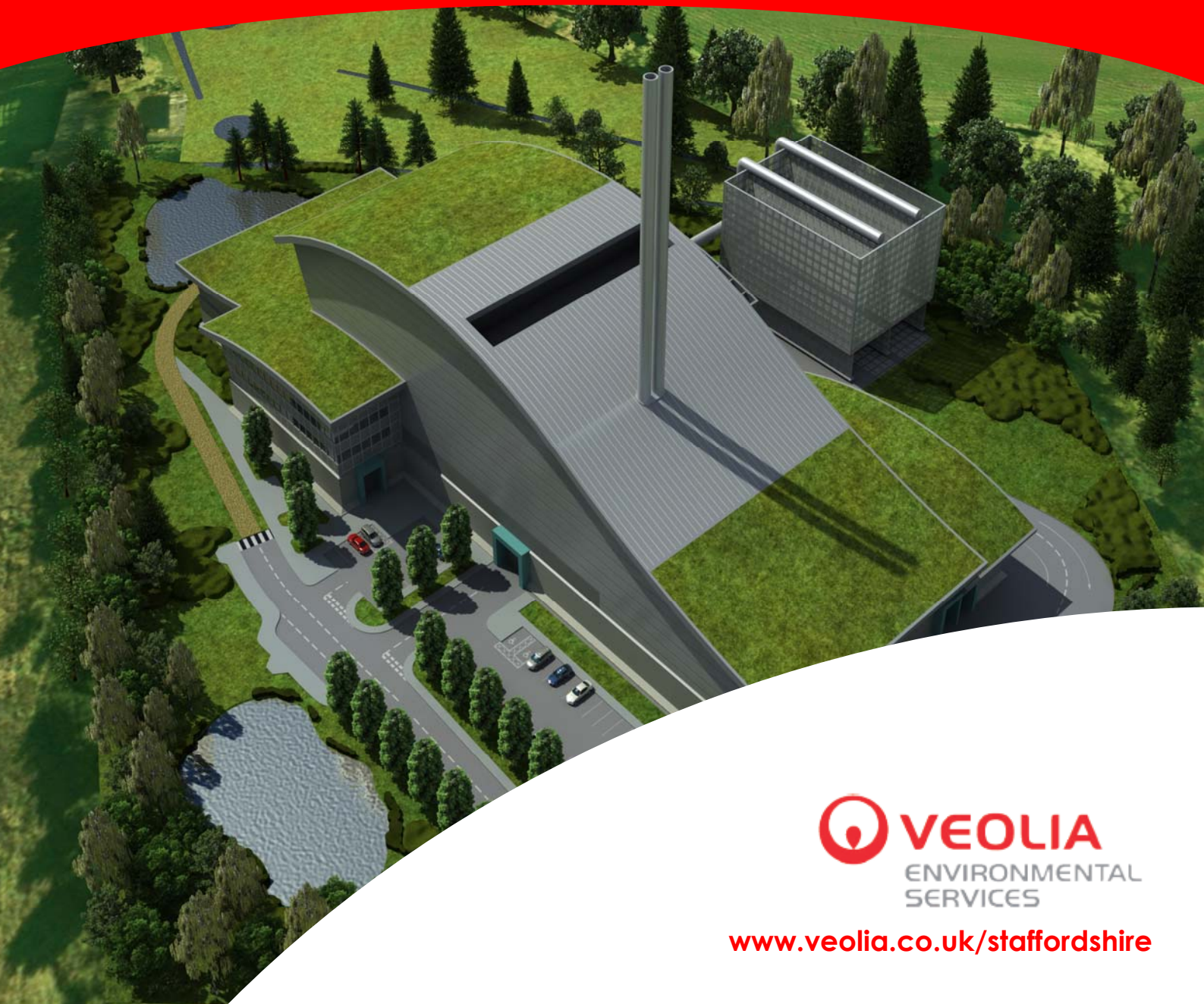


Four Ashes Energy Recovery Facility

Volume 1

Non Technical Summary, Introduction and Application Forms

May 2011



 **VEOLIA**
ENVIRONMENTAL
SERVICES

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NON TECHNICAL SUMMARY

INTRODUCTION

Veolia Environmental Services (UK) plc ('VESUK') intends to construct an Energy Recovery Facility (ERF) to serve the Staffordshire region. The ERF will be fired by predominantly residual municipal solid waste (some commercial and industrial waste may also be accepted) and will have a design capacity of 300,000 tonnes of waste per annum⁽¹⁾. The ERF will be operated by Veolia ES Staffordshire Ltd ('VES'), a wholly owned subsidiary of VESUK.

In addition to dealing with waste, the facility can generate approximately 26 MW of electricity, with the ERF consuming approximately 3.2 MW of the generated electricity and the balance is exported to the local electricity network via an underground cable.

This non-technical summary is provided as a condensed summary of the key assessments and results submitted as part of the Application for a new permit under the Environmental Permitting (England and Wales) Regulations 2010 (the "EP Regulations"), Statutory Instrument 2010 no. 675.

BACKGROUND

Description of Waste

Municipal waste is the waste that the District, Borough and County Councils have a responsibility for collecting and disposing. It is mainly composed of:

- wastes produced by householders;
- wastes produced by trade premises and collected by the Councils; and
- litter and street sweepings.

