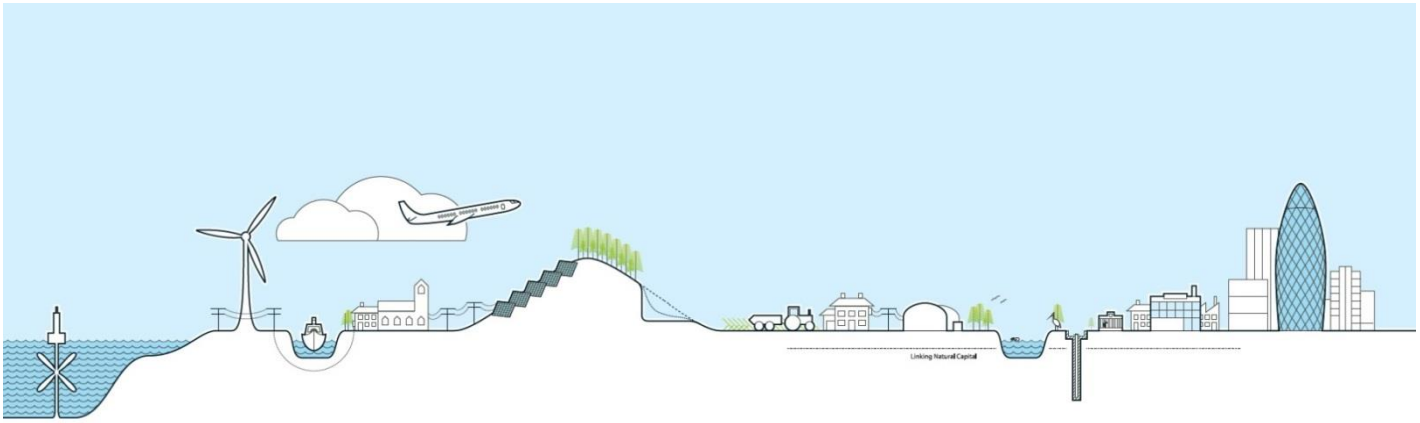
Bridgwater Resource Recovery Facility

Dust Management Plan

March 2020

Prepared By

aardvark
environment matters



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Location: **Showground Road, Bridgwater, Somerset, TA6 6AJ**

Grid Reference: ST 30970 35064

Project Manager: Jon Pettitt MSc PIEMA

Report Author: Dr Alan Taylor CEng MEI

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Report Written and Produced By

Aardvark EM Limited, Higher Ford, Wiveliscombe, Taunton, Somerset, TA4 2RL

Telephone: 01984 624989, Facsimile: 01984 623912

Email: environment@aardvarkem.co.uk, Web: www.aardvarkem.co.uk

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1 Introduction

1.1 Site Location

The development site is located off an existing industrial estate on vacant land, approximately 2km to the south Bridgwater town centre, and 13km to the north east of Taunton in Somerset. The site is adjacent to the M5 motorway to the east and close to the Bridgwater & Taunton Canal and railway line to the north-east. See Figure 1 (the site location is indicated by the red rectangle).

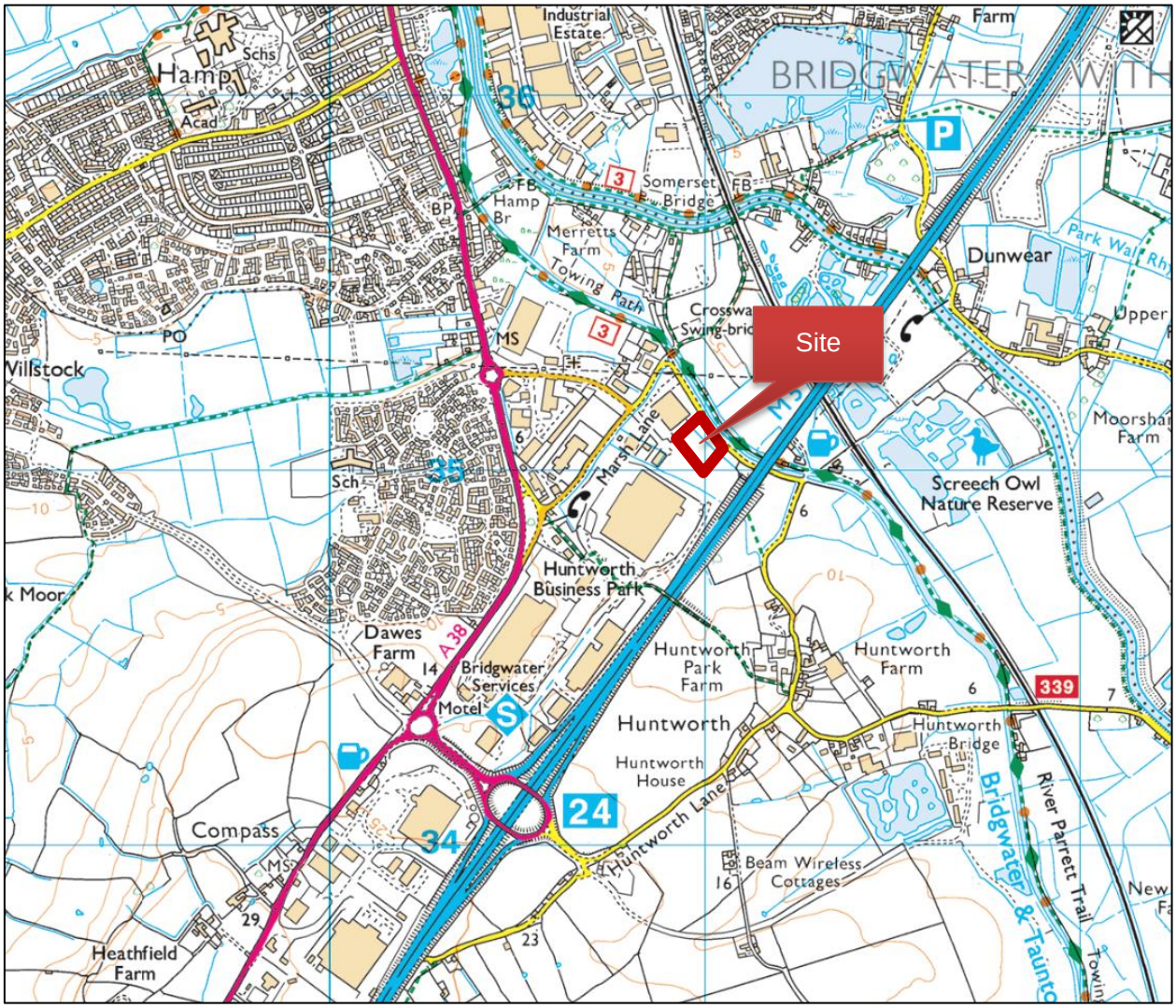


Figure 1: Site location

1.2 Proposals

In summary, the proposal comprises of:

- An Energy Recovery Facility (ERF) with a maximum site throughput of 130,000 tpa and a stack of 40m height above ground level;
- The ERF will comprise of a mass incineration system, fed by single line, linked to a dual burner system. The fuel used in the plant will be refuse derived fuel (RDF), which will be sourced and delivered to the site by a third party on a contracted basis;

- A steam turbine driven power generation capacity of approximately 9.58MW of electricity;
- Grid connection cables, plant and equipment including a high voltage power distribution system to enable electricity to be supplied to the public supply network;
- Infrastructure to enable Combined Heat and Power (CHP) which includes the provision of a steam take off; and
- Installation of weighbridges, access and internal roads and parking facilities.

