

# FICHTNER

Consulting Engineers Limited



## Beddington EP variation



**Viridor South London Limited**

Environmental Risk Assessment

## Document approval

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# 1 Introduction

Viridor South London Limited (Viridor) is applying to the Environment Agency (EA) for a variation to Environmental Permit (EP) for the Beddington Energy Recovery Facility (the 'ERF'), including the incorporation of the adjacent waste transfer station (WTS) to the EP. The ERF and WTS are herein referred to collectively as the 'Facility'.

The aim of this report is to assess the environmental risks associated with the proposed changes to the activities undertaken at the Facility, and demonstrate that the necessary measures will be in place to protect the environment, ensuring that the operation of the Facility will not pose an unacceptable risk to the environment.

This report will:

- a. identify potential risks that the proposed changes to the activities undertaken at the site may present to the environment;
- b. screen out those that are insignificant and don't require detailed assessment;
- c. identify potentially significant risks, where appropriate;
- d. choose the right control measures, where appropriate; and
- e. report the findings of the assessment.

This document has been developed to consider the requirements of Environment Agency (EA) Guidance Notes H1 Annexes A, C, H and F. While it is acknowledged that these guidance documents have been withdrawn, it is understood that the requirements of the guidance are still applicable under Environment Agency Guidance '*Risk assessments for specific activities: environmental permits*', which replaced H1 and H2 with alternate (albeit not as prescriptive) guidance in February 2016.

## 1.1 Risk assessment process

The EA Guidance promotes the following key steps:

1. identify and consider risks from your site/the activity and the sources of those risks;
2. identify the receptors at risk from your site;
3. identify the possible pathways from the sources of the risks to the receptors;
4. assess the risks relevant to your specific activity and check they are acceptable/can be screened out;
5. justify appropriate measures to control the risks if they are high; and
6. submit/present the assessment with the permit application.

## 1.2 Step 1 – identify risks

The following report will identify the activities that present different types of risk to the environment associated with the proposed changes to the operation of the Facility, including:

- a. odour;
- b. noise;
- c. fugitive emissions; and
- d. accidents.

### 1.3 Step 2 – Step 4: Assessment of receptors, pathways and risks

The report will include an assessment of risks associated with the operation of the Facility, and will identify the:

- a. hazard;
- b. receptor; and
- c. pathway.

The risks relevant to the proposed changes to be carried out on site will be checked to see if they are acceptable/can be screened out.

### 1.4 Step 5 – justify appropriate measures

This report will demonstrate that the risks associated with the proposed changes to the operation of the Facility have been considered and will identify the proposed control measures to demonstrate that the risks will be appropriately managed.

### 1.5 Step 6 – present the assessment

The report will conclude by presenting the following:

- a. possibility of exposure;
- b. consequence; and
- c. the overall risk.

The report will present the overall risk applying the EA's previous H1 criteria, defined as:

- a. insignificant;
- b. not significant; and
- c. significant.

## 2 Odour risk assessment and management plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence.
Odour emissions at the WTS from waste accepted under the new proposed EWC codes (during storage and handling).	Immediate area. The nearest residential receptors to the WTS are located approximately 300m to the northeast of the WTS Installation Boundary.	Air – winds generally blow from a south-westerly direction.	All wastes received at the WTS will be unloaded inside the main WTS building.  Clinical and hazardous wastes will be received in appropriate containment - refer to section 7 of the Supporting Information for further detail. It is not anticipated that the acceptance of these wastes will introduce any additional odour risks when compared to the waste already accepted at the WTS. The containment of clinical and hazardous wastes in suitable packaging will reduce the potential for odour release from these wastes.	Minimal.	Odour annoyance. This will have more impact in the summer, when temperatures are higher and people are outdoors.	Not significant if managed well.

