1MC04 Main Works - Contract Lot S2

Dust and Emissions Management Plan - Waste Transfer and Treat Station - Ruislip Southern Sustainable Placement S2

MDL Code:

Document no.: 1MC04-SCJ_SDH-EV-PLN-SS05_SL07-000013

Revision	Author	Checked by	Approved by		Date approved	Reason for revision
C01	Melanie Thrush	Nigel Phelps	Isobel Byrne Hill	Steven Bodenham	16/11/2021	For Acceptance
						

SECURITY CLASSIFICATION: OFFICIAL

Handling instructions: None

Revision changes, authorisation, and reason for issue records:

Revision	Author	Date authored	Checked by	Date checked	Approved by	Date approved	Reason for revision
C01.1	Victoria MeGraw	09/08/2021	James Ennis	18/08/2021	Mark Gaby	19/08/2021	RSSP - Waste Transfer and Treat Station (WTS) Permit
C01.2	Melanie Thrush	09/11/2021	Nigel Phelps	12/11/2021	Isobel Byrne Hill	16/11/2021	RSSP - Waste Transfer and Treat Station (WTS) Permit – reissue following incorporation of SCS comments

Contents

1 Introduction

1.1.1 Phase One of HS2 will provide dedicated high-speed rail services between London, Birmingham, and the West Midlands. It will extend for approximately 230km (143 miles). Just north of Lichfield, high speed trains will join the West Coast Main Line for journeys to and from Manchester, the North West and Scotland.

1.1.2 Phase One of HS2 is the first phase of a new high-speed railway network proposed by the Government to connect major cities in Britain. It will bring significant benefits for inter-urban rail travellers through increased capacity and improved connectivity between London, the Midlands, and the North. It will release capacity on the existing rail network between London, Birmingham and the West Midlands and so provide opportunities to improve existing commuter, regional passenger, and freight services.

1.1.3 The Materials Management Plan Framework (ref. HS2-HS2-EV-STD-000-000006) for the HS2 scheme sets out framework for materials reuse within the scheme. As part of the Materials Management Plan Framework the Ruislip Southern Sustainable Placement Waste Transfer and Treat Station (RSSP-WTS) will be used as an inert and non-hazardous waste transfer station, operated by Skanska Costain STRABAG Joint Venture (SCSJV). Testing of TBM trial materials has indicated that materials arriving to site will be classified as inert and non-hazardous.

1.1.4 In line with current waste legislation, the handling of excavated material at the site will need to be undertaken in line with the Environmental Permitting (England and Wales) Regulations 2016. The screening process for the proposed RSSP-WTS has identified the need for a Bespoke Permit application.

1.1.5 This Dust and Emissions Management Plan (DEMP) has been prepared for the Waste Ruislip Southern Sustainable Placement Waste Transfer and Treat Station (RSSP-WTS), operated by SCSJV. The RSSP-WTS facility will be used to transfer soil arisings from construction sites in the local area, this will comprise Tunnel Boring Machine (TBM) arisings from West Ruislip Portal, which will be brought to the site via conveyor. If required, incoming arisings will be treated to ensure that they possess the appropriate qualities for re-use as reinstatement materials, either as backfill in the following areas: Ruislip Southern Sustainable Placement (RSSP) and Copthall Tunnel (Copthall backfill). Once materials are treated at the RSSP-WTS facility, onward transport of treated materials will be via a return conveyor to Copthall backfill. Materials will be transported to RSSP to the south of the treatment area via dump trucks along haul roads.

1.1.6 The DEMP has been produced in line with the requirements of the above Regulations to prevent pollution from emissions from site activities which may *"be harmful to human health or the quality of the environment, cause offence to a human sense, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment".* In addition, the document has been produced in accordance with the requirements to *"manage dust, air pollution, odour and exhaust emission during the construction accordance with Best Practicable Means (BPM)"* as defined in the Code Of Construction Practice (CoCP) for the HS2 project. This DEMP is informed by the following industry and HS2 specific guidance:

- Code of Construction Practice (CoCP) [R1]
- Local Environmental Management Plan - Hillingdon [R2]
- The Air Quality Strategy [R3] and accompanying Hs2 Information Paper E31: Air Quality [R4];
- HS2 Air Quality Action Plan [R5]
- Technical Guidance Note (Monitoring) M17, Monitoring Particulate Matter in Ambient Air around Waste Facilities. 2014 [R9]
- The Example Dust Emissions Management Plan V10 Template provided by air.quality@environment-agency.gov.uk
- Guidance provided at https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#emissions-that-do-not-have-set-limits

1.1.7 The purpose of the DEMP is to identify potential receptors sensitive to dust and emissions, identify the potential sources of dust and emissions and detail the methods adopted to control dust and emissions generation.

1.1.8 The main sources of dust particularly during periods of dry weather, are likely to be from conveyor transfer points and unloading and loading of waste including the movements of on-site machinery and vehicles.

1.1 Associated Documents

1.1.1 This report should be read in conjunction with the following documents:

- Environmental Permit Application Forms [R10];
- Non-technical summary [R11];
- Site Condition Report [R12];

- Site Operating Plan [R13];
- Management Systems and Procedures [R14];
- Noise and Vibration Management Plan [R15].

1.1.2 This document will be kept on site along with the other suite of permit documents.

1.2 Context

1.2.1 This DEMP provides details of the site-specific measures that will be employed on site in relation to the management of dust and emissions It is based on the Environmental Permitting (England and Wales) Regulations 2016 requirements to prevent pollution from emissions from site activities as outlined above and the HS2 Air Quality Strategy [R3] which sets out the approach HS2 Ltd will follow to avoid, reduce, or mitigate emissions to air causing adverse effects on communities and to prevent air pollution.

1.2.2 As part of the Phase 1 Environmental Statement (ES), emissions from dust generating activities during the construction of the scheme were assessed using industry guidance produced by the Institute of Air Quality Management (IAQM). The dust impact assessment evaluated the risk of dust impact at West Ruislip rail head, which includes the RSSP-WTS facility (and areas including Harvil Road realignment and sustainable placement areas). This evaluated the potential impacts of dust generation associated with demolition, earthworks, construction, trackout and haul road at the location of the RSSP-WTS facility.

1.2.3 Emissions from road traffic during construction and operation of the scheme were assessed using a staged approach. Traffic data obtained from different receptors (roads) was screened using thresholds in the Design Manual for Roads and Bridges (DMRB) guidance [R16]. Sensitive receptors were then selected, and concentrations were calculated using the DMRB air quality screening tool spreadsheet.

1.2.4 Where the DMRB threshold values were not exceeded, no additional assessment was required as the impact to air quality was deemed minimal. If the threshold values had been breached then further quantitative assessment has been carried out. Receptors with potentially significant effects were further assessed using an atmospheric dispersion model.

1.2.5 The operation of the RSSP-WTS facility is required during the construction of HS2 only and as such forms part of the construction phase works. Following

completion of the works, the RSSP-WTS facility will no longer be required in relation to the HS2 works.

1.2.6 The ES as amended predicted negligible magnitude of impact and no significant effects in relation to dust emissions during the construction of the project and the area of the RSSP-WTS facility. It is anticipated that with the use of appropriate mitigation measures, , impacts during the HS2 construction phase will be minimised or eliminated.

1.2.7 The implementation of the HS2 project will be undertaken in line with Environmental Minimum Requirements (EMRs) which *"will ensure that impacts which have been assessed and reported in the ES will not be exceeded…and…use reasonable endeavours to adopt mitigation measures that will further reduce any adverse environmental impacts…"*

1.2.8 The conclusion of the ES as amended is that there will be no significant effect on any receptors (residential, property-based, or ecological) along the route from dust generating activities during construction, with the provisions of the CoCP applied. Therefore, it is the EMR that dust emissions during construction should be minimised as far as reasonably practical and with the objective that no significant effects result.

1.2.9 The ES as amended indicated that traffic emissions during construction of the project are predicted to give rise to significant effects in relation to NO_2 concentrations in Greater London and PM_{10} and NO_2 in Central London. It is not practical to enforce or limit a change in ambient pollution concentration arising from highway impacts at project level, because ambient concentrations change from day to day and year to year due to complex influences from other pollution sources in the area and meteorological conditions. Other pollution sources include non-project highway traffic, domestic and commercial heating and cooking, industrial emissions, and other transport (aircraft and shipping).

