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Consulting Engineers Limited

Tees Valley Energy Recovery Facility

Viridor Tees Valley Ltd

Fire Prevention Plan

ENGINEERING CONSULTING

Document approval

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Contents

1 Introduction

Viridor Waste Management Limited (Viridor) is applying to the Environment Agency (EA) under the Environmental Permitting Regulations (EPRs) for an Environmental Permit (EP) for the Tees Valley Energy Recovery Facility (the 'Facility'). The Facility will be located at the site of a former British Steel works in Grangetown, a large industrial brownfield site in Redcar and Cleveland Borough Council in an area known as Grangetown Prairie.

The Facility will be located on land within the South Tees Development Corporation (STDC) area, which comprises 4,500 acres (1,800 hectares) of land that forms part of the STDC's Regeneration Master Plan. A detailed description of the Facility is presented in Section 1.2 of the Supporting Information.

The objective of this report is to provide a preliminary Fire Prevention Plan (FPP) for the Facility, identifying the provisions which have been taken into account during the development phase of the Facility. In addition, provisional operational measures have been identified where these are available. The report will be subject to review following completion of detailed design of the Facility.

This report has been developed in accordance with Environment Agency guidance note: *Fire Prevention Plans: Environmental Permits* and the associated report template, as published on the UK government website. The requirements of the FPP will be integrated within the emergency plans and procedures for the Facility to ensure that they are consistent and compatible with other management systems associated with the operation of the Facility. It is intended to share the FPP with the local fire and rescue service.

This document and the measures to mitigate the risk and impact of fires within the Facility have been (and will continue to be) developed in accordance with the requirements of the following:

- Environment Agency guidance - *'Fire Prevention Plans: Environmental Permits'* (9 January 2020);
- Building Regulations – '*Approved Document B (Fire Safety)'*;
- Chubb Guidance Document – Energy from Waste - Fire Systems Issue 5.0 14 December 2017 (formerly ACE Technical Risks, Engineering Information Bulletin, Guidance document '*Energy from Waste (EfW) – Fire Systems, Issue 1.0*');
- Chubb Guidance Document – Waste Processing Plant – Fire Systems Issue 4.0 14 December 2018 (formerly ACE Technical Risks, Engineering Information Bulletin, '*Guidance Document Waste Processing Plants – Fire Systems Issue 1.0*');
- National Fire Protection Association *'NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations'*; and
- The insurer's requirements where structures or equipment fall outside published guidance or recommended practice.

The EA's Fire Prevention Plan guidance has been designed with 3 objectives in mind:

1. minimise the likelihood of a fire happening;
2. aim for a fire to be extinguished within 4 hours; and
3. minimise the spread of fire within the site and to neighbouring sites.

The Facility will meet these objectives as follows:

1. The use of suitable management procedures and fire detection systems will minimise the likelihood of a fire happening – refer to sections 5, 6 and 10.
2. Active firefighting measures will be implemented should a fire break out – refer to section 11. Utilising these measures, the Facility aims to extinguish a fire within 4 hours.

3. Fire walls will minimise the spread of fire within the site and to neighbouring sites – refer to section 8.

Utilising these measures, the Facility aims to extinguish a fire within 4 hours.

1.1 Site location and description

The proposed ERF site occupies a 25-acre (10 hectare) site situated at the southwestern corner of the STDC area, within the Grangetown Prairie Zone. The site lies 1.2km south of the River Tees and approximately 4miles to the north east of Middlesbrough Town centre. The Facility will be located at an approximate national grid reference NZ 54436 21340.

The Facility is bounded to the north by the main Middlesbrough to Redcar railway line, to the east by the site of Lackenby steel works, to the south by industrial units and beyond them the A66 road and to the west by various industrial units. Access to the site will be via a new site access on the corner of Eston Road that will serve a new internal highway network for the Grangetown Prairie plots. This access will be constructed as part of the enabling works for all development plots by STDC. The site is brownfield land which has been cleared and was once dominated by industrial buildings at the heart of the steel making industry on Teesside. Some industrial buildings /plant still surround the Grangetown Prairie site on its the south, east and western boundaries.

A site location plan and installation boundary drawing are presented in Appendix A of the Application Pack.