### 3 Fugitive emissions risk assessment and management plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
Leaks from the additional clinical and/or hazardous wastes proposed to be accepted at the WTS during unloading and loading activities.	Immediate area – air, land, water.  Direct contact – site workers.	Air, surface runoff, infiltration to groundwater, direct contact.	All waste unloading activities at the WTS will be undertaken within the main WTS building. The documented management systems for the WTS will be updated to include for specific risks associated with the handling of clinical and hazardous wastes, including response procedures for spillages. Appropriate spill kits/equipment will be in place to deal with leaks, and site workers will be equipped with appropriate PPE.  Waste unloading areas will have contained drainage to minimise the risk of emissions of contaminated	Unlikely.	Human contact with hazardous and clinical wastes, environmental damage through fugitive release of hazardous substances.	Insignificant due to the proposed management systems.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
			<p>water. Process drainage will link to the decantation pit.</p> <p>Clinical and hazardous wastes will be received in appropriate containment/ packaging, and will not be treated at the WTS. Further information on handling procedures for clinical and hazardous wastes is presented within section 7 of the Supporting Information.</p>			
Wastes treated within the shredder may introduce fugitive dust/litter emissions.	<p>Immediate area – air, land, water.</p> <p>The nearest residential receptors to the WTS are located approximately 300m to the northeast of the WTS Installation Boundary.</p>	<p>Air – winds generally blow from a south-westerly direction – and resulting deposition.</p> <p>Surface runoff..</p>	<p>Dust spray bars will be fitted on each end of the feed hopper for the shredder to minimise fugitive emissions during shredding activities. The shredder will also employ a self-cleaning system, whereby cleaning will be done by a manually-operated switch.</p>	Contact with unacceptable emissions levels is unlikely.	<p>Environmental impacts, human health impacts.</p> <p>Dust annoyance – this would have higher impacts in windy weather, when there is greater potential for dispersion off-site.</p>	Insignificant due to the proposed mitigation measures.



What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
			The shredder's diesel engine will have an exhaust duct which will direct emissions, via a side vent, to a vertical stack approximately 14.5m high. The stack will protrude above the main WTS building. Emissions of particulates would be extracted via a particle filter, designed to meet the relevant EUROMOT standards (for nonroad diesel engines).			

## 4 Accidents risk assessment and management plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
Receipt and processing of non-compliant waste (i.e. wastes that do not fall under the EWC codes within the permit).	WTS – site workers, third parties.  ERF – site workers, air.	Air emissions, direct contact.	Documented waste acceptance and pre-acceptance procedures will be in place to verify the waste prior to processing at either the WTS or ERF. Procedures are already in place to deal with waste deemed 'unacceptable' – further detail is provided within section 7 of the supporting information – however, these will be updated to include for specific risks associated with the storage and handling of clinical/hazardous wastes.	Unlikely.	Unacceptable emissions to air, human health impacts from direct contact with 'unacceptable' wastes.	Insignificant due to the proposed management systems.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
Spillages/tears during unloading activities for the additional clinical and/or hazardous wastes proposed to be accepted at the WTS.	Immediate area – air, land, water.  Direct contact – site workers.	Air, surface runoff, infiltration to groundwater, direct contact.	All waste unloading activities at the WTS will be undertaken within the main WTS building. Documented management systems for the WTS will be updated to include for specific risks associated with the handling of clinical and hazardous wastes. Waste unloading areas will have contained drainage to minimise the risk of emissions of contaminated water. Process drainage will link to the decantation pit.  Clinical/hazardous wastes will be received in appropriate containment/packaging, with integrity visually inspected prior to transfer. Clinical/hazardous waste will not undergo any treatment at	Unlikely.	Environmental impacts, human health impacts.	Insignificant due to the proposed mitigation measures.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
			<p>the WTS, and handling will be minimised where possible.</p> <p>Site workers will be provided with appropriate PPE.</p> <p>Further information on handling procedures for clinical and hazardous wastes is presented within section 7 of the Supporting Information.</p>			
Incompatible wastes coming into contact at the WTS.	Immediate area, site workers.	Air, direct contact.	<p>Due care and attention when reviewing waste transfer notes accompanying hazardous and clinical wastes.</p> <p>Hazardous and clinical wastes contained within appropriate packaging/containment and integrity inspected visually. Wastes not treated or mixed – transfer only.</p>	Very low.	Air impacts, human health impacts.	Not significant.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
Waste storage failure – WTS	Immediate area – air, land, water.  Direct contact – site workers.	Air, surface runoff, infiltration to groundwater, direct contact.	Storage of clinical/hazardous wastes at the WTS will be in segregated areas with contained drainage. Process drainage discharges to the decantation pit. Regular inspections of waste storage areas will be undertaken. Waste will be processed in a timely manner and is unlikely to be stored for long periods of time. Leachate from wastes will be contained, with storage and unloading operations undertaken within the WTS building, minimising the risk of releases to the surface water environment.	Unlikely.	Environmental impacts, human health impacts (exposure to hazardous wastes), litter.	Not significant due to control measures in place.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
Explosion risks from pressurised gases accepted at the WTS.	Immediate area – air. Site workers.	Air, direct contact.	<p>Pressurised gases will be segregated and stored safely in accordance with documented procedures at the WTS.</p> <p>Pressurised gases will be stored in accordance with the EA guidance note '<i>Guidance for the storage and treatment of aerosol canisters and similar packaged wastes</i>'. Further detail is presented within section 2.3.11 of the Waste Transfer Station BAT report – refer to Appendix F of the Supporting Information.</p>	Unlikely.	Environmental impacts, human health impacts.	Not significant due to control measures in place.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Possibility 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? If it occurs who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that remains? The balance and probability and consequence
Theft/unwanted personnel entering the premises/ vandalism	Immediate area.	Land, air, water, direct contact.	Security fences, controlled entrance to the site, CCTV monitoring.	Unlikely.	Release of any substances to the environment.	Not significant due to control measures in place.