Staffordshire County Council, alongside its eight constituent District and Borough Councils has set a target of "Zero Waste to Landfill" by 2020. As part of this the authorities intend, by 2020, to:

- increase recycling/composting rates to 55%;
- continue to use the existing Energy From Waste Facility at Hanford, Stoke on Trent; and

(1) Based on an average of 7,500 hours of operation per annum and lower heating value (LHV) of 9.2MJ kg⁻¹

- to procure a facility for the diversion of remaining wastes from landfill in the County, and partner authorities of Walsall, Sandwell and Warwickshire.

Through the combined provision of a new waste management infrastructure, significant volumes of waste will be diverted away from landfill disposal and assist Staffordshire County Council to achieve specific statutory targets for recycling and recovery in accordance with local, national and European waste management strategies.

Waste Management Contract

In July 2010 Staffordshire County Council signed a 25 year Private Finance Initiative (PFI) waste management contract with VESUK.

The PFI is a form of public-private partnership (PPP) in which local authorities can gain access to new or improved capital assets. Unlike traditional procurement the public sector does not buy the assets, but rather pays for their use.

The overarching objectives of the Staffordshire PFI Contract are for VES to:

- deliver the proposed Energy Recovery Facility at Four Ashes in accordance with the Project Programme;
- meet the Contract Waste Diversion Targets;
- use and promote the principle of the Waste Hierarchy;
- promote waste prevention, minimisation and re-use through increased public awareness, education and involvement in the management of waste; and
- encourage and promote partnering between VES and the Authority to facilitate continuous improvement of service delivery

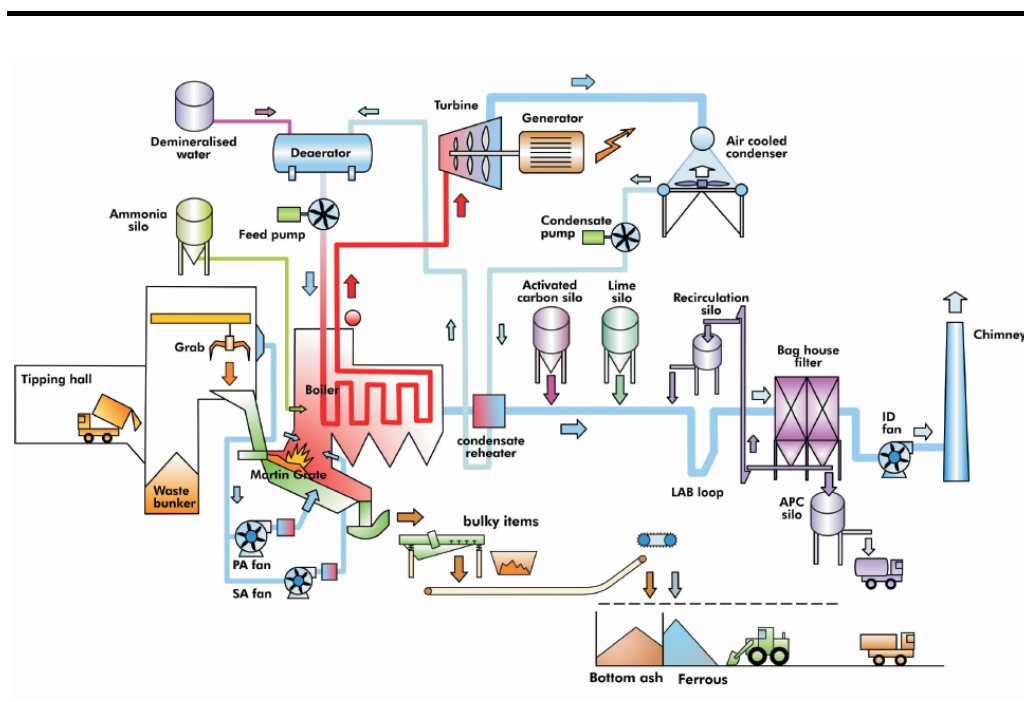
SITE CONDITION REPORT (VOLUME 2, SECTION 3 AND VOLUME 3, ANNEX A)

An Application Site Condition Report (SCR) has been compiled following Environment Agency guidance. This document is included in *Annex A*. Information regarding the site and surrounding areas has been reviewed in order to describe the condition of the site and, in particular, to identify any substance in, on or under the land that may constitute a potential pollution risk to the land. Pollution prevention measures have been identified and an assessment of pollution potential to land has been undertaken.

Outline Design and Process Description

The ERF will consist of two streams with a capacity of 20 tonnes of residual municipal waste per hour per stream. *Figure 1* shows the main process steps of the ERF. Waste is combusted, and the heat from this process is used to heat water to steam in the boiler. The steam from the boiler is then routed to a turbine to generate electricity. The output steam from the turbine is then cooled, and converted back into water to be recycled back into the boiler. The ERF is designed to produce approximately 26 MW of electricity, of which 23 MW will be exported to the local electricity network. The activities carried out at the ERF will comply with the Waste Incineration Directive (WID).

Figure 1 Schematic Diagram of Proposed Energy Recovery Facility



Abatement of Emissions to Air

The ERF will use a dry Flue Gas Treatment (FGT) system to reduce emissions to the atmosphere. The acid gases generated by the combustion of waste will be neutralised and the resulting particulate matter separated out in a bag filter. Emissions of nitrogen oxides will also be reduced, through the use of a Selective Non-Catalytic Reduction (SNCR) de-NO_x treatment. In addition to process logic controllers, the Facility also utilises various process control and monitoring mechanisms to minimise emissions to air.