2 Types of combustible materials

2.1 Combustible waste

The non-hazardous waste types to be treated at the Facility, which may comprise municipal or commercial and industrial waste, are presented in Table 1:

Table 1: Wastes to be processed in the Facility

EWC Code	Description of Waste
02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING**
02 01	**Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 02	animal-tissue waste
02 01 03	plant-tissue waste
02 01 04	waste plastics (except packaging)
02 01 07	wastes from forestry
02 01 09	agrochemical waste other than those mentioned in 02 01 08
02 03	**wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**
02 03 04	materials unsuitable for consumption or processing
02 05	**wastes from the dairy products industry**
02 05 01	materials unsuitable for consumption or processing
02 06	**wastes from the baking and confectionery industry**
02 06 01	materials unsuitable for consumption or processing
02 06 02	wastes from preserving agents
03	**WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD**
03 01	**wastes from wood processing and the production of panels and furniture**
03 01 01	waste bark and wood
03 01 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04
03	**WASTE FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD**
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 01	Waste bark and wood
03 03 07	Mechanically separated rejects and pulping of waste paper and cardboard
03 03 08	Waste from sorting of paper and cardboard destined for recycling
04	**WASTES FROM THE LEATHER, FUR AND TEXTILES INDUSTRIES**
04 02	**Wastes from the textiles industry**

EWC Code	Description of Waste
04 02 09	Wastes from composite materials, (impregnated textile, elastomer, plastomer)
04 02 10	Organic matter from natural products (for example grease, wax)
04 02 21	Wastes from unprocessed fibres
04 02 22	Wastes from processed fibres
07	**WASTES FROM ORGANIC CHEMICAL PROCESSES**
07 02	**wastes from the MFSU of plastics, synthetic rubber and man-made fibres**
07 02 13	waste plastic
09	**WASTES FROM THE PHOTOGRAPHIC INDUSTRY**
09 01	**wastes from the photographic industry**
09 01 07	photographic film and paper containing silver or silver compounds
09 01 08	photographic film and paper free of silver or silver compounds
09 01 10	single-use cameras without batteries
12	**WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS**
12 01	**wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01 05	plastics shavings and turnings
15	**WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED**
15 01	**Packaging (excluding separately collected municipal packaging waste)**
15 01 01	Paper and cardboard packaging
15 01 02	Plastic packaging (which is contaminated)
15 01 03	Wooden packaging
15 01 05	Composite packaging
15 01 06	Mixed packaging
15 01 09	Textile packaging
15 02	**Absorbents, filter materials, wiping cloths and protective clothing**
15 02 03	Absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02
16	**WASTES NOT OTHERWISE SPECIFIED IN THE LIST**
16 01	**End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)**
16 01 19	plastic
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
17 02	**Wood, glass and plastic**
17 02 01	Wood

EWC Code	Description of Waste
17 02 03	Plastic
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
18	**WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)**
18 01	**wastes from natal care, diagnosis, treatment or prevention of disease in humans**
18 01 04	wastes whose collection and disposal is not subject to special requirements in order to prevent infection(for example dressings, plaster casts, linen, disposable clothing, diapers)
18 01 07	chemicals other than those mentioned in 18 01 06
18 01 09	medicines other than those mentioned in 18 01 08
18 02	**wastes from research, diagnosis, treatment or prevention of disease involving animals**
18 02 03	wastes whose collection and disposal is not subject to special requirements in order to prevent infection
18 02 06	chemicals other than those mentioned in 18 02 05
18 02 08	medicines other than those mentioned in 18 02 07
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**
19 02 03	Premixed wastes composed only of non-hazardous waste
19 02 10	Combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 03	**stabilised/solidified wastes**
19 03 05	stabilised wastes other than those mentioned in 19 03 04
19 03 07	solidified wastes other than those mentioned in 19 03 06
19 05	**Wastes from aerobic treatment of solid waste**
19 05 01	Non-composted fraction of municipal and similar wastes
19 05 02	Non-composted fraction of animal and vegetable waste
19 05 03	Off specification compost
19 06	**wastes from anaerobic treatment of waste**
19 06 04	digestate from anaerobic treatment of municipal waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste
19 08	**wastes from waste water treatment plants not otherwise specified**
19 08 01	screenings
19 10	**wastes from shredding of metal-containing wastes**
19 10 04	fluff-light fraction and dust other than those mentioned in 19 10 03

EWC Code	Description of Waste
19 08	**Wastes from waste water treatment plants not otherwise specified**
19 08 14	Sludges from other treatment of industrial waste water other than those mentioned in 19 08 13
19 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 01	Paper and cardboard (which is contaminated)
19 12 04	Plastic and rubber (which is contaminated)
19 12 07	Wood other than that mentioned in 19 12 06
19 12 08	Textiles
19 12 10	Combustible waste (refuse derived fuel)
19 12 12	Other wastes (including mixtures of materials from mechanical treatment of wastes other than those mentioned in 19 12 11)
20	**MSWS (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS**
20 01	**Separately collected factions (except 15 01)**
20 01 01	Paper and cardboard (which is contaminated)
20 01 08	Biodegradable kitchen and canteen waste
20 01 10	Clothes
20 01 11	Textiles
20 01 25	Edible oil and fat
20 01 28	Paints, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 30	Detergents other than those mentioned in 20 01 29
20 01 32	Medicines other than those mentioned in 20 01 31
20 01 36	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 38	Wood other than that mentioned in 20 01 37
20 01 39	Plastics
20 02	**Garden and park wastes (including cemetery waste)**
20 02 01	Biodegradable waste
20 02 03	other non-biodegradable wastes
20 03	**Other MSWs**
20 03 01	Mixed MSW
20 03 02	Waste from markets
20 03 03	Street cleaning residues
20 03 06	waste from sewage cleaning
20 03 07	Bulky waste
20 03 99	MSWs not otherwise specified

2.2 Other combustible materials

In addition to the combustible wastes listed in Table 1, there will be a limited number of other materials on site which are potentially combustible, including maintenance materials (such as oils and greases present in small quantities at various locations) and gas cylinders.

