site entrance.

Reporting of complaints and management responsibilities

5.2 Any complaints about the site operations and/or their impact on the environment made by third parties (including any complaints identified by the Environment Agency, Health and Safety Executive or Local Authority) should be brought to the attention of the TCM in the first instance who will identify and implement the measures needed to resolve the matter as set out in Section 6 of this DEMP. They shall then make a note of the complaint and the actions taken to resolve it. A Complaint Report Form is provided in Appendix DEMP 2 for this purpose.

5.3 The particulate matter management and monitoring action plan which is implemented in the event that a complaint is received is presented in Section 6 of this DEMP.

6. Particulate matter and dust management and monitoring action plan

Context

The overriding management principle of the site with respect to dust control is to operate the site in a manner which prevents or minimises the release of dust as set out in the Dust and Particulate Matter Emission Management Plan. If it is considered that the waste stored on the site, the waste being loaded or unloaded at the site or the site surfacing itself is in a condition that has the potential to release a significant quantity of dust such that there is a potential for off site dust emissions, additional dust suppression measures will be employed in a manner proportionate to the risk. These actions will be undertaken as part of the routine operation of the site. The action plan in this section of the report sets out the additional actions that will be taken in the event that conditions are identified whereby the routine measures need to be supplemented or improved.

Introduction

6.1 The action plan will be implemented in the event that:-

i) there is an unacceptable visual emission of dust from the site or
ii) a complaint is received or
iii) the PM_{10} action level is exceeded.

An unacceptable visual emission of dust from the site comprises a visual observation of dust or particulate matter crossing the site boundary. The initial observation will be made by the site operative who has identified the emission and will be verified by the TCM.

6.2 The timescale for implementation of the action plan will vary depending on the circumstances under which it is implemented. If an unacceptable visual emission is observed by a site operative there will be no delay in implementing the action plan, whereas a complaint may be received by the operator a number of hours or even days after the activity that may have contributed to the complaint has ceased. In the latter case investigation of the complaint will be based on a review of the data and observations recorded at the site corresponding to the time at which the complainant observed the event.

Action plan

6.3 In the event that an unacceptable visual emission of particulate matter from the site is observed by site personnel the event will be investigated immediately by the TCM to determine the source as follows:

If it is established that the emissions are attributable to activities being undertaken at the DB Cargo site action will be taken to control the emissions including where relevant:

- If emissions are attributable to stockpiled material, employing mobile dust suppression immediately using a water bowser to dampen the stockpiles.
- If emissions are attributable to unloading or loading of waste mobile dust suppression will be applied to control the particulate matter emission from the activity being undertaken. If necessary, the unloading and loading of waste will temporarily cease.
- Organising additional mechanical or manual road sweeping or cleaning of the tarmac surface if necessary.
- Checks to confirm that vehicles are obeying the site speed limits.
- Identify whether there are any other activities being undertaken at locations other than the DBC site and estimate the extent to which other activities may contribute to the visual emissions observed on the site including circumstances where windblown dust may be transported across and/or over the site from the external sources.
- In the unlikely event that the routine control measures employed at the site are not sufficient to control particulate matter emissions then consideration will be given to further measures to minimise and control emissions including relocation of storage areas, temporary reduction in stockpile heights, installation of storage bays, installation of fixed dust suppression, procurement of additional mobile dust suppression equipment or incorporation of a chemical suppressant into the water sprays employed at the site.

6.4 In the event of a complaint associated with particulate matter emitted from the site an investigation will be undertaken immediately to determine the source as follows:

- Identify from the site diary what activities were being undertaken at the time at which the complaint event occurred and in which location at the site and review the waste types that were accepted and handled at the site on that day.

- Identify from meteorological data available whether the emissions are potentially a result of the operations at the site.

- Identify from the site diary and London Air Quality Network website for monitoring stations in the region including those specified earlier in the DEMP (including Scrattons Farm) whether there were any unusual regional weather events occurring during the day on which the complaint was made such as Saharan dust storms.

- Giving consideration to the wind direction recorded by the on-site particulate matter monitoring device, identify from the site diary whether there were any other activities being undertaken at locations other than the DBC site for example the neighbouring sites with the potential to release particulate matter identified in Table 1.

- If it is established that the emissions were attributable to activities being undertaken at the site, as necessary review the relevant operational procedures and implement improvements and provide additional training to site personnel and third party contractors to improve the controls and minimise future emissions. Consideration will be given to further measures to minimise and control emissions including relocation of storage areas, temporary reduction in stockpile heights, installation of storage bays, installation of fixed dust suppression, procurement of additional mobile dust suppression equipment or incorporation of a chemical suppressant into the water sprays employed at the site.

The action taken will be communicated to the Environment Agency as appropriate. The nature of the complaint, the findings of the investigation and the action taken will be recorded using a copy of the complaint form provided at Appendix DEMP 2.

6.5 In the event that the PM_{10} action level is exceeded an investigation will be undertaken immediately to determine the source as follows:

- Identify whether there are any visible emissions of particulate matter which are indicative of a release of particulate matter from operations at the site. Although PM_{10} is not readily visible an elevated concentration of PM_{10} will potentially form part of a particulate matter emission which includes a larger visible component.

- Identify from the meteorological data recorded by the PM_{10} monitor the wind direction and speed during the monitoring period over which the exceedance was observed and determine whether the wind is blowing from the DB Cargo site towards the PM_{10} monitor or whether the wind is blowing towards the PM_{10} monitor from off-site hence is potentially attributable to sources other than the DB Cargo site. Identify based on visual observation and with reference to data available on the London Air Quality Network website for monitoring stations in the region including those specified earlier in the DEMP whether there are any unusual regional weather events occurring during the monitoring period over which the exceedance was observed for example Saharan dust storms or foggy or misty weather which can generate high PM_{10} readings if the instrument pre-heater inlet is not functioning correctly.

- If it is established that the emissions are attributable to activities being undertaken at the DB Cargo site action will be taken to control the emissions including where relevant:

- If emissions are attributable to stockpiled material, employing mobile dust suppression immediately used the water bowser to dampen the stockpiles.

- If emissions are attributable to unloading or loading of waste mobile dust suppression will be applied to control the particulate matter emission from the activity being undertaken. If necessary, the unloading and loading of waste will temporarily cease.

- Organising additional mechanical or manual road sweeping or cleaning of the tarmac surface if necessary.

- Checks to confirm that vehicles are obeying the site speed limits.

- If following implementation of the actions above the PM_{10} concentration does not fall below the action level for 6 consecutive 5 minute mean readings and it is clear that emissions of PM_{10} are attributable to the DB Cargo site consideration will be given to suspending the activities being undertaken including unloading and loading of material until the PM_{10} concentration falls below the action level for 6 consecutive 5 minute mean readings.