The furnace temperature is continuously monitored to ensure optimal combustion and reduce the formation of dioxins and nitrous oxide (a greenhouse gas) in the flue gas.

Continuous in-stack monitoring of key pollutants is conducted whenever the ERF is in operation. If emissions to air are detected to be approaching the prescribed set point concentrations, an alarm will sound, and the Operator will take corrective action or shutdown the plant until the problem can be corrected.

The pressure drop across the bag house filter is continuously monitored and controlled. When it reaches the set point, a bag cleaning sequence is automatically initiated. Pressure drop is an indicator parameter of how well the bag filter is able to control particulates, so this monitoring and automation are a means to minimise the release of particulate emissions (e.g. PM₁₀ and PM_{2.5}) to the atmosphere.

There are no significant fugitive emissions to air of gases, vapours, odours or particulates. There will be no large scale storage of fuels or stockpiles of raw materials, other than of residual municipal waste. Incoming municipal waste will be delivered in covered vehicles or containers to minimize fugitive losses. Combustion air is drawn from above the waste storage bunker and tipping hall so that the odours and airborne dust from the areas are drawn into the incineration process. Odorous substances will thus be destroyed by incineration and any dust retained in the bottom ash or in the FGT residue.

Abatement of Emissions to Surface Water and Sewer

All the rainwater run off from the roadways, parking areas and hardstandings will be passed through the SUDS system and two attenuation ponds prior to discharge into Saredon Brook.

Under normal operations, process water will be passed to a wastewater treatment pit designed to allow the water to be recycled within the process, and will not be discharged to surface water or the sewer. Under certain circumstance when wastewater can not be recycled within the process, wastewater can be discharged to the public sewer after appropriate treatment and in accordance with a trade effluent discharge consent which will be sought from Severn Trent Water.

In the event of fire on the Site, the firewater used in areas which are clean and not contaminated, will enter the surface water drains and be handled as rainwater. Firewater from potentially contaminated areas will be routed to the wastewater treatment pit and would be pumped out for final disposal by tanker.

It is anticipated that there will be no fugitive emissions to surface water, sewer and groundwater and therefore abatement does not need to be considered.

WASTE INCINERATION DIRECTIVE COMPLIANCE (VOLUME 2, SECTION 5)

The Waste Incineration Directive (WID) aims to prevent or limit, as far as practicable, negative effects on the environment and the resulting risks to

human health by requiring the setting and maintenance of stringent operational conditions, technical requirements and emission limit values for plants incinerating waste. The proposed ERF will meet the requirements of the WID as follows:

- emission limits are met;
- the heat generated is recovered as far as practicable;
- residues are minimised and recycled where appropriate; and
- the proposed monitoring techniques are as defined in WID.

Section 5 of the Application summarises the requirements of WID and cross-references to other sections of the Application that describe how WID is met.

PROPOSED MANAGEMENT TECHNIQUES (VOLUME 2, SECTION 6)

Environmental Management Systems (EMS)

Waste facilities within the contract with Staffordshire County Council are covered by the VESUK management system. This system is already established and will be applied at the start of operation of the ERF.

VESUK holds the Management System Presentation Certificate No LQR 4005031 which relates to all waste facilities operated by the Group. Prior to operation, the proposed ERF will adopt this Management System, which accords with BS.EN.ISO 9001:2008, BS.EN.ISO 14001:2004 and OHSAS 18001:2007. The proposed ERF will be audited by Lloyds Register Quality Assurance (LRQA) and integrated into the new LRQA Veolia Environmental Services Group Certificate. An Environmental Management System (EMS) is part of the Facility's overall management system.

The Management System operates so as to control the activities of the Company. This system is in place to prevent harm to the environment and to set down guidelines for action in the event of an unforeseen occurrence.

Maintenance and Repairs

The first stage of the Maintenance and Repairs programme (including the computerised maintenance management system) will be set up during the commissioning phase. The second stage will take place during the first year of operation, and will allow the validation and optimisation of the maintenance system by the VES staff.

Training

A comprehensive apprenticeship and training programme will be developed and implemented to prepare personnel for their positions at the ERF. Veolia will actively seek applicants from the local area. Training will cover the role and responsibilities of the employee, the Environmental Policy and Objectives and the correct implementation of the EMS procedures. All staff will be given training as follows: hands on training; work experience at similar facilities operated by Veolia; and dedicated training from the turnkey construction contractor.

RAW AND AUXILIARY MATERIALS (VOLUME 2, SECTION 7)

The main raw material to be used by the ERF will be residual municipal waste from Staffordshire and Walsall, Sandwell and Warwickshire and this will be stored in the waste reception bunker. Segregation of waste is effectively carried out off site at householder level through collection of recyclables and green and food waste as well as through source segregation at household waste recycling centres. It is therefore residual waste that is delivered to the ERF. This waste is anticipated to be directly delivered to the ERF as EWC code 20 03 01 or via bulk waste vehicle from the Integrated Waste Management Facilities (IWMF) as EWC code 19 12 12.

Additionally, the ERF will use a variety of other raw materials for auxiliary operations such as: treatment of flue gases and demineralisation of water for boiler water preparation; fuels for the auxiliary burner and fuelling site vehicles; and effluent treatment chemicals. VES will maintain an inventory of all auxiliary raw materials and will continue to assess the potential for reducing the use of such materials or substituting materials by less harmful alternatives as part of the EMS.