1.2.10 In order to manage significant impacts related to highway traffic changes and interventions, the Nominated Undertaker will put in place a management process to manage those impacts through measurement of air quality and regular assessments of the air quality situation as affected by the construction of the scheme. Where significant effects are still predicted, action plans will be put in place with the objective of removing those significant effects. The current HS2 Action Plan [R5] summarises in one document all the air quality commitments to measure, avoid and reduce emissions and sets out the principle of monitor-review-assess. This management process is modelled on Defra Local Air Quality Management (for which the statutory duties of Local Authorities and London Boroughs are set out in Part IV of the Environment Act

1995), and the periodic reviews and action plans are envisaged as being similar to those produced in that process. This process comprises: measure – review – action plan. Baseline (pre-works) air quality monitoring will be required in locations where potential significant effects are predicted. Forecast baseline and with HS2 construction traffic flows will be reviewed and updated in these locations, if necessary.

1.2.11 These baseline measurements in relation to highway traffic emissions will be reviewed and an air quality assessment will be produced at an appropriate stage to determine whether significant effects are still predicted. Where significant effects are still predicted, the air quality monitoring should be continued, and an air quality action plan should be drawn up, with the objective of removing the significant effects, as soon as, and as far as practicable. The action plan should be presented at Transport Liaison Group meetings (as set out in the Route-Wide Transport Management Plan). The process of reviewing highway and air quality impacts should be repeated at appropriate intervals (e.g., annual, or biannual), until no significant effects are predicted or detected (as far as practicable), or two years after the completion of construction, whichever is the sooner. The monitoring, reviews, assessments, and action plans will be developed working with local authorities.

1.2.12 In summary, the RSSP-WTS facility will be operated during the construction phase of HS2 and as such the dust and emissions generated by its use were assessed as part of the ES, as amended (with specific reference to the potential dust generating activities mentioned in the ES at RSSP-WTS). The findings of the ES, as amended have identified that no significant impacts on receptors were identified from dust emissions provided the measures outlined in the CoCP are adopted. In relation to traffic emissions, significant effects have been identified and these will be managed by baseline monitoring, assessment, and action plans. The emissions from traffic assessment was based on predicted increase in traffic caused by the scheme, as such it is not directly relevant to works within the RSSP-WTS site. Nevertheless, the measures to control the impact from traffic emissions will be adopted scheme wide. The following document therefore presents the sources of dust and emissions at the RSSP-WTS site, a review of pathway and potential receptors and provides details of the measures that will be adopted to mitigate these in order to prevent pollution from emissions in accordance with Environmental Permitting (England and Wales) Regulations 2016 and in line with the requirements set out in the CoCP and as part of the relevant HS2 EMRs.

2 The Site

2.1 Site Setting

2.1.1 The site is an area of semi-rural, former agricultural land located immediately north west of Ickenham and to the west of West Ruislip (London Borough of Hillingdon), centred around Grid Reference TQ06517 87233. The area of the site is roughly 10.5ha. The RSSP-WTS site is currently accessed via the Copthall South Office entrance, which is accessed through a secured site entrance along the western perimeter of the site off Harvil Road. This Copthall South Office includes concrete hardstanding, car parking and temporary building structures.

2.1.2 The main storage and treatment area proposed as part of the RSSP-WTS facility will be located directly to the east of the Copthall South Office, in an area that is currently occupied by reworked ground. The RSSP-WTS permit boundary is designed so that it does not intercept the forested covert 'Copthall Covert' (1.5ha), which is an area of secondary semi-natural broad-leaved woodland. This area is located directly south of the main storage and treatment area and the Copthall South Office. Directly north and west of the permit boundary is an isolated residential dwelling 'Shorthill Cottage'.

2.1.3 South of the main proposed treatment area for RSSP-WTS, the permit boundary narrows to the east so that it avoids the forested Copthall Covert. To the south of Copthall Covert, the permit boundary widens so that it incorporates a larger area that is currently occupied by agricultural fields separated by hedgerows. This area will be used to accommodate supporting and ancillary infrastructure of the RSSP-WTS facility (e.g., haul roads) and a large area is also proposed as topsoil storage.

2.1.4 The Chiltern Main Line is located directly north of the permit boundary, beyond which is a pharmaceutical research facility and fields. To the west of the permit boundary and beyond the Copthall South Office is Harvil Road, beyond which industrial buildings are located such as the Harefield Oil Depot. To the east of the site is farmland associated with Brackenbury Farm (220m east) and Copthall Farm (250m south east), the latter of which is moated. Beyond the farmland to the east is Breakspear Road South and residential estates associated with Ickenham (315m south east).

2.1.5 In summary, the surrounding land uses are a mixture of agricultural, commercial, and industrial land uses. Additionally, there are several defined residential areas within 1000m proximity of the permit boundary, these are depicted on Drawing 1MC04-SCJ_SDH-LS-DGA-SS05_SL07-711020.

2.2 Weather Conditions

2.2.1 The generation of dust is influenced by the prevailing weather conditions at the site. Precipitation will dampen existing dust preventing it becoming airborne and will increase the moisture content of stockpiled materials reducing the potential dust generation during handling. Similarly, windy, dry conditions will exacerbate dust generation. Based on regional climatic patterns it can be assumed that there will likely be periods of higher precipitation throughout certain periods of the year, due to weather variability, a reliance on such conditions as a measure to mitigate against dust generation has not been assumed. As such the focus of this section is on the prevailing wind direction, which is considered to be the most significant meteorological factor in dust generation and transport.

2.2.2 The predicted wind speed and direction data has been obtained for the West Ruislip Portal site approximately 1.6m to the south east of the site. Met Office Virtual Met Mast data is included below for a measurement height of 10m above ground level and indicates a predominant wind direction from the south west with a typical speed in the range of 2-6m/s (see Figure 1). On this basis in relation to dust and emissions, those receptors located to the north and northeast are potentially more susceptible to adverse impacts.

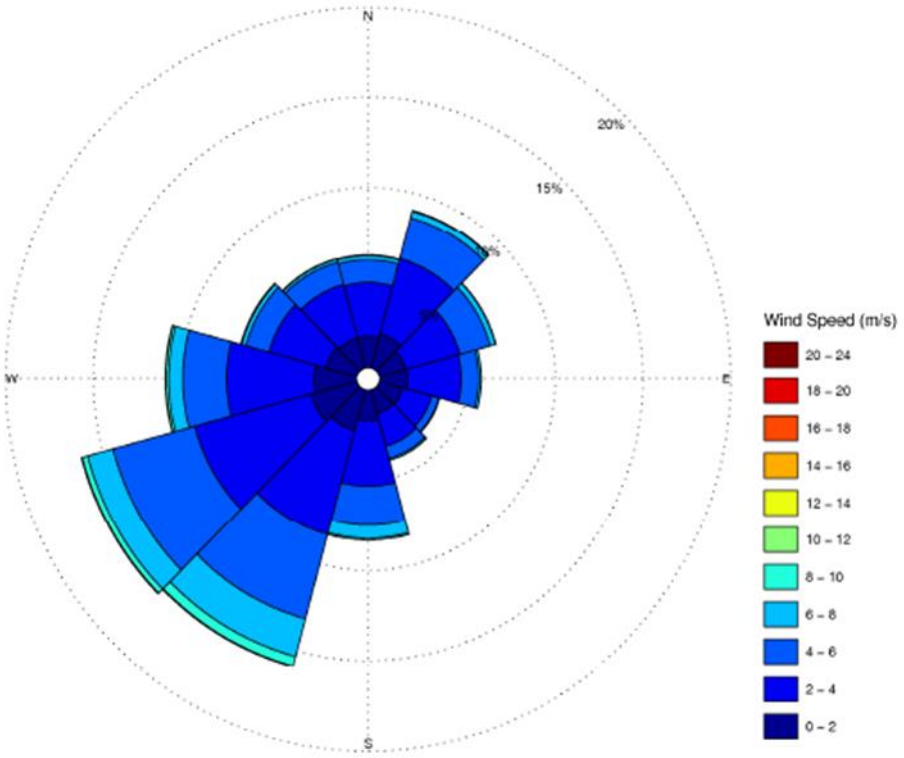

Figure 1 – Predicted Annual Average Wind Rose for West Ruislip Portal

2.3 Sensitive Receptors

2.3.1 A number of sensitive receptors with respect to dust and air quality have been identified within 1000m distance of the permit boundary, see Table 1. These are also detailed and included in the Site Condition Report (SCR). The site is located in the Hillingdon Air Quality Management Area (AQMA). The pollutant declared for this AQMA is nitrogen dioxide (NO_2) – annual mean.

2.3.2 Consideration of sensitive receptors has been judged on a case-by-case basis, and includes environmental, ecological, and anthropogenic receptors. Refer to Drawings (SCR; 1MC04-SCJ_SDH-LS-DGA-SS05_SL07-711019 and 1MC04-SCJ_SDH-LS-DGA-SS05_SL07-711020).