- A record of the action taken in respect of the exceedance will be made in the site diary and operational procedures will be reviewed and amended as necessary.

TABLES

Table 1

Summary of the receptors in the vicinity of the site

Ref	Name or description	Type of receptor	Approximate distance from site (m)	Direction from site
1	Barking Industrial Park East[10]	Commercial	25m	N
2	Barking Industrial Park West	Commercial	515m	WNW
3	Barking Power Station	Commercial	810m	SW
4	Castle Green Nursery	School/Educational	320m	N
5	DHL	Commercial	880m	SW
6	Eddie Stobart	Commercial	200m	E
7	Enterprise Car Club	Commercial	380m	S
8	John G Russell	Commercial	Adjacent	W
9	London Sustainable Industrial Park	Commercial	200m	ESE
10	Barking Reach Power Station	Commercial	990m	ESE
11	Dagenham Dock Industrial Park South	Commercial	500m	SE
12	Dagenham Dock Industrial Park East	Commercial	550m	ESE
13	Dagenham Dock Industrial Park North	Commercial	540m	E
14	Asda Dagenham	Commercial	540m	NE
15	Aldi	Commercial	770m	NE
16	Goresbrook Road Post Office	Commercial	950m	NE
17	Merrylands Retail Park	Commercial	810m	NE
18	Barking & Dagenham Scout Hall	Community	260m	SW
19	Social Club & Community Hall	Community	80m	N
20	Fielders Crescent Construction Works	Construction	390m	S
21	Bastable Avenue Housing Estate	Domestic Dwellings	570m	WSW
22	Cherry Orchard Care Home	Domestic Dwellings	550m	NE
23	Choats Road Housing Estate including Keel Close	Domestic Dwellings	130m	SW
24	Fielders Crescent Accommodation	Domestic Dwellings	280m	S
25	Gale Street Housing Estate East	Domestic Dwellings	550m	NNE
26	Gale Street Housing Estate West	Domestic Dwellings	550m	NNW
27	Scratton Terrace Housing Estate	Domestic Dwellings	50m	NE
28	Outlook Care Home	Domestic Dwellings	925m	NW
29	Renwick Road Accommodation	Domestic Dwellings	440m	W

[10] Including the waste facilities identified in the Site Condition Report dated April 2023.

Ref	Name or description	Type of receptor	Approximate distance from site (m)	Direction from site
30	Becontree Ambulance Station	Health	615m	NE
31	St. Albans Surgery	Health	935m	NW
32	St. Albans Surgery (1)	Health	850m	NNE
33	Barking Rugby Club	Recreational	300m	N
34	Castle Green Leisure & Community Center	Recreational	370m	N
35	Castle Green Skate Park	Recreational	435m	NW
36	Dagenham Leisure Park	Recreational	400m	NE
37	Goals Dagenham	Recreational	420m	N
38	Goresbrook Park	Recreational	840m	NE
39	Goresbrook Sports Ground	Recreational	400m	N
40	Newlands Park	Recreational	800m	W
41	Ripple Nature Reserve	Recreational	630m	SW
42	Scrattons Farm Eco Park	Recreational	100m	NE
43	Thames View Skate Park	Recreational	610m	SW
44	Christ Embassy	Religious	750m	SW
45	Faith Connections	Religious	360m	N
46	Saint Albans Church	Religious	840m	N
47	Saint John	Religious	730m	NW
48	St Peter RC Church	Religious	930m	NE
49	A13	Road	230m	N
50	A1306	Road	500m	NE
51	Castle Green Community School	School	370m	N
52	Goresbrook School	School	320m	N
53	Hopewell School	School	615m	NE
54	Maysebrook Park School	School	815m	N
55	Monteagle Primary School	School	780m	NW
56	Riverside Bridge School	School	600m	SW
57	The James Cambell School	School	760m	N
58	St Peters RC Primary School	School	830m	NE
59	Dagenham Dock Train Station	Transport	830m	E
60	The Gores	Water Body	120m	S
61	The River Thames	Water Body	975m	S
62	Pathways School	School	920m	SW
63	Marine Drive Housing Estate	Domestic Dwellings	970m	SW

Note: The shaded boxes comprise activities such as roads and commercial operations in the vicinity of the site which have the potential to contribute particulate matter emissions to local air quality. Only selected receptors within 1km of the site are displayed in Table 1 above. The receptors are measured from their closest point to the site.

Table 2

Waste types authorised to be accepted at the site

EWC Code	Description	Nature	Potential for dust generation without mitigation[A]	Reason
02 01 10	Waste metal	Solid	Low	Metal typically comprises large pieces with a high density.
12 01 01	Ferrous metal filings and turnings	Solid	Low-Medium	Metal filings and turnings are typically finer particle sizes and can release dust like material during loading and unloading.
12 01 03	Non-ferrous metal filings and turnings	Solid	Low-Medium	Metal filings and turnings are typically finer particle sizes and can release dust like material during loading and unloading.
15 01 04	metallic packaging	Solid	Low	Metal typically comprises large pieces with a high density.
16 01 17	Ferrous metal	Solid	Low	Metal typically comprises large pieces with a high density.
16 01 18	Non-ferrous metal	Solid	Low	Metal typically comprises large pieces with a high density.
16 01 22	Components not otherwise specified (comprising only of depolluted metallic vehicle parts, components and engines)	Solid	Low	The metal components comprise large pieces with a high density.
17 01 01	Concrete	Solid	Low	Concrete/Bricks/Tiles typically comprise large items. These waste types rarely are received at the site.
17 01 02	Bricks	Solid	Low	
17 01 03	Tiles and Ceramics	Solid	Low	
17 01 07	Mixtures of concrete, bricks, tiles and ceramics	Solid	Low-Medium	Due to the mixed nature, the waste may have been broken up during loading and transportation. This waste type rarely is received at the site.
17 02 02	Glass	Solid	Low	Glass typically comprises large pieces with a high density. This waste type rarely is received at the site.
17 03 02	Bituminous mixtures	Solid	Low	Road planings typically comprise large, high density pieces of pavement. This