The energy recovery operation will run on a 24/7 basis, and the site will be permanently staffed. The acceptance of RDF will be restricted to specified hours.

1.3 Role of this report

This dust management plan has been prepared in order to support the requirement of the permit application for the facility.

2 Objectives of this dust management plan (DMP)

The objective of this document is to detail the measures that will be employed to control dust emissions and manage the potential environmental impacts from dust that could arise during the construction and operational phases at the facility.

Specifically, the scope of this Dust Management Plan will consider:

- The site setting: identification of sensitive receptors and site-specific meteorological conditions that may affect dust dispersion;
- Dust sources and their control;
- Monitoring procedures;
- Triggers for management actions; and
- Management, communication and reporting information.

3 Site Setting: Receptors and Meteorological Conditions

The determination of appropriate dust control measures requires consideration of the potential dust impacts. The potential for dust impacts is determined by the potential for dust generation, the distance to, and sensitivity of, receptors in the surroundings and prevailing meteorological conditions (precipitation, wind speed and direction).

3.1 Site Surroundings and Potential Receptors

3.1.1 Local sensitive receptors

Figure 2 illustrates the site in relation to its surroundings and the range of potential receptors.

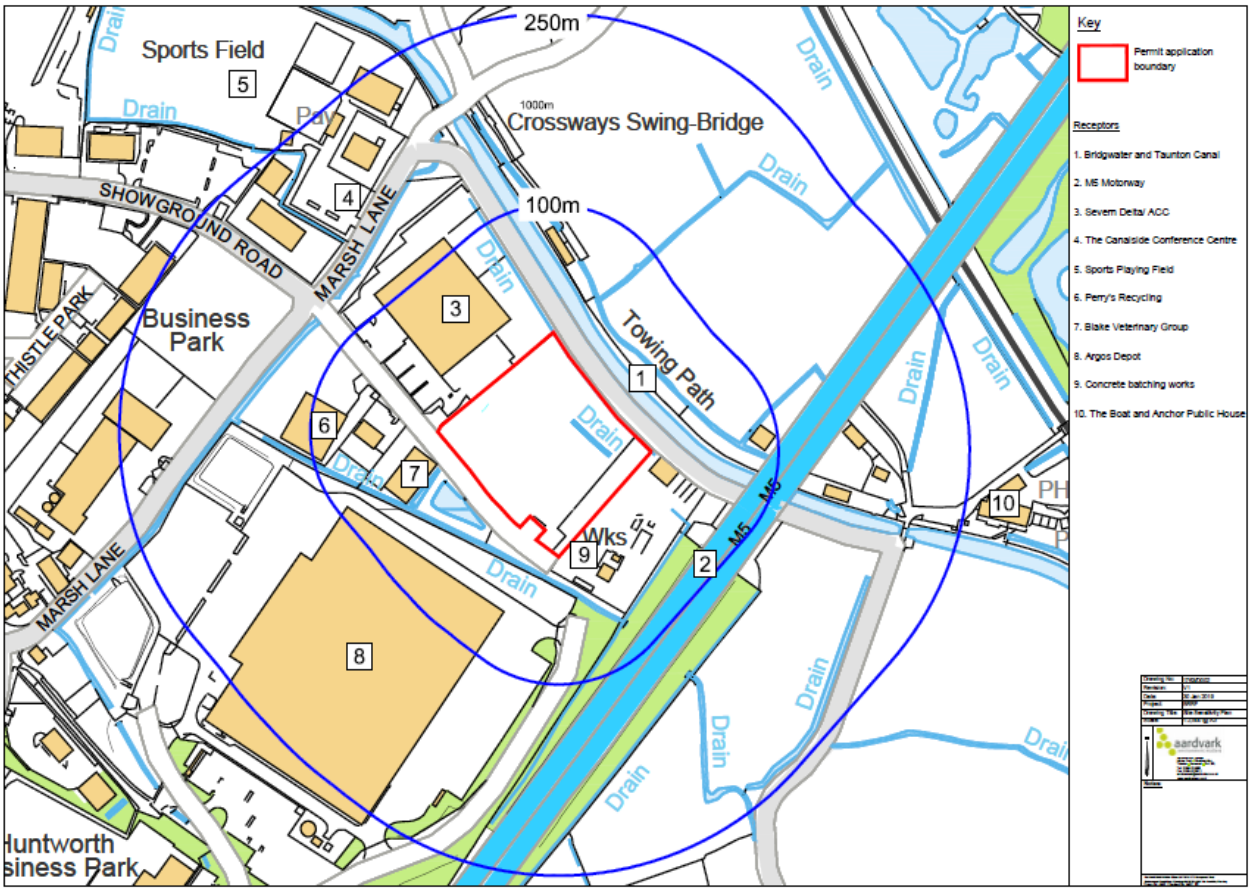


Figure 2: Site and Surrounding Sensitive Receptors

Whilst the site is located within an existing industrial and commercial area and alongside the M5 Motorway, there are sensitive residential and commercial properties within 200m of the site boundary. In addition, the area provides a variety of leisure facilities (sports pitches and fishing lakes) and the site is bounded by the Taunton and Bridgwater Canal, which acts as a linear park.

The nearest ecologically sensitive receptors are associated with the Bridgwater and Taunton Canal bounding the north east of the site. A local Wildlife Site and Local Nature Reserve are situated within 300m of the eastern site boundary. Additional local wildlife sites within 1km of the site have now been developed to housing.

Human	Ecological
Bridgwater and Taunton Canal path	Local Nature Reserve (Screech Owl)
Canal side collages off Marsh Lane (x4)	Local Wildlife Site to NE of Canal
Commercial and industrial premises on Showground Road/Marsh Lane	
Sports Pitches at Canal side Conference Centre	
Boat and Anchor Inn	
Housing to the West of A38 Taunton Road (Stockmoor)	