2.3.3 In relation to environmental and ecological receptors, a number of Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SAC – statutory and non-statutory), Local Nature Reserves (LNRs), Scheduled Monuments and Listed Buildings are located within 1000m of the site area, see Table 1.

2.3.4 There are no National Parks, Areas of Outstanding National Beauty (AONB) or Ramsar sites within 1000m of the site area.

2.3.5 Sensitive anthropogenic receptors, which includes adjacent residential properties and certain commercial enterprises (e.g., schools, GPs, and farms) are also considered below in Table 1.

Site Name	Designation	Approximate direction and closest distance from site boundary.
Fray's Valley	Local Nature Reserve	570m west
Fray's Farm Meadows	Site of Special Scientific Interest	670m south west
Denham Country Park	Local Nature Reserve	790m west
Denham Lock Wood	Site of Special Scientific Interest	880m south west
Non-Statutory Designations		
Source Protection Zone(s) I (Inner Protection Zone) and II (Outer Protection Zone)	Source Protection Zone	Site and north
Thames_SWSGZ4015, 4016_Cookham Teddington & Wey	Drinking Water Safeguard Zones (Surface Water)	Site and its surroundings
London Area Greenbelt	Green Belt	Site and its surroundings
Ickenham (Hillingdon)	Sites of Important Nature Conservation (GIGL)	Directly west
Brackenbury Railway Cutting	Site of Borough Importance Grade 2.	50m north
Brackenbury Farm moated site	Scheduled Monument	210m east
Brackenbury Farmhouse	Grade II Listed Building	290m east
Copthall Farmhouse	Grade II Listed Building	330m south east
North Lodge	Grade II Listed Building	390m south
Newyears Green	Site of Borough Importance Grade 1, Ancient Woodland	400m north
West Ruislip Golf Course and Old Priory Meadows	Site of Borough Importance Grade 1	445m east
Mad Field Covert, Railway Mead, and the River Pinn	Site of Borough Importance Grade 2	460m east
Medieval moated site	Scheduled Monuments	495m south east
The Pinnocks Wood	Ancient Woodland	570m south west
Harefield Place	Grade II Listed Building	600m south west

Highway Farmhouse, Forecourt walls to South Highway Farmhouse and Barn and Shelter Shed to south east of Highway Farmhouse	Grade II Listed Buildings	840m to 880m north west
Colne Valley Regional Park	Public park	Site
Residential and sensitive commercial receptors		
Shorthill Cottage	Residential area	Directly north and west of the site
Ickenham residential properties	Residential areas	Large areas west, south, and east. Closest areas are 180m south west, 300m east
Harvil Farm	Farm/residential area	140m south west
Brackenbury Farm	Farm/residential area	190m east
Copthall Farm	Farm/residential area	210m south east
West London School of Guitar	School	240m south west
Dunster Cottage	Farm/residential area	740m north east
Ruislip and Newyears Green Farm Buildings	Farm/residential area	560m north east, 725m north west, 800m north west, and 900m north west
The Breakspear School	School	700m south east
Wallasey Medical Centre – Dr K Patel	Doctors Surgery	930m south east

Table 1 – Distances to selected, representative receptors (up to 1000m from site boundary)

2.4 Other Sources of Dust and Emissions

2.4.1 As well as considering the RSSP-WTS site as a potential source of dust and emissions, this report also considers local practices that may be a potential source of dust and emissions.

2.4.2 A review of the Envirocheck report obtained for the site and the MAGIC website has indicated the following potential sources of dust and emissions in the local area (see Table 2).

Direction from boundary	Process	Approximate distance metres
West	Harefield Oil Terminal	100m
North east	MSD Animal Health and pharmaceutical research facility	220m
West	GBN Services - Skip Hire	230m
West	Thames Materials Ltd - Mobile screening and crushing of materials	230m
North	B.F.A. Recycling	640m
West	Hanson Ready-Mixed Concrete – concrete mixing	650m
North east	West Composting London	830m
North east	Country Compost Ltd, J Madden (Garages), Dassio Autocars, Crows Farm Storage Facility	950m

Table 2 – Identified sources of dust and emissions within 1000m of the site boundary

3 Operations at Waste Transfer Station

3.1.1 SCSJV commit to undertaking measures to reduce potential impacts on air quality. As such the relevant mitigation and best practice measures will be employed on site, these are detailed the following sections. As in the case with all receptors, should dust become a nuisance, action to remedy the situation will be taken.

3.1.2 The site layout has been planned in order to locate machinery and dust-causing activities away from sensitive receptors, where reasonably practicable. Methods, such as active management of dust generation along the conveyor system, enclosure of the waste material storage areas and movement of waste material and machinery onsite provide a means of reducing the impacts of dust and emissions generation. The site layout is shown on Drawings 1MC04-SCJ_EN-SKE -SS05_SL07-650028 and 1MC04-SCJ_EN-SKE -SS05_SL07-650029; drawing references in Appendix B.

3.1.3 A Dust and Emission Risk Assessment (DERA) has been undertaken for the RSSP-WTS facility and is included In Appendix A. Pre-mitigation, the DERA concludes that the activities are likely to result in an overall Medium Dust/Emissions Risk. After the risk management factors (mitigation) have been considered, there is an overall Low Dust/Emissions Risk.

3.2 Site Activities and Proposed Infrastructure

3.2.1 The RSSP-WTS will receive Tunnel Boring Machine (TBM) spoil arisings via a conveyor system from the construction of Northolt Tunnels West via West Ruislip Portal. This material will be temporarily stored and treated within the extent of the RSSP-WTS. The material arisings are to be treated with additives (lime and ggbs) to ensure that they have suitable properties (geotechnical and chemical) for placement in the following areas: Ruislip Southern Sustainable Placement (RSSP) and Copthall Tunnel (Copthall backfill).

3.2.2 Once materials are treated at the RSSP-WTS facility, onward transport of treated materials will be via a return conveyor to Copthall backfill. Materials will be transported to RSSP to the south of the treatment area via dump trucks along haul roads.

3.2.3 In order to facilitate the operational requirements of the RSSP-WTS facility, the following activities will take place, reference to specific plant is also made below:

- Machine conveyor belt transportation of excavated TBM arisings. This includes a conveyor for material input and material output;
- Materials stockpiling and stockpile distribution for materials storage. Conveyor system will offload untreated TBM arisings into storage arisings bins. The dimensions of these bins are included within the Site Operating Plan (1MC04-SCJ_SDH-EV-PLN-SS05_SL07-000016);
- Lime silo operation areas for treatment of TBM arisings. Delivery lorries will be utilised to deliver the lime and/or ggbs. The silos will be topped up using compressed air to blow the new materials in;
- Site drainage measures, including an attenuation pond. Tractor bowser will be used to extract water from the attenuation pond for dust suppression measures;
- Silt-buster and associated generator will be in operation 24/7; and
- Vehicular transport of materials to the RSSP facility via haul road. Transporting mechanisms as a minimum will include 3 x loading shovels, 1 x 40t excavator and 5 x 30-35t ADT dumpers which will transport treated materials down to the RSSP facility and around the RSSP-WTS facility.

3.2.4 A detailed description of the site layout and operating procedures is provided in the Site Operating Plan (1MC04-SCJ_SDH-EV-PLN-SS05_SL07-000016).

3.2.5 The Dust and Emissions Risk Assessment (DERA) has considered the potential impacts for all of the above activities, see Appendix A.

3.3 Waste Deliveries to Waste Transfer Station

Controls measures during transportation of materials

3.3.1 Waste TBM arisings will be delivered to the RSSP-WTS facility via a two-way conveyor system, which will be enclosed along its length of travel within the extent of the permit boundary. Currently it is understood that no incoming wastes will be received via vehicular transport.

3.3.2 Features of the design of the proposed RSSP-WTS facility, which includes proposed anticipated mitigations for dust and emissions during the transportation of materials, is discussed in detail in the Dust and Emissions Risk Assessment (DERA). Pertinent points are outlined below. For the full list of mitigations, see Appendix A.

3.3.3 The conveyor belt system will be enclosed for its length of travel within the site.

3.3.4 The conveyor belt system will have a suitable belt cleaning system (scrapers/brushes and watering) to prevent the build-up of dry friable materials on the conveyor. Additionally, further measures including a mist spray system will be fitted to the conveyor exit to avoid fugitive dust emissions from the waste materials becoming airborne beyond the conveyor discharge point.