EWC Code	Description	Nature	Potential for dust generation without mitigation[A]	Reason
				waste type rarely is received at the site.
17 04 01	Copper, bronze, brass	Solid	Low	Metal typically comprises large pieces with a high density.
17 04 02	Aluminium	Solid	Low	Metal typically comprises large pieces with a high density.
17 04 03	Lead	Solid	Low	
17 04 04	Zinc	Solid	Low	
17 04 05	Iron and steel	Solid	Low	
17 04 06	Tin	Solid	Low	
17 04 07	Mixed metals	Solid	Low	
17 04 11	Cables other than those mentioned in 17 04 10	Solid	Low	Cables typically comprise materials with a high density.
17 05 04	Soil and Stones (C&D waste)	Solid	Low-Medium	Soils are typically finer grained than aggregate/stones and can release dust during loading and unloading.
17 05 08	Track ballast other than those mentioned in 17 05 07	Solid	Low	Track ballast typically is coarser than soil. This waste type rarely is received at the site.
19 01 02	Ferrous materials removed from bottom ash	Solid	Low	Ferrous materials typically comprise large metallic pieces with a high density.
19 10 01	Iron and steel waste	Solid	Low	Metal typically comprises large pieces with a high density.
19 10 02	Non-ferrous metal	Solid	Low	Metal typically comprises large pieces with a high density.
19 12 02	Ferrous metal	Solid	Low	Metal typically comprises large pieces with a high density.
19 12 03	Non-ferrous metal	Solid	Low	Metal typically comprises large pieces with a high density.
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	Solid	Low-Medium	This LoW code will comprise soils. Soils are typically finer grained than aggregate/stones and can release dust during loading and unloading.

EWC Code	Description	Nature	Potential for dust generation without mitigation[A]	Reason
19 13 02	Solid wastes from soil remediation other than those mentioned in 19 13 01	Solid	Low-Medium	Soils are typically finer grained than aggregate/stones and can release dust during loading and unloading.
20 01 40	Metals	Solid	Low	Metal typically comprises large pieces with a high density.
20 02 02	Soil and stones (garden and park wastes)	Solid	Low-Medium	Soils are typically finer grained than aggregate/stones and can release dust during loading and unloading. This waste source rarely is received at the site.

Notes
A - The control measures applied at the site to minimise the potential for generation of dust from the storage of the waste types specified in Table 2 are set out in Section 3 and in Tables 3 and 4 of this DEMP.

Table 3

Measures that will be used on site to control emissions of particulate matter

This table considers in turn each of the measures considered in Table 3.2 of Environment Agency internal guidance template entitled "Dust and emission management plan" (Version 10 dated October 2018). Text from the EA guidance document is shown in red.

Abatement Measure	Description / Effect	Overall consideration and implementation
Preventative Measures		
Enclosure within a building	Creating a solid barrier between the source of dust and particulates and receptors is likely to be the most effective method of control, provided that the building entrances and exits are well managed.	Taking into consideration the waste types accepted at the site and the fact that physical treatment of waste for example crushing and screening in not undertaken at the site it is unnecessary to carry out operations inside a building.
Negative pressure extraction	Within enclosed buildings, controlled extraction can be undertaken to ensure a constant negative pressure relative to the outside air. This system should prevent the emission of particulates from any openings in the building. Extracted air should be treated through a suitable filtration system prior to discharge to atmosphere. This method is more frequently applied for odour control.	As this technique is relevant only to operations undertaken within a building it is not relevant to the operations at the site.
Dust Extraction Systems	A large variety of abatement technologies exist for the removal of dust and particulates from a flowing gas and have typically been applied to combustion plants and other sites	As this technique is relevant only to operations undertaken within a building it is not relevant to the operations at the site.

Abatement Measure	Description / Effect	Overall consideration and implementation
	where controlled emissions of particulates occur. These include Electrostatic Precipitators (ESPs), wet scrubbers, baghouses (bag filters), viscous media (e.g. oil) filters and gravitational settling. Although not all of these may be appropriate for dust and particulate suppression at waste management sites, and they cannot be applied to controlling external fugitive emissions, they may be effective when coupled with local exhaust extraction, ventilation or negative pressure extraction systems from enclosed buildings to remove dust and particulates from the airstream.	
Site / process layout in relation to receptors	Locating particulate emitting activities at a greater distance and downwind from receptors may reduce receptor exposure, provided that emissions from the source are not dispersed over significant distances.	As shown on Figure DEMP 2 the locations of the rail loading areas at the site are on the upwind boundary of the site (rail loading area to south of tarmac area) and in the central northern part of the site hence are not directly adjacent to the residential properties on the downwind boundary to the north east of the site.
Site speed limit, 'no idling' policy and minimisation of vehicle	Reducing vehicle movements and idling should reduce emissions from vehicles. Procurement policy to only purchase clean burn road vehicles and non-road going mobile machinery. Enforcement of a speed limit may	No vehicle is permitted to exceed the 10mph speed limit generally in the site or the 5mph speed limit at the entrance and exit points. A no idling policy is implemented at the site. Waste materials are located and managed operationally in order to minimise double handling of material to minimise particulate matter generation and release.

Abatement Measure	Description / Effect	Overall consideration and implementation
movements on site	reduce re-suspension of particulates by vehicle wheels.	
Minimising drop heights for waste. Use of enclosed chutes for waste drops/end of conveyor transfers and covered skips / storage vessels.	Minimising the height at which waste is handled should reduce the distance over which debris, dust and particulates could be blown and dispersed by winds. Enclosing processes will further reduce dispersion.	Drop heights will be minimised. The mobile water bowsers are employed to provide dust suppression to minimise the release of particulate matter from any unloading, bulking and loading of waste at the site. As there are no physical treatment operations (crushing and screening) undertaken at the site there will be no material conveyors or chutes.
Good house-keeping	Having a consistent, regular housekeeping regime that is supported by management, will ensure site is regularly checked and issues remedied to prevent and remove dust and particulate build up.	Good housekeeping is encouraged at the site through training with particular focus on the use of the mechanical and manual road sweeping equipment on the tarmac surface. Vehicles will have their wheels cleaned prior to leaving the site using the wheel cleaning facilities at the site.
Sheeting of vehicles	Prevents the escape of debris, dust and particulates from vehicles as they travel.	All heavy goods vehicles entering the site carrying waste are instructed to sheet or otherwise contain their loads to minimise the potential for the release of dust or particulate matter. Vehicle drivers are instructed to un-sheet on site prior to unloading of the waste at the site.
Hosing of vehicles on exit	May remove some dirt, dust and particulates from the lower parts of vehicles although likely to be less effective than a more powerful wheel wash.	A wheel wash bath with shaker grids will be installed within the Harry Sidings area to clean the wheels of vehicles prior to exiting this part of the site. Wheel cleaning facilities will be available for vehicles travelling only on the tarmac areas of the site.