Gas cylinders will be stored within purpose-built dedicated storage facilities. All facilities for the storage of gas cylinders will be kept locked/secured. A system for the regular inspection of gas storage facilities will be developed as part of the operating and maintenance procedures and the site inspection regime.

The location of gas cylinder storage and maintenance materials will be subject to detailed design. A plan showing the location of gas storage facilities and maintenance materials will be developed upon completion of detailed design.

Low sulphur fuel oil will be used for auxiliary firing and will be stored in a dedicated storage tank on-site. A plan showing the location of the primary raw materials and residues is presented within Appendix A.8 of this report.

3 Using this fire prevention plan

3.1 Where the plan is kept and how staff know how to use it

This FPP will form part of the integrated management systems (IMS) for the Facility. The FPP will be linked with the site Fire Risk Assessment (FRA) within the fire safety report order under the IMS. The FPP will be available in both electronic and hard copies at easily accessible locations. Staff induction programmes will be location and job role specific; however, they will include IMS (including Environmental Management Systems or EMS) awareness training as a minimum. All staff will be able to easily access the documented management systems, including this FPP.

Visitors and contractors will be informed about fire prevention measures adopted at the Facility as part of site induction procedures, and will be able to access the FPP if required. The FPP will also be made available to local Fire Officers. A premises box or similar will be made available to the fire and rescue service which will contain a copy of the FPP, contact numbers and also information on control features such as shut-off valves, hydrants controls, etc.

3.2 Testing the plan and staff training

All site staff (and contractors) will be trained in emergency response procedures and in the use of firefighting equipment such as fire extinguishers. Training records will be maintained in accordance with the documented management systems for the Facility, with fire response procedures incorporated within the site's management systems. It is expected that fire drills (including procedures for emergency evacuation of the site) will be exercised at least twice per year.

This FPP will be subject to regular review and updating by senior management following the commencement of operation of the Facility. The first review is expected to be during the commissioning of the site prior to full operation, to incorporate any further detailed design information or mitigation measures installed at the Facility. The FPP will be updated where necessary to ensure that the stated control techniques remain appropriate, for example:

- immediately following any major fire incidents;
- following a near miss of a fire;
- if there are any significant technical or managerial changes at the Facility;
- the local environment changes, e.g. a school or residential development is built nearby; or
- if the EA asks for the FPP to be revised.

Regular reviews will be captured through both the FPP and FRA as part of Viridor's IMS.

Fire prevention messages will be reinforced around the site using signs. Furthermore, visitors to the Facility will be informed of the correct safety and fire prevention procedures – information will be provided at the site entrance and by appropriate located signage on-site.

On a periodic basis, testing of the emergency procedures will be undertaken. The intention of the testing is to verify that all staff and contractors are aware of the emergency procedures. Following all tests, the implementation of the procedures will be reviewed. If appropriate, the procedures will be amended, or additional training provided to all staff and contractors.

The effectiveness of the emergency response procedures will be reviewed following any emergency incidents on-site. The procedures will be updated if required, and staff trained in the updated procedures.

3.3 Roles and responsibilities

In addition to all staff having an awareness of fire safety and emergency response procedures, a Fire Safety Manager (FSM) will be assigned. The FSM will take overall responsibility for establishing and maintaining a safe working environment in which fires are prevented from starting, or if they do, from developing beyond a minor event. The FSM will be responsible with overseeing the production of any fire risk assessments at the site and ensuring that findings are addressed, or mitigation measures are implemented. Risk assessments will be reviewed on an annual basis. The assigned FSM would also be responsible to ensure that the FPP is reviewed regularly and remains appropriate to the site.

In addition to the FSM, a sufficient number of fire wardens will be assigned to ensure a safe and timely evacuation in the event of a fire. The fire wardens will be suitably trained and competent to carry out the role, with any training recorded as part of the documented management systems. The fire wardens will undertake fire watch site inspections and raise alarm/activate call points if smoke, odour or flame indicates a potential fire source. They will be responsible for investigating the location of the fire (if safe to do so, i.e. if determined using an automatic detection system) and utilising fire suppression equipment such as fire extinguishers if deemed safe to do so. They will liaise with the FSM if they are not already present on the site.

