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Charlton Lane Eco Park

SUEZ Recycling & Recovery Surrey Ltd

EP Variation

ENGINEERING CONSULTING

Document approval

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Non-technical Summary

SUEZ Recycling and Recovery Surrey Ltd (SUEZ) was granted a waste management licence for a waste transfer station and material recycling facility at Charlton Lane, Shepperton on 15 November 2004. In accordance with the Environmental Permitting Regulations, this was subsequently re-issued as an Environmental Permit (EP), reference EPR/VN3997NK, on 12 November 2010.

SUEZ applied for a variation to the EP to include a waste gasification and anaerobic digestion facility at the Charlton Lane site (Charlton Lane Eco Park or the 'Facility') and consolidated Environmental Permit (EP) was granted on 8 October 2012 incorporating the additional operations. The EP has been subject to three variations since it was granted, a fourth variation was submitted in January 2022 is currently being determined.

Following completion of detailed design and construction of the Facility, it has been identified that the EP does not fully reflect the as-built designs. Therefore, SUEZ is applying to the EA to regularise the requirements of the EP with the as-built designs. In addition to this, SUEZ is also applying to make some additional changes to the EP. The proposed changes to the EP summarised as follows:

- increasing the throughput of the pre-treatment plant and gasification plant, as follows:
  - Pre-treatment – increasing from 55,460 tpa to 94,339 tpa;
  - Gasifier – increasing from 55,460 to 61,320 tpa;
- changing the acid gas abatement system from a dry system to a semi-dry system;
- removing the secondary NOx abatements system;
- incorporate additional processes/changes to the pre-treatment plant;
- changes to the anaerobic digestion (AD) process;
- increasing the electrical output of the AD/biogas engines;
- changes to the odour abatement arrangements for the overall site;
- incorporating additional emission points to air to facilitate additional odour abatement systems and emission points;
- incorporating additional EWC codes for waste delivered to the HWRC (in line with RPS 234);
- correct referencing to align with the 2019 Trade Effluent Consent granted by Thames Water;
- moving the road sweepings area; and
- additional minor modifications to the design and layout of the Facility to optimise the waste processing and handling arrangements across the site.

During pre-application discussions, the EA confirmed that the EP application would not be classified as a substantial variation. Therefore, this application is being submitted as a Normal Variation.

As demonstrated within this application, and the supporting document, the proposed changes are not expected to result in any significant environmental impacts.

Contents

1 Introduction

1.1 Background

SUEZ Recycling and Recovery Surrey Ltd (SUEZ) was granted a waste management licence for a waste transfer station and material recycling facility at Charlton Lane, Shepperton on 15 November 2004. In accordance with the Environmental Permitting Regulations, this was subsequently re-issued as an Environmental Permit (EP), reference EPR/VN3997NK, on 12 November 2010.
SUEZ applied for a variation to the EP to include a waste gasification and anaerobic digestion facility at the Charlton Lane site (Charlton Lane Eco Park or the 'Facility') and consolidated Environmental Permit (EP) was granted on 8 October 2012 (2012 Variation) incorporating the additional operations. The EP has been subject to three variations since it was granted as follows:

1. An Agency led variation was granted on 30 May 2013 to incorporate the changes introduced by the IED.
2. A substantial variation was granted 29 October 2014 to change the gasification technology from a batch gasifier to a fluidised bed gasifier. This variation implemented a number of changes associated with the change in technology, including annual waste throughput, number of emissions points and the electrical output.
3. An administrative variation to amend the company name from SITA (Surrey) Limited to SUEZ Recycling and Recovery Surrey Ltd.

An application to vary the permit to introduce an additional surface water emission point was submitted to the Agency in January 2022 and is currently being determined.

Following completion of detailed design and construction of the Facility, it has been identified that the EP does not fully reflect the as-built designs. Therefore, SUEZ is applying to the EA to regularise the requirements of the EP with the as-built designs.

Section 1 of this document provides a brief overview of the applicant/application, including the proposed changes and type of variation, whilst section 2 describes the proposed changes in further detail. Section 3 includes a quantitative BAT assessment of the proposed semi-dry acid gas abatement system. Section 4 summarises the environmental impacts associated with the proposed changes.