Abatement Measure	Description / Effect	Overall consideration and implementation
Ceasing operation during high winds and/or prevailing wind direction	Mobilisation of dust and particulates is likely to be greater during periods of strong winds and hence ceasing operation at these times may reduce peak pollution events.	DB Cargo will cease waste handling, train loading or adding to stockpiles if weather conditions and ground conditions preclude effective dust control. The mobile water bowsers will be employed as necessary on stockpiled materials during high winds.
Installed wheel wash	Provides a high pressure wash of vehicle wheels and lower parts (including under body) using a series of jet sprays. More effective if vehicles drive through the wheel wash slowly in order that there is sufficient time for dirt to be removed.	A wheel wash bath with shaker grids will be installed within the Harry Sidings area to clean the wheels of vehicles prior to exiting this part of the site. Vehicle drivers will be instructed to drive through the wheel wash slowly in order that there is sufficient time for dirt to be removed. Wheel cleaning facilities will be available for vehicles travelling only on the tarmac areas of the site.
Easy to clean concrete impermeable surfaces	Creating an easy to clean impermeable surface, using materials such as concrete as opposed to unmade (rocky or muddy) ground within the site and on site haul roads. This should reduce the amount of dust and particulate generated at ground level by vehicles and site activities.	Details of the site surfacing are shown on Figure DEMP 2 and described in section 3 of this DEMP. The site reception area and southern part of the site is tarmac surfaced hence comprises a readily cleanable surface for the vehicles transporting waste to the site. Vehicles delivering waste to the southern part of the site will remain on the tarmac surface for unloading of waste hence minimising the potential for mud to be tracked onto the site surfacing, or tracked out of the site onto the public highway. Harry Sidings is accessed from the south east of the site at the approximate location shown on Figure DEMP 2. Vehicles arriving from the site access road on Box Lane will drive along a road to the south of the tarmac area to reach the Harry Sidings entrance shown on Figure DEMP 2 and will leave Harry Sidings via the same entrance. The hardstanding in the Harry Sidings area comprises compacted earth which has the potential to be picked up by the wheels of vehicles in this area of the site. A wheel wash bath with shaker grids will be installed within the Harry Sidings area to clean the wheels of vehicles prior to exiting this part of the site. Vehicles leaving Harry Sidings will return to the road located to the south of the tarmac area before leaving the wider site via Box Lane. A mechanical road sweeper is employed at the site to clean the tarmac surface at the site, including

Abatement Measure	Description / Effect	Overall consideration and implementation
		the area between the waste storage area and the site exit and the area between the Harry Sidings entrance/exit and Box Lane.
Minimisation of waste storage heights and volumes on site	Minimising the height at which waste is handled should reduce the distance over which debris, dust and particulates could be blown and dispersed by winds. Reducing storage volumes should reduce the surface area over which particulates can be mobilised.	Waste stockpile heights at the site will be limited to 5.3m to minimise the potential for wind whipping of the stockpile and to facilitate access for the water bowser to reach the top of the stockpiles. The principle of the operation of the site is to minimise the timescale during which waste is stored at the site, hence the quantity of waste stored, by maintaining a regular schedule of train deliveries from the site. Checking stockpile heights will form part of the daily site checks that will be carried out by the TCM.
Reduction in operations (waste throughput, vehicle size, operational hours)	Reducing the amount of activity on site, including no tipping, shredding, chipping or screening of high risk loads during windy weather as well as associated traffic movements should result in reduced emissions and re-suspension of dust and particulates from a site.	No physical treatment (crushing and screening) of waste is undertaken at the site. DB Cargo will cease waste handling, train loading or adding to stockpiles if weather conditions and ground conditions preclude effective dust control. The mobile water bowsers will be employed as necessary on stockpiled materials during high winds.
Remedial Measures		
Netting / micro netting around equipment	Erecting netting around equipment that could give rise to large amounts of dust and particulates may be effective within the site boundary and prevent their dispersion off-site / their re-suspension within the site.	As no physical treatment (crushing and screening) of waste is undertaken at the site there is no specific equipment which would benefit from micro netting.
On-site sweeping	Sweeping could be effective in managing larger debris, dust and particulates but may also cause the mobilisation of smaller particles.	A mechanical road sweeper is employed at the site to clean the tarmac surface at the site, including the area between the waste storage area and the site exit and the area between the Harry Sidings entrance/exit and Box Lane. The mechanical road sweeper will be complemented where necessary by manual sweeping by site personnel using brushes. The mechanical road sweeper is maintained in accordance with the

Abatement Measure	Description / Effect	Overall consideration and implementation
	Road sweeping vehicles damp down dust and particulates whilst brushing and collecting dust and particulates from the road surface, particularly at the kerbside. This may generate dust and particulate movement that may become a Health and Safety issue if the filters and spray bars on the sweepers are not maintained.	manufacturer's recommendations and is topped up with clean water to provide effective surface cleaning. During and at the end of each working day, the water levels will be replenished to ensure that water is available to start cleaning the next working day. The mechanical road sweeper is subject to daily inspections including inspection of the water spray nozzles and brushes to ensure that the performance of the road sweeper is optimised. Spare filters and brushes are kept at the site in the event that replacements are required.
Site perimeter netting / micro netting	Erecting netting around the site perimeter may capture released debris and dust and particulates prior to it being dispersed off-site.	It is considered that the operational controls which are implemented to minimise the release of particulate matter and the generation of dust at the site, including controls on waste acceptance and the employment of mobile water dust suppression mitigate against the potential release of unacceptable levels of dust hence erecting netting around the site perimeter is unnecessary.
Water suppression with hoses & water jets	Damping down of site areas using hoses can reduce dust and particulate re-suspension and may assist in the cleaning of the site if combined with sweeping.	Dust suppression is provided at the site by mobile water bowsers which are employed to minimise the release of dust from site surfaces and stockpiled waste at the site. Employment of a water bowser has been an effective dust suppression technique employed at the site since the permit was first issued in July 2018 during which time there have been no complaints in respect of dust and particulate matter at the site.
Water suppression with mist sprays	Installation of mist sprays around sites, at building entrances/exits and within buildings at point source emissions like conveyors, trommels etc. It can also assist in the damping down of dust and particulates, therefore, reducing emissions from site.	As there are no waste storage buildings at the site and as no physical treatment (crushing and screening) of waste is undertaken at the site it is unnecessary to install any further suppression in addition to the mobile suppression described above.