All other employees at the Facility will have a number of additional responsibilities in relation to fire safety, which are set out as follows:

- never leave obstructions in corridors, stairways, stair landings or other escape routes;
- never block fire exits or place objects in front of fire doors;
- never leave open fire doors which are required to be kept shut to prevent fire spreading, and ensure these doors are closed behind them;
- never interfere with fire detection or suppression equipment unless authorised to do so;
- report any damages identified to fire detection or suppression equipment;
- maintain safe working practices with electrical equipment;
- do not smoke on site unless in an approved area;
- familiarise themselves with fire emergency procedures; and
- book in and out of the site using the correct systems in place.

4 Fire prevention plan contents

4.1 Activities at the site

Activities covered by this EP application include:

1. a twin-stream waste incineration plant processing incoming waste which is delivered to the Facility from off-site via road;
2. generation of power for export to the local electricity grid, and the potential to export heat;
3. production of inert bottom ash material that will be transferred off-site to a suitably licensed waste treatment facility for recovery; and
4. generation of an air pollution control residue that will be transferred to a suitably licensed hazardous waste facility for disposal or recovery.

Table 2 lists the Schedule 1 activities, from the Environmental Permitting Regulations, and the Directly Associated Activities (DAA's).

Table 2: Scheduled and directly associated activities

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
Installation	Section 5.1 Part A(1) (b)	Line 1 – The incineration of non-hazardous waste in a waste incineration plant with a capacity of 3 tonnes per hour or more	From receipt of waste to treatment and emission of exhaust gas and disposal of any residues arising. Waste types as specified in Table 1
Installation	Section 5.1 Part A(1) (b)	Line 2 – The incineration of non-hazardous waste in a waste incineration plant with a capacity of 3 tonnes per hour or more	From receipt of waste to emission of exhaust gas and disposal of waste arising. Waste types as specified in Table 1.
Directly associated activities			
Directly Associated Activities		Energy generation	Generation of electrical power using a steam turbine, with electricity exported to the National Grid, and the potential to export heat to local heat users from energy recovered from the flue gases
Directly Associated Activities	Waste reception area	The receipt, handling and bulking for transfer off-site of non-hazardous waste.	Directly Associated Activities

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
Directly Associated Activities		A medium combustion plant comprising a diesel generator	For providing emergency electrical power to the plant in the event of supply interruption. Operation for no more than 50 hours per year for testing purposes (unless in emergency situations).
Directly Associated Activities		Surface water management	From collection of uncontaminated surface water drainage to the discharge to sewer.

The Facility will include the following key components: waste reception; waste storage; water, fuel oil and air supply systems; furnaces; boilers; steam turbine/generator set; facilities for the treatment of exhaust or flue gases; on-site facilities for storage of residues and waste-water; flues with associated stacks; and devices and systems for controlling combustion operations and recording and monitoring conditions.

The Facility will process approximately 430,000 tonnes per annum (at the design capacity of 26.3 tph per line with a design NCV of 10.25 MJ/kg and an availability of approximately 8,147 hours).

The maximum mechanical throughput is 34.1 tonnes per hour of waste for lower NCV wastes. The maximum annual throughput is 510,000 tonnes per annum assuming 8,760 hours operation per annum at 110% of the design point. However, this does not account for periods of start-up, shut down and other periods of non-availability. Allowing for these periods, the maximum capacity of the Facility will be approximately 495,000 tonnes per annum

4.2 Site plans and drawings

The following plans and drawings are included within Appendix A of this report:

- site location plan (Appendix A.1);
- site layout plan (Appendix A.2);
- waste storage areas plan (Appendix A.3)
- access points (Appendix A.4);
- indicative locations of fire hydrants (Appendix A.5);
- indicative locations of fire walls (Appendix A.6);
- indicative location of quarantine area (Appendix A.7);
- materials storage areas (Appendix A.8);
- indicative firewater storage and containment (Appendix A.9);
- fire receptor plan (Appendix A.10);
- areas of natural and unmade ground (Appendix A.10); and
- indicative location of gas cylinders and mobile plant (Appendix A.12).

Detailed design will be undertaken following appointment of a technology provider. Therefore, the information in relation to some of the drawings identified above must be considered to be indicative until detailed design of the Facility has been completed. Following completion of detailed design, the following drawings will be included within the updated FPP:

- the location of drain covers and any pollution control features such as drain closure values and firewater containment systems;
- site drainage plan; and
- the location of plant, protective clothing and pollution control equipment and materials.

Wind roses indicating the direction of prevailing winds for the Facility from 2015 to 2019, taken from Durham Tees Valley Airport, are presented in Appendix A.1 of this report.

4.3 Plan of sensitive receptors near the site

In the unlikely event of a fire, the site personnel, other industrial units and businesses within Tilbury Dock are most at risk. A fire at the Facility may have a temporary localised impact on the operation of the Tilbury Dock depending on meteorological conditions at the time of any incident.

A plan showing the location of receptors in the event of a fire is presented within Appendix A.10 which sets out sensitive receptors within 1km of the site. In addition, a wind roses drawing is presented within Appendix A.1 which shows the prevailing wind direction for the Facility.

The key human health receptors within 1km which could be impacted by a fire at the Facility are presented in the following table (these have been extracted from the air quality assessment presented within Appendix E of the supporting information):

Table 3: Sensitive human receptors

ID	Name	Location		Distance from the stacks (m)
		X	y	
R1	Elgin Avenue	454542	520552	905
R2	Jones Road	453788	520848	912
R3	Strauss Road	453770	520709	1,022
R4	Low Grange Farm new housing	454191	520590	908
R5	Bolckow Road	455310	520893	1,011
R6	Dimples Day Nursery	453561	520505	1,314
R7	Saint Peter's Catholic College	453793	520150	1,469
R8	South Bank Community Primary School	453638	519852	1,805
R9	Low Grange Health Village	453907	519896	1,656
R10	Tigertots community day nursery	455000	520328	1,245
R11	Grangetown Primary School	455179	520377	1,290

A more detailed fire receptor plan, as required by the EA's FPP guidance, is presented in Appendix A.10 of this report.

5 Managing common causes of fire

5.1 Arson or Vandalism

Security measures will prevent access by members of the public and thereby prevent the risk of arson attacks or vandalism. The Facility will be surrounded by security fencing. A barrier will be present at the entrance and exit of the site to restrict vehicular access. Only authorised visitors will be able to enter the site.

The Facility will be operational and manned 24 hours a day, 7 days a week, with the CCTV system monitored in the control room by trained and competent operators. The shift team leaders will be responsible for security on the site, including delivery vehicles as they travel around the site.

Emergency response procedures will be developed for the Facility, prior to the commencement of operations, as part of the detailed Environmental Management System (EMS). The procedures will detail the response to a number of different emergency situations on site, including unauthorised personnel accessing the Facility.

In accordance with the waste acceptance procedures to be developed for the Facility, unloading of all waste deliveries will be supervised by operational staff. CCTV will be installed in all areas where waste delivery vehicles discharge waste into the bunker. The design and location of the CCTV systems and security alarms will be undertaken during detailed design of the Facility and labelled on a site plan accordingly.

5.2 Plant and equipment

An operating and maintenance manual (O&M manual) will be developed and completed through the commissioning phase of the installation. The O&M Manual will set out detailed operating and maintenance instructions for all plant and equipment which requires maintenance.

Maintenance procedures and work instructions will be developed to cover all plant and equipment within the Facility. As part of such work instruction development, the risk of fire will be considered, and appropriate activities included within the work instruction to reduce the risk of fire in all plant and equipment.

As part of the maintenance system, responsibilities for retaining records of all maintenance undertaken and any actions taken following a problem will be defined.

The shredder will incorporate an anti-jam system to prevent blockages from damaging the shredder. Furthermore, the shredder will have an integrated fire suppression system which may include, but not be limited to, foam/powder injection, battery isolation and machine shutdown in the event of a fire. Frequent visual checks of the shredder will be undertaken to allow prompt identification of any ‘unsuitable’ or ‘unacceptable’ wastes which includes hot loads. The shredder will also be subject to regular preventative maintenance in accordance with the documented management systems in place.

5.3 Electrical faults including damaged or exposed electrical cables

The risk of electrical faults on site will be minimised by the use of qualified electricians and will comply with the relevant British Standards for the design and installation of electrical equipment and supplementary bonding/earthing. The site will be constructed and operated in accordance with recognised standards for fire prevention, detection and control within electrical control systems.

The exact types of fire detection and suppression systems for electrical control systems will be subject to the detailed design of the Facility; however, it is expected that the following measures will be implemented in accordance with current best practice for this type of facility:

- All rooms with concentrations of electrical equipment such as switchgear rooms, low voltage rooms, distributed control system (DCS) rack room, uninterruptible power supply (UPS) / battery rooms, crane control cabinet rooms will be fitted with suitable fire detection systems. Fire detection will be by means of a 'double knock' system, composing of ionisation (or heat and smoke) detectors to minimise the risk of false activation. Furthermore, Manual Call Points will be installed in all areas. The detection systems will be designed for ease of regular testing to demonstrate correct operation.
- Electrical equipment will be installed within e-housing rooms which are of a steel construction with dedicated fire detection and suppression systems.
- Suitable automatic fire protection systems will be located within the rooms. For electrical rooms, it is expected that inert gas suppression systems will be used. These will be installed and operated in accordance with a recognised standard, such as EN 15004. Gaseous supply bottles and local control/isolation panels for the systems will be located outside the enclosed area (i.e. the electrical e-housing room) being protected by the system.
- All cable trays or piping systems passing through fire barriers will be fitted with fire stops. Cable spreading rooms and cable tunnels which are long, or otherwise difficult to access for firefighting, will be protected with appropriate automatic fire suppression systems (such as automatic gaseous extinguishing systems, or sprinklers or water spray systems).

Testing will be carried out on electrical equipment by fully and appropriately qualified electricians, when required. The inspection of electrical cabling at the Facility will be included in the documented maintenance programmes. Electrical circuits on both mobile plant and static equipment will be checked in accordance with the manufacturer’s recommendations.

All portable electrical appliances will be PAT tested annually, with a label attached to the plug (or the cable) to confirm the item has been tested.

5.4 Discarded smoking materials

Smoking will be prohibited in operational areas. External areas designated for smoking within the site Boundary will be identified, with suitable facilities provided for staff.

5.5 Hot works safe working practices

Staff and contractors will follow safe working practices which may include a permit to work system when carrying out hot works such as welding or cutting. A fire watch will be carried out for a suitable period after hot works have ended, and at the end of a working day (i.e. after each shift).

5.6 Industrial heaters

It is currently expected that industrial heaters will not be installed at the Facility, however, this will be confirmed during detailed design of the Facility. If applicable, the hot work management system will be extended to include the use of industrial heaters and the necessary safeguards required in each instance will be assessed and implemented to ensure their use is safe.

5.7 Hot exhausts and engine parts

A fire watch system will be implemented to detect signs of fires from dusts settling on hot exhausts (including those associated with mobile plant). This will be developed as part of the operating procedures. This will include regular visual checks of dusts settling on hot exhausts as part of operational checks by staff – it is expected that these checks will be undertaken at the end of each shift and so will be daily. Maintenance work instructions will be raised for any items identified as requiring maintenance.

5.8 Ignition sources

A review under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) will be completed during the detailed design of the Facility, with any risk areas identified on DSEAR zonal drawings.

Vehicles and electrical items necessary for the operation of the Facility will be regularly inspected for electrical faults. Mobile plant serving the Facility will be fitted with fire extinguishers and dust filters where appropriate.

Naked sources of ignition will be controlled through a hot work management system. This system will cover both staff and contractors working at the Facility. The hot work management system will also include requirements to train and authorise 'hot work risk assessors' for the purposes of eliminating, reducing and managing the risks associated with hot work. The hot work system will include for a period of fire watch following the hot works being undertaken.

As part of the hot work management system, the potential for sources of ignition to cause fires will be managed on a case-by-case basis. The guidance of keeping all sources of ignition at least 6 metres away from any combustible or flammable waste will be followed as part of this management where possible (i.e., this separation distance may not be possible when using or transporting mobile plant or when driving site vehicles). The management system will include ensuring that the location of stored mobile plants, which is subject to detailed design of the Facility, will be stored at least 6 metres away from combustible wastes. In the unlikely event that this separation distance cannot be maintained, there will be suitable fire detection and protection measures installed in this area, the design of which is subject to the recommendations of the final fire strategy which will be completed during the detailed design phase of the project and agreed with the fire insurers. The fire detection and protection measures will minimise the risk of a fire spreading from waste storage areas.

5.9 Leaks and spillages of oils and fuels

Emergency response procedures will be developed as part of the emergency procedures for the Facility. The procedures will include actions to be undertaken to respond to spills and leaks of chemicals. This will include actions to be undertaken to prevent liquids leaking or trailing from site vehicles. In addition, oil interceptors will treat surface water runoff from roadways prior to discharge via the infiltration pond.

Mobile plant and vehicle operators will be provided with suitable training for the equipment they are operating. Supervision of mobile plant operation and regular site inspections will ensure that any leaks or trailing from vehicles are quickly identified and suitably maintained to prevent leaks. Where specific responsibilities are given to specific staff, training will be provided to those employees. Training records in the emergency response procedures for all staff and contractors will be retained on-site.

Should a spill occur at the site, contained drainage systems in process areas will ensure that any contaminated effluent is not released to the aquatic environment. Storage of liquid chemicals will be within bunded areas with the secondary containment having sufficient capacity to contain a spill. Regular inspections will be undertaken of storage vessels as part of the regular preventative maintenance of the Facility.

Spill kits will be made easily available at different locations throughout the site. The location of spill kits will be marked up on a site plan following detailed design of the Facility. The documented management procedures for the Facility will include for accident management measures and will set out procedures to be followed in a spill event. All staff and contractors would be trained in site-wide emergency response procedures.

5.10 Build-up of loose combustible waste, dust and fluff

The Facility will be designed to prevent the accumulation of dusts by designing structural steelwork such that their shape or method of installation minimizes the surface area where dust can settle.

As part of the design of the Facility, the control of dust and fluff has been considered. This includes:

- the use of an enclosed fuel reception/unloading building; and
- mechanical ventilation of the waste reception and storage areas, during normal operation, to prevent fugitive emissions from the building façade.

These systems will be checked as part of the planned maintenance regime as required in the detailed operating manuals for each piece of equipment.

On a daily basis, inspections will be undertaken to identify the build-up of loose combustible materials, such as waste, dust and fluff. Where inspections identify that there has been a build-up of loose combustible materials, appropriate cleaning will be undertaken to clean this material from the surfaces. Waste held within the waste reception area will be removed and the area will be cleaned at the end of each day. Good housekeeping practices will be employed at the Facility to ensure that dusts and litter do not build up and pose a fire risk.

5.11 Reactions between wastes

Waste acceptance procedures will be in place which will minimise the risk of incompatible wastes coming into contact with each other, or unstable wastes being accepted at the Facility.

In the unlikely event that waste identified as ‘unacceptable’ is received, a quarantine area will enable segregation of the waste prior to transfer off-site or extinguishing of a hot load (refer to section 9).

5.12 Deposited hot loads

Documented waste pre-acceptance and waste acceptance procedures will be in place which will enable the identification of any ‘unacceptable’ wastes – this could include the presence of hot loads. Waste acceptance and pre-acceptance procedures will meet the requirements of EA Guidance S5.06, to ensure that only the permitted waste codes are accepted. These do not include any hazardous wastes including those with oxidising or flammable risk phases.

Hot loads identified prior to transfer to the bunker (if not immediately rejected) will be tipped onto the tipping hall in the quarantine area and extinguished. Appropriate fire detection and protection measures will be installed in the quarantine area, with any hot loads extinguished using hoses, sprinklers or an equivalent fire suppression method.

Hot loads identified within the waste bunker would be extinguished by water cannon/hoses before being transferred to the waste feed hopper.

Any rejected wastes will be stored within a dedicated quarantine area – refer to section 9. Should a 'hot load' be delivered to the Facility, a 'hot load procedure' will be followed (this will be incorporated into the waste acceptance procedures for the site). Fire suppression (e.g. by the use of fire extinguishers) will be implemented to deal with the hot load if necessary.

5.13 Hot and dry weather

Incoming loose waste, stored within the main building, will be provided with protection from direct sunlight as the waste bunker will not have external windows. Periods of hot weather have the potential to increase the risk of fires. However, all loose waste will be stored within the main building which will reduce the risk of overheating. Furthermore, during periods of very hot weather, additional site inspections and monitoring will take place.

6 Preventing self-combustion

6.1 General self-combustion measures

It is acknowledged that some wastes can self-combust under certain conditions. Self-combustion can be managed through preventative measures, carefully managing storage times, pile volumes and height, and the temperature of the wastes. These are described further within the following sections.

Baled waste will not be received at the Facility. Therefore, the FPP guidance requirements relevant to waste bale storage do not apply to the Facility.

6.2 Managing storage time

6.2.1 Methods used to record and manage the storage of all waste on site

The capacity of the waste bunker will be clearly stated and not exceeded. It is anticipated that the waste storage capacity of the bunker will be approximately 10,185 tonnes (or 30,625 m^3), equivalent to approximately 7 – 8 days fuel supply. During normal operation, it is expected that the maximum period which waste will remain within the waste bunker is approximately 7 days. Waste will be held within the waste reception area for short duration periods. Waste held within the waste reception area will be removed and the area will be cleaned at the end of each day.

Prior to any planned shutdowns of the Facility, waste deliveries will be stopped and/or diverted to alternative waste management facilities, and the waste within the bunker will be combusted to minimize the quantity of waste remaining in the bunker prior to the shutdown commencing. This will ensure that there is only a small residue in the bunker during the period of shutdown. The duration of planned shutdowns will vary significantly, dependent on the nature of the work required, and typically will not extend beyond four weeks.

In the event that the Facility is not able to receive waste due to an unplanned incident, forcing a full shutdown of the Facility, waste deliveries will be stopped and/or diverted to a suitably licenced waste management facility. Typically, in the event that an unplanned shutdown lasts for more than 14 days, waste within the bunker may be backloaded into lorries for transport to a suitably licensed waste management facility, unless operations are expected to recommence imminently. The rate at which waste will be removed from the bunker will depend on the status of operation and expected recommencement of operations at the Facility. In addition, environmental factors such as weather (e.g. hot weather posing odour risks) may contribute to the urgency to remove waste from the bunker.

6.2.2 Stock rotation policy

Following the recommencement of waste deliveries after a period of shutdown, deliveries of ‘new’ waste will be mixed with residual quantities of waste within the bunker in accordance with the bunker management procedures for the Facility – refer to section 6.3.1. This will ensure that older waste is not ‘buried’ within the bunker.

It is not expected that there will be seasonal variations in the demand or supply of waste.

6.3 Monitoring and control temperature

6.3.1 Monitoring and controlling temperature

As part of the detailed design and construction of the Facility, the fire system design will be designed and installed by an experienced fire engineering company, which employs appropriately qualified persons. The system will be developed in accordance with NFPA 850 (an industry standard for fire protection systems for power generating facilities) or equivalent standard, the local fire officer, the fire risk insurers and any relevant standards and codes of practice.