3.3.5 The conveyor system will be regularly inspected and maintained in accordance with the manufacturer's instructions to ensure the belt cleaning and dust suppression systems are working effectively and efficiently.

3.3.6 Drop heights from the conveyor to stockpiles will be kept to the reasonably practicable minimum.

3.3.7 The waste material storage area (muck bin storage area will) will comprise walls on western, northern, and eastern facades to roof level and the 7,850m2 area will be roofed.

3.4 Permitted Wastes

Acceptable Wastes

3.4.1 The RSSP-WTS facility will receive approximately 1,250,000m^3 of material from the Tunnel Boring Machine (TBM) arisings. The material generated as part of the TBM will arrive at the RSSP-WTS facility via a conveyor system. The TBM material will arrive at the facility at a rate of between 500m^3 to 3,000m^3 per 24-hour day, dependent on the type of material the TBM is currently driving through. The average daily rate of material delivery from the TBM is anticipated to be within the region of 2,200m^3 to 3,000m^3 per day. The

materials accepted have been classified using the EWC. It is anticipated that the material will primarily comprise European Waste Codes:

17 05 04 – Soil and stones other than those mentioned in 17 05 03; and

19 03 07 – Solidified wastes other than those mentioned in 19 03 06.

3.4.2 No hazardous wastes will be accepted at the site. As such mirror hazardous entry codes are not included within accepted materials listed above.

3.4.3 Stabilised wastes will not be accepted at the site, as this results in the change of the hazardous status of the waste. See definitions of Stabilisation and Solidification, taken from Technical Guidance WM3: Waste Classification - Guidance on the classification and assessment of waste [R19] below;

- *Stabilisation*; means processes which change the hazardousness of the constituents in the waste and transform hazardous waste into non-hazardous waste.
- *Solidification*; means processes which only change the physical state of the waste by using additives without changing the chemical properties of the waste e.g., addition of lime.

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

Control measures during the transfer of waste

3.5.1 As discussed in Section 3.3, the RSSP-facility will receive materials via an onward conveyor system. The materials will be temporarily stored on site in the designated treatment area, prior to onward transfer of the material as a waste. The waste will be clayey with a cohesive nature, with an estimated moisture content between 30-40%, and it is expected that much of this material will not in itself create significant dust arising. However, dust can arise from the physical operations associated with the transfer of waste.

3.5.2 The waste material storage area will comprise walls on western, northern, and eastern facades to roof level and the 7,850m² area will be roofed. Materials stored within the arisings bins will not be placed so that the height of the materials in the bins exceeds 3.3m, as to ensure that there is at least 0.5m between the top of the bin wall facades (3.8m height) and the top level of the arisings.

3.5.3 Materials exiting the RSSP-WTS facility for placement as reinstatement material at RSSP will be transported via internal haul road. Materials exiting

the facility for onward transport and placement as Copthall Backfill will be transferred off-site via a returning mechanism on the conveyor system.

3.5.4 Drop heights from vehicles/NRMM involved in the transfer of materials on the site will be kept to the reasonably practicable minimum.

3.5.5 Vehicles/NRMM transporting materials within the site will not be overloaded

3.5.6 Movement of vehicles / NRMM around the site will be kept to the minimum reasonable for the effective and efficient operation of the site.

3.5.7 The number of handling operations of stockpiled waste materials will be kept to the minimum reasonably practicable.

3.5.8 Daily cleaning and suppression of dust in the muck storage bin area will be supplemented using a road sweeper (7t or larger) and / or large capacity vehicle pulled (HGV), or driven, water bowser.

3.5.9 The number of handling operations of stockpiled waste materials will be kept to the minimum reasonably practicable.

3.5.10 A visual inspection of operations within the muck storage bin area will be undertaken at regular intervals during the day and recorded. Any shortfalls in 'housekeeping' and effectiveness of dust suppression will be identified and rectified promptly.

3.5.11 On site speed limit for any vehicle/NRMM will be 5mph. Speed limit signage will be displayed at the site entrance and around the haul route and enforced by on-site traffic marshals.

3.5.12 The entrance / egress of the site and haul road that circles the waste material storage area (muck storage bins) will comprise an impermeable concrete slab.

3.5.13 The haul road serving the topsoil storage area (south of the wooded area) will comprise course granular compacted materials.

3.5.14 A visual inspection of haul routes ('housekeeping' and repair) will be undertaken at regular intervals during the day and recorded. Any shortfalls in 'housekeeping' will be identified and rectified promptly. Similarly, repairs will be arranged and implemented.

3.5.15 Daily cleaning and suppression of dust on haul routes will be carried out using a road sweeper (7t or larger) and / or large capacity vehicle pulled (HGV), or driven, water bowser.

3.5.16 Manual jet washes (estimated inventory of 4-6) and sweeping facilities will be available on site for cleaning of small/limited areas where access for larger road sweeper and vehicular water bowsers is limited / prevented.

3.5.17 The frequency of cleaning during the day will be suitable for the purposes of suppressing dust emissions and preventing friable deposits on haul routes.

3.5.18 All HGV road vehicles and NRMM leaving the site will use the automated wheel-wash facility. All vehicle wheels will be subsequently checked and if necessary be resent through the wheel wash for further cleaning prior to the site egress at Harvil Road.

3.5.19 A noticeboard summarising the site rules for visiting drivers is displayed in a prominent position adjacent at the site entrance, and a complete set of rules will be displayed in the site office. Copies of the site rules will be available for issue to visiting drivers.

3.5.20 All road vehicle movements to the site will be prebooked and allocated delivery times to prevent queuing of vehicles at the site entrance off Harvil Road

3.5.21 Movement of road vehicles around the site will be kept to the minimum reasonable for the effective and efficient operation of the site.

3.5.22 Vehicles will be switched off when not in use. All Light Duty Vehicles will meet Emission Standard Euro 6 (Diesel) and Euro 4 (Petrol).

3.5.23 All Heavy Good Vehicles (HGVs) will meet Emission Standard Euro VI.

3.5.24 Specific dust and emissions mitigation measures in relation to the conveyor system are discussed in Section 3.3.

3.6 Non-Road Mobile Machinery (NRMM) Mobile Plant and Equipment

3.6.1 All relevant NRMM (with a power rating between 37-560kW) will meet a minimum emission standard Euro Stage IIIB*and Stage IV* from 1st January 2022. *IIIA for constant speed engines of any power i.e., generators. NRMM meeting emission standard Euro Stage V or using alternative low/zero emission technology (e.g. hydrogen or electric) will be preferred depending on market availability.

3.6.2 All NRMM will be operated in accordance with the manufacturer's written recommendations.

3.6.3 All NRMM will use ultra-low-sulphur diesel or Hydrogenated Vegetable Oil (HVO).

3.6.4 All NRMM will be switched off when not in use and not left idling.

3.6.5 Site speeds will be controlled to minimise possible dust entrainment (5mph). Appropriate instruction will be issued to all vehicle drivers.

3.6.6 SCSJV will compliance-check the emission standard of each machine and register it with HS2 prior to the machinery being deployed to site.

3.6.7 The mobile plant anticipated to be used on site are listed in Table 3 below. It is expected that additional plant will be used during the operation of the facility, but the exact plant is currently not confirmed.

Description	Make	Model	EU Emission Stage
40Ton Excavator	CAT	336	IV
30T DUMPTRUCK	BELL	B30E	IV
30T DUMPTRUCK	BELL	B30E	IV
30T DUMPTRUCK (V)	BELL	B30E MK3 (V)	V
D6 Dozer	CAT	D6	IV
D6 Dozer	CAT	D6	IV

Table 3 – Mobile plant and equipment

4 Dust and Particulate (PM_{10}) Management

4.1 Responsibility for Implementation of the DEMP

4.1.1 The Site Supervisor, or his nominee, will exercise day-to-day control on site at all times. The Site Supervisor will have particular responsibility for ensuring full compliance with the conditions attached to the DEMP. Specifically, the Site Supervisor will assume control, either personally or by delegation to suitably trained and responsible staff, of:

- Vehicle movements;
- Rail movements
- All loading, tipping and materials handling operations;
- Operation of dust suppression measures; and
- Inspection, cleaning and maintenance of all plant and equipment.

4.1.2 SCSJV operates an externally audited Environmental Management System (EMS) which is certified to ISO 14001:2015.

4.1.3 Staff at all levels will receive the necessary training EMS and instruction in their duties relating to the control of all operations and the potential sources of dust emissions. Particular emphasis will be given to dealing with plant malfunctions and abnormal conditions. Site staff will inform the Site Supervisor whenever visible dust emissions are observed or appear likely to occur, as a result of any site operation.