Abatement Measure	Description / Effect	Overall consideration and implementation
Water suppression with bowser	Using bowsers is a quick method of damping down large areas of the site with large water jets. This method could also be used on easy-to-clean, impermeable concrete surfaces.	Dust suppression is provided at the site by two mobile water bowsers which are employed to minimise the release of dust from site surfaces and stockpiled waste at the site. Employment of a water bowser has been an effective dust suppression technique employed at the site since the permit was first issued in July 2018 during which time there have been no complaints in respect of dust and particulate matter at the site.
Dust and particulate monitor with trigger alarm	Installation of a dust and particulate monitor with specified alarm trigger level can alert site staff when short-term particulate concentrations are elevated in order that site practices can be reviewed or application of mitigation measures increased.	As explained in section 4 of this DEMP a PM_{10} particulate matter monitoring device will be installed at the site. The action plan in section 6 of this DEMP provides details of the PM_{10} action limit and the actions to be undertaken in the event that the action limit is exceeded.
Shaker grids	Similar to cattle grids, these are installed at a site entrance and exit. The movement of vehicles over the grids shakes dust and particulates from the wheels, thus removing them before vehicles enter the site.	A wheel wash bath with shaker grids will be installed within the Harry Sidings area to clean the wheels of vehicles prior to exiting this part of the site. It is unnecessary to install a shaker grid for vehicles which will travel only on the tarmac surface at the site prior to leaving the site.
Water Cannons	Water cannons provide a means for delivery of powerful water streams from a water truck. With variable nozzles, the spray pattern can be controlled and varied between jet and fog. Typical water flows are up to 5000 litres per minute. Water cannons are most often used for fire protection, mining operations, heavy machinery wash	Dust suppression is provided at the site by two mobile water bowsers which are employed to minimise the release of dust from site surfaces and stockpiled waste at the site. Employment of a water bowser has been an effective dust suppression technique employed at the site since the permit was first issued in July 2018 during which time there have been no complaints in respect of dust and particulate matter at the site. As it is considered that the dust suppression system employed at the site will provide sufficient suppression capacity it is considered unnecessary to install water cannons at the site.

Abatement Measure	Description / Effect	Overall consideration and implementation
	down, cleaning and dust and particulate abatement.	
Screening of buildings / reducing large apertures using plastic strips	Installing plastic strips to cover entrances/exits to buildings may reduce emissions of dust and particulates dispersing through doorways.	As this technique is relevant only to operations undertaken within a building it is not relevant to the operations undertaken at the site.
Application of CMA / chemical suppressant	Diluted Calcium Magnesium Acetate (CMA) or other chemical based dust suppressant is regularly applied by spraying using a back-pack applicator for small areas or by road sweeper to cover larger areas. CMA acts as a suppressant with the aim of reducing dust and particulate re-suspension and hence ambient concentrations.	It is considered that the dust suppression employed at the site will provide sufficient particulate matter suppression. Should the results of visual monitoring or quantitative PM_{10} monitoring at the site identify that dust emissions are unacceptable remedial actions including incorporating a chemical suppressant into the water sprays employed at the site will be considered.
Heavy Water	Heavy water is used to improve the compaction and stability and reduce dust and particulates on unsealed roads or areas of land. Ideally it is blended into the road construction material as the road is constructed, but where this is not possible it can be sprayed onto the top of the road. Heavy water combines fast acting wetting agents with polymer binders, to	Should the results of visual monitoring or quantitative PM_{10} monitoring at the site identify that dust emissions are unacceptable remedial actions including using a heavy water additive on the surfacing in the Harry Sidings area of the site will be considered.

Abatement Measure	Description / Effect	Overall consideration and implementation
	allow penetration deep into the material and to 'agglomerate' the dust and particles together.	
Foam Suppression	The aggregate and mining industries frequently use foam suppression for the control of dust and particulate emissions, mixing the foam with broken material to increase efficiency. Foaming agents can be added to increase the efficiency of dust and particulate reduction. Foam suppression has seen increased attention in recent years and has previously been applied to waste transfer facilities where crushing of waste occurs.	There are no proposals to utilise foam suppression at the site. It is considered that the mobile dust suppression employed at the site will provide sufficient particulate matter suppression.

Table 4

Source - pathway - receptor linkages

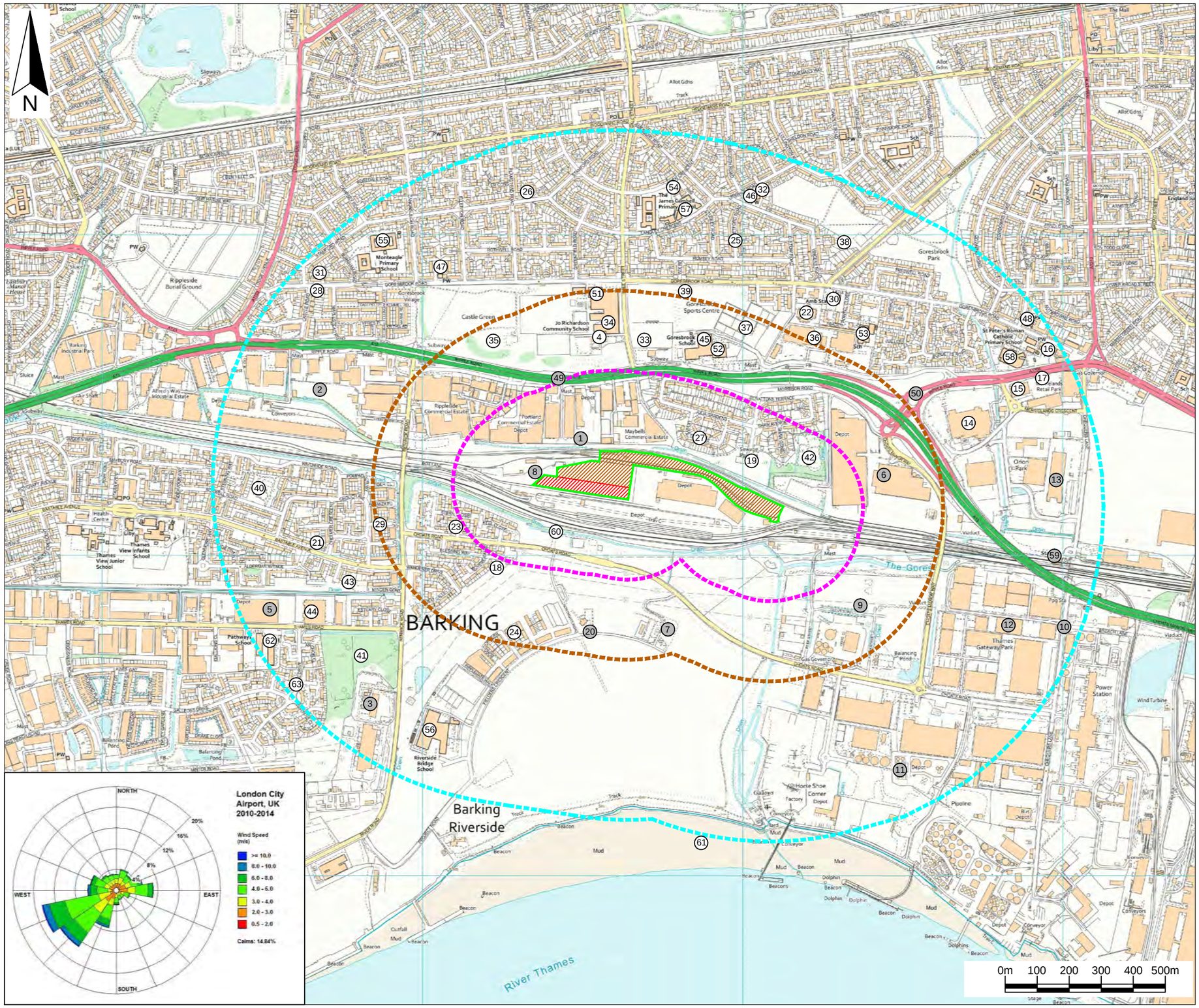
For each of the sources and pathways included in the table the receptor is considered to be the receptors identified in Table 1, particularly those located down prevailing wind of the site. The sources in the table comprise those identified in Paragraph 2.4 of the DEMP. Further details of the techniques employed are presented in Section 3 of the DEMP and in Table 3.