There will be no direct or planned indirect discharges of List I or II substances from the ERF.

Water Usage

Water is a significant raw material for the ERF. The ERF will use approximately 75,000 m³ of mains water per year. No additional surface or ground water abstraction will be required. The Facility is designed with a waste water pit to store used process water. This water is then reused within the process for bottom ash quenching. In the unlikely event that these liquids cannot be reused within the process, they can either be pumped out for final disposal by tankers or neutralised prior to discharge to sewer. This discharge would be in accordance with the trade effluent discharge consent.

Water consumption will be closely monitored to ensure that the water is being used effectively in the process.

CHARACTERISATION AND QUANTIFICATION OF WASTE STREAMS (VOLUME 2, SECTION 8)

The major wastes resulting from the process are bottom ash and flue gas treatment (FGT) residue. Ferrous metals will be extracted from the bottom ash.

Minor waste streams generated by ancillary and supporting activities at the site include general (non-hazardous) waste, collected ash and lime resulting from spillages, items produced as a result of maintenance activities such as used filters, empty containers, rags and papers, absorbent granules, etc and scrap metal.

Duty of Care

All vehicles transporting bottom ash, ferrous metals and FGT residue from the ERF to specific disposal or recycling sites will be weighed. All the data collected (vehicle destination, vehicle registration, type of product, net and gross weight, date and time) will be recorded and controlled using the computerised system.

Duty of care documentation relating to the off site disposal and recovery of key waste streams are kept by VES and will include:

- waste disposal contracts;
- waste carrier registrations;
- waste management licences;
- waste disposal options; and
- waste management facility audits.

WASTE STREAM RECOVERY AND DISPOSAL (VOLUME 2, SECTION 9)

Section 9 of the Application considers waste disposal and the potential for reduction of waste streams. Bottom ash and FGT residue are the primary waste streams.

Full analysis of the bottom ash will be undertaken on a regular basis. Ferrous metal will be recovered by magnetic separator from the bottom ash and sent to suitable recycling facilities. VES intends to recycle the bottom ash by processing it off site into a suitable aggregate type material for use in the construction industry.

FGT residue will, where possible, be reused within the chemical and manufacturing industry to neutralise acids or disposed of at licensed facilities.

Full analysis of the FGT residue will be undertaken on a regular basis.

ENERGY CONSUMPTION, GENERATION AND EFFICIENCY (VOLUME 2, SECTION 10)

Management Techniques

Various management techniques will be adopted by the Operator to specifically address energy related issues including energy management policy, monitoring and staff training and education.

Energy Efficiency Assessments will cover the following areas: lighting; heating; water; boilers; buildings; electrical equipment; compressed air; vehicles; buying fuel and utilities; and management.

Operating and Maintenance Procedures

The ERF will operate continuously, 24 hours per day, 7 days a week. The generation of electricity is a key output from the ERF and is paramount to the overall financial viability of the project.

As the plant will operate continuously, detailed operating procedures and maintenance schedules are optimised to minimise downtime and maximise net export of electricity. The Operator will adopt a planned maintenance schedule for the whole plant.

Energy Consumption

The primary energy used in the ERF is broken down into:

- self generated;
- imported;
- exported electricity;
- energy from fuel oil; and
- energy from waste.

Energy consumption by activity is broken down in detail in this Section. The specific energy consumption (SEC) is a benchmark for energy consumption per unit of raw material processed or product output. Measures to improve energy efficiency are also detailed in this section of the Application.

SYSTEMS TO IDENTIFY ASSESS AND MINIMISE ENVIRONMENTAL RISKS AND HAZARDS OF ACCIDENTS AND THEIR CONSEQUENCES (VOLUME 2, SECTION 11)

VES will through the EMS, seek to prevent and limit accidents with environmental consequences. The following systems will be included:

- a Safety Programme (closely co-ordinated with the EMS);
- a comprehensive Emergency Plan of Response for environmental incidents, natural disasters, individual emergencies and civil disorders;

- plans and resources for fire prevention and fire fighting;
- a Hazard and Operability (HAZOP) study conducted on the plant and any major new equipment;
- the incorporation of appropriate design measures and operational techniques into the design and operation of the ERF; and
- Risk Assessments for all activities on site.

NOISE AND VIBRATION (VOLUME 2, SECTION 12)

The potential for environmental noise impacts was assessed and noise limits have consequently been proposed at appropriate levels to avoid noise disturbance. *Section 12* of the Application describes how the Facility has been designed to achieve these limits through the adoption of BAT to control noise.

VES has specified a high standard of noise attenuation for the ERF. The attenuation philosophy has been based on the following stages: identifying the equipment with high sources of noise; introducing attenuation measures to the equipment; specifying local acoustic enclosures; and suitably locating plant within the fabric of the building.

An acoustic analysis of the internal fixed plant will be carried out during the course of the design and construction of the plant to establish the overall noise level and the frequency contributions of the ERF.

The predicted operational noise levels are below the existing ambient noise at the nearest noise sensitive receptors or will not cause annoyance as they are below the predicted operational noise levels of the World Health Organisation guideline limits.