4.1.4 The continuing effectiveness of this dust management scheme will be reviewed regularly in the context of monitoring results.

4.2 Sources and Control of Fugitive Dust/Particulate Emissions

4.2.1 Dusts, fibres, and particulates are found in wastes with a fines content and soils.

4.2.2 They are generated during periods of dry weather in combination with windy conditions.

4.2.3 The focus of the DEMP is to control dust generation and movement at source. The main potential sources of dust at the site are likely to be from site surfaces conveyor transfer points, unloading and loading of waste.

4.2.4 The sources of potential dust and particulates generated by the waste transfer station are summarised below:

- Vehicles entering and/or leaving the site with mud on wheels, and tracking dust on to or off the site;
- Offloading of material into the holding bays from the conveyor;
- Loading of materials on to dump trucks and off-loading onto spoil mounds;
- Dust re-suspension from vehicular movement along internal haul roads;
- Wind whipping of dust from spoil mounds or waste stored in bays;
- Site surfaces; and
- Particulate emissions from the exhaust of vehicles/plant/machinery on site.

4.2.5 The pathway for the majority of the releases (sources) listed above is atmospheric dispersion, either primarily from the dust/particulate source (e.g., wind whipping of stockpiles) or after tracking on to site surfaces/roads and public highways.

4.2.6 Appendix A presents a dust risk assessment and control measures to manage the risk.

4.2.7 The potential pathway for fugitive emissions from the sources listed above is predominantly by atmospheric dispersion. The following section provides an assessment of the Source-Pathway-Receptor Scenario at the site.

Table 4 Source-Pathway-Receptor Model.

Source	Pathway	Receptor	Type of impact	Where relationship can be interrupted
Mud	Tracking dust on wheels and vehicles, then mud dropping off wheels/vehicles when dry	Sensitive Receptors as identified in Table 1	Visual soiling, also consequent resuspension as airborne particulates	Limiting road transport by use of conveyor. Remove mud before vehicles leave site. Long haul road round the site ensures residual mud drops off before vehicle reaches drop off point. Wheel wash following drop off. Road sweeper present to clear surfaces.
Offload of waste from conveyor	Atmospheric dispersion	Sensitive Receptors as identified in Table 1	Visual soiling and airborne particulates	Minimise source strength by means of low drop heights, Maximise shielding and containment profiling and shielding of piles from wind whipping, 3.75m high bund walls. Damping down dry material before and during offload activities.
Load of waste to dump trucks and offloading onto spoil mounds	Atmospheric dispersion	Sensitive Receptors as identified in Table 1	Visual soiling and airborne particulates	Maximise shielding and containment. Minimise source strength by misting/water/barrier techniques. Damping down dry material before and during offload activities. Ensuring waste soil is damp via misting prior to handling. Handling material to prevent excessive residence time within bund and drying.
Dust resuspension	Atmospheric dispersion	Sensitive Receptors as identified in Table 1	Visual soiling and airborne particulates	Road sweeper and bowser carrying out regular circuits of haul routes to clear / dampen surfaces. Movement of machinery / vehicle around the site kept to the reasonably minimum.
Wind whipping	Atmospheric dispersion	Sensitive Receptors as identified in Table 1	Visual soiling and airborne particulates	Ensure stockpiles within contained bunded areas are below 0.5m from bund wall top. Clearly demarked line indicating maximum bund height on bund walls. Profiling of spoil mounds. Road sweeper/bowser present to clear and dampen surfaces.
Vehicle exhaust emissions	Atmospheric dispersion	Sensitive Receptors as identified in Table 1	Airborne particulates	Ensure vehicles comply with HGV - Euro VI and LDV - Euro 6 (diesel)/Euro 4 (petrol) emissions standards. Regulatory controls and best-practice measures to minimise source strength.
Non road going machinery exhaust emissions	Atmospheric dispersion	Sensitive Receptors as identified in Table 1	Airborne particulates	Ensure machines comply with NRMM Emissions standards Euro Stage IIIB minimum until end of 2021 and Stage IV minimum thereafter.

Table 5 List of Control Measures

Abatement Measure	Description / Effect	Overall consideration and implementation	Trigger for implementation
Preventative Measures			
Containment within building	Creating a solid barrier between the source of dust and particulates and receptors is an effective method of control, provided that the building entrances and exits are well managed.	Very effective but needs to be implemented in combination with a range of dust suppression measures.	Integral to site design.
Dust Extraction System	Silo bag filtration for delivery and dosing of lime/ggbs	Very effective	Integral to site design
Site / process layout in relation to receptors	Location of muck bin storage area and topsoil handling area is distant from nearby receptors.	Will be in combination with a range of other measures to reduce dust and particulate generation.	The site layout has been designed to minimise potential dust generation and limit impact to identified receptors.
Site speed limit, 'no idling' policy and minimisation of vehicle movements on site	Reducing vehicle movements and idling should reduce emissions from vehicles. Contractual requirement to use lower emission road vehicles and NRMM. Enforcement of a speed limit will help reduce re-suspension of particulates by vehicle wheels.	The site operating plan provides additional details on the speed limit for the site. No idling policy applies on this site.	Implemented as part of site operating procedures
Minimising drop heights for waste.	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.	Implemented throughout site operation. Will be in combination with a range of other measures to reduce dust and particulate generation.	Implemented as part of site operating procedures
Good housekeeping	Having a consistent, regular housekeeping regime that is supported by management, will ensure site is regularly checked and issues	Site operating plan provides details on required site and vehicle inspections, cleaning, maintenance.	Housekeeping will form part of the daily routine and operation of the site.

Abatement Measure	Description / Effect	Overall consideration and implementation	Trigger for implementation
	remedied to prevent and remove dust and particulate build up.	Site entrance and access road to be inspected daily to check cleanliness and a road sweeper / bowser will operate regular circuits throughout the day.	
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.	Procedures will be in place when operations will cease	Daily visual inspections will inform decision by the site supervisor when works on site will be ceased due to high winds. Continuous real time dust will also aid decision making, especially if the site action level is breached.
Installed wheel wash	High pressure wash of vehicle wheels and undercarriage (including under body) using a series of jet sprays. All vehicles to use wheel wash on exiting the site. An Ecowash Excel system is to be used - see Appendix C for details. The wheel wash timer is set to 15 seconds operation from activating the sensor which allows for the lorry to enter and ensure all wheels are washed before exiting. The wheel wash has a maintenance contract in place with an engineer's inspection/servicing every 3 months.	All road vehicles to use wheel wash and vehicles to drive through slowly on exit.	Wheel wash to be used by all exiting HGVs and NRMM
Easy to clean concrete impermeable surfaces	Site surfaces of the muck storage bin area are comprised of concrete. Hard surfacing ensures that these can be easily cleaned of debris.	Daily visual inspections for debris as detailed in the site operating plan. Ongoing maintenance of defects through life of site. Use of road sweeping on daily regular circuits.	Integral to site design

Abatement Measure	Description / Effect	Overall consideration and implementation	Trigger for implementation
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.	Volumes of waste stored in each bund is defined in the Site Operating Plan and stockpiles will be managed to keep heights below 0.5m from wall top.	No trigger as these will be undertaken at all times
Reduction in operations (waste throughput, vehicle size, operational hours)	Reducing the amount of activity on site during windy weather as well as associated traffic movements should result in reduced emissions and re-suspension of dust and particulates from a site.	See ceasing operations and the effectiveness of the wide range of other measures to reduce dust and particulate generation.	Daily visual inspections will inform decision by the site supervisor when works on site will be ceased due to high winds. Continuous real time dust will also aid decision making, especially if the site action level is breached.
Remedial Measures			
On-site sweeping	Sweeping of site and adjacent highways by road sweeper or similar.	Daily visual inspections of site haulage roads and entrance/exit roads by Site Supervisor or nominated person in line with the requirements of the Site Operating Plan.	Housekeeping will form part of the daily routine and operation of the site. Site entrance and internal haul routes road to be inspected daily to check cleanliness and a road sweeper / bowser will operate regular circuits throughout the day.
Site hoarding	Site hoarding 2.4m in general around site boundary	Reduces wind speed across the site which indirectly controls the potential for dust and particulate emissions.	Integral to site design