Table 1: **Potential sensitive dust receptors**

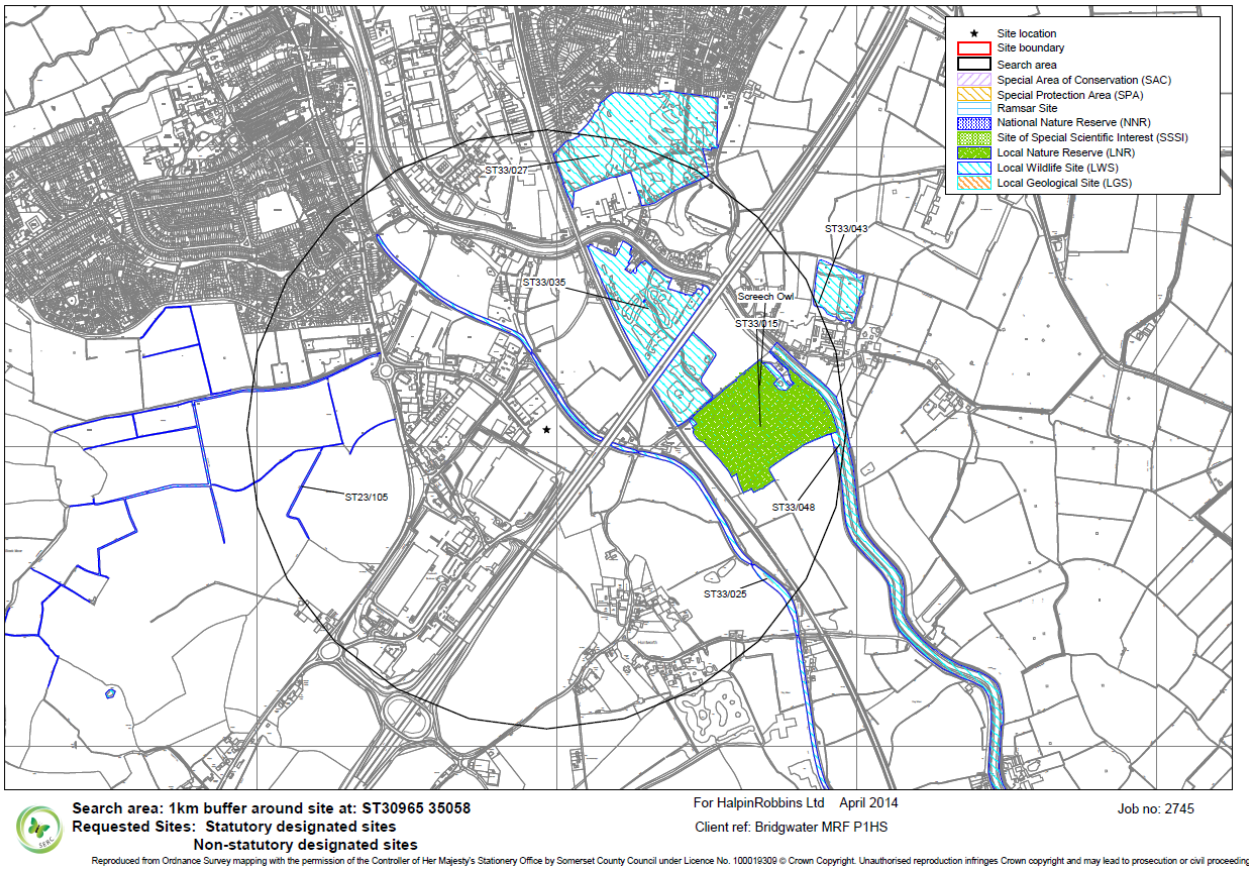
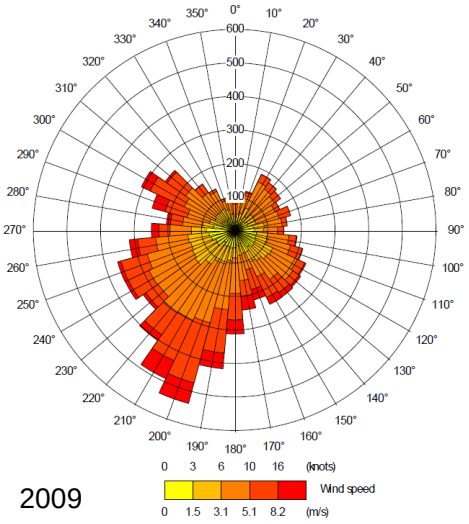


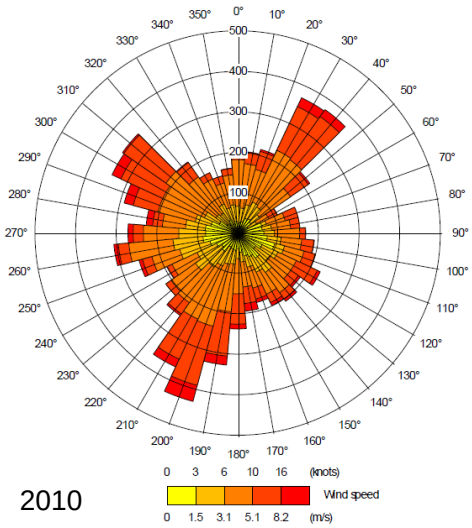
Figure 3: Statutory and non-statutory designated sites

3.1.2 Meteorological Conditions

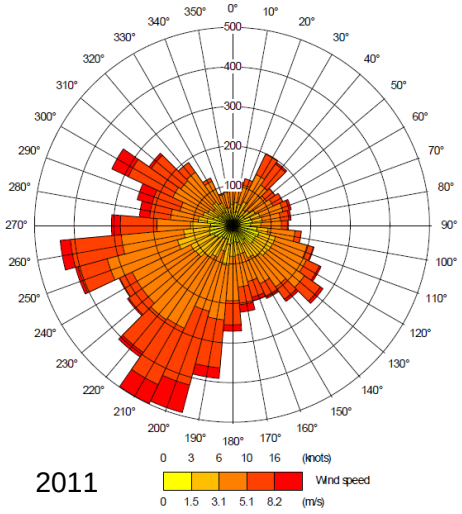
Research has shown that winds greater than 3m/s are capable of suspending and carrying dusts. A wind rose montage presenting the frequency of wind direction and speed over eight years (2009-2016) at the site is presented in Figure 4 below. This provides confirmation of the prevailing SW airflow, and that the strongest wind speeds can be expected from that direction and therefore receptors to the north-east of the site are most at risk.