Source	Pathway	Where the relationship can be interrupted
Vehicles entering and/or leaving the site with mud on their wheels	Tracking out of the site of particulate matter and mud on vehicle wheels which may drop off and deposit on the public highway which may subsequently dry and generate particulate matter if disturbed such as when tracked over by vehicles.	The site reception area and southern part of the site is tarmac surfaced hence comprises a readily cleanable surface for the vehicles transporting waste to the site. Vehicles delivering waste to the southern part of the site will remain on the tarmac surface for unloading of waste hence minimising the potential for mud to be tracked onto the site surfacing, or tracked out of the site onto the public highway. Where vehicles have accessed the Harry Sidings area a wheel wash facility will be used prior to exiting the site. In addition vehicles leaving Harry Sidings will travel along an internal tarmac road prior to returning to the public highway on Box Lane minimising the risk of mud and debris being deposited on the public highway. A mechanical road sweeper is employed at the site to clean the tarmac surface at the site, including the area between the waste storage area and the site exit and the area between the Harry Sidings entrance/exit and Box Lane. The mechanical road sweeper will be complemented where necessary by manual sweeping by site personnel using brushes.
The release of particulate matter and debris from waste loads as they are delivered to the site	Falling off delivery vehicles.	All heavy goods vehicles entering or exiting the site carrying waste are instructed to sheet or otherwise contain their loads to minimise the potential for the release of dust or particulate matter. Vehicle drivers are instructed to un-sheet on site prior to unloading of the material at the site.

Source	Pathway	Where the relationship can be interrupted
The resuspension of particulate matter on roads and site surfacing by vehicles	Atmospheric dispersion	A mechanical road sweeper is employed at the site to clean the tarmac surface at the site, including the area between the waste storage area and the site exit and the area between the Harry Sidings entrance/exit and Box Lane. The mechanical road sweeper will be complemented where necessary by manual sweeping by site personnel using brushes. The hardstanding in the Harry Sidings area of the site will be dampened down as necessary to reduce the potential for particulate matter to be resuspended by vehicles travelling in this part of the site.
The release of particulate matter when waste loads are deposited or set down in stockpiles on the site.	Atmospheric dispersion	Dust suppression is provided at the site by two mobile water bowsers which are employed to minimise the release of dust from stockpiled waste at the site. Employment of a water bowser has been an effective dust suppression technique employed at the site since the permit was first issued in July 2018 during which time there have been no complaints in respect of dust and particulate matter at the site.
The release of particulate matter from stockpiled materials. Wind whipping of materials stockpiled in at the site.	Atmospheric dispersion	The management controls employed to minimise the potential for release of dust from the waste stockpiles at the site include minimising the height of the stockpiles, shaping of the stockpiles generally to be flat topped to minimise wind whipping and turning where necessary to maintain an even distribution of moisture to prevent the outer surface of the stockpile drying out during dry warm weather and becoming friable and prone to dust blow during windy weather conditions. Dust suppression is provided at the site by two mobile water bowsers which are employed to minimise the release of dust from stockpiled waste at the site. Employment of a water bowser has been an effective dust suppression technique employed at the site since the permit was first issued in July 2018 during which time there have been no complaints in respect of dust and particulate matter at the site. Waste stockpile heights at the site will be limited to 5.3m to minimise the potential for wind whipping of the stockpiles and

Source	Pathway	Where the relationship can be interrupted
		to facilitate access for the water bowsers to reach the top of the stockpiles.
Loading of stockpiled materials onto train wagons for transfer off site	Atmospheric dispersion	The mobile water bowsers are employed where necessary to damp down waste materials prior to or during train wagon loading.
Particulate emissions from the exhaust of vehicles and plant on site.	Atmospheric dispersion	Vehicles and plant on site will be maintained to optimise performance and minimise vehicle emissions. A no idling policy is implemented at the site for vehicles and plant.

FIGURES



Key / Notes

- Environmental Permit boundary
- Proposed area of the site for storage of inert and excavation waste types
- Proposed area of site for storage of metal wastes
- (17) Potential receptor of dust generally within a 1km radius of the site
- 250m distance from the site
- 500m distance from the site
- 1000m distance from the site

A full list of the receptors identified on the drawing is presented in Table 1 of the DEMP

The numbers shaded in grey on the drawing and shown in the table below comprise activities such as roads and commercial operations in the vicinity of the site which have the potential to contribute particulate matter emissions to local air quality

Ref	Name or description	Type of receptor	Approximate distance from site (m)	Direction from site
1	Barking Industrial Park East	Commercial	25m	N
2	Barking Industrial Park West	Commercial	515m	WNW
3	Barking Power Station	Commercial	850m	SW
5	DHL	Commercial	900m	SW
6	Eddie Stobart	Commercial	200m	E
7	Enterprise Car Club	Commercial	390m	S
8	John G Russell	Commercial	Adjacent	W
9	London Sustainable Industrial Park	Commercial	200m	ESE
10	Barking Reach Power Station	Commercial	990m	ESE
11	Dagenham Dock Industrial Park South	Commercial	500m	SE
12	Dagenham Dock Industrial Park East	Commercial	550m	ESE
13	Dagenham Dock Industrial Park North	Commercial	540m	E
20	Fleiders Crescent Construction Works	Construction	400m	S
49	A13	Road	230m	N
50	A1306	Road	500m	NE
59	Dagenham Dock Train Station	Transport	830m	E

Rev	Status	Drn	App	Chk	Date
	Final	KR	AW	LH	21/04/23
A	Minor amendments	KR	AW	LH	18/04/23
	Final	KR	LBA	AW	07/01/22