Abatement Measure	Description / Effect	Overall consideration and implementation	Trigger for implementation
Water suppression with mist sprays	A mist spray system of nozzles will be fitted to the exit shroud of each conveyor belt discharge and operated in order to avoid fugitive dust emissions form the waste materials becoming air borne beyond the discharge point.	Very effective at controlling point source emissions of dust and particulates. Uses less water than water bowser	Daily visual inspections of muck bin storage area by Site Supervisor or nominated person in line with the requirements of the Site Operating Plan.
Water suppression with bowser	Towable water bowser/bowsers will be employed on site for damping down of site surfaces outside the reach of the mist sprayers (particularly the haul road). Moveable water cannons that will be fed by a water tank topped up by these mobile bowser(s) will also be employed on site for dust suppression measures.	Highly water intensive and more likely to minimise dust and particulates on the ground that is at risk of being re-suspended rather than already airborne dust and particulates. Very effective at dampening down haul roads and large surface areas. Can also come with hose attachments and other attachments to increase its versatility.	Site to be inspected daily to check cleanliness and a road sweeper / bowser will operate regular circuits throughout the day.
Dust Canons	Moveable water cannons that will be fed by a water tank topped up by mobile bowser(s) will also be employed on site for dust suppression measures predominately in the topsoil storage area.	Very effective at dampening down wide areas of spoil / made ground and great flexibility in deployment location. Water intensive	Site to be inspected daily dust canons and determine the operating duration and location of canons
Dust and particulate monitor with trigger alarm	Dust and particulate monitoring will be undertaken at the site. Installed and operational at the western site boundary of the site towards the nearest sensitive residential premises (approx. 100m to the west of the storage bins area and immediately north of the topsoil storage area).	Valuable early warning of increased/elevated PM10 levels A trigger/site action level of 75µg/m^3 (over a 5-minute average) is to be adopted.	Used throughout site lifetime in combination with daily visual inspections.

4.3 Water Availability

4.3.1 Water for dust suppression and the wheel wash is available from a high-pressured water main supply present on site and will also be supplemented using tractors and sludge tankers that will retrieve the water from the onsite attenuation pond, and bowsers fed bed rainwater collection from roofs onsite. See (1MC03-SCJ-EV-PLN-S001-000036 C04).

4.3.2 There will be up to four (4) dust canons (Dustex Hydramist 50GT or similar) on site, each with a built-in 5,000l capacity. These are portable and able to be deployed to risk areas on the pad with a 30 – 40m water throw. The cannons will be fed by a water tank topped up by a mobile bowser and operated based on daily visual inspections.

4.3.3 Should drought conditions restrict the water supply or amount of water available then the Site Supervisor will decide to reduce the operations on site or cease operations in order to comply with water usage restrictions.

4.4 Procedures to control operations that may have an adverse impact on the environment

4.4.1 The Site Supervisor will be responsible for maintaining a check of dust from site activities in accordance with the Operating Plan. Should conditions arise where emissions have the potential to breach legislative requirements contained in the permit or planning conditions, corrective action will be taken in accordance with the Operating Plan. Should a complaint be received about dust or other emissions from external parties, the Site Supervisor will follow the Complaints Procedure (Section 6). Should a situation arise as a result of an incident and there is potential for dust to disperse offsite the Site Supervisor will follow the Incidents Procedure (Section 6).

4.4.2 Where pollution control abatement equipment in use, it will be maintained in accordance with the manufacturer's recommendations.

4.4.3 Where pollution monitoring equipment is in use, it will be calibrated and maintained in accordance with the manufacturer's recommendations. Records of maintenance and calibration will be kept on site.

4.4.4 Results of daily visual monitoring and measuring of dust will be recorded in the Site Diary.

4.4.5 A visual inspection template to be used to record daily visual inspection is provided in Appendix A2.

4.4.6 A trigger exceedance log template is provided in Appendix A3.

4.4.7 The Site Supervisor will maintain copies of all correspondence associated with air emissions monitoring to/from the relevant authorities.

4.4.8 Performance will be assessed by regular audits.

5 Monitoring of Dust, Fibres and Particulates

5.1.1 Monitoring and reporting will be undertaken in line with industry best practice and the Dust and Emissions Risk Assessment (see Appendix A).

5.1.2 An automatic continuous real-time particulate monitor (PM10) (Osiris Monitor) which meets MCERTS performance standard for indicative ambient particulate monitors, will be installed and operational at the western site boundary of the site towards the nearest sensitive residential premises (approx. 100m to the west of the storage bins area and immediately north of the topsoil storage area). The monitor forms part of a network of multiple dust monitors around SCSJV sites in the area and the wider HS2 route in London. The Air Quality Specialist who manages the dust monitors will liaise closely with the facility site supervisor on monitored data and site dust management in general.

5.1.3 Instruments shall be serviced and calibrated according to the manufacturer's specification are summarised as follows:

- All servicing to be carried out by appropriately trained staff and records of service visits kept;
- Flow checks should only be conducted with calibrated rotameters;
- Data verification and ratification for PM concentration data should be carried out by appropriately trained and experienced personnel; and
- The service record of instruments shall be retained for inspection.

5.1.4 Staff installing and operating the instruments shall be trained in the set-up and operation of the instruments. Staff training records shall be kept.

5.1.5 Monitoring data shall be transmitted from the measurement instrument to a web-based software system which collects, manages, and displays the results on a secure site. This software shall retain a searchable database of results, allow downloading of results which can be opened in Excel and have the capability to prepare automated reports.

5.1.6 The instruments shall be physically inspected on a regular basis, to ensure that the sampling position remains appropriate.

5.1.7 Monthly monitoring reports will be published at: https://www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2. These will include a summary of the activities occurring, any complaints received, the data recorded over the monitoring period broken down into appropriate time periods, any period in exceedance of the trigger alert level (see section 5.1.13 below) and the result of any

investigations and identified source, and where the works have been found to be the source, any action taken to immediately resolve the issue and prevent a recurrence.

5.1.8 Monitoring site action level is set at 75µg/m^3 (over a 5-minute average), as a tool to provide near-real time feedback to the site team. In the event that a trigger alert is received, immediate investigations will be undertaken, works will be paused, and the cause is investigated. If the trigger is deemed to be associated with on-site activities, the mitigation methods will be reassessed, as appropriate, before activities recommence. The outcome of trigger alerts and investigation will be notified to EA, LB Hillingdon and HS2 as soon as practicable and within 48 hours.

5.1.9 SCSJV will endeavour to notify the London Borough of Hillingdon and the Environment Agency as soon as reasonably practicable following receipt of a trigger alert.

5.1.10 Daily visual inspections of the transfer station and access roads will be undertaken by the Site Supervisor or their nominee at least twice during each working day (start of day and mid-day as a minimum). A record of the inspections and their findings, together with the prevailing weather conditions, will be kept in a logbook made specifically for this purpose.

6 Complaints and Incident Management

6.1 Incident Response

6.1.1 The SCSJV has adapted its incident management procedures to align with the HS2 incident management process which, in summary includes:

- A three-tier response command structure (Gold, Silver, Bronze) to manage an incident;
- A single process for the management of all events that constitute an incident, with defined levels to help frame the response – Levels 1 to 4 (Level 1 being the most serious incidents);
- A 24-hour, 365-day Help Desk, operated by HS2, to start the co-ordination of HS2's response to an incident and to support the SCS JV where appropriate. The help desk is the first point of contact (0207 944 6570) to HS2. for all Level 1 and 2 incidents on the programme; and
- An internal project, on-line incident reporting system (HORACE) that records the details of an incident and supports communications, investigation, and follow-up activities to avoid a recurrence.

Air Quality Specific incidents

Exceedance of dust trigger levels

6.1.2 Monitoring will be used to ensure the effectiveness of these onsite mitigation measures and demonstrate compliance with the EMRs.

6.1.3 Continuous real-time monitoring will be configured to provide real time access to data and allow alerts (by text, email, or other means) to be sent to designated recipients when levels approach or exceed predetermined thresholds. A trigger action level of 75µg/m^3 (5-minute average) will be adopted. Any exceedance, or potential exceedance, of dust thresholds will trigger an alert and subsequent investigation.

6.1.4 Recipients of trigger alerts will include the RSSP-WTS Site Supervisor, Environmental Manager/Advisor, Air Quality Specialist and HS2 Air Quality Team.

6.1.5 If the alarm is triggered, the following process will be followed:

- The site team nominated person (or a delegated representative) will investigate activities on site, as quickly as reasonably practicable, to ascertain if any visible dust is emanating from the site or if any activities are occurring on site that are not in line with the dust control measures;

- Any identified causes will be rectified where practicable and actions recorded in the site logbook and reported to the nominated undertaker. The nominated undertaker will report this to the relevant authority as soon as reasonably practicable after it has been informed by its contractors;
- If the source of the incident cannot be identified as originating from the site operations, operations of other nearby construction sites and other activities will be investigated for potential causes of the alarm. Other sites' particulate matter monitoring data may be available to assist this investigation; and
- If the source of the alarm is not related to the site operations, the outcome of any investigation and associated actions will be recorded in the site logbook.