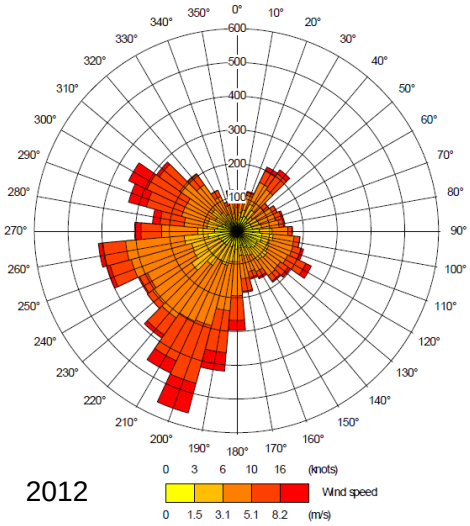
2009



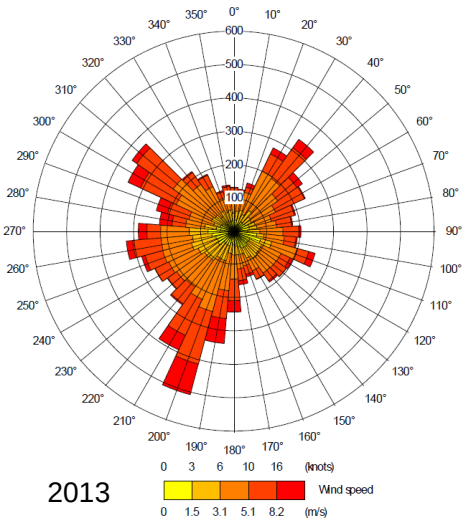
2010



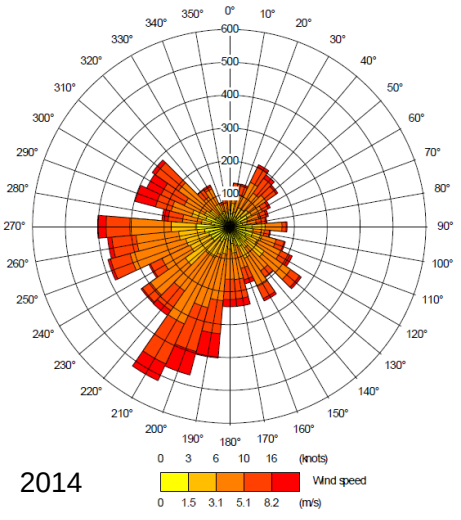
2011



2012



2013



2014

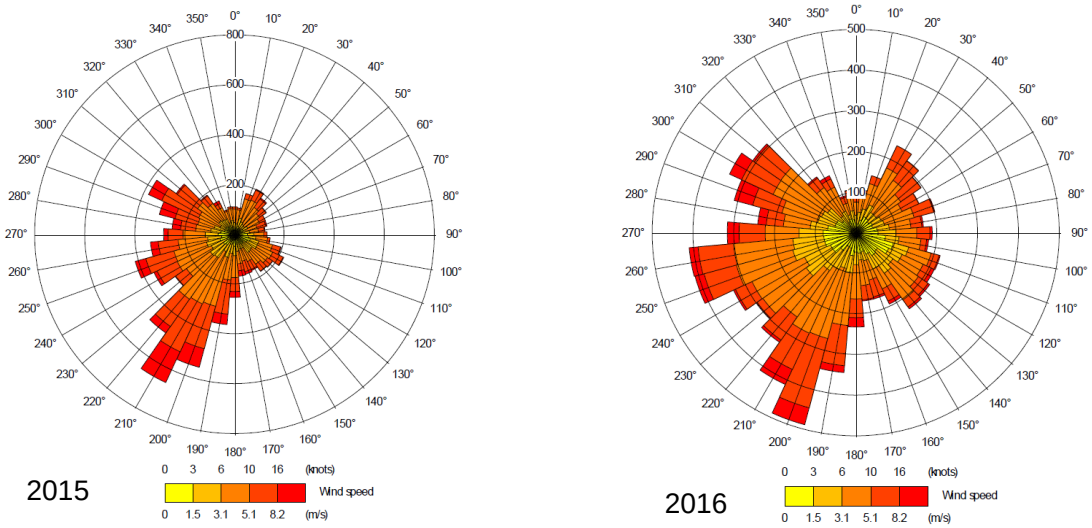
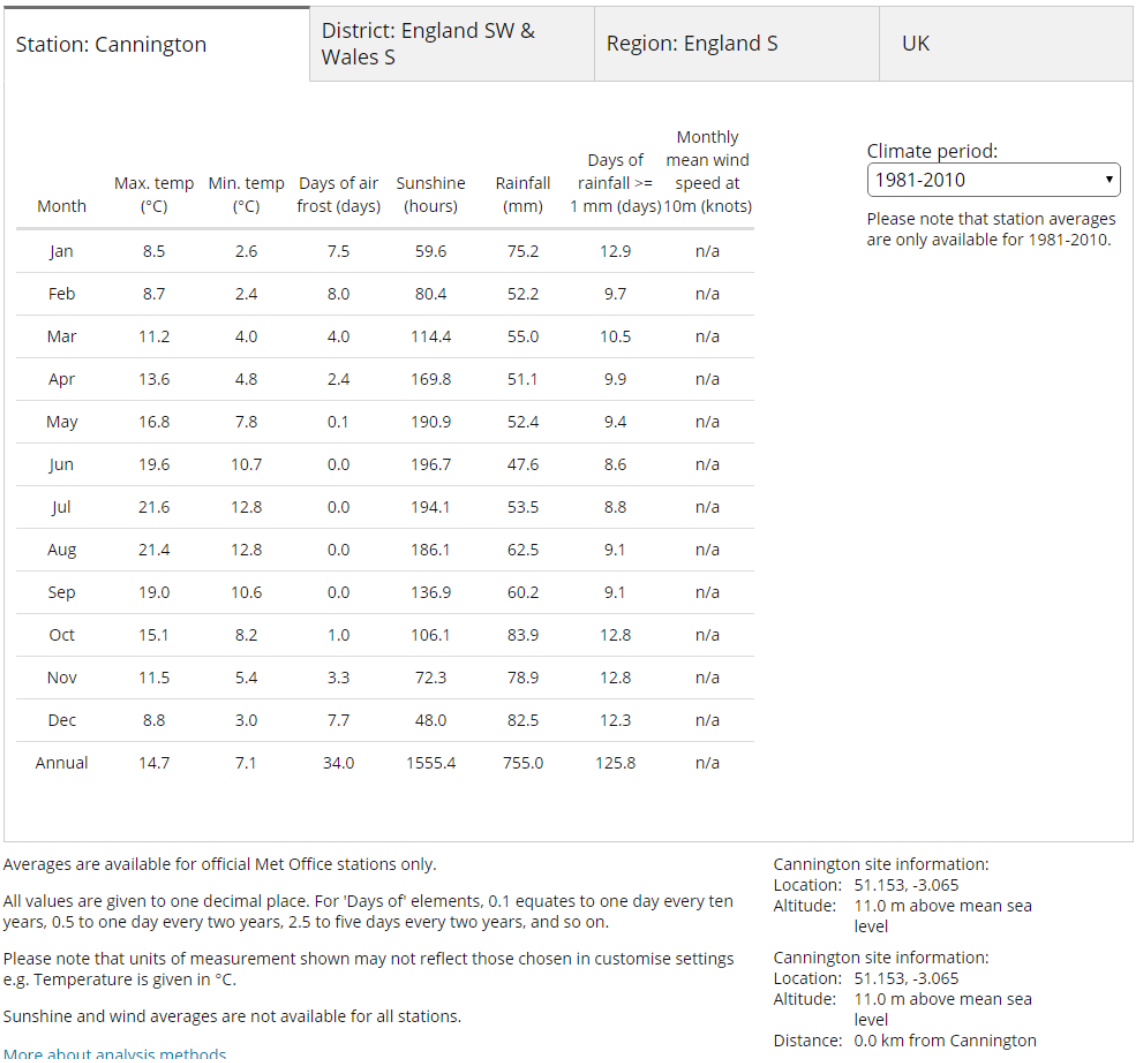


Figure 4: Illustrative wind strength and directional data from 2009-2016[1]

Rainfall is a natural dust suppressant, with rainfall of greater than 0.2mm per day is considered sufficient to effectively suppress wind-blown dust emissions. The data presented in Figure 5 below presents average rainfall data for the area and indicates that typically in any month there may be up to 22 days in which dust control measures may need to be applied in the absence of sufficient rainfall to control fugitive dust emissions. This highlights the need for monitoring of weather forecasts in order to be pro-active in the application of dust control measures.