1.2 Proposed changes

For the purposes of this application, the proposed changes are summarised as follows:

- increasing the throughput of the gasification pre-treatment plant and gasification plant, as follows:
  - Pre-treatment – increasing from 55,460tpa to 94,339 tpa;
  - Gasifier – increasing from 55,460 to 61,320 tpa;
- changing the acid gas abatement system from a dry system to a semi-dry system;
- removing the secondary NOx abatements system;
- incorporate additional processes/changes to the pre-treatment plant;
- changes to the anaerobic digestion (AD) process;
- increasing the electrical output of the AD/biogas engines;
- changes to the odour abatement arrangements for the overall site;

- incorporating additional emission points to air to facilitate additional odour abatement systems and emission points;
- incorporating additional EWC codes for waste delivered to the HWRC (in line with RPS 234);
- correct referencing to align with the 2019 Trade Effluent Consent granted by Thames Water;
- moving the road sweepings area;
- additional minor modifications to the design and layout of the Facility to optimise the waste processing and handling arrangements across the site; and
- reduction of overall tonnage into the CRC/RBF from 250,000tpa to 211,121 tpa to account for the increase in tonnage within the gasification activity and ensuring no additional tonnage input into the overall site.

The proposed changes are explained in more detail in section 2.

1.3 Type of variation

The Environment Agency's guidance on Charging Schemes states that there are four types of variations – administrative, minor technical, normal and substantial.

SUEZ acknowledges that the proposed changes will not constitute either an administrative or minor technical variation.

The Environment Agency has published guidance (Regulatory Guidance Note 8 – Substantial Change) which defines a substantial change. It is acknowledged that the guidance has subsequently been withdrawn but any replacement guidance is not as prescriptive. The guidance defined a substantial change as:

'… a change in operation of installations or mining waste facilities, which in our opinion may have significant negative effects on human beings or the environment. Certain changes are automatically regarded as substantial, namely:

> *a. a change in operation of a Part A installation which in itself meets the thresholds, if any, set out in Part 2 of Schedule 1 EPRs; or*
>
> *b. a change in operation of an incineration or co-incineration plant for non-hazardous waste which would involve the incineration or co-incineration of hazardous waste.'*

During pre-application discussions, the EA confirmed that the EP application would not be classified as a substantial variation. Therefore, this application is being submitted as a Normal Variation.

2 Changes with the 'as-built' designs

Following completion of detailed design and construction of the Facility, it has been identified that the EP does not fully reflect the as-built designs. In addition to this, SUEZ is also applying to make some additional changes to the EP. As set out in section 1.2, SUEZ is applying to regularise the requirements of the EP with the as-built designs as follows:

- increasing the throughput of the gasification pre-treatment plant and gasification plant, as follows:
  - Pre-treatment – increasing from 55,460tpa to 94,339 tpa;
  - Gasifier – increasing from 55,460 to 61,320 tpa;
- changing the acid gas abatement system from a dry system to a semi-dry system;
- removing the secondary NOx abatements system;
- incorporate additional processes/changes to the pre-treatment plant;
- changes to the anaerobic digestion (AD) process;
- increasing the electrical output of the AD/biogas engines;
- changes to the odour abatement arrangements for the overall site;
- incorporating additional emission points to air to facilitate additional odour abatement systems and emission points;
- incorporating additional EWC codes for waste delivered to the HWRC (in line with RPS 234);
- correct referencing to align with the 2019 Trade Effluent Consent granted by Thames Water;
- moving the road sweepings area;
- additional minor modifications to the design and layout of the Facility to optimise the waste processing and handling arrangements across the site; and
- reduction of overall tonnage into the CRC/RBF from 250,000tpa to 211,121 tpa to account for the increase in tonnage within the gasification activity and ensuring no additional tonnage input into the overall site.

The proposed changes are explained in more detail in sections 2.1 to 2.7.

2.1 Changes to the pre-treatment and gasification plant

2.1.1 Pre-treatment plant capacity

As set out in the original EP application, the operational design capacity of the pre-treatment plant is 28 tonnes per hour, which would produce 21 tonnes per hour of fuel for the gasification plant. Therefore, approximately 75% of the incoming waste would be used to produce the fuel for the gasification plant.

Following the commencement of commissioning of the pre-treatment plant, SUEZ has discovered that approximately 35% of the incoming waste has poor CV or non-combustible material, which is not suitable for gasification. For instance, the proportion of food waste within the incoming waste is much higher than had been measured when designing the plant. Due to this change in waste composition there is a lower RDF yield from the pre-treatment process, to the extent that it limits the operating hours of the gasifier to ~6,500hrs/yr. The original intent was that the gasifier would operate for 7,984hrs/year. A shortfall of ~1,500hrs/yr (2 Months).

To ensure that there is sufficient RDF available to maintain operation of the gasification plant, SUEZ is proposing to increase the RDF output of the pre-treatment plant by operating the pre-treatment plant for additional hours to allow for additional RDF to be produced. The proposed increase in operating hours will be in accordance with any existing constraints on the times that waste can be delivered to the Facility.

Allowing for the proposed operational and design changes, SUEZ is proposing to process up to 94,339 tonnes per annum of waste within the pre-treatment plant to produce up to 18.2 tonnes per hour of fuel for the gasification plant.

2.1.2 Changes to the pre-treatment plant

Through the commissioning phase of the pre-treatment plant, SUEZ has made a number of process improvements to increase the quality of fuel which is produced by the pre-treatment process.

The Operating Techniques for the Facility are referenced from the previous application documents which the EA has previously approved. SUEZ has undertaken a review of the Operating Techniques, and identified where these need to be updated to allow for the process improvements which have been made to the pre-treatment plant, refer to Appendix A.

2.1.3 Gasification plant capacity

The gasification plant was designed to thermally treat up to 44,710 tonnes per annum with an assumed availability of 91%, equivalent to 7,984 hours per annum.

During commissioning and optimisation we have also identified that the gasifier is not only capable of operating at a higher throughput, but also works more efficiently at a higher throughput when fed with a consistent and good quality RDF.

Allowing for the theoretical maximum availability of the gasification plant and its increased throughput capacity, it is capable of processing up to 61,320 tonnes per annum of waste.

2.1.4 Acid gas abatement system

A semi-dry acid gas abatement system has been installed for the abatement of emissions of acid gases. A quantitative BAT assessment has been undertaken to compare the two abatement techniques, refer to section 3.

As concluded in the BAT assessment, the proposed semi-dry acid gas abatement system is considered to represent BAT.

2.1.5 NOx abatement system

Within the 2012 Variation, two stages of NOx abatement were proposed:

1. Primary NOx abatement – a Selective Non-Catalytic Reduction (SNCR)system; and
2. Secondary NOx abatement – a Selective Catalytic Reduction (SCR) system

When commissioning the NOx abatement systems, it was discovered that the SCR system had a minimal effect on reducing NOx emissions released from the stack but increased overall urea consumptions.

Having completed commissioning, SUEZ undertook a trial to operate the gasification plant without the secondary NOx abatement/SCR system. The initial trial, between January 2022 and March 2022, SUEZ operated the gasification plant without the urea injection in the SCR system – the layer of

catalyst was retained in the reaction chamber. SUEZ undertook a further trial between March and April 2022, whereby the layer of catalyst was removed from the reaction chamber. During both trials, SUEZ was able to successfully comply with the emission limit for NOx within the EP. Taking this into consideration, SUEZ proposes to mothball the SCR system, so that it can be re-instated during a short shutdown if required to comply with any future reductions in emission limits.

The Review of Operating Techniques, refer to Appendix A, has included for the mothballing of the SCR system.

2.2 Changes to the AD process

Through the detailed design of the AD process, there were a number of minor modifications incorporated into the design to optimise the AD process. As the modifications are not reflected within the Operating Techniques, a Review of Operating Techniques, refer to Appendix A, it has been undertaken.

The differences to the as-built designs are considered to be minor and will not result in any changes to the overall operation of the AD process or the residues (or types of residues) generated.

In addition to the changes to the process, the biogas engines which have been installed at the Facility have a higher thermal capacity and electrical output than originally anticipated. The increase in thermal capacity of the biogas engines is to allow for the processing of biogas, and minimising the quantities of biogas which may need to be combusted in the flare.

The biogas engines which have been installed at the Facility have a thermal capacity of 5.74 MWth (2 biogas engines with a thermal capacity of 2.87 MWth/engine) and have an electrical output of 2.4MWe (1.2 MWe per engine). Therefore, the biogas engines have an electrical efficiency of 41.8 %. The air quality impacts associated with the higher thermal capacity biogas engines have been assessed, refer to section 4.1.

2.3 Changes to the HWRC

In June 2020, the EA published Regulatory Position Statement (RPS) 234. RPS 234 allows '*operators of sites that are permitted to accept household waste, to also accept separately collected household packaging waste. It applies until their permit is varied to include waste coded under waste chapter 15 01 or this* [the] *RPS is withdrawn'.*

Therefore, in accordance with RPS 234 SUEZ is requesting that the EP is varied to allow SUEZ to receive the additional EWC Codes at the Community Recycling Centre as they are not allowed for within the existing EP:

Table 1: Additional EWC Codes to be received at the Community Recycling Centre

EWC Codes	Description
15	**WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED**
15 01	***packaging (including separately collected municipal packaging waste)***
15 01 01	paper and cardboard packaging
15 01 03	wooden packaging
15 01 04	metallic packaging

EWC Codes	Description
15 01 05	composite packaging
15 01 07	glass packaging
15 01 09	textile packaging

2.4 Road Sweepings Dewatering

Within the previous EP application, it was stated that the unloading and dewatering of road sweepings/gulley waste would be undertaken within a building. Due to the high quantity of reject materials from the Gasifier pre-treatment, there is insufficient space for this to be undertaken within the existing building as originally assumed.

A dedicated bay adjacent to the Recyclables Bulking Facility (RBF) is used for the unloading and dewatering of road sweepings/gulley waste. This is enclosed on three sides and has a roof. As set out in the Review of the Operating Techniques (Appendix A) the arrangements for the storage and handling of solid and liquid residues from the dewatering of road sweepings within the RBF has not changed from the existing EP, but it is undertaken in a different area of the site.

On this basis, the environmental risks associated with the dewatering of road sweepings are the same as previously considered. However, as requested by the EA during pre-application discussions, an environmental risk assessment has been completed for this activity, refer to Appendix F.

2.5 Odour abatement arrangements

The proposals for the abatement of odour have not changed. However, instead of potentially odorous air from the Anaerobic Digestion Process Building being treated within a single carbon filter system contained within the Odour Control Facility, the Anaerobic Digestion Process Building has been separated into two separate areas. The potentially odorous air from each area is treated within a dedicated carbon filter system, and there is a separate emission point/flue from each carbon filter system. In addition to the Odour Control Facility, the MBR Aeration tank also has an odour control vent.

The impact of emissions to air from the odour abatement system have been assessed, refer to section 4.2.

Allowing for the additional emission points to air, a revised emission point drawing is provided in Appendix B.

2.6 Trade Effluent Consent

A revised Trade Effluent Consent was granted by Thames Water in 2019. The Trade Effluent Consent included an emission limit for Rapidly Settleable Solids (100 mg/l). This is not currently included within the EP documentation. The H1 assessment completed for the previous application has been reviewed to consider the impact on emissions to water from this additional emission limit.

2.7 Modifications to the design and site layout

As set out in the preceding sections, a number of modifications have been made to the design and layout of the Facility. In addition to these presented above, there have also been some more minor modifications/amendments which have not been noted, which have been made to optimise the waste processing and handling arrangements across the site.

A Review of Operating Techniques (refer to Appendix A) has been undertaken to identify any additional modifications so that they can be reflected in the revised Operating Techniques for the Facility.

3 Acid Gas Abatement - BAT Assessment

As SUEZ is proposing to change the acid gas abatement system from a dry system to a semi-dry system, the BAT assessment for the abatement of acid gases has been reconsidered to allow for this change.

3.1 Options Considered

There are currently three technologies widely available for acid gas abatement on waste incineration plants in the UK:

1. Wet scrubbing, involving the mixing of the flue gases with an alkaline solution of sodium hydroxide or hydrated lime. This has a good abatement performance, but it consumes large quantities of water, produces large quantities of liquid effluent which require treatment, has high capital and operating costs and generates a visible plume. It is mainly used in the UK for facilities treating hazardous waste where high and varying levels of acid gases in the flue gases require the buffering capacity and additional abatement performance of a wet scrubbing system.
2. Semi-dry, involving the injection of lime as a slurry into the flue gases in the form of a spray of fine droplets. The acid gases are absorbed into the aqueous phase on the surface of the droplets and react with the lime. The fine droplets evaporate as the flue gases pass through the system, cooling the gas. This means that less energy can be extracted from the flue gases in the boiler, making the steam cycle less efficient. The lime and reaction products are collected on a bag filter, where further reaction can take place.
3. Dry, involving the injection of solid lime into the flue gases as a powder. The lime is collected on a bag filter to form a cake and most of the reaction between the acid gases and the lime takes place as the flue gases pass through the filter cake. In its basic form, the dry system consumes more lime than the semi-dry system. However, this can be improved by recirculating the flue gas treatment residues, which contain some unreacted lime and reinjecting this into the flue gases.

Wet scrubbing is not considered to be suitable, due to the production of a large volume of hazardous liquid effluent, a reduction in the power generating efficiency of the plant and the generation of a visible plume. The dry and semi-dry systems are considered further below.

3.2 Environmental Performance

3.2.1 Emissions to Air

The impact of emissions to air is considered in the Dispersion Modelling Assessment, refer to Appendix B. The impact of the emissions of acid gases was assessed at the daily emission concentrations of 40 mg/m^3 for sulphur dioxide (SO_2) and 8 mg/m^3 for hydrogen chloride (HCl).

The table below presents the emission concentrations at the stack and the predicted ground level concentrations for each option. For sulphur dioxide, the 99.18th percentile of the daily averages is shown. For hydrogen chloride, the maximum hourly mean is shown. The emission concentrations for a semi-dry system are expected to be the same as for a dry system so the ground level impacts are also the same.

Table 3-1: Emissions to Air

Abatement System		Dry		Semi-dry	
Pollutant	**Units**	**SO_2**	**HCl**	**SO_2**	**HCl**
Unabated emission concentration	mg/m^3	480	900	480	900
Unabated emission rate	tpa	180	330	180	330
Abated emission concentration	mg/m^3	40	8	40	8
Abated emission rate	tpa	10	5	10	5
Total emissions abated	tpa	170	325	170	325
Process Contribution (PC)	ug/m^3	0.78	2.05	0.78	2.05
Background	ug/m^3	17.08	1.42	17.08	1.42
Predicted Environmental Contribution (PEC)	ug/m^3	17.86	3.47	17.86	3.47
Air Quality Objective	ug/m^3	125	750	125	750
PC as % of AQO		0.62%	0.27%	0.62%	0.27%
PEC as % of AQO		14.29%	0.46%	14.29%	0.46%

The short-term impact of the plant is 0.62% of the daily average air quality objective for sulphur dioxide and 0.27% of the hourly air quality objective for hydrogen chloride. The impact of hydrogen chloride and sulphur dioxide is considered to be insignificant when applying the criteria stated in Environment Agency guidance note H1.

A more detailed assessment of impacts from the release of sulphur dioxide and hydrogen chloride is presented within the Dispersion Modelling Assessment, refer to Appendix B.

3.2.2 Deposition to Land

The impact of acid deposition on sensitive habitats has been assessed in the Dispersion Modelling Assessment, refer to Appendix B. As can be seen from this assessment, the impact of acid deposition on sensitive receptors is not considered to be 'insignificant' at all habitat features.

3.2.3 Emissions to Water

There are no emissions to water for either the dry or the semi-dry systems, therefore the impact of these systems is the same.

3.2.4 Photochemical Ozone Creation Potential

Sulphur dioxide has a photochemical ozone creation potential (POCP) of 4.8. Hence, the POCP for both the dry and semi-dry systems would be 50 tonnes ethylene equivalent.

3.2.5 Global Warming Potential

The direct emissions of greenhouse gases are the same for each option, since the carbon dioxide and nitrous oxide emission concentrations are unchanged. However, the energy consumption is slightly different, which would change the power exported from the plant. This means that the reduction in greenhouse gas emissions due to the displacement of power generated by other power stations would be different in each case.

The semi-dry system involves the evaporation of water. Since the reaction temperature of the lime and hence the outlet temperature should be the same, this means that the flue gas temperature at the inlet to the abatement system is higher for the semi-dry system than the dry system and hence more power can be generated if a dry system is used.

In order to calculate the global warming potential of electricity consumption, the figure of 357kg CO_2 per MWh has been used.

This is shown in the table below.

Table 3-2: Global Warming

	Units	Dry	Semi-Dry
Power consumed	kWh/t	30	28.5
	MWh pa	1,840	1,750
Generation lost (water evaporation)	MWh pa	-	1,100
Power not exported	MWh pa	1,840	2,850
GWP	t CO_2 pa	700	1,100

3.2.6 Raw Materials

The estimated consumption of raw materials for both options is shown below.

Table 3-3: Raw Materials

	Units	Dry	Semi-Dry
Additional water consumption compared to a dry system	tpa		5470
Lime Slurry	tpa		660
Lime	tpa	850	
Powdered Activated Carbon (PAC)	tpa	30	30

3.2.7 Waste Streams

The only waste stream associated with the acid gas abatement treatment technologies is Air Pollution Control residues (APCr) which is a hazardous waste. The production rate for both systems would be approximately 3,000 tonnes per annum.

3.3 Costs

The estimated costs associated with each option are presented below. In order for direct comparisons to be made, the costs are presented as annualised costs, with the capital investment and financing costs spread over a 30-year lifetime with a rate of return of 9%, using the method recommended in Technical Guidance Note EPR-H1.

Table 3-4: Costs

	Dry	Semi-Dry
Capital Cost	£3,600,000	£3,700,000
Annualised Capital Cost	£350,000	£360,000
Maintenance	£180,000	£185,000
Reagents and residues	£873,000	£767,000
Loss of exported power	£105,000	£162,000
Total Annualised Cost	**£1,508,000**	**£1,474,000**

3.4 Conclusions

The table below compares the options.

Table 3-5: Comparison Table

	Units	Dry	Semi-Dry
SO_2 abated	tpa	170	170
Photochemical Ozone Creation Potential (POCP)	t ethylene-eq pa	50	50
Global Warming Potential	t CO_2 eq pa	700	1,100
Additional water consumption compared to a dry system	tpa		5470
APC Residues	tpa	3,000	3,000
Annualised Cost	£ pa	£1,508,000	£1,474,000

The performance of the options is very similar.

The two systems will abate the same mass of acid gas emissions and generate the same quantity of residues requiring disposal/recovery. The semi-dry system will have a slightly higher global warming potential due to reduced power generation; however, it also has a lower annualised operating cost.

The semi-dry option benefits from medium reaction rates which mean that a shorter residence time is required in comparison with a dry system.

Due to the lower annualised operating cost and higher reaction rates for the abatement of acid gases, SUEZ considers that the semi-dry system is considered to represent BAT for the Facility.

4 Environmental Assessments

There are a number of different environmental impacts to consider as a result of the change in fuel to be combusted at the Facility. These are discussed further in the sections below.

In addition to the below, the Environmental Risk Assessment submitted in support of the previous application has been reviewed, and it can be confirmed that there are no changes associated with the environmental risks and appropriate control measures associated with the operation of the Facility from the changes proposed within this application.

4.1 Air Quality

Dispersion modelling has been undertaken to assess the air quality impacts of the following:

- additional operating hours associated with the gasification plant;
- changes to the thermal capacity of the biogas engines; and
- changes to the odour abatement systems.

The Dispersion Modelling Assessment has assumed that the Facility is classified as a 'existing plant' for BREF compliance purposes. Whilst the BREF Review process for the Facility is ongoing, it has been assumed that the emission limits within the EP are at the upper-end of the BAT-AEL, with the exception of NOx which has been assumed to be at the existing ELV.

The findings of the dispersion modelling are presented in the following reports:

- Dispersion Modelling Assessment (Appendix B);
- Dioxin Pathway Assessment (Appendix D); and
- Abnormal Emissions Assessment (Appendix E).

As concluded in the AQA:

> *the change in air quality impact associated with proposed variation would be 'insignificant'. In addition, the total impact of the Proposed Facility would not have a significant impact on local air quality, the general population or the local community. As such there should be no air quality constraint in granting a variation to the existing EP for the changes to the design as proposed.*

Furthermore, the DPA concludes that:

> *the impact of emissions of dioxins and dioxin-like PCBs from the Facility on human health is not predicted to be significant.*

Finally, the AEA concludes that:

> *during periods of abnormal operation as permissible under the IED (Article 46) is not predicted to give rise to an unacceptable impact on air quality or the environment.*

4.2 Odour

As set out in section 2.5 and Appendix A, the proposed arrangements for the extraction of potentially odorous air are different from those presented in the previous application. The potentially odorous air is still treated in a series of carbon filters, and the impact of the proposed arrangements for the extraction/treatment of odorous air has been assessed in the Dispersion Modelling Assessment, refer to Appendix B.

As concluded in the Dispersion Modelling Assessment:

Modelling has shown that the impact of odour from these sources is very small, and well below the benchmark value set for most offensive odour. As such there are not expected to be any unacceptable impacts on odour in the local area from the odour control systems and SBR tank.

SUEZ has an existing Odour Management Plan which, as per the conditions within the EP, it is required to operate in accordance with. The Odour Management Plan already takes into consideration the as-built designs, so will not require updating as part of the EP determination process.

4.3 Water/Sewer

As explained in section 2.6, whilst the most recent Trade Effluent Consent granted by Thames Water did not change any of the emission limits it included an emission limit for Rapidly Settleable Solids. There is no Water Quality Standard for Rapidly Settleable Solids in EA Guidance; therefore, there is no assessment criteria which the impact of emissions of Rapidly Settleable Solids can be assessed against.

4.4 Noise

The waste processing equipment is the same as proposed in the original EP application; therefore, it is not expected that the noise impacts associated with the proposed changes to the Facility will change.

SUEZ has an existing Noise and Vibration Management Plan which, as per the conditions within the EP, it is required to operate in accordance with. The Noise and Vibration Management Plan already takes into consideration the as-built designs, so will not require updating as part of the EP determination process.

4.5 Fire prevention plan

During pre-application discussions with the EA, it was agreed that the volumes or types of waste stored at the Facility would not be changing through the implementation of the proposed changes. On this basis, it was concluded that a Fire Prevention Plan would not be required to be submitted with this application.

4.6 Raw material consumptions

The proposed changes to the design and operation of the Facility, as set out in section 2, are not expected to change the raw materials consumed at the Facility or the arrangements for the storage & handling of raw materials.

The quantities of raw materials expected to be consumed at the Facility are as follows:

Product	Chemical Composition	Estimated consumption (tpa)
Water	Water	30,000
Auxiliary fuel	Low sulphur (<0.1%)	1,500
Hydrated Lime	$Ca(OH)_2$	250
Urea	$(NH_2)_2CO$ (40% solution)	500

Product	Chemical Composition	Estimated consumption (tpa)
Activated carbon	C	30
Boiler treatment chemicals		10
Ferric Chloride	$FeCl_2$	80
Caustic Soda (NaOH)	NaOH 32% solution, low mercury	410
Sulphuric acid	77% Solution	30

4.7 Residue generation

Whilst the proposed changes to the design and operation of the Facility, as set out in section 2, are not expected to significantly change the residues generated by the Facility, it is anticipated that the Facility will give rise to the following quantities of residues:

Source/ Material	Estimated residues generation (approximate) (tonnes)
Boiler Ash/Multiclone Ash	2,000
Gasifier Bottom Ash	3,000
Ferrous metal	1,500
Non-Ferrous metal	610
Fly Ash / APCR	3,000
Digestate	7,000
Contaminated aggregate (Fines)	19,000
Hard particles / residue	12,500
Road Sweepings following dewatering	2,660

A Review of Operating Techniques

B Emission Point Drawing

C Dispersion Modelling Assessment

D Dioxin Pathway Assessment

E Abnormal Emissions Assessment

F Environmental Risk Assessment – Road Sweepings Dewatering

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**
Dust/litter from the road sweepings areas being blown off-site.	Immediate area – air, land.	Air, surface runoff.	Road sweepings will be delivered in enclosed vehicles. All waste unloading activities will be undertaken within the enclosed road sweepings area. Good housekeeping will be employed to minimise the build-up of dust or litter. Waste deliveries will be supervised by suitably trained staff.	Unlikely.	Nuisance and dust.	Insignificant.
Fugitive emissions during periods of shutdown.	Immediate area – air.	Air, direct contact.	Prior to periods of planned shutdown, the quantities of waste stores within road sweepings dewatering area will be run-down, with incoming waste deliveries halted.	Unlikely.	Nuisance, annoyance.	Insignificant.

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**
			In the event of an extended unplanned shutdown requiring waste to be removed from the storage bay, it will be backloaded and transferred off-site to a suitably licensed waste management facility.			
Spillage of waste and materials during delivery and offloading.	Immediate area – air, land, water.	Air, surface runoff.	Spillages would be cleaned up in accordance with documented management systems. Waste unloading areas will have contained drainage systems which discharge into the process drainage system to minimise the risk of emissions of contaminated water.	Unlikely.	Nuisance and dust.	Insignificant.

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