Site
EUROHUB BARKING

Client
DB CARGO (UK) LIMITED

Title
Site plan showing the receptors relevant to the DEMP

Figure DEMP 1

Scale
1:12,500@A3

Drawing Ref
DBC/EU/09-21/22768revA

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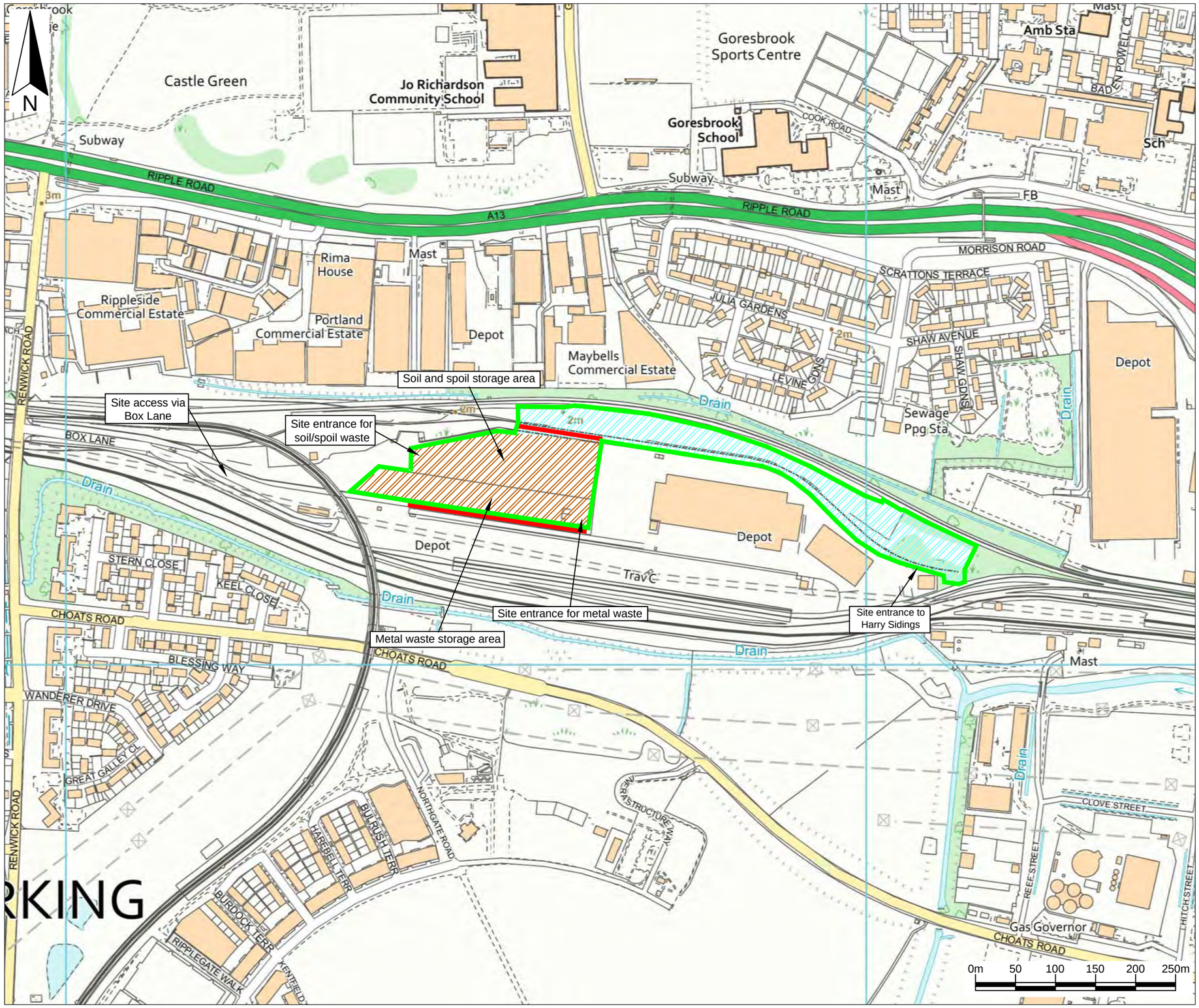

Key / Notes

- Environmental Permit boundary
- Tarmac surface
- Hardstanding surface
- Train loading area

Rev	Status	Drn	App	Chk	Date
	Final	KR	AW	LH	21/04/23
B	Minor amendments	KR	AW	LH	18/04/23
	Final	KR	LBA	AW	07/01/22

Site: EUROHUB BARKING

Client: DB CARGO (UK) LIMITED

Title: Site Layout

Figure DEMP 2

Scale: 1:5,000@A3

Drawing Ref: DBC/EU/09-21/22772revB

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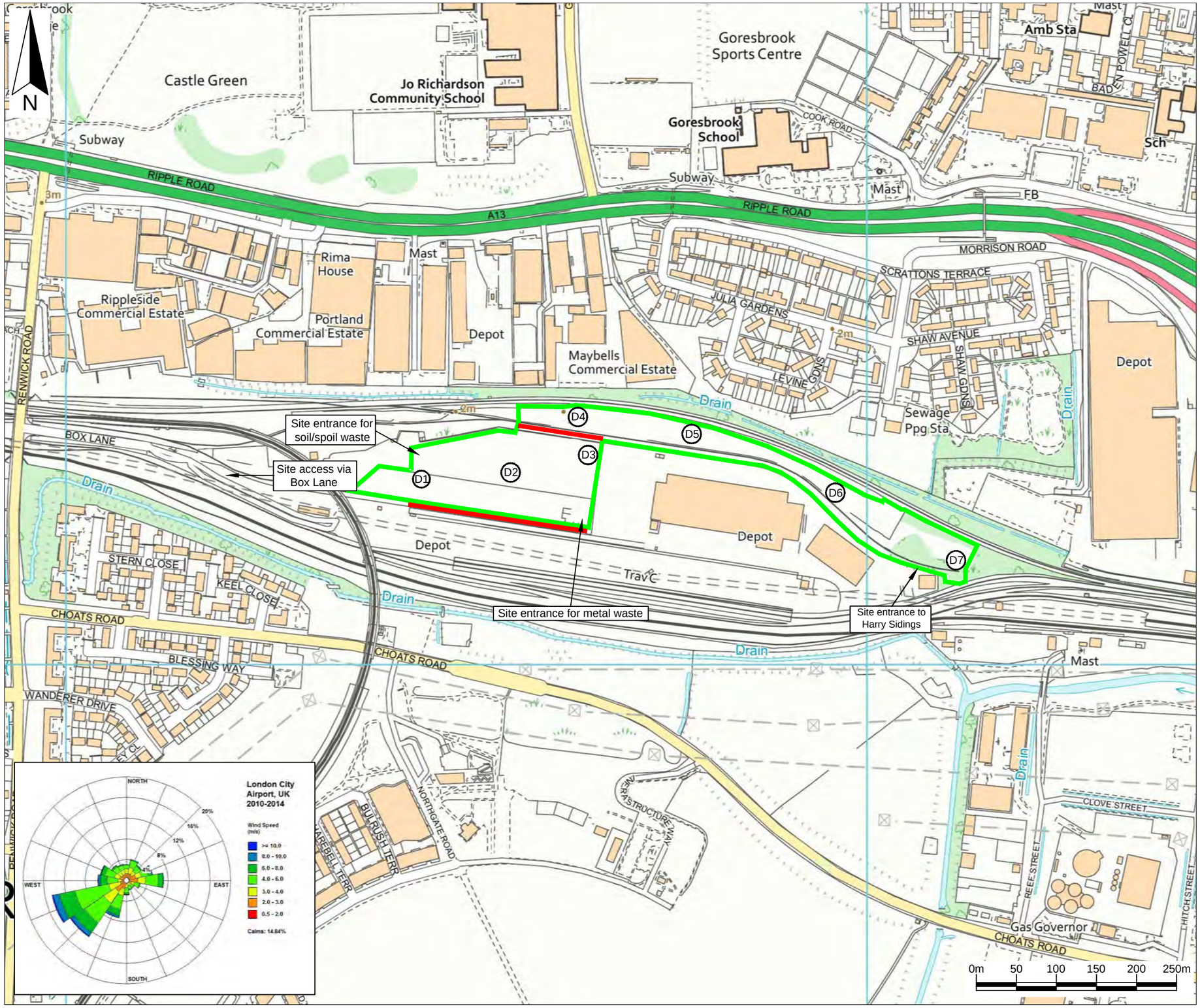