[1] Air Quality Assessment: Energy from Waste, Land at Showground Road, Bridgwater. Air Quality Consultants Ltd, July 2014



Station: Cannington | District: England SW & Wales S | Region: England S | UK

Climate period: 1981-2010

Please note that station averages are only available for 1981-2010.

Month	Max. temp (°C)	Min. temp (°C)	Days of air frost (days)	Sunshine (hours)	Rainfall (mm)	Days of rainfall >= 1 mm (days)	Monthly mean wind speed at 10m (knots)
Jan	8.5	2.6	7.5	59.6	75.2	12.9	n/a
Feb	8.7	2.4	8.0	80.4	52.2	9.7	n/a
Mar	11.2	4.0	4.0	114.4	55.0	10.5	n/a
Apr	13.6	4.8	2.4	169.8	51.1	9.9	n/a
May	16.8	7.8	0.1	190.9	52.4	9.4	n/a
Jun	19.6	10.7	0.0	196.7	47.6	8.6	n/a
Jul	21.6	12.8	0.0	194.1	53.5	8.8	n/a
Aug	21.4	12.8	0.0	186.1	62.5	9.1	n/a
Sep	19.0	10.6	0.0	136.9	60.2	9.1	n/a
Oct	15.1	8.2	1.0	106.1	83.9	12.8	n/a
Nov	11.5	5.4	3.3	72.3	78.9	12.8	n/a
Dec	8.8	3.0	7.7	48.0	82.5	12.3	n/a
Annual	14.7	7.1	34.0	1555.4	755.0	125.8	n/a

Averages are available for official Met Office stations only.

All values are given to one decimal place. For 'Days of' elements, 0.1 equates to one day every ten years, 0.5 to one day every two years, 2.5 to five days every two years, and so on.

Please note that units of measurement shown may not reflect those chosen in customise settings e.g. Temperature is given in °C.

Sunshine and wind averages are not available for all stations.

More about analysis methods

Cannington site information:
Location: 51.153, -3.065
Altitude: 11.0 m above mean sea level

Cannington site information:
Location: 51.153, -3.065
Altitude: 11.0 m above mean sea level
Distance: 0.0 km from Cannington

Figure 5: Long Term Station Averages from Cannington (6 km NE of site)[2]

3.2 Other Potential Sources of Dust

Other local potential sources of dust include:

- Adjacent concrete and aggregate batching plant (Hopkins Concrete)
- M5 Motorway (on viaduct)

Other land uses adjacent to the site include distribution depots and commercial business uses.

[2] Met Office - https://www.metoffice.gov.uk/public/weather/climate/gcjg4205u

4 Construction Phase

4.1 Potential Dust Sources

During the construction phase the activities identified in the EIA most likely to generate dust are:

- Construction of access roads;
- Vehicles entering and leaving the public highway;
- Excavations and earthworks (laydown areas and landscaping);
- Stockpiles and storage mounds;
- Grading and levelling of ground prior to construction of the new access road; and
- Use of equipment for cutting, grinding, and external finishing.

4.2 Dust Control Measures

Dust mitigation measures that will be applied as required to mitigate the dust sources or dust generating activities are detailed in Table 2 below.

Potential Dust Sources	Control Measures
Construction and use of temporary and permanent site roads	• Surfacing of site roads as soon as possible, especially close to residential receptors • Wheel cleaning facilities between dirty and clean areas • Regular inspection of local highways to check for dust deposits and any deposits removed • Sheeting of vehicles carrying loose aggregate; • Implementation of appropriate speed limits in different areas of the site • Use of wet cleaning methods on haul roads as and when required • Regular inspection of site roads for maintenance and repair.
Excavation and earthworks	• All dusty activities will be damped down during dry weather; • Earthworks will be temporarily covered if required and re-vegetated as soon as practicable; and • Fall of materials (e.g. from excavator to dump-truck) will be controlled and drop heights minimised. • Sheeting of vehicles removing soils or excavated materials from site

Potential Dust Sources	Control Measures
Stockpiles / Storage Mounds	• Long-term stockpiles avoided; • Permanent noise or visual screening bunds to be vegetated as soon as practicable • Stockpiles, other than for screening, will not be situated within 75m of Canal • Any materials under 3mm in size will be stored within enclosures.
Use of construction equipment	• Only use of cutting, grinding or sawing equipment fitted with or used in conjunction with dust suppression techniques such as water sprays or local extraction

Table 2: Dust Control Measures

4.3 Monitoring

4.3.1 Weather Forecast

Weather forecasts available on the internet will be used to aid decision making, e.g. with regard to scheduling activities with a high potential to produce dust, identifying the need to commence additional damping down.

4.3.2 Wind Conditions

Banner flags that indicate wind direction will be installed on the site boundary to aid decision making with regard to the risk of dust impacts and appropriate mitigation.

4.3.3 Visual Dust Monitoring

A daily on-site and off-site visual inspection will be made and recorded in the site log, with particular attention paid to the Canal side cottages off Marsh Lane and the commercial properties in proximity to the site access on Showground Road. Daily inspections during the construction period will be the responsibility of the Main Contractor and will be carried out in accordance with their Environmental Management System. The Site Environment Manager will have specific responsibility for day to day administration of environmental tasks.

Visual surveys will make observations on:

- Dust plumes (dusts dispersing beyond the site boundary); and
- Dust soiling on surfaces such as cars or windowsills.

The frequency of inspections will be increased as appropriate in response to:

- Activities with a high potential to produce dust are being carried out;
- Prolonged periods of dry or windy conditions; and
- As part of an action in response to complaints.

Inspection results recorded in the site log.

4.4 Site Action Plans

The site action plans shall be 'triggered' in the event of:

- complaints received during or after a dust event; or
- Identification from visual monitoring of dust plumes crossing the site boundary

4.4.1 Complaint(s) Received (during dust event)

The following action plan presents the course of action that shall be taken in the event that a complaint is registered by a member of the public whilst the source of the problem is still in operation.

1.) Complaint registered by a member of the public
2.) Identify source of dust emissions on site and mitigate as soon as practicable
3.) If mitigation ineffective, cease operations until activity can be undertaken without significant dust emissions
4.) Complete dust event reporting in log book, recording on site meteorological conditions (including wind speed, wind direction and recent rainfall patterns)
5.) If dust complaints continue – investigate further mitigation methods that can be applied to the operation or activity
6.) Maintain correspondence with complainant and inform of actions taken

Table 3: Dust Event Action Plan

4.4.2 Complaint(s) Received (post dust event)

The following action plan presents the course of action that shall be taken in the event that a complaint is registered by a member of the public following the cessation of a dust event.

