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## SUEZ Recycling and Recovery Suffolk Ltd

Supporting Information

## Document approval

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## Non-technical Summary

SUEZ Recycling and Recovery Suffolk Ltd (SUEZ) operate a two-stream EfW plant at the SUEZ Suffolk EfW Facility (the Facility) in Great Blakenham, Suffolk. An Environmental Permit (EP) for the operation of the Facility was granted on 21 September 2011. SUEZ have subsequently been granted five separate variations to the EP.

SUEZ is proposing to increase the capacity of the Facility from 269,000 tonnes per annum to 295,000 tonnes per annum. The proposed increase in plant capacity is to reflect the design capacity within the firing diagram for the as-built facility.

SUEZ consider that this application should be determined as a Substantial Variation.

Assessments of the air quality impacts associated with these changes have been undertaken and have concluded that the changes proposed in this application will not have a significant impact upon sensitive ecological and human receptors.

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# 1 Introduction

## 1.1 Background

SUEZ Recycling and Recovery Suffolk Ltd (SUEZ) operate a two-stream EfW plant at the SUEZ Suffolk EfW Facility (the Facility) in Great Blakenham, Suffolk. An Environmental Permit (EP) for the operation of the Facility was granted on 21 September 2011. SUEZ have subsequently been granted five separate variations to the EP.

SUEZ is applying to increase the capacity of the Facility to allow up to 295,000 tonnes per annum.

This document and supporting annexes contain the information for the application for a variation to the EP, and should be read in conjunction with the formal application forms.

Section 1 of this document provides a brief overview of the applicant and the purpose of this application; Section 2 provides information to justify the proposed increase in plant capacity; and Section 3 considers the environmental impact associated with the proposed increase in capacity.

## 1.2 Proposed Change

SUEZ is proposing to increase the capacity of the Facility from 269,000 tonnes per annum to 295,000 tonnes per annum. The proposed increase in plant capacity is to reflect the design capacity within the firing diagram for the as-built Facility (refer to Appendix A), and is justified 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 been withdrawn). 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.'*

An air quality assessment for the proposed increase in plant capacity has been undertaken. A summary of the assessment is presented in Section 3. As can be seen from the conclusions of the assessment, the air quality impacts will not have a significant impact on local air quality, the general population or the local community.

Furthermore, as explained in Section 2 of this document, the proposed increase in plant capacity is equivalent to 1.58 tonnes per hour per line. The Facility is a two line design; therefore, the overall increase in processing capacity is 3.16 tonnes per hour.

The threshold for a non-hazardous waste incineration facility within Part 2, Schedule 1, Section 5.1 (b) of the Environmental Permitting Regulations is 3 tonnes per hour. Therefore, the proposed increase in capacity is more than the threshold in '*Part 2 of Schedule 1 EPRs*'. Therefore, it is considered that this application is a 'Substantial Change' to the EP.

To conclude, SUEZ considers that this application should be determined as a Substantial Variation.

## 2 Proposed Changes to Plant Capacity

It should be noted that the proposed increase in the permitted capacity is to reflect the maximum capacity of the as-built Facility. To understand the proposed increase in capacity it is important to understand how the capacity of the Facility has been calculated. The plant fuel throughput (referred to as mechanical plant capacity) is calculated as follows:

Plant Fuel Capacity = Processing Capacity x Operational Period

### 2.1 Current Permitted Capacity

The design basis for the current permitted capacity is set out below. For the purposes of calculating the capacity it is important to refer to the firing diagram, presented in Appendix A. For the purposes of the original EP application, the following assumptions were applied to calculate the permit capacity:

1. the processing capacity of nominal design fuel = 15.79 tonnes per hour per line (is represented by design point X<sub>mcr</sub>);
2. the typical long-term availability of an EfW = 97% (8,500 hours per annum);
3. the nominal design of the waste = 9.8 MJ/kg Net Calorific Value (NCV); and
4. The Facility is a two stream facility.

Taking this into consideration, the permitted capacity of the Facility was calculated as follows:

Permitted Capacity per line = 15.79 tonnes per hour x 8,500 hours availability  
= 134,200 tonnes per annum per line  
= approx. 269,000 tonnes per annum

### 2.2 Proposed Increase in Permitted Capacity

As shown in the firing diagram, the Facility has been designed to process waste with a range of NCV's (7.8 to 12.5 MJ/kg). Allowing for the lower range of NCV of the waste, the Facility is capable of processing up to 17.37 tonnes per hour, within the 'Normal Load Range'. Therefore, this should be reflected in calculating the maximum capacity of the Facility.

Taking the above into consideration, the assumptions for calculating the maximum capacity of the Facility are as follows:

1. the processing capacity of lower range NCV of the waste (design points X<sub>Mcr+</sub> and X<sub>Lcr+</sub>) = 17.37 tonnes per hour;
2. the maximum operating hours of the Facility = 8,500 hours per annum; and
3. the lower range NCV of the waste = 8.91-7.8 MJ/kg Net Calorific Value (NCV).

Taking the above into consideration, the maximum capacity can be calculated as follows:

Proposed Capacity = 17.37 tonnes per hour x 8,500 hours availability  
= 147,600 tonnes per annum per line  
= approx. 295,000 tonnes per annum

If the Facility is not permitted to operate at the increased capacity, the waste which would be processed in the Facility could need to be transferred to an alternative waste management facility.

Whilst alternative waste management facilities have not been identified, it is possible that these could be landfill facilities and not necessarily alternative EfW sites.