MONITORING (VOLUME 2, SECTION 13)

VES will monitor both process conditions and emissions. Process monitoring, and the frequency of this monitoring, is as follows:

- furnace gas temperature (continuously);
- mass and category of waste received (as applicable);
- pressure drop across the bag filter (continuously);
- flue gas temperature, pressure, water vapour content, O₂ concentration (continuously); and

- bottom ash Total Organic Carbon (TOC) content (as permitted by EA).

Emissions monitoring will also be conducted. A description of all emissions monitoring is provided below.

Releases to Air

A Continuous Emissions Monitoring System (CEMS) will be used to monitor air pollutant emission concentrations in the ERF stacks. The CEMS will monitor the emissions of total particles/dust, volatile organic compounds (VOCs), hydrogen chloride (HCl), (and as a surrogate for hydrogen fluoride (HF)), carbon monoxide (CO), sulphur dioxide (SO₂), oxides of nitrogen (the sum of NO and NO₂, expressed as NO₂), ammonia (NH₃) oxygen (O₂), and water vapour (H₂O). It will also record temperature, pressure and the flue gas flow. Operators will be alerted when atmospheric emissions approach the authorised limits by audio or visual alarms.

Other substances, namely the heavy metals and their compounds and dioxins and furans, will be monitored by taking and analysing extractive samples from the chimneys at six month intervals (but every three months for the first 12 months of operation).

Water Discharges

The plant has been designed to operate as a zero process water discharge plant during normal operation. As such, releases to sewer will be limited to amenity wastes and occasional wastewater discharge after prior neutralisation. The water treatment systems will be monitored to check performance and be adequately maintained. Samples of waste water treatment pit discharge (with the frequency to be agreed with the EA) will be analysed to verify compliance with limits set by the Permit.

Waste Stream Characteristics

Solid wastes generated at the ERF will be inspected and, as appropriate, analysed to characterise the waste for waste management purposes. The quantities of waste generated will be measured or estimated. Periodic sampling (frequency to be agreed with the EA) and analysis of the main waste streams (bottom ash and FGT residue) will also take place, including a regular assessment of bottom ash burnout.

Ambient Noise

Noise levels will be monitored during operation to check compliance with the noise limits in the planning permission. Measurements will be taken at a time when other sources are likely to be low compared to the plant and this is likely to be most effectively achieved in the evening or at night.

DECOMMISSIONING (VOLUME 2, SECTION 14)

VES will adopt appropriate measures in the plant design to ensure continued safety and operation, and management initiatives and procedures to minimise the potential for contamination during operation of the ERF. A Site Closure and Restoration Plan will be developed once the plant becomes operational. A Site Closure Report will be provided as part of the application to surrender the Permit.

NATURE, QUANTITY AND SOURCES OF FORESEEABLE EMISSIONS (VOLUME 2, SECTION 15)

Emissions to Air

The principal sources of emissions to atmosphere from the normal operation of the proposed ERF will be from the 80 metre chimneys and will include carbon dioxide, carbon monoxide, water vapour, oxides of nitrogen, sulphur dioxide, particulate matter, trace metals and organic compounds.

Detailed atmospheric dispersion modelling of the emissions from the ERF has been undertaken. The results show that there is no significant impact to local air quality, human health or sites of nature conservation interest.

Emissions to Surface Water

No potentially contaminated water will be released to surface water. Uncontaminated rain water will be routed directly to the two attenuation ponds via a dedicated SUD system before discharge into Saredon Brook.

Emissions to Controlled Water and Groundwater

There will be no emissions to controlled water or groundwater.

Emissions to Sewer

The ERF has been designed to operate as a zero process water discharge plant during normal operation. Releases to sewer will therefore be limited to amenity wastes and abnormal wastewater discharge after prior neutralisation. These releases will be subject to the Environmental Permit and discharge consent.

Emissions to Land

Wastes are limited to bottom ash and FGT residues, and minor quantities of pit and tank sludge, interceptor sludge and general plant waste. These will be disposed of off site at licensed disposal facilities. Where practical, office waste will be recycled.

There will be emissions of noise from certain equipment within the proposed ERF. There will be no significant emissions of vibration or odour.

POTENTIAL SIGNIFICANT ENVIRONMENTAL EFFECTS (VOLUME 2, SECTION 16 AND VOLUME 4, ANNEXES D, E AND F)

Environmental Effects of Emissions to Air

Annex D contains the detailed assessment of the consequences of releases to atmosphere of prescribed substances or any substance with the potential to cause harm. The assessment considers the following:

- relevant air quality assessment criteria;
- existing ambient air quality;
- assessment methodology;
- meteorological data;
- impact on air quality;
- impact to sensitive receptors;
- optimum chimney height;
- risk to public health; and
- visibility of the plume.

The proposed ERF will be designed to minimise atmospheric emissions using Best Available Techniques (BAT) to render harmless any residual emissions. Emissions to air will be required to meet the stringent standards included in the European Waste Incineration Directive.

The potential impacts to sensitive community and ecological receptors have been assessed using two separate computer air dispersion models in accordance with good practice. When the maximum additional predicted contributions from the ERF are added to the worst-case background concentrations, the resultant predicted environmental concentrations of all released substances are within all relevant air quality criteria for the protection of human health.

The impact of operational traffic, odour and visibility of the plume from the chimneys associated with the proposed Facility has also been assessed. Emissions from traffic accessing and leaving the site during operation of the ERF are predicted to be insignificant and have no impact on local air quality. No emissions of odour are predicted during normal operation. The impact from visible plume is deemed to be low.

Contributions of air pollutant concentrations and deposition from the ERF to designated ecological sites have been calculated based on dispersion modelling results and compared against relevant criteria. The assessment indicates that none of the Natura 2000 sites (SACs) will experience a

significant impact. There are potentially significant impacts associated with deposition of acid at three SSSIs (Big Hyde Rough, Belvide Reservoir and Stowe Pool & Walk Mill Clay Pit), and there may be significant impacts associated with emissions of NO_x for the 24 hour mean at one SSSI (Stowe Pool & Walk Mill Clay Pit). Some significant impacts are also predicted at several of the BAS/SBI sites with respects to acid deposition, nutrient nitrogen deposition, NO_x and ammonia. It is expected that emissions will be well below the WID limits and hence the actual impacts will be lower than estimated.

The results of the assessment using the Department of Health's Committee on the Medical Effect of Air Pollutants (COMEAP) methodology demonstrate that the health effects associated with the development are very small, especially in comparison to the health effects associated with the existing exposure to atmospheric pollutants and lifestyle choices made by individuals in the population considered.

The assessment of health effects arising from exposure to metals and dioxins indicates that emissions from the ERF do not pose a significant risk to health, given what is considered to be an acceptable level of lifetime risk in the UK.

The assessment demonstrates that the maximally exposed individual is not subject to a significant carcinogenic risk or non-carcinogenic hazard, arising from exposures via both inhalation and the ingestion of foods.

Environmental Effects of Releases to Surface Water

No potentially contaminated water will be released to surface water and therefore there will be no impact.

Environmental Effects of Releases to Controlled Water and Groundwater

There will be no emissions to controlled water or groundwater and therefore there will be no impact.

Environmental Effects of Releases to Sewer

The releases to sewer will be made under a Trade Effluent Discharge Consent with Severn Trent Water, who will dispose of the waste water in an appropriate manner at the local sewage treatment works.

Environmental Effects of Releases to Land

VES intends to recycle the bottom ash off-site for use as an aggregate in the construction industry. Where possible, the FGT residue will be reused off-site in the chemical manufacturing industry for acid neutralisation.

All wastes will be collected by a licensed operator, who will transport the material for processing and reuse or for disposal at permitted facilities. There will therefore be no significant effect to land.

BEST AVAILABLE TECHNIQUES (BAT) (VOLUME 2, SECTION 17 AND VOLUME 4, ANNEX G)

Section 17 references *Volume 4, Annex G* which details a BAT assessment carried out using the Environment Agency's H1 software.

The Best Available Techniques (BAT) assessment methodology is designed as an objective means of establishing the most appropriate design for the process to minimise environmental impacts, whilst taking into account the costs associated with the various possible design options. By applying the prescribed methodology, the Environment Agency and the public can see this evaluation process in as transparent a manner as possible.

As part of this BAT assessment, the following air pollution control options have been assessed: moving grate furnace versus fluidised bed; flue gas recirculation (FGR); selective non-catalytic reduction (SNCR); selective catalytic reduction (SCR); and acid gas removal systems (dry, semi-dry, or wet). The various air pollution control options are assessed for energy efficiency, global warming potential, photochemical ozone creation, potential noise and vibration, air quality impacts, waste materials and raw materials. Annualised costs are also considered as part of this assessment.

The BAT study suggests that the best practical environmental control option is that proposed; a moving grate furnace with selective non-catalytic reduction (SNCR) for NO_x control, and a dry flue gas treatment (FGT) system for acid gas removal.

1 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

This document is an Application for a new permit to operate an Energy Recovery Facility ('ERF') at Four Ashes in Staffordshire, submitted to the Environment Agency ('the EA') under the Environmental Permitting (England and Wales) Regulations 2010 (the "EP Regulations"), Statutory Instrument 2010 no. 675.

Veolia ES Staffordshire Ltd ('VES') intends to construct an ERF located on a site at The Dell, Four Ashes Industrial Estate, Enterprise Drive, Four Ashes WV10 7DF generating approximately 26 MW_e capacity, predominantly fired by municipal waste. Under the EP Regulations this is a Part A1 Installation, requiring a permit from the EA. The ERF will be operated by VES to serve a contract between Staffordshire County Council ('SCC'), its partner authorities and VES hence this Application is being made by VES as the Operator. VES is also responsible for obtaining the necessary planning permission and all other regulatory permissions. In this respect planning permission for an EfW plant at the development site was originally granted to the County Council in April 2009 and a new application submitted by VES (for the development to which this EP application relates) was approved by Staffordshire County Council on 18th February 2011.

1.2 OPERATOR BACKGROUND

Veolia Environmental Services UK plc (of which VES is a wholly owned subsidiary) is part of French multi-national Veolia Environment and is the UK's leading waste management company with 12,000 employees operating in all industry sectors. Veolia Environment is the world leader in environmental services with 312,500 employees operating in 74 countries worldwide. Its activities are focused on water, transport, energy and waste management. The Group has extensive experience in all aspects of waste management including the operation of energy from waste facilities. In the UK, it operates facilities at:

- Tyseley, Birmingham;
- Sheffield;
- SELCHP, Deptford, London;
- Portsmouth;
- Marchwood, near Southampton, and;
- Chineham, near Basingstoke.

A further facility at Newhaven, East Sussex is nearing completion and is expected to be commissioned mid 2011.