1.) Complaint received by a member of the public
2.) Investigate operations and weather conditions at the time of the event to identify source of dust emissions
3.) Complete dust event reporting in log book
4.) Implement dust mitigation measures reduce potential for repeat episode
5.) If dust complaints continue – investigate further mitigation methods that can be applied to the operation or activity
6.) Maintain correspondence with complainant and inform of actions taken

Table 4: Post-Dust Event Action Plan

4.4.3 Visual Monitoring of Dust Plumes across the Site Boundary

The following action plan presents the course of action that shall be taken in the event that a member of site personnel report visible plumes of particulate matter crossing the site boundary.

1.) Daily visual monitoring identifies dust plume beyond site boundary
2.) Record details of event and operations currently being undertaken on site
3.) Assess wind direction, i.e. whether the dust plume is travelling in the direction of sensitive receptors
4.) Identify dust source on site and investigate further mitigation measures or cease operations if mitigation proves in-effective
5.) Complete dust event reporting in log-book
6.) Continue visual monitoring to ensure source of dust has been effectively managed

Table 5: Visual plume monitoring procedure

4.5 Management

4.5.1 Management Responsibility

The construction site will be managed by a principal contractor who will be responsible for proper implementation of dust mitigation measures.

The key management roles with regard to the design and implementation of dust control at the construction site are the Project Manager, Construction Manager and Environmental Manager. Their roles are provided in detail in the site Environmental Management Plan, responsibilities that relate to any aspect of dust control are detailed below.

Project Manager: The Project Manager is responsible to the Employer and duties relating to the management of dust include:

- Responsible for implementation of the Employer's Environmental Policy and Sustainability Strategy and compliance with contractual requirements regarding Environmental Matters;
- Approval of control measures, and participation in regular reviews of theses to ensure their continued suitability and effectiveness;
- Designate responsibility for environmental control during the works;
- Regular meetings with project team members to review environmental matters;
- Regular reporting to the Employer on environmental matters; and
- Ensure adequate resources are made available.

Construction Manager: The Construction Manager is responsible for implementation of this plan on site with respect to all construction activities.

Environment Manager: The Environment Manager is directly responsible to the Project Manager for the day to day administration of environmental issues. This shall include, but not be limited to:

- Managing and advising on environmental matters affecting the Project;
- Implementing the EMS on the project;

- Reporting to the Project Manager on implementation of the Project Execution Plan (PEP), good environmental practice and sustainability measures.
- Carrying out regular internal audits and procedure review on environmental matters;
- Review and updating of environmental system procedures and method statements;
- Review and mitigate all environmental impacts of method statements;
- Record and maintain all environmental matters/incidents in accordance with reporting procedures; and
- Ensure all team members work in accordance with the PEP.

4.6 Communications

4.6.1 Contact Information

The relevant contact details shall be displayed at the site entrance to ensure that complaints can be registered. A 24hr emergency contact number will be set up and distributed accordingly to ensure enquiries can be registered at all times.

4.6.2 Community Liaison

A proactive approach will be established on site whereby newsletters are distributed to sensitive receptors identifying up and coming works on the project. The Community Liaison Officer will also regularly engage with receptors local to the project to ensure feedback and a point of contact is established should any queries arise.

With respect to dust, particular attention will be paid to informing the residents of residential properties off Marsh Lane if activities are scheduled which are known to result in a short-term higher risk of generating dust and the anticipated duration.

4.7 Records and Reporting

Records relating to the management and monitoring dust will be maintained as described below.

4.7.1 Daily Records

Daily records shall be maintained in the site log book and include the following details:

- Results of inspections and monitoring carried out by site personnel;
- Weather conditions from site observations;
- Problems including date, time, duration, prevailing weather conditions and the cause of problem;
- Details of corrective action taken and any subsequent changes to operational procedures; and
- Complaints received including address of complainant (if available).

Records of all monitoring, inspections and services of equipment shall be maintained on site and these records shall be made available to the regulator to examine on request.

4.7.2 Dust Event Reporting

Reporting of dust events shall be completed in the site log book; an example of the details to be recorded is presented below:

Dust Event Form	
Name of Author	
Description of Event (a)	
Date / Time	
Activities taking place during time of event	
Dust mitigation techniques employed at time of event	
Summary of weather conditions leading up to and during the event (Inc. wind speed, prevailing wind direction and rainfall patterns)	
Details of corrective actions	
Notes	
(a) e.g. complaint registered (name and address) or visible dust crossing site boundary during visual assessment	

Table 6: Example Dust Event Reporting Form

5 Operational Phase

5.1 Process overview

The following section provides an overview of the process which will be used within the ERF, with a focus on the identification of potential sources of dust release.

5.1.1 Delivery of waste

The ERF is designed for the incineration of refuse derived fuel produced from commercial and industrial wastes. Waste that consists entirely of high concentrations of only one component (e.g. plastic, biowaste, rubber etc.) can adversely affect the performance of the installation and will be avoided.

Waste will be delivered to the facility by covered tipping or walking floor bulk haulage vehicle, accessing the site from Taunton Road to the west.

Vehicles will enter the site and pass through the weighbridge. Following acceptance, they will travel to the Waste Reception Hall and will be directed to an area for tipping.

During unusually dry periods of weather the process of vehicles accessing the Waste Reception Hall, to deliver their waste load, is one of the main potential sources of dust associated with the operation of the facility. To minimise the potential for dust releases, the delivery door will open only as the vehicle reverses into the Waste Reception Hall. Once the vehicle is fully within the Waste Reception Hall, the door will close immediately to minimise any escape of process air from within the fully enclosed building.

Once the vehicle has discharged its load and has been cleared to leave the Waste Reception Hall by the Mobile Plant Operator or Operations Technician, the driver will be directed to exit by site signage through an available reception door to return to the weighbridge.

The reception hall is kept at negative pressure by the operation of the combustion process air fan. In situations where this may not be available due to breakdown or maintenance, the auxiliary air extraction system will provide permanence of negative pressure within the hall to prevent odour escape. The auxiliary system will consist of an appropriately sized air extraction fan passing throught a wet scrubbing unit and/or activated carbon filters.

5.1.2 Storage

Incoming waste will be stored in a waste storage bunker of a capacity of approximately 5,200m^3 and in a storage area within the reception hall suitable for approximately 1,650m^3. The bunker and storage area will facilitate the continuous operation of the plant, as it enables material delivered during the day to be stored and used on a 24-hour basis. The bunker will also provide sufficient storage to allow weekend and bank holiday operation when there are no waste deliveries, and for deliveries to continue during maintenance or plant shutdown.

The total storage of RDF onsite is therefore estimated to be 6,850m^3 at any one time and under normal operating conditions the duration of storage will be 4 days. The annual throughput of RDF to the plant is to be up to 130,000 tonnes per year.

The RDF to be used in all non-hazardous by classification and its standard properties are set out in Table 7 below.

Attribute	Value	Comment
Calorific value	9 MJ/kg – 14 MJ/kg 11MJ/kg	Value range Average Value
Average moisture content	30%	Not to exceed 40%
Average bulk density	175 kg/m^3	Range 110 – 300kg/m^3
Ash content	25%	Maximum value
Maximum dimension	350 mm	In longest axis

Table 7: Characteristics of the RDF to be utilised

5.1.3 Fuel feeding

The fuel in the bunker will be handled by an overhead crane that automatically spreads out the fuel, optimising the space for pit replenishment. The overhead crane is also used to load the boiler hopper. The operation of the overhead crane is fully automated via a PLC system, though it may be manually controlled if required.

From the hopper the fuel will pass onto a reciprocating feeding grate, which uses a hydraulic pusher to feed the fuel into the combustion chamber. The designed fuel consumption rate is 13 tonnes per hour.

5.1.4 Combustion Process

Once within the feed grate, waste is combusted with the aid of primary and secondary air to the combustion process which will be provided by electric fans. The gas temperature in the combustion chamber is maintained and adjusted by the recirculation fumes; this is used to control thermal NO_x created due to high temperatures in the chamber.

The combustion process is provided with a fuel oil fired start-up burner for ignition from cold.

The hot gases from combustion pass through a boiler where the heat is transferred to the water circuit and where steam is raised. Subsequently, the flue gases exiting the boiler are cleaned and discharged to atmosphere.

Two systems are used to extract ash from the combustion chamber and boiler surfaces. Bottom ash (from the combustion grate) is collected within a quenched system from hoppers beneath the grate and conveyed to a dedicated collecting room. Fly ash, from radiant and conductive parts of the boiler, is transported by an enclosed screw and chain conveyor system to a dedicated silo.

In addition, the facility is equipped with a Selective Non-Catalytic Reduction (SNCR) system that can dose an aqueous solution of urea with a concentration of 40% to reduce fuel NO_x.

5.1.5 Power Generation

The combustion gases will flow from combustion chamber through the boiler, where they will transfer the heat to the boiler pipes where the water evaporates. The steam is then “superheated” via the boiler superheater to approximately 395°C. The superheated steam is then delivered to the steam turbine for electrical power production. Steam enters the turbine through a hydraulic emergency stop valve, and the rate of flow into the turbine is controlled via a hydraulic throttle valve.

The gross electricity generation is 9.58MW_e, with a gross electrical efficiency of 25%. The electrical export (taking into account the parasitic load of the plant, other auxiliary consumptions and electrical losses) is 7.75MW_e, an equivalent net electrical efficiency of 20%.

The electricity, produced at 11kV is exported via the electricity substation, in line with a Connection Agreement with Western Power Distribution (WPD).

Steam from the steam turbine exhaust, flows into the main steam duct to the air-cooled condenser. The steam is condensed inside a heat exchanger using air as the cooling medium. The cooling air is forced through the heat exchanger by axial fans, driven by electric motors and speed reducing gearboxes. The condensate formed is collected by gravity into the condensate tank, from where it is pumped to a de-aerator to be recycled to the steam boiler for a new cycle.

A back-up diesel generator will be provided to provide power to shut-down the plant in safety operation mode in an emergency scenario.

5.1.6 Exhaust Emissions

Exhaust gases from the fuel combustion are mixed with lime and active carbon in the vertical reaction tower. Following this process, exhaust gases are sent to a dust separator system that consists of filter bags to ensure the emissions comply with the limits specified in the BAT Reference for Waste Incineration and the Industrial Emission Directive (IED). In addition to the SNCR system which doses a urea solution into the combustion chamber to reduce NO_x formation, a Selective Catalytic Reduction (SCR) system is installed.

Exhaust gases are discharged through a stack, with an approximate height of 40m. A continuous Emission Monitoring System (CEMS) (with redundancy) is installed to ensure compliance with permitted emission limits at the point of discharge.

Parameter	Daily Average (mg/Nm^3)
Carbon monoxide	50
Nitrogen oxides (as nitrogen dioxide)	120
Ammonia	10
Total Particulate	5
Sulphur dioxide	30
Hydrogen chloride	6
Hydrogen fluoride	1
Volatile organic carbons	10

Table 8: Exhaust Emission Figures

5.1.7 Water Treatment

A demineralised water production plant will be installed to make up the small amount of water lost in the steam cycle. The process requires a potable water supply of approx. 7.2m^3 per hour on average, with a peak demand of 12.3m^3 per hour (only during Start-up). This process is not a potential source of dust.

5.1.8 Facility Control Systems

Process control at the facility will be an important factor in dust control. The facility will be equipped with an automatic process control unit, which measures and records various process parameters that indicate whether the process is operating within design parameters. The facility operator can control the process via the Human Machine Interface (HMI) which delivers a complete overview of the process components, reports system status and shows any alarms.

In addition, and emergency shutdown system is provided as a separate system that can be used to detect emergency situations and perform the required emergency shutdowns.

5.1.9 End Products

As described above, the end products associated with these processes are flue gases that have the potential to be a source of dust include: bottom ash, fly ash from the boiler and Air Pollution Control residues (APCr) (solid residues comprising fly ash, lime and carbon),

- Exhaust gases from the combustion process are normal products of gas combustion and closely controlled and monitored for particulate content.
- The bottom ash is discharged via a wet conveyor system to a dedicated storage room, from which it is discharged by wheeled loader into appropriate covered skips or bulk vehicles for transport to reprocessing into secondary products and/or disposal.
- APCr and fly ash from conductive and radiant surfaces of the boiler which is conveyed to an enclosed silos. This material is subsequently collected via a pneumatic system into bulk vehicles for onward transport to reprocessing and/or disposal.

5.2 Management of operational phase

Prior to the commencement of commissioning, the site operational management will prepare and a site Environment Management System (EMS) that accords with the appropriate Environment Agency guidance. This EMS will be required to incorporate dust control measures and will cover the following elements:

- **Operations**: potential operational dust sources and techniques for their control;
- **Maintenance**: to ensure that dust control measures/equipment are correctly maintained;
- **Accidents**: an accident action plan will be in place detailing potential accident/failure scenarios e.g. spillages of dusty material or damage to containment, and contingency plans;
- **Incidents and non-conformances**: techniques for monitoring dust and detecting a non-conformance, i.e. fugitive emissions from visual monitoring or complaints from public, contingency actions and investigative procedures;
- **Competent persons and resources**: this will list personnel responsible for particular dust control measures and scheme to ensure resources e.g. water bowsers are in place; and
- **Records**: for use in monitoring the effectiveness of dust control measures and to demonstrate compliance.

5.3 Best Available Techniques

Best available techniques are derived from the Best Available Techniques Reference Document (BREF) for Waste Incineration and the Environment Agency's Sector Guidance Note EPR S5.01 'The incineration of Waste' provides indicative Best Available Techniques (BAT). This guidance has been reviewed for measures that are relevant to controlling dust emissions.

Indicative BAT for dust control of incoming waste and ash handling at the facility is as follows:

BAT – for incoming waste	Facility Design features
Maintain a high standard of housekeeping in all areas and provide and maintain suitable equipment to clean up spilled materials;	Unloading only within reception hall
Only load and unload vehicles in designated areas provided with proper hard standing and such areas should have appropriate falls to an adequate drainage system	
Store uncontained or potentially odorous waste inside buildings with suitable odour control e.g. negative pressure created by feeding combustion air, automatic or restricted size doorways;	
Incoming municipal waste should be: in covered vehicles or containers and unloaded into enclosed reception bunkers or sorting areas with odour control	All RDF delivered in vehicles that are covered or enclosed All unloading within reception hall
Use design and handling procedures to avoid any dispersal of litter	All unloading within reception hall
Operate low volume water fog sprays above the storage bunkers if you need to control dust emission. Minimise liquid run-off and wash down from the storage and handling areas and use them in the process, such as in the ash quench, wherever possible	System available, but expected average moisture content is high enough to avoid dust generation within bunkers

Table 9: BAT for waste delivery

BAT – for Ash Handling	Facility Design features
Water quenched bottom ash should be held at an intermediate point to ensure it is fully drained before being transferred to skips to protect against leakage in transport	Bottom ash held within dedicated room to drain prior to being transferred to container/bulk transport
All ash transport containers to be covered	All transport vehicles will be covered before leaving site
Adequate cleaning equipment, such as a vacuum cleaner, should be provided and maintained, to clean up promptly any spilled ash.	Mobile plant to be provided
Fly ash and APC residues to be handled in completed sealed system	Boiler fly ash and APC residues to be handled in a sealed conveyor and silo storage systems before being loaded pneumatically into transport vehicles for reprocessing and/or disposal off site.

Table 10: BAT for ash handling

6 Dust Management and Risk Assessment

6.1 Introduction

This section sets out the control measures/operational procedures that will be put in place at the Site in order to reduce the potential for dust releases and associated nuisance for local residents or impacts on sensitive ecological receptors. In addition, a risk assessment has been undertaken to consider the effectiveness of these measures and procedures. Table 11, adapted from the relevant EA guidance[3], sets out the measures and procedures to be put in place, as well as the residual risk of dust nuisance, during normal operational practices.

The risk assessment indicates that the residual risk of dust releases should not be significant should the management procedures are correctly implemented.

[3] Environment Agency (2011) Horizontal Guidance Note H1, Annex A: Amenity and Accident Risk from Installations and Waste Activities

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
What has the potential to cause harm?	*What is at risk? What do I wish to protect?*	*How can the hazard get to the receptor?*	*What measures will you take to reduce the risk? (Who is responsible?)*	*How likely is this contact?*	*What is the harm that can be caused?*	*What is the risk that still remains?*
Dust from waste being delivered to reception hall	Residential and commercial properties bordering Marsh Lane and Showground Road	Air	Physical Control Procedures: • Ensure that all vehicles delivering waste to the facility are fully enclosed • Ensure that roller doors on the Waste Reception Hall are only opened for the arrival of a delivery vehicle and that they are closed once the vehicle is fully within the building Procedural/Managerial Control Measures: • Continuous monitoring of the process using the automatic process control • A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible • A preventative maintenance programme will include the regular inspection of all plant and control measures	Unlikely	Dust emission - nuisance	Not significant, if management effective

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Dust from waste being held in the storage bunker	Residential and commercial properties bordering Marsh Lane and Showground Road	Air	Physical Control Procedures: • Ensure that waste is only held within the reception hall storage areas within the reception hall which is held at negative pressure and is utilised as combustion air within the furnace where dusts are combusted • Ensure that all waste is physically managed to minimise the time between initial receipt of waste and input into the grate Procedural/Managerial Control Measures: • Continuous monitoring of the process using the automatic process control • A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible • A preventative maintenance programme will include the regular inspection of all plant and control measures	Unlikely	Dust emission - nuisance	Not significant, if management effective
Particulate and dust from stack emission	Residential and commercial properties bordering Marsh Lane and Showground Road Sensitive ecological receptors at distance from site due to deposition	Air	Physical Control Procedures • Installation of effective bag filters and other air pollution techniques to minimises any dust of particulates in the exhaust gases Procedural/Managerial Control Measures: • Continuous monitoring of the process using the automatic process control • A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible • A preventative maintenance programme will include the regular inspection of all plant and control measures	Unlikely	Dust emission – nuisance & habitat impact	Not significant, if management effective

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Dust emission from ash handling	Residential and commercial properties bordering Marsh Lane and Showground Road	Air	Physical Control Procedures • Bottom ash from grate handled in quenched collection system and deposited into dedicated storage room • Fly ash from boiler handled within a sealed conveyor system and stored within enclosed silo • Air Pollution Control materials (from bag filters) transported and stored within sealed system • All transport off-site to reprocessing/disposal within enclosed or sheeted vehicles Procedural/Managerial Control Measures: • Continuous monitoring of the process and storage capacity used using the automatic process control • A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible • A preventative maintenance programme will include the regular inspection of all plant and control measures	Unlikely	Dust emission – nuisance	Not significant, if management effective

Table 11: **Dust Risk Assessment and Management Plan**

6.2 Repairs, maintenance and monitoring

The site will be inspected daily by the operator by means of a visual check and will be serviced and maintained by competent site staff and third party providers at regular intervals in accordance with the operational manual and manufacturer's instructions. Results of the daily visual check will be recorded in the site log book. Records of all servicing and maintenance visits will be held on site.

6.3 Neighbourhood engagement

The site operator is committed to developing a good relationship with the public and is committed to deal with any complaints, including those with regard to dust, in an open and timely manner. Visitors, customers and neighbours expressing dissatisfaction with the facilities or operations carried out at the site will be invited to enter a record in the Complaints File. The complaint will be dealt with by the facility operator for analysis and actions required, engaging specialist third parties wherever needed. The complainant will be informed of the results of the investigation and any corrective actions proposed.

6.4 Staff competency and training

The facility operator will be fully trained by the technology provider, or a chosen training provider, in the correct operation of all elements of the ERF. The facility operator will be equipped with an operations manual which will support him during the day to day running of the plant. It will also contain all necessary details regarding inspection and maintenance intervals, and contact details of contractors.

In addition, all site staff will be trained in emergency and incident response relating to the operation of the facility. Training records will be held at the site as part of the operations manual.

7 Summary and conclusions

The Bridgwater Resource Recovery Facility will be located to the south of Bridgwater within an existing industrial and commercial estate that contains sensitive receptors.

The facility will utilise commercial and industrial refuse derived waste to generate electricity for export into the national grid. The additional end products include flue gases, bottom ash, fly ash and residues from flue gas treatments

The main source of dust at the facility during its operational phase is associated with the delivery and storage of waste prior to treatment and the handling of ash and flue gas treatment residues.

Wastes will be delivered by bulk haulage vehicles, which will access the Waste Reception Hall through roller shutter doors. These doors will only open to allow vehicles to enter and exit the building, thus minimising the potential for dust releases.

The management of ash and air pollution residues are to be undertaken within sealed systems or within a building and therefore as long as they are managed correctly is not considered likely to have the potential to lead to dust emissions.