## 2.3 Raw Material Consumption

The proposed increase in plant capacity will result in the consumption of additional quantities of the raw materials currently consumed during the operation of the Facility:

Table 1 - Raw Material Consumption

Raw Material	Unit	Current Raw Material consumption based on 2018 data	Proposed Raw Material consumption
Lime	tonnes per annum	2,390	2,661
Carbon	tonnes per annum	81	90
Urea	tonnes per annum	549	611
Diesel	m <sup>3</sup> per annum	466	466 <sup>(1)</sup>
Notes:			
(1) Diesel is used as a start-up (and shutdown fuel). Due to the proposed increase in plant capacity it is not proposed to change the number of start-ups and shutdowns. Therefore, this will remain the same with the proposed increase in capacity.			

The raw materials consumed in 2018 have been scaled to increase in accordance with the proposed increase in capacity to reflect the proposed raw material consumption.

It should be noted that the proposed increase in plant capacity will not result in any changes to the arrangements for the storage and handling of raw materials or any additional types of raw materials to be consumed at the Facility.

## 2.4 Residues Generation

The proposed increase in plant capacity will result in the generation of additional residues, as presented in Table 2:

Table 2 - Residues Generated

Residue	Current residue generation based on 2018 data (tonnes per annum)	Proposed residue generation (tonnes per annum)
Incinerator Bottom Ash	62,881	70,000
APCr	6,651	7,500

The residues generated in 2018 have been scaled to increase in accordance with the proposed increase in capacity to reflect the proposed residue generation.

It should be noted that the proposed increase in plant capacity will not result in any changes to the arrangements for the storage and handling of residues generated by the Facility.

## 2.5 Energy Efficiency

The Facility has been designed to generate up to 25.2 MWe. Assuming an availability of 8,500 hours per annum the Facility will generate up to 214,000 MWh per annum. The Facility has a parasitic load of 3.5 MWe. With the assumed availability, the Facility will consume up to 29,750 MWh per annum. Therefore, the Facility is capable of exporting up to 184,250 MWh per annum. The as-built designs have been considered against the relevant energy efficiency requirements of the waste incineration sector guidance (EPR5.01) and the Waste Incineration BREF (referred to as the WI BREF). As can be seen from the findings presented in Table 3, the design of the Facility compares favourably with the relevant benchmarks.

Table 3 - Facility design parameters comparison table

Parameter	Unit	The Facility	Benchmark
Gross power generation, nominal design	MWh/t waste	0.725	0.415-0.644
Net power generation, nominal design	MWh/t waste	0.625	0.279-0.458
Internal power consumption, nominal design	MWh/t waste	0.10	0.15
Power generation (assumed gross) for 100,000 tpa of waste	MWe	11.7	5-9

It is understood that the change to the EP proposed in this application will not require the Facility to undertake a cost–benefit assessment (CBA) of opportunities for cogeneration (combined heat and power) or district heating in accordance with the requirements of Article 14 of the Energy Efficiency Directive.

## 2.6 Fire Prevention Plan

The proposed increase in capacity of the Facility is to regularise the EP with the design of the Facility. Through implementation of this variation, there will not be any changes to the quantity or arrangements for the storage of waste within the Facility. Furthermore, it is understood that:

- there will be no increase in the potential risk of fire at the Facility, including the volumes or types of wastes which will be held at the Facility in the bunker; and,
- there will be no changes to the proposed management techniques to prevent or mitigate fire associated with this variation.

Taking this into consideration, it is understood that a Fire Prevention Plan is not required to be submitted in support of this application for a variation to the EP. This was discussed and agreed with Audrey McIntyre (National Permitting Service), during Enhanced Pre-application discussions.

## 2.7 Environmental Risk Assessment

As this variation is not proposed to result in any changes to the waste processing equipment of the associated Operating Techniques listed within table S1.2 of the EP, it is not proposed to make any changes to the Environmental Risk Assessments submitted with the original EP application.

### 3 Air Quality Assessment

An air quality assessment of the impacts associated with the proposed change in throughput has been undertaken, and is presented in Appendix B. The assessment considers the impact of the Permitted Facility and compares this to the Operational Facility. The Permitted Facility and Operational Facility are defined within the air quality assessment. Section 9 of the air quality assessment also considers the impact of emissions upon sensitive ecological features.

In addition, a human health risk assessment (refer to Appendix C) and an abnormal emissions assessment (refer to Appendix D) have been undertaken.

As concluded in the air quality assessment:

1. *Emissions from the Operational Facility will not cause a breach of any AQAL.*
2. *The Operational Facility is predicted to have a lower impact on air quality than that considered when determining the original EP application. This is because the Operational Facility has a greater flue gas exit velocity than the Permitted Facility, causing greater dispersion of emissions and resulting in lower ground level impacts.*
3. *The overall impact of all short-term process emissions associated with the Operational Facility can be considered to be 'insignificant' at the point of maximum impact and all identified human sensitive receptors.*
4. *The overall impact of all long-term process emissions associated with the Operational Facility can be considered to be 'not significant' at the point of maximum impact and all identified human sensitive receptors.*
5. *Two statutory designated sites and fourteen locally designated sites have been identified as requiring consideration within this assessment. At all of the sites, emissions from the operation of the Facility can be screened out as 'not significant'.*

In summary, a comprehensive assessment of the impact of the proposed increase in throughput and using operational data from the Facility has shown that emissions 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 the variation to the EP for the Facility.

For the purposes of this application, it is assumed that the Facility will operate in accordance with the emission limits stated within the existing EP. SUEZ understands that the WI BREF is currently under consultation and is expected to be formally published later this year (2019). The WI BREF is expected to impose lower emission limits than required by the existing EP. Taking this into consideration, the air quality impacts associated with the proposed increase in processing capacity will be even lower than reported in the air quality assessment following implementation of the WI BREF.

# Appendices

# A Firing Diagram

## B Air Quality Assessment

## C Human Health Risk Assessment

## D Abnormal Emissions Assessment

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