Key / Notes

- Environmental Permit boundary
- Train loading area
- (D1) Approximate location for the monitoring of visible dust

Rev	Status	Drn	App	Chk	Date
	Final	KR	AW	LH	21/04/23
A	Minor amendments	KR	AW	LH	18/04/23
	Final	KR	LBA	AW	07/01/22

Site: EUROHUB BARKING

Client: DB CARGO (UK) LIMITED

Title: Locations for the monitoring of visible dust

Figure DEMP 3

Scale: 1:5,000@A3

Drawing Ref: DBC/EU/09-21/22775

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APPENDICES

APPENDIX A

VISUAL DUST MONITORING FORM

Dust Monitoring Form

Week commencing: ……

Day	Name of assessor	Time	Location	Wind direction	Visual observations / Comments	Action taken
Monday			D1			
			D2			
			D3			
			D4			
			D5			
			D6			
			D7			
Tuesday			D1			
			D2			
			D3			
			D4			
			D5			
			D6			
			D7			
Wednesday			D1			
			D2			
			D3			
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			D6			
			D7			
Thursday			D1			
			D2			
			D3			
			D4			
			D5			
			D6			
			D7			
Friday			D1			
			D2			
			D3			
			D4			
			D5			
			D6			
			D7			
Additional comments						

Signed off by
Management: ……

This form should be read and used in conjunction with Figure DEMP3 which shows the visual monitoring locations D1, D2, D3, D4, D5, D6 and D7

Use as many of these forms as necessary

APPENDIX B

INCIDENT REPORT FORM AND COMPLAINT FORM

EMS Document: Incident Report Form

This form should be used for incidents that affect the environment (e.g. dust, odour or noise pollution outside site). It is also good practice to record 'near-misses'.

Date and time of the incident		
What happened, what was it about?		
What caused it?		
Has the incident been reported to the Operations Director or TCM in accordance with the procedures set out in the EMS/AMP		Yes/No Time: Date: Person spoken to:
Name:	Date:	Signature:
The rest of the form is to be completed by the TCM/Terminals Manager		
Was there any significant pollution or environmental damage to land, water or air (e.g. dust, odour or noise pollution outside the site, oil or fuel seepage)? Yes /No If so what? Is there a continuing threat? Yes / No		
If Yes to either of above, you must take steps to prevent any further damage and inform the EA on 0800 807060 (as well as any other relevant regulators) as soon as possible. Have you done so?		Yes/No/Not Applicable Time: Date: Person spoken to: EA Incident No.:
What have you done to prevent the incident from happen again?		
Has the EMS Manual/AMP been updated and any changes to operations and procedures been initiated? Include details and dates		
Name:	Date:	Signature:
Name:	Date:	Signature:

Continue overleaf or on a separate sheet if you do not have enough room.
Keep the completed form on file at the Site Office to discuss with the EA when they visit.

Continuation sheet

EMS Document: Complaint Report Form

This form should be used to record complaints that are received from the public in respect of the site operations.

Complaint report form	Date:	Reference:
Name and address of complainant		
Tel. No. of complainant		
Time and date of complaint		
Date, time and duration of nuisance		
Weather conditions (e.g. dry, rain, fog, snow)		
Wind strength and direction (e.g. light, steady, strong, gusting)		
Complainant's description of the nuisance		
Does the complainant have any other comments about the nuisance?		
Any other previous known complaints relating to the facility?		
Any other relevant information		
Potential sources that could give rise to the complaint		
Operating conditions at the time nuisance occurred (e.g. equipment in use, waste type being processed)		
Action taken		
Final outcome		

Form completed by:	Signed:	Date:
TCM/Manager:	Signed:	Date:

Continuation sheet

APPENDIX C

SITE DIARY CHECK SHEET

DB CARGO UK LTD LONDON EURO WASTE TRANSFER SITE DIARY				
Date:	Day:	Weather Conditions:	Time Site: Open:	Closed:
Staff/Contractors on site:		Plant on site:	Defects/Break downs:	Materials on site:

Operations on site:	Trains on site:
	Train 1:
	Train 2:
	Train 3:
	Train 4:
	Train 5:

Site inspections:				
	Inspected by:	Time(s):	Result:	Actions taken/Comments:
Stockpiles Height/Overhangs:				
Stockpile Locations:				
Access Roads/Surfaces:				
Odours:				
Noise:				
Dust/Excess mud or debris:				
Pest infestation:				
Neighbouring Roads/Traffic:				
Perimeter/Security Fencing:				
Litter:				
Rail Sidings:				

Leaks/Spillages:		Fires:		Complaints:
EA informed?		EA informed?		
EA incident no:		EA incident no:		
COTC/TCM on site?		Time in	Time out	Signature:
Name:				
EA/Statutory Bodies on site:				

ANY OTHER COMMENTS: