Permit Variation

EPR/EP3136GK

Rainham Compost / Wood / RDF

Veolia ES Landfill Limited

July 2025

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1. Non technical summary

1.1. General overview

In 2021 the composting and wood storage activities at Rainham, were added to the Rainham Landfill permit ref. EPR/EP3136GK. Composting was added as an 'Installation' activity and storage of wood was added as a waste operation.

The wood and composting activities were permitted to allow flexibility for the site to either exclusively carry out composting or wood storage or a combination of the two activities. This is governed primarily through the Fire Prevention Plan 'FPP' which is included in the operational techniques of the permit.

We are now seeking to include the ability to transfer and store Refuse Derived Fuel 'RDF' at the Facility with the flexibility to carry this out alongside the composting and wood storage activities with the ability to expand or contract the three activities according to business demand. This will allow the Facility to either receive overcapacity baled RDF material for bulking prior to trans frontier shipment (e.g. as sea freight from the waste management terminal on the Thames to the west), or accept baled RDF during shutdown of Energy Recovery Facilities 'ERF's', allowing for temporary storage / buffering until the ERF resumes operation, thereby preventing the material being diverted to landfill. The proposal does not include the shredding of RDF material, only storage and transfer. There will be no change to the permit boundary.

The permit variation will include addition of the EWC code to the waste activity to allow for acceptance of RDF and an update to the FPP describing the controls that will be in place for RDF storage.

1.2. Site location

Rainham landfill site is centered on approximately grid reference TQ 52278 79637 at Coldharbour lane, RM13 9BJ, located within the larger complex of Rainham Integrated Waste Management Facility accessed from Coldharbour Lane, off the nearby A13 via an internal access road. The site is bounded by the landfill to the east; to the south by the access road, beyond which is the River Thames; to the west by a Materials Recycling Facility (MRF/PRF) and Waste Transfer Station facility (WTS), and to the north by the EDL Power Generation Plant and interior access roads. The boundary of the Facility is delineated in part by fences and 5m high screening bunds.

Facility location

1.3. Flexible operations

The site is ideally suited to either wood and composting activities or RDF storage and transfer and in order to allow VES to both innovate and supply the needs of the secondary raw material economy and improve material recycling and recovery the Facility will be permitted with the flexibility to exchange annual throughput capacity between windrow composting, wood storage / treatment and RDF storage.

VES has configured the Facility's management system so as well as the options for composting and wood there is a limited flexibility to transition between these principal activities in a defined way based on a series of indicative operational scenarios. It is now proposed to include RDF storage within these flexible arrangements.

The management system will allow for the following operational scenarios as outlined in the table below:

Proposed operational scenarios governed by the Fire Prevention Plan

Activity	Description
COMPOST **[EXISTING]**	Windrow composting as the principal activity
WOOD	Wood storage and treatment as the principal activity
RDF STORAGE [NEW]	Storage of RDF to be used during loading of the nearby river transport network for trans frontier shipment, or, storage during ERF outages as the principal activity.
MIXED **[EXISTING]**	Ability to be able to carry out a mixture of the above operations (including RDF along with wood and compost).

The operational flexibility will be governed by a Fire Prevention Plan 'FPP'. The FPP will define maximum waste pile sizes and detail how the site will be configured to manage the proposed operational scenarios.

An Environmental Risk Assessment 'ERA' has been completed which characterises the impacts and controls which will be required to support the proposed modifications to site operations.

1.4. Permit changes / activity types

The table below lists the changes required to permit reference EPR/EP3136GK to allow the addition of RDF storage:

Changes requested as part of this variation

Permit change	Description	Limits
Addition of an RDF storage activity	Inclusion of a waste activity for storage only of refuse derived fuel.	Activities will include: ■ Storage of refuse derived fuel (R13) ■ Storage amount in combination with activities A5 and A16 limited to 150,000 tonnes in combination with compost and wood activities.
Addition of EWC codes 19 12 10	Inclusion of EWC code 19 12 10 [combustible waste (refuse derived fuel)]	Listed in a separate table linked only to the RDF activity.

The requested changes to the permit are supported by the following documentation:

- Updated Fire Prevention Plan 'FPP'
- Updated Environmental Risk Assessment 'ERA'

  [note that the ERA includes an assessment of:

  - *Odour emissions*
  - *Noise emissions*
  - *Dust emissions]*

2. Activity descriptions

2.1. Outline description of the RDF activity

2.1.1. Reception / Acceptance

Baled RDF waste will be brought to site by road transport and unloaded into Legioblock storage bays. The material will arise from RDF production facilities comprising principally shredded and baled residual waste. The description, nature and source of wastes are verified at the weighbridge. Details of the waste carrier, waste type (EWC code), client / source and quantity (tonnes) of waste are recorded on WIMS and / or on a Waste Transfer Note.

Bales will be unloaded by mobile plant and stacked in Legioblock bays where they are stored pending transfer off site.

A different protocol will be in place depending on the maximum residence time of the RDF material according to two scenarios; transfer only, or storage *and* transfer.

2.1.2. Transfer only

Wrapped RDF bales will be stored in open bays constructed of concrete (Legioblocks) which are rated to fire resistance of 120 minutes. The storage time will be limited to a maximum of 45 days.

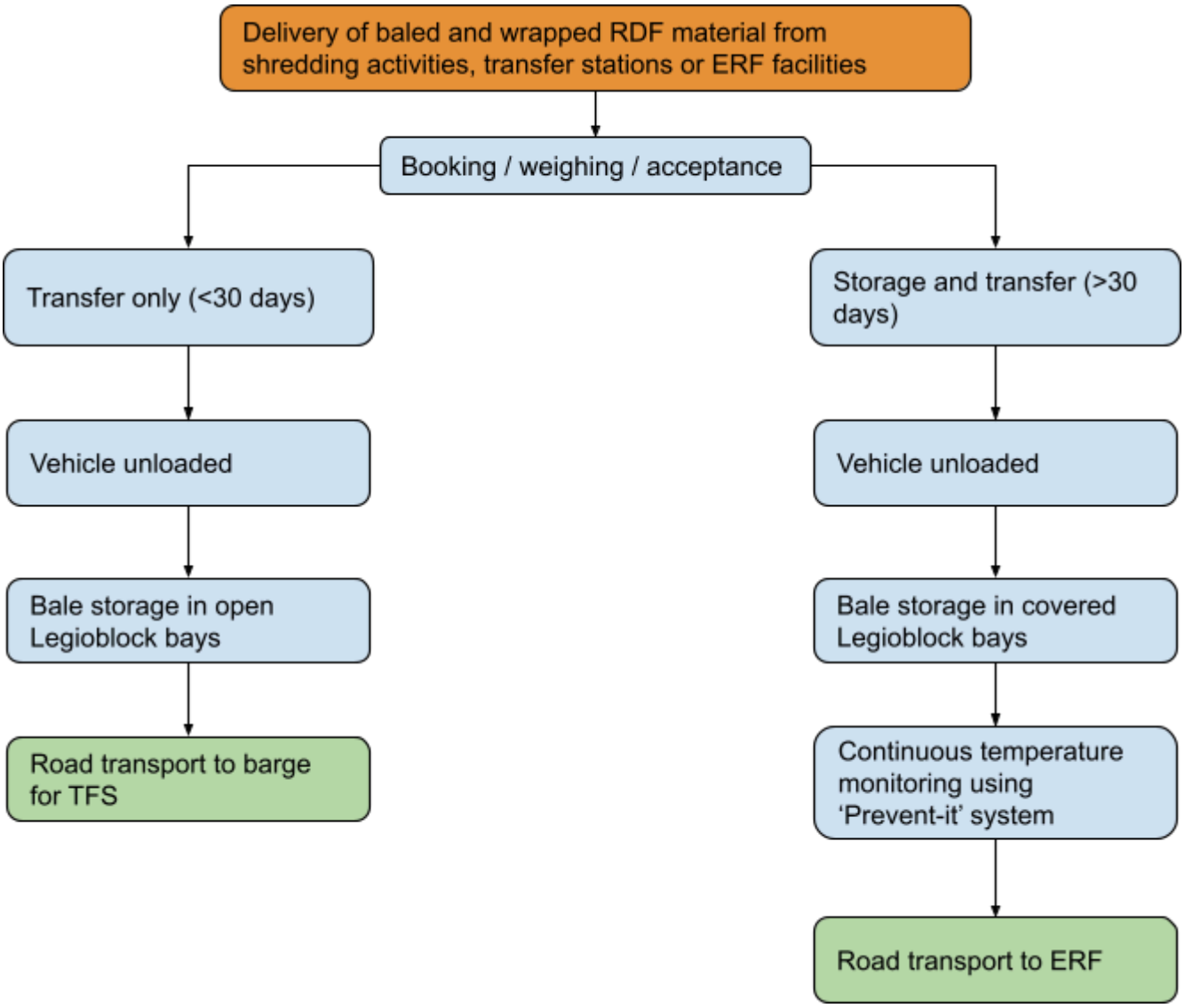
2.1.3. Storage and transfer

Wrapped RDF bales will be stored in bays constructed of concrete (Legioblocks) which are rated to fire resistance of 120 minutes. The bales will be covered to provide protection from external heating during hot weather and protection from precipitation. Temperature of the bales will be continuously monitored using the ‘Prevent It’ system. Monitoring tapes will be placed between the bottom / middle bales and between the middle / top bales across every row of bales. The tapes are continuously monitored for temperature fluctuations with inbuilt notifications for deviations from expected temperature ranges. An action plan is in place within the FPP incorporating notification procedures and procedures for removing and assessing bales that fall outside of the set temperature range. In the case of waste stored for ERF shutdown once the ERF outage is over, typically 2-6 weeks, baled RDF will start to be removed from the site for ERF feedstock. ERF facilities generally operate at or near capacity and therefore stored / buffered RDF waste is reintroduced at a manageable rate to allow continuing operation and elimination of the backlog created during shutdown. While mostly operating at capacity there are some periods such as during / just after holidays where waste inputs may fluctuate, during these periods stored RDF can be used to ensure sites are working at available capacity, smoothing fluctuations in supply. Also during the ERF outage baled RDF may still be exported to other ERFs for the same purpose. To allow for optimisation of the buffering capacity the maximum storage period will be 12 months.

2.2. RDF process flow diagram

The figure below describes the RDF process

RDF process flow diagram

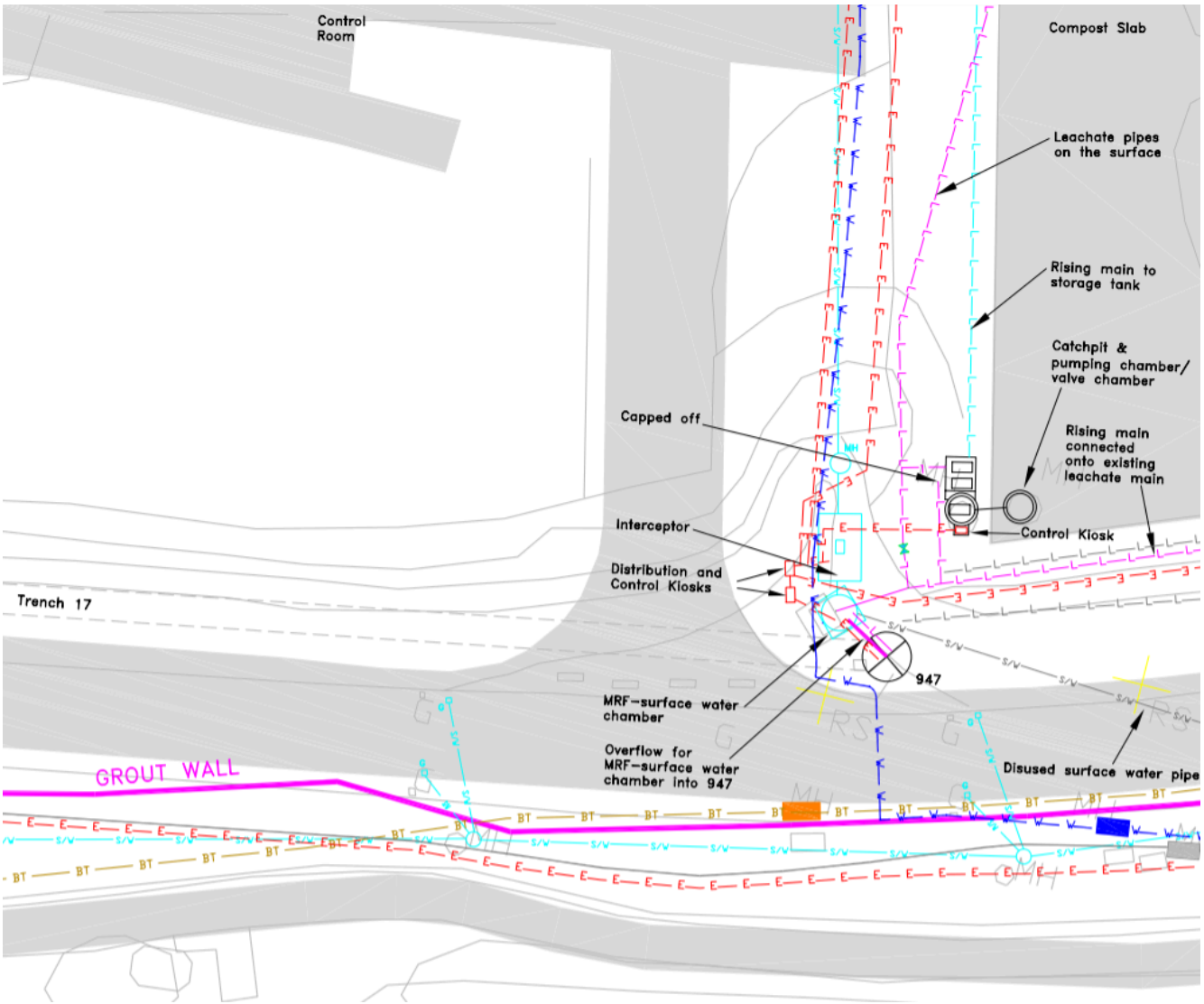


3. Drainage

3.1. Description of the drainage system

There will be no changes to the drainage system required as part of the proposed modifications to the permit. The operational area comprises a large impermeable slab constructed of fully engineered reinforced concrete, laid to falls, with a sealed drainage system directed to a collection sump in the south western corner of the slab. A raised kerb of minimum 100mm prevents any water leaving the site.

Arrangement of infrastructure for surface water transfer to leachate treatment plant (south west quadrant of the waste storage pad)



Flow to the sump is gravity fed into a pumping chamber outside the containment wall of the composting pad. The pumping chamber has two float controlled pumps, each independently capable of controlling the tank inputs. The pumps are swapped over regularly. The flow can be directed to the compost storage tank to the north east of the facility for subsequent reuse within the process or through an electromagnetic flow meter to the landfill leachate main for eventual discharge to the sewer. All surface water and compost liquor / leachate generated within the proposed extension area is treated through the landfill leachate treatment plant. As an existing facility with a drainage system specifically designed to interface with the landfill leachate treatment system the segregation of surface water and process water is not carried out. Retrospectively applying this capacity to this site is not justifiable however there is a system in place to reuse collected water in the process which reduces primary usage.

The landfill leachate plant is a listed biological treatment activity 5.4, Part A(1)(a)(i) for treatment with a capacity of greater than 50 tonnes per day (activity A3 in permit reference EP3136GK). The flow rate from the composting / wood recycling activity is between a maximum of 27m^3/hr down to 10m^3/hr, depending on conditions. Volumes pumped are recorded three times per week and totals are recorded weekly and monthly. The monthly average is variable depending on the amount of precipitation and moisture inputs required into the composting process.

Emission of landfill leachate is controlled by a separate permit (discharge consent) issued by Thames Water.

4. Throughput and waste types

4.1. Windrow composting activities

4.1.1. Annual throughput

Combined Wood, Compost and RDF tonnage will not exceed 150,000 tonnes per annum.

4.1.2. Waste types

RDF transfer / storage activities will require the following waste code as laid out below.

European Waste Codes required for RDF activities

Waste Code	Description
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 10	Combustible waste (refuse derived fuel)

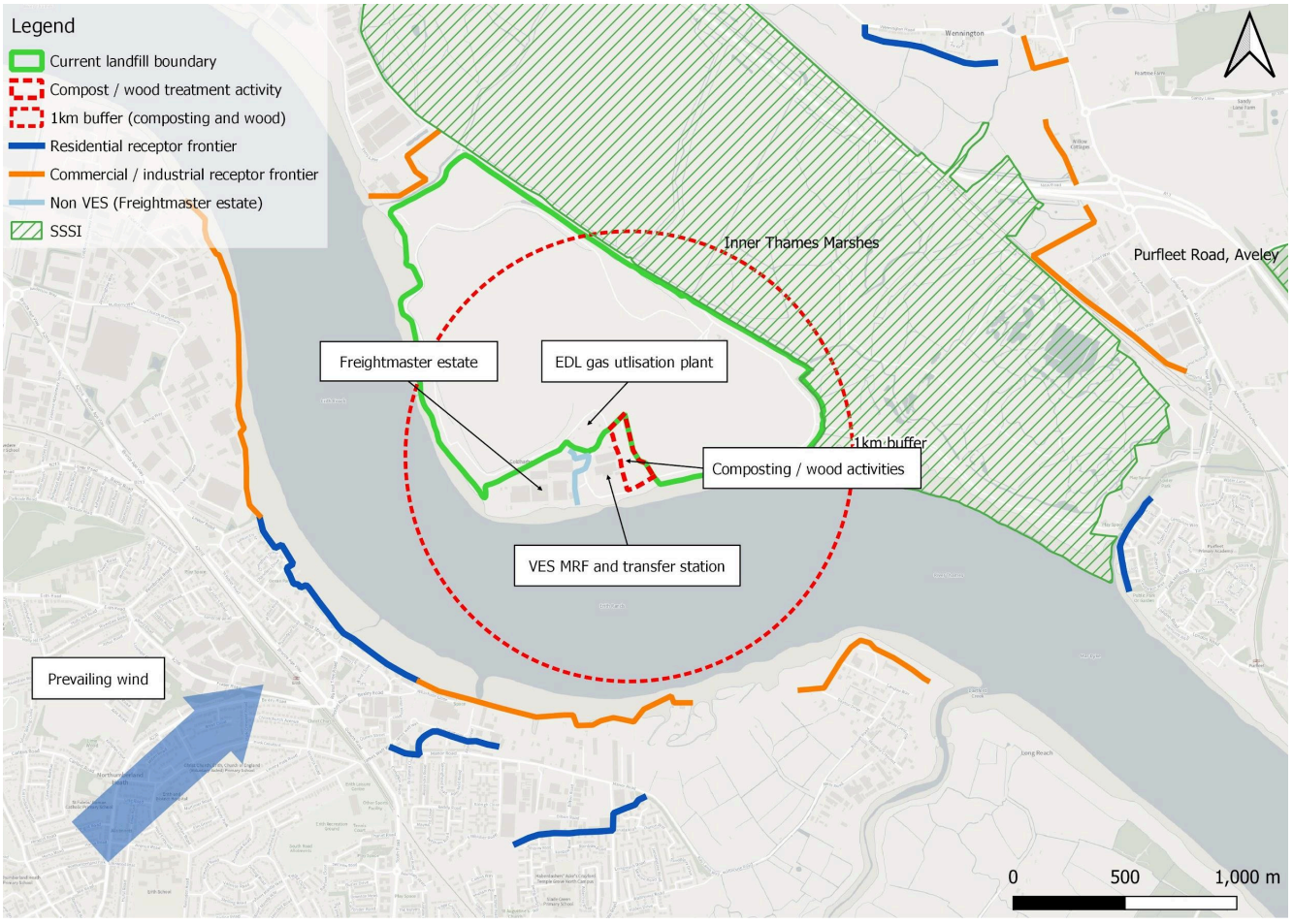
5. Environmental Risk Assessment

5.1. Summary of ERA and site sensitivity

The following section is a summary of the outcome of key aspects and impacts assessed in the ERA carried out in relation to the proposed permit changes. In the ERA these are separated by activity type i.e. composting, wood recycling and RDF storage but are dealt with together below as the activities have a similar risk profile.

The plan below gives an overview of the site setting in relation to human and environmental receptors against a 1km buffer. The location of the site means that it has a very low amenity risk profile which is reflected and confirmed based on VES's experience operating the Facility. A more detailed description of each receptor of receptor type is provided in the table below.

Human and ecological receptor locations (1km buffer)



Human and ecological receptor descriptions

Receptor (non VES)	Type	Distance to site boundary (m)	Direction from site	Grid reference	
				x	y
River Thames	Controlled water	50	South	552727	178928
EDL gas utilisation plant (part of landfill operations plant run by third party)	Commercial	66	West	552495	179181

Freightmaster estate	Commercial / industrial	140	West	552444	179067
Inner Thames Marshes	Ecological (SSSI)	633	North east	552933	179765
Manor Road Industrial Estate	Commercial / industrial	1090	South	552452	177878
Burnett Road Industrial Estate	Commercial / industrial	1170	South east	553650	178246
Ferry Lane Industrial Estate	Commercial / industrial	1420	North west	551608	180235
Thames south bank housing	Residential	1500	South west	551252	178416
Purfleet industrial park	Commercial / industrial	1960	North east	554441	179963
Purfleet	Residential	2100	East	554827	178688
Rainham	Residential	2140	North	552913	181332

5.2. Fire prevention

A site specific Fire Prevention Plan ‘FPP’ has been prepared as a standalone document included with the application. The FPP has been updated from the previous version to include RDF transfer and storage within the scope of flexible operations. All waste will be stored within the pile size limits and duration specified within the prevailing FPP guidance.

5.3. Odour

The likelihood of odour from RDF activity causing offense to human senses at sensitive receptors is remote. The closest residential receptors are 2.14km to the north and 1.3km to the south, 2.12km to the east and 1.65km to the west. The composting activity is a well established operation and has not previously attracted any complaints or adverse observations with respect to odour either internally or externally to the business relating to odour emissions.

Implementation of a stand alone Odour Management Plan ‘OMP’ is not considered necessary for the RDF activity. The cross cutting controls and surveillance in place elsewhere in the EMS and wider management system are appropriate and proportional to the risks.

5.4. Dust

The ERA assessment carried out for this application has determined that the likelihood of dust emissions from the addition of RDF to the facility are very low. The bales will be wrapped and will be for transfer and storage only with no RDF shredding taking place.

Implementation of a stand alone Dust Emission Management Plan ‘DEMP’ covering the RDF activity is not considered necessary - the existing DEMP will be updated to reference the inclusion of the RDF activity for completeness. The cross cutting controls and surveillance in place elsewhere in the EMS and wider management system are appropriate and proportional to the risks.

These include but are not limited to:

- Daily yard cleaning.
- A cleaning rota is in place to manage dust and debris.
- Deep clean to take place a minimum of twice per annum and includes removal of waste from area being cleaned and hosed down.
- Every load tipped has visual inspection with clearly defined acceptance criteria.
- All feedback including complaints and non-conformances are recorded and reviewed with corrective and preventive actions put in place.

5.5. Noise

The ERA has assessed the impact from noise and has determined that the impacts can be screened out qualitatively with no need for further detailed assessment. Specific noise sources on site associated with RDF activities will include vehicular movements, loading and unloading activities, movement of material around site and reversing sirens. The type of material being handled, RDF bales, are not inherently noisy when mechanically handled or placed into storage. Dominant noise sources are likely to be from the composting and wood activities i.e. shredding, and these are not prominent above the residual soundscape in the local area. The local residual acoustic environment is very low risk being industrial and non-customer facing commercial activities. The location of the site adjacent to the Thames does mean that although there is little surface absorption of noise emissions projecting south from the facility there will be considerable distance attenuation, over the 1.3km, to the nearest receptor. There are a series of dockside industrial and commercial activities on the southern bank of the Thames between the Facility and nearest receptors which are likely to comprise the dominant ambient and background acoustic environment at that location. Residential receptors to the north are more remote and protected by the barrier formed by the shape of the landfill.

Implementation of a stand alone Noise Management Plan ‘NMP’ is not considered necessary for RDF activities. The cross cutting controls and surveillance in place elsewhere in the EMS and wider management system are appropriate and proportional to the risks.

These include but are not limited to:

- Routine qualitative noise monitoring.
- PPM regime in place for all equipment.
- Daily checks of equipment for abnormal operation.
- All feedback including complaints and non-conformances are recorded and reviewed with corrective and preventive actions put in place.

5.6. Technical competence

The site operates under the Competence Management System ‘CMS’. The Competence Management System, which is approved by the Department for Environment, Food & Rural Affairs (Defra), the Welsh Government, the Environment Agency and Natural Resources Wales is based on the principles of a Management System e.g. ISO14001, ISO9001. It is a technical scheme that enables operators to demonstrate technically competent management of their permitted activities. The CMS does not require a named technically competent manager per site, however, a management representative should be available to deal with any issues that may have an impact on compliance with the conditions of an environmental permit.

A copy of the relevant CMS certification is included with the application.

5.7. Management systems

Veolia ES Landfill Limited is a quality assured company with its sites registered under the Quality Management System ISO 9001, OHSAS 18001 and ISO 14001. The operational, monitoring and management procedures implemented on site are in accordance with the Veolia Management System and have been audited against the requirements of the standards detailed previously. A summary of the electronic live system is provided in Appendix G.