## 5 Detailed assessment

### 5.1 Emissions to air

The Environment Agency's H1 tool has been completed to assess the impact of emissions to air and see whether any pollutants can be screened out as 'insignificant' – refer to Appendix A. The tool is supported by a detailed dispersion modelling assessment which assesses the impact of emissions to air associated with the proposed increase in thermal capacity of the ERF – this is presented within Appendix C of the Supporting Information. The assessment concluded that the impact of the proposed change would be 'not significant' with respect to human health or habitat sites.

### 5.2 Habitats assessment

There are a number of habitat sites present within the appropriate screening distances from the stack. The following habitat features presented in Table 1 have been considered within the Air Quality Assessment:

*Table 1: Sensitive Ecological Receptors*

<b>European and UK designated sites (Ramsar, SPA, SAC, SSSI)</b>
Wimbledon Common (SAC)
Richmond Park (SAC)
<b>Local nature sites (NNR, LNR, LWS, Ancient Woodland)</b>
Bennett's Hole (LNR)
Cranmer Green (LNR) (also a LWS – see listing below)
The Spinney, Carshalton (LNR) (also a LWS – see listing below)
Spencer Road Wetlands (LNR)
Wilderness Island (LNR)
Wandle Valley Wetland (LNR)
Caraway Place Pond (LWS)
Beddington Farmlands (LWS)
Beddington Park (LWS)
The Spinney (Nightingale Road Bird Sanctuary) (LWS)
Queen Elizabeth Walk (LWS)
Upper River Wandle (LWS)
Cranmer Green Local Nature Reserve (LWS)
Revesby Road Wood (LWS)
Therapia Lane Rough (LWS)
Mill Green (LWS)
Land north of Goat Road (LWS)
Croydon Cemetery complex (LWS)
Mitcham Common (LWS)
Canons Pond (LWS)



The Air Quality Assessment concludes the following in relation to habitats sites:

*“For European habitat sites, the impact of emissions from the Proposed Facility were assessed as ‘not significant’. For locally designated sites, predicted impacts were well below the Environment Agency’s 100% criterion for locally designated habitat sites. In addition, the change in concentration for the Proposed Facility compared to the Permitted Facility is 0.2% or less of the critical levels and critical loads for all habitat sites.”*

The Air Quality Assessment goes on to state that:

*“the impact of the change in the maximum continuous rating for the installation would be ‘not significant’ with respect to human health or habitat sites.”*

Therefore, it is concluded that the proposed change will not result in unacceptable impacts on sensitive ecological features.

### 5.3 Emissions to sewer and water

There will not be any changes in the nature of any emissions to water/sewer as a result of the proposed changes, and all emissions of process effluent will be required to comply with the Trade Effluent Consent which was granted by Thames Water (the Sewerage Undertaker).

As explained in section 3 of the Supporting Information, this application confirms the location of the discharges to water and sewer.

### 5.4 Odour

The addition of the clinical and hazardous EWC waste codes at the WTS is not considered to pose any additional odour risks compared to the wastes currently accepted at the WTS. Clinical and hazardous wastes will be received in sealed bags/packages and will be appropriately contained, therefore these wastes are not considered to pose additional odour risks. As a result of this, no changes are proposed in relation to techniques currently employed for odour control at the WTS. Therefore, an Odour Management Plan is not considered to be required in support of this variation application.

### 5.5 Pest management

With regards the nature of the additional waste to be processed at the WTS, the processing of clinical and hazardous wastes is not considered to introduce any additional risk in relation to pests when compared to current operations at the WTS. In addition, clinical and hazardous waste will be received in sealed packaging where appropriate. Therefore, it is understood that a Pest Management Plan is not required in support this variation application.

## 6 Conclusions

As presented in this report, the Facility is considered to contain appropriate control measures and management systems to ensure that the proposed changes will not result in any significant impacts upon the local environment.

# Appendices

# A H1 Tool

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