6.1.6 Environmental Managers/ Advisors will coordinate investigation of any exceedances, with the construction team being required to consider the immediate cause of any exceedance and, where necessary, implement suitable control measures. The AQ Specialist shall provide monitoring data and interpretation to support the investigation.

6.1.7 The Air Quality Specialist will provide the outcome of the investigation to HS2 within 48 hours or sooner following the exceedance of the trigger action level, via the HS2 Trigger Alert email airquality.triggers@hs2.or.uk who will in turn notify the relevant local authority as soon as reasonably practicable.

6.1.8 The monthly dust monitoring report will include a summary of the trigger level, the measured exceedance level, the likely causes of the exceedance, a description of relevant on-site activities and actions taken for verification/ remediation.

6.2 Complaints

6.2.1 HS2 operate the HS2 Public Help Desk 24 hours per day, 7 days a week, to manage all complaints, handle enquiries and co-ordinate incident response. The SCSJV community engagement team will maintain a 24/7 contact with the helpdesk and be available to answer any queries or liaise with site supervisors for investigation and resolution of complaints.

7 References

The following documents have been referred to in this report.

Reference	Title	Document Number
R1	HS2 Environmental Minimum Requirements Annex 1: Code of Construction Practice	LWM-HS2-EV-STA-000-000107
R2	Local Environmental Management Plan - London Borough of Hillingdon	P1S-HS2-EV-REP-S000-000007
R3	HS2 Air Quality Strategy	https://www.gov.uk/government/publications/hs2-air-quality-strategy
R4	Hs2 Information Paper E31:Air Quality	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672406/E31_-_Air_Quality_v1.5.pdf
R5	HS2 Air Quality Action Plan	https://www.gov.uk/government/publications/hs2-air-quality-action-plan
R9	Waste Transfer and Treat Station Permit Application Form - Ruislip Southern Sustainable Placement S2	1MC04-SCJ_SDH-EV-FRM-SS05_SL07-000011
R10	Non-Technical Summary	1MC04-SCJ_SDH-EV-NOT-SS05_SL07-000008
R11	Site Condition Report - Waste Transfer and Treat Station - Ruislip Southern Sustainable Placement S2	1MC04-SCJ_SDH-EV-REP-SS05_SL07-000009
R12	Site Operating Plan - Waste Transfer and Treat Station - Ruislip Southern Sustainable Placement S2	1MC04-SCJ_SDH-EV-PLN-SS05_SL07-000016
R13	Management Systems and Procedures - Waste Transfer and Treat Station - Ruislip Southern Sustainable Placement S2	1MC04-SCJ_SDH-EV-PRO-SS05_SL07-000004
R14	Noise and Vibration Management Plan - Waste Transfer and Treat Station - Ruislip Southern Sustainable Placement S2	1MC04-SCJ_SDH-EV-PLN-SS05_SL07-000015
R15	Highways Agency (2007), Design Manual for Roads and Bridges, Volume 11 Section 3, Part 1 GA 207/07 Air Quality	https://www.standardsforhighways.co.uk/dmrb

R16	Highways Agency (2007), Design Manual for Roads and Bridges, Volume 11 Section 3, Part 1 GA 207/07 Air Quality	https://www.standardsforhighways.co.uk/dmrb
R17	Virtual Met Mast report for HS2 Route (OOC Station to Bromford Tunnel West Portal) 2014	
R18	Drainage Technical Report, MDL Code: TW-RSP-SSP	1MC04-SCJ-EN-REP-SS05_SL07-000027
R19	Technical Guidance WM3: Waste Classification - Guidance on the classification and assessment of waste. Version 1.1.GB. Jan 2021 (EU Exit Update)	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948735/Waste_classification_technical_guidance_WM3.pdf

Appendix A - Dust Risk Assessment

Appendix A1. Fugitive Dust and Emissions Risk Assessment

What do you do that can harm			Assessing the risk(Unmitigated)			Managing the Risk	Residual Risk(mitigated)		
Hazard	Receptor	Pathway	Probability of exposure	Consequence	What isthe overall risk?	Risk management	Probability of exposure	Consequence	What is theoverall risk?
Exhaust emissions from road vehicle movements on site including entering and leaving the site.	Residents to the west on Harvil Road and to the East / Southeast on Breakspear Road	Air	Medium	Medium	Medium	• All road vehicle movements to the site will be prebooked and allocated delivery times to prevent queuing of vehicles at the site entrance off Harvil Road • All Light Duty Vehicles will meet Emission Standard Euro 6 (Diesel) and Euro 4 (Petrol). • All Heavy Good Vehicles (HGVs) will meet Emission Standard Euro VI. • All road vehicles will be maintained in accordance with the manufacturer's instructions and hold a current MOT. • A noticeboard summarising the site rules for visiting drivers is displayed in a prominent position adjacent at the site entrance, and a complete set of rules will be displayed in the site office. Copies of the site rules will be available for issue to visiting drivers. • Movement of road vehicles around the site will be kept to the minimum reasonable for the effective and efficient operation of the site. • Vehicles will be switched off when not in use.	Low	Low	Low
Exhaust emissions from on site Machinery (Non-road Mobile Machinery – NRMM)	Residents to the west on Harvil Road and to the East / Southeast on Breakspear Road	Air	Medium	Medium	Medium	• All relevant NRMM (with a power rating between 37-560kW) will meet a minimum emission standard Euro Stage IIIB*and Stage IV* from 1st January 2022. *IIIA for constant speed engines of any power i.e. generators. NRMM meeting emission standard Euro Stage V or using alternative low/zero emission technology (e.g. hydrogen or electric) will be preferred depending on market availability. • All NRMM will be operated in accordance with the manufacturer's written recommendations. • On-site NRMM will be switched off and secured when not in use on site.	Low	Low	Low

What do you do that can harm			Assessing the risk(Unmitigated)			Managing the Risk	Residual Risk(mitigated)		
Hazard	Receptor	Pathway	Probability of exposure	Consequence	What isthe overall risk?	Risk management	Probability of exposure	Consequence	What is theoverall risk?
						• NRMM exhausts to be directed away from the ground and positioned at a height to facilitate appropriate dispersal of exhaust emissions. • Movement of NRMM around the site will be kept to the minimum reasonable for the effective and efficient operation of the site. • The use of diesel or petrol-powered generators will be reduced by using mains electricity or battery-powered equipment where reasonably practicable. • All NRMM will use ultra-low-sulphur diesel or Hydrogenated Vegetable Oil (HVO). • NRMM maintenance records will be kept on site and reviewed regularly.			
Dust emissions from the waste delivery to site by the conveyor system	Residents to the west on Harvil Road and to the East / Southeast on Breakspear Road	Air	Medium	Medium	Medium	• The conveyor belt system will be enclosed for its length of travel within the site. • The conveyor belt system will have a suitable belt cleaning system (scrapers/brushes and watering) to prevent the build-up dry friable materials on the conveyor. • A mist spray system of nozzles will be fitted to the exit shroud of each conveyor belt discharge and operated, as required, to avoid fugitive dust emissions form the waste materials becoming air borne beyond the discharge point. • The conveyor system will be regularly inspected and maintained in accordance with the manufacturer's instructions to ensure the belt cleaning and dust suppression systems are working effectively and efficiently. • Drop heights from the conveyor to stockpiles will be kept to the reasonably practicable minimum. • The waste material storage area (muck bin storage area) will comprise walls on western, northern and eastern facades to roof level and the 7,850m^2 area will be roofed.	Low	Low	Low