These facilities are operated either as part of long-term integrated waste management contracts provided by Veolia Environmental Services to local authorities, or as individual contract infrastructure forming part of the local authorities waste management strategy.

1.3 WASTE MANAGEMENT AND PROJECT BACKGROUND

1.3.1 Waste Management in Staffordshire

Municipal waste is the waste that the District and Borough Councils and the County Council have a responsibility for collecting and disposing. It is mainly composed of:

- wastes produced by householders;
- wastes produced by trade premises and collected by the councils; and
- litter and street sweepings.

Staffordshire County Council and the eight constituent District and Borough Councils have set a target of “Zero Waste to Landfill” by 2020. As part of this they intend to:

- increase recycling and composting of municipal waste arisings from the 2005/2006 level of 36% to more than 55% by 2020;
- continue to use the Energy from Waste facility at Hanford in Stoke-on-Trent; and
- procure a facility for the diversion from landfill of the remaining amount of the residual municipal waste originating in the County and from its partner authorities in Walsall, Sandwell and Warwickshire.

The need for an additional facility to divert waste from landfill has been established through the local response to national waste management targets in the Staffordshire and Stoke-on-Trent Joint Municipal Waste Management Strategy (2007) and has been carried through into the emerging Staffordshire Waste Core Strategy. The proposed ERF would meet this requirement, helping to ensure that there would be a minimal regional and local requirement for landfilling of residual household waste.

1.3.2 Planning History

The proposed ERF is to be built on a site which gained planning approval from Staffordshire County Council in 2009 for a similar facility. In August 2010 VES submitted an application for planning permission which reflected several Veolia inspired changes to the original proposals. The planning application was recommended for approval by Staffordshire County Council

on 3rd February 2011 (subject to planning conditions and a legal agreement) which was completed and the permission issued on 18th February 2011.

The new proposals benefit from Veolia's detailed knowledge and experience of designing and operating such facilities to reduce the footprint, scale and mass of the ERF building. This includes a twin slim-line exhaust stack system with reduced visual prominence and a range of improved environmental and sustainable features, compared to the design originally approved. These changes largely reflect the design-concept layout and orientation of the original facility but do not change the amount of waste treated or how and where the waste would come from.

When compared to the County Council's previously approved plans:

- the overall footprint and size of the facility is now smaller;
- the overall height of the building would be 1.5 metres lower;
- the roof has been redesigned to make it less prominent; and
- the stack would be repositioned and reduced in diameter.
- It features increased biodiversity and sustainability provisions
- the plant has been designed to be CHP ready; and
- high efficiency technology has been employed to meet the R1 "Recovery" thresholds under the Waste Framework Directive.

The ERF is designed so that all waste handling and processing is enclosed within the building, and high levels of sustainability and plant efficiency are attained. Exterior lighting will be designed to minimise light pollution, whilst maintaining site security.

The building would also continue to benefit from having a 'living roof' which means roof sections are planted with species to help the building blend into the surrounding area and to increase biodiversity. The scheme will also benefit from extensive landscaping, sustainable drainage and habitat creation.

1.3.3

Staffordshire Waste Management PFI Contract

In July 2010 Staffordshire County Council signed a 25 year Private Finance Initiative (PFI) waste management contract with Veolia Environmental Services (UK) plc.

The PFI is a form of public-private partnership (PPP) in which local authorities can gain access to new or improved capital assets. Unlike traditional procurement the public sector does not buy the assets, but rather pays for their use; Staffordshire County Council was awarded PFI credits by Treasury towards the cost of this project, having met strict project business case objectives and standard Office of Government Commerce contract terms.

The overarching objectives of the Staffordshire PFI Contract are for VES to:

- deliver the proposed ERF at Four Ashes in accordance with the Project Programme;
- meet the Contract Waste Diversion Targets;
- use and promote the principle of the Waste Hierarchy;
- promote waste prevention, minimisation and re-use through increased public awareness, education and involvement in the management of waste; and
- encourage and promote partnering between VES and the Authority to facilitate continuous improvement of service delivery.

The Proposed Energy Recovery Facility

Residual household waste that cannot be recycled or composted from District and Borough Councils and the partner authorities will be sent to the ERF.

The 300,000 tonne per annum ⁽¹⁾ ERF will convert - through modern high efficiency incineration - residual waste, which is not recycled or composted, into electrical power. Approximately 23 MW of energy will be exported into the National Grid and is sufficient to supply 32,000 homes. The ERF will be classified as a “recovery” operation as defined by the Waste Framework Directive 2008/98/EC, Annex 2, R1 formula. The plant has also been designed to be CHP ready and opportunities to link this to a CHP user are being pursued.

Ferrous metals will be separated from the bottom ash and sent to market. Bottom ash will also be recycled off-site for beneficial use as opposed to landfill disposal. Flue Gas Treatment (FGT) residues from the ERF will be disposed of in the Veolia Deepstore facility at Minosus in Cheshire.

Any non-combustible household wastes which are delivered to the ERF will be redirected to landfill.

1.3.4 *Project Development*

Under the terms of the Contract, Veolia is developing an ERF with a design capacity of 300,000 tonne per annum to serve the Staffordshire region including some waste from the partner authorities in Sandwell, Walsall and Warwickshire together where necessary with waste from local commercial sources.

(1)Based on an average of 7,500 hours of operation per annum and lower heating value (LHV) of 9.2MJ kg⁻¹

VES has prepared a technical specification for the ERF which was developed in-house based on its experience from operating facilities in Tyseley, Birmingham; Sheffield; SELCHP, Deptford, London; Portsmouth; Marchwood near Southampton and Chineham near Basingstoke; (as well as from the construction of its latest plant in Newhaven, East Sussex which is nearing completion) together with the expertise developed by Veolia Environment the parent group, who operate many other plants around the world.

Based on the current development programme, construction is programmed to commence mid 2011 and the Service Commencement Date (ie when the Facility is due to commence operations) is expected to be December 2013.

1.4 **LEGISLATIVE BACKGROUND**

1.4.1 ***The Pollution Prevention and Control Act***

The Pollution Prevention and Control (PPC) Act is intended, among other things, to implement the European Union's Council Directive 96/61/EC, which concerns Integrated Pollution Prevention and Control ('IPPC'). The Environmental Permitting Regulations, made under Section 2 of the Act, are intended to implement IPPC in England and Wales. In England and Wales the Environmental Permitting regime covers facilities that were previously regulated under the PPC Regulations and Waste Management Licensing. The EP regime has the following aims:

- to protect the environment;
- to deliver permitting and compliance effectively and efficiently in a way that provides increased clarity and minimises the administrative burden on both the regulator and the operators of facilities;
- to encourage regulators to promote best practice in the operation of regulated facilities; and
- to continue implementing fully European legislation.

1.4.2 ***The Waste Incineration Directive (WID)***

The Waste Incineration Directive (WID) 2000/76/EC was transposed into UK Regulations through the Waste Incineration (England and Wales) Regulations 2002 (SI 2002 No. 2980). The Environmental Permitting regime provides a mechanism for delivering the requirements of and compliance with WID.

WID aims to prevent or limit, as far as practicable, negative effects on the environment and the resulting risks to human health by requiring the setting and maintenance of stringent operational conditions, technical requirements and emission limit values for plants incinerating and co-incinerating waste.

The requirements of WID will be achieved through the PPC process. Compliance with the requirements of the WID form part of the Environmental Permit. This application will also address WID by demonstrating the following:

- the plant is designed, equipped and operated in such a manner that the requirements of the WID are met;
- the heat generated is recovered as far as practicable;
- residues are minimised and recycled where appropriate; and
- the proposed monitoring techniques are as defined in the WID.

See *Section 5* for more information.

1.4.3 *Industrial Emissions Directive*

The Industrial Emissions Directive (2010/75/EU), came into force in January 2011, and will merge seven existing directives including the Waste Incineration Directive and IPPC Directives once transposed into UK law by January 2013. The main aim of the directive is to increase the application of BAT (Best Available Techniques) in order to achieve a high level of environmental protection. The proposals introduce numerous edits to the text of the Waste Incineration Directive, but the most significant change is a proposed further derogation from the existing minimum monitoring requirements, that could be granted by the competent authority.

1.4.4 *Waste Framework Directive*

The latest revision of the Waste Framework Directive, (2008/98/EC) sets down the basic concepts and definitions related to waste management in the European Union, and is in the process of being transposed into UK law. The primary aim of the directive is to promote waste prevention, increase recycling and ensure better use of resources. The proposed UK legislation includes a waste hierarchy system in which ERF such as this facility can be classified as energy recovery (or R1) operations depending on efficiency.

1.4.5 *Guidance*

The UK Government, through the Department for Environment, Food and Rural Affairs (DEFRA) and (for England and Wales) the EA, has published guidance which includes:

- DEFRA, *Environmental Permitting Core Guidance*, November 2009;

- DEFRA, *The Environmental Permitting Guidance, The Waste Incineration Directive, for the Environmental Permitting (England and Wales) Regulations 2010* (March 2010);
- EA, *EPR5.01, Incineration of Waste*, March 2009;
- EA, *EPR - H1: Environmental Risk Assessment for Permits*, April 2010;
- EA, *Horizontal Guidance Note IPPC H2: Energy Efficiency*, February 2002;
- EA, *Horizontal Guidance Note IPPC H3: Noise Guidance, Part 2 – Noise Assessment and Control*, June 2004;
- EA, *Horizontal Guidance Note IPPC H4: Odour Management – Draft for Consultation*, June 2009;
- EA, *Guidance for Applicants, EPR H5 Site Condition Report*, August 2008; and
- EA, *Horizontal Guidance Note H6 – Environmental Management Systems*, April 2010.

This guidance has been considered during the preparation of this Application.

In addition to the UK guidance, the Reference Document on Best Available Techniques for Waste Incineration (August 2006) was also used as a reference for this application.

1.5 STRUCTURE OF THE APPLICATION

The Application consists of four volumes, bound into one single document:

- *Volume 1* the Non Technical Summary, this introduction and the completed application forms;
- *Volume 2* the main text in support of the application containing site maps and plans and the relevant technical information (including Proposed Activities, Management Techniques, WID Compliance; Raw Materials; Waste; Energy; Risks and Hazards; Noise and Vibration; Monitoring; Decommissioning; Emissions; Impacts and Best Available Techniques);
- *Volume 3* Annex A (the Site Condition Report); and
- *Volume 4* Annexes B to G (Environmental Management System and Certificates of Incorporation, Noise Impacts, Air Quality Impacts, Assessment of Acute Health Effects, Health Risk Assessment and BAT).