What do you do that can harm			Assessing the risk(Unmitigated)			Managing the Risk	Residual Risk(mitigated)		
Hazard	Receptor	Pathway	Probability of exposure	Consequence	What isthe overall risk?	Risk management	Probability of exposure	Consequence	What is theoverall risk?
						• An automatic continuous real-time particulate monitor (PM10) (MCERTS indicative) will be installed and operational at the western site boundary towards the nearest sensitive residential premises (approx. 100m to the west of the storage bins area and immediately north of the topsoil storage area. The monitors have a site action level set at 75µgm-3 based on a 5-minute average, which if triggered will send an email alert to relevant site and project personnel and instigate cessation of work and investigation into the source of the trigger. Corrective action will be implemented before recommencement of site operations. The outcome of trigger alerts and investigation will be notified to EA, LB Hillingdon and HS2 as soon as practicable and within 48 hours. All monitoring data, trigger alert investigations and complaint investigations are reported on the www.gov.uk website.			
Dust emissions from loading and storage of lime /ggbs in silos	Residents to the west on Harvil Road and to the East / Southeast on Breakspear Road	Air	Medium	Medium	Medium	• Lime/ggbs will only be stored on site within the designated silos. • Dust emissions from unloading road tankers shall be minimised by venting to the silo filter using a delivery tanker fitted with an on-board, truck-mounted relief valve and filtration system, and by connecting transfer lines first to the delivery inlet point and then to the tanker discharge point, and by ensuring delivery is at a rate which does not pressurise the silo. • Bulk lime/ggbs tanker transfer lines will be securely connected to the silo delivery inlet point first, and then the tanker discharge point before the delivery commences. Materials will be delivered at a controlled rate, and the rate adjusted to prevent pressurisation of the silo. • Silos shall not be overfilled or over pressurised and there shall be an overfilling and over pressure warning alarm. • Deliveries will automatically stop where overfilling or over-pressurisation is identified.	Low	Low	Low

What do you do that can harm			Assessing the risk(Unmitigated)			Managing the Risk	Residual Risk(mitigated)		
Hazard	Receptor	Pathway	Probability of exposure	Consequence	What isthe overall risk?	Risk management	Probability of exposure	Consequence	What is theoverall risk?
						• Displaced air from pneumatic transfer shall pass through filtration prior to emission to air. • The filter systems will be regularly inspected and cleaned to prevent blockages and accumulation of powder in the filter system.			
Dust emissions from stockpile management within the muck storage bin area	Residents to the west on Harvil Road and to the East / Southeast on Breakspear Road	Air	Medium	Medium	Medium	• The height of waste material stockpiles will always be at least 0.5m below the top of the 3.8m walls. • Drop heights from vehicles/NRMM involved in the transfer of materials on the site will be kept to the reasonably practicable minimum. • Vehicles/NRMM transporting materials within the site will not be overloaded • Daily cleaning and suppression of dust in the muck storage bin area will be supplemented using a road sweeper (7t or larger) and / or large capacity vehicle pulled (HGV), or driven, water bowser. • The number of handling operations of stockpiled waste materials will be kept to the minimum reasonably practicable. • A visual inspection of operations within the muck storage bin area will be undertaken at regular intervals during the day and recorded. Any shortfalls in 'housekeeping' and effectiveness of dust suppression will be identified and rectified promptly.	Low	Low	Low
Dust emissions from road vehicles and NRMM movements on site including entering and	Residents to the west on Harvil Road and to the East / Southeast on Breakspear Road	Air	Medium	Medium	Medium	• On site speed limit for any vehicle/NRMM will be 5mph. Speed limit signage will be displayed at the site entrance and around the haul route and enforced by on-site traffic marshals. • The entrance / egress of the site and haul road that circles the waste material storage area (muck storage bins) will comprise an impermeable concrete slab. • The haul road serving the topsoil storage area (south of the wooded area) will comprise course granular compacted materials.	Low	Low	Low

What do you do that can harm			Assessing the risk(Unmitigated)			Managing the Risk	Residual Risk(mitigated)		
Hazard	Receptor	Pathway	Probability of exposure	Consequence	What isthe overall risk?	Risk management	Probability of exposure	Consequence	What is theoverall risk?
leaving the site via Harvil Road.						• A visual inspection of haul routes ('housekeeping' and repair) will be undertaken at regular intervals during the day and recorded. Any shortfalls in 'housekeeping' will be identified and rectified promptly. Similarly, repairs will be arranged and implemented. • Daily cleaning and suppression of dust on haul routes will be carried out using a road sweeper (7t or larger) and / or large capacity vehicle pulled (HGV), or driven, water bowser. • Manual jet washes (estimated inventory of 4-6) and sweeping facilities will be available on site for cleaning of small/limited areas where access for larger road sweeper and vehicular water bowsers is limited / prevented. • The frequency of cleaning during the day will be suitable for the purposes of suppressing dust emissions and preventing friable deposits on haul routes. • All HGV road vehicles and NRMM leaving the site will use the automated wheel-wash facility. All vehicle wheels will be subsequently checked and if necessary be resent through the wheel wash for further cleaning prior to the site egress at Harvil Road. • An automatic continuous real-time particulate monitor (PM10) (MCERTS indicative) will be installed and operational at the western site boundary towards the nearest sensitive residential premises (approx. 100m to the west of the storage bins area and immediately north of the topsoil storage area. The monitors have a site action level set at 75µgm-3 based on a 5-minute average, which if triggered will send an email alert to relevant site and project personnel and instigate cessation of work and investigation into the source of the trigger. Corrective action will be implemented before recommencement of site operations. The outcome of trigger alerts and investigation will be notified to EA, LB Hillingdon and HS2 as soon as practicable and within 48 hours. All monitoring data, trigger alert			

What do you do that can harm			Assessing the risk(Unmitigated)			Managing the Risk	Residual Risk(mitigated)		
Hazard	Receptor	Pathway	Probability of exposure	Consequence	What isthe overall risk?	Risk management	Probability of exposure	Consequence	What is theoverall risk?
						investigations and complaint investigations are reported on the www.gov.uk website. • Movement of vehicles / NRMM around the site will be kept to the minimum reasonable for the effective and efficient operation of the site. • Drop heights from excavators to vehicles/NRMM involved in the transport of materials between stockpiles and road haulage vehicles or NRMM will be kept to the reasonably practicable minimum. • The number of handling operations of stockpiled waste materials will be kept to the minimum reasonably practicable.			
Dust emissions from stockpile management within the topsoil storage area	Residents to the north on Harvil Road and to the East / Southeast on Breakspear Road	Air	Medium	Medium	Medium	• A sufficient number of dust canons will be located within the topsoil storage area (estimated up to 4 depending on size) and operated to avoid fugitive dust emissions from the waste materials and deposits on the off-haul route areas becoming airborne. • Drop heights from vehicles/NRMM involved in the transfer of materials on the site will be kept to the reasonably practicable minimum. • Vehicles/NRMM transporting materials within the site will not be overloaded • Daily cleaning and suppression of dust in the topsoil storage area will be supplemented using large capacity vehicle pulled (HGV), or driven, water bowser. • The number of handling operations of stockpiled waste materials will be kept to the minimum reasonably practicable. • A visual inspection of operations within the topsoil storage area will be undertaken at regular intervals during the day and recorded. Any shortfalls in the effectiveness of dust suppression will be identified and rectified promptly.	Low	Low	Low

What do you do that can harm			Assessing the risk(Unmitigated)			Managing the Risk	Residual Risk(mitigated)		
Hazard	Receptor	Pathway	Probability of exposure	Consequence	What isthe overall risk?	Risk management	Probability of exposure	Consequence	What is theoverall risk?
						• Seeding, sealing of completed earthworks will be undertaken as soon as reasonably practicable following completion of the materials transfer to the topsoil storage area.			

Appendix A2 Visual Inspection Template

Daily Dust Visual Inspection								
Work Package			Ruislip Southern Sustainable Placement area Waste Transfer Station (RSSP-WTS)				Month	
Work Package Number							Programmed Work for the Month (*consider control measures in advance*)	
Work Package Description								
Site Address			Ruislip, London Borough of Hillingdon					
Date	Day	Observer		Risk of Dust Emissions?		If Yes		
			Proposed activities today	Yes	No	Why Risk?	Proposed Control Measures	Observations after Control Measures Implemented
1st								
2nd								
3rd								
4th								
5th								
6th								
7th								
8th								
9th								
10th								
11th								
12th								
13th								
14th								
15th								
16th								
17th								
18th								
19th								
20th								
21st								
22nd								
23rd								
24th								
25th								
26th								
27th								
28th								
29th								
30th								
31st								

Appendix A3 Trigger Exceedance Log

Trigger Exceedance Log						
Work Package			Ruislip Southern Sustainable Placement area Waste Transfer Station (RSSP-WTS)			
Work Package Number						
Work Package Description						
Site Address			Ruislip, London Borough of Hillingdon			
Date dd/mm/yyyy	Time /Period	Dust Monitoring Site ID (AQ27 and AQ?)	Investigator	Reason for Trigger	Action Taken	Recommendation(s)

Appendix B – Drawing References

Please see:

1MC04-SCJ_SDH-LS-DGA-SS05_SL07-711019

1MC04-SCJ_SDH-LS-DGA-SS05_SL07-711020

1MC04-SCJ_EN-SKE -SS05_SL07-650028

1MC04-SCJ_EN-SKE -SS05_SL07-650029

1MC04-SCJ_EN-SKE -SS05_SL08-000048