Operational staff will be briefed on the need for monitoring for the early signs of fires. The waste bunker and all main process areas will have CCTV to allow remote monitoring from the control rooms on a continuous basis. All waste delivered to the Facility will be supervised by operational staff, who will be responsible for the inspection and monitoring of waste deliveries. The frequency of inspection of waste storage areas (and other parts of the site) will be increased during a full shutdown, and a checklist utilised to ensure a complete record of issues and comments that may require further action, such as assessing the presence of hotspots.

6.3.1.1 Bunker

Thermal imaging cameras or IR flame detectors will be fixed around the perimeter of the bunker to provide the crane driver with a continuous thermal ‘map’ of the bunker. This is standard practice in UK waste incineration plants. The temperature of waste in the bunker will continue to be monitored even during periods of shutdown.

During daytime operations, the bunker will be visually monitored by control personnel, such as the crane operator. At night-time, the control personnel will visually monitor the thermal imaging system as part of their responsibilities for operating the Facility. Therefore, they will be able to identify and react to hot areas in the bunker and undertake the mixing or feeding of waste as appropriate.

Bunker management procedures will be adopted to ensure that there is a regular turnover of waste within the bunker, preventing hotspots or anaerobic conditions developing within the bunker. The turning of waste within the bunker is standard practice at waste incineration plants in the UK. As well as helping to mix the waste (to produce a more homogenous fuel which is better for control of the combustion process), it helps to prevent the formation of hotspots. Turning of the waste within the bunker helps to release heat that has built up in the waste. By taking grabs of waste and then spreading it over a wider area, it dissipates the entrained heat and removes thermal inertia within the waste. It also increases the evaporation of water, which is a heat absorbing process. These factors help to minimise the risk of self-heating and ignition. In addition, mixing the waste with the crane enables waste from the base of the bunker to be brought to the surface. The crane will be sized to allow for mixing and rotating the waste within the bunker, whilst providing appropriate quantities of waste within the feed hopper to maintain operation of the waste combustion process. The size of the crane will ensure that the mixing of waste is feasible in relation to the amount of waste present in the bunker. The crane operator will be trained in careful waste handling and crane operation as to maintain the integrity of the bunker.

In extreme cases, firewater cannons (refer to section 11.1.1) may be used to extinguish any smouldering or burning waste. The thermal imaging cameras or IR flame detectors will be set with two trigger alarms at different temperatures within the bunker. The fire water cannons will be activated if the high-high temperature alarm is reached.

6.3.1.2 IBA storage

Due to the high thermal temperatures in which the IBA has been combusted, it will not be expected to contain any combustible materials which are able to self-combust from the elevated temperatures within the IBA. In addition, the quenching of the ash will ensure it has been suitably cooled prior to storage and the moisture within the IBA from quenching of the ash will ensure that the IBA will not combust.

6.3.1.3 APCr Storage

The APCr is not expected to contain any combustible materials which could self-combust from elevated temperatures within the APCr.

6.3.2 Reducing exposed metal content and proportion of fines

As the waste received at the Facility will be pre-processed residual waste, it is not expected that there will be large quantities of metals within the waste. Furthermore, it is not expected that a large amount of fines will be present within the waste. Therefore, the FPP guidance requirement to reduce exposed metal content and proportions of fines does not apply to the Facility.

7 Manage waste piles

7.1 Maximum pile sizes

It is understood that the EA's maximum waste pile sizes are not applicable to waste stored within a waste bunker.

In addition, bottom ash is not expected to contain any combustible materials which would pose a fire risk. Therefore, it is understood that the pile sizes do not apply to bottom ash stored within the IBA storage area.

7.2 Storing waste materials in their largest form

Incoming loose waste will not be treated (such as shredding) prior to processing and combustion. Therefore, incoming loose waste will be stored in its largest form.

As stated in section 7.1, it is understood that the EA's requirements for waste piles do not apply to waste stored within a bunker.

7.3 Waste stored in containers

The only waste which will be stored in 'containers' is Air Pollution Control residues (APCr) which will be stored within silos. The design of the silos is subject to detailed design; however, it is expected that the total storage capacity for APCr will be approximately 620 m^3. The APCr silos will have sufficient capacity for the storage of approximately 5 days of APCr, assuming that the Facility operates continuously at the nominal capacity. As stated in section 6.3.1, the APCr is not expected to contain any combustible materials which could self-combust from elevated temperatures within the APCr.

8 Prevent fire spreading

8.1 Separation distances

Following previous consultation with the EA, it is understood that the storage requirements relating to pile separation distances (i.e. storing combustible waste piles with a separation distance of at least 6 metres) only applies to the external storage of wastes. All wastes which are delivered to the Facility will be stored within buildings and will primarily be stored within the waste bunker. Therefore, the pile separation distances do not apply to the Facility. However, in the unlikely event that there is more than one pile of waste within the Facility (for example, two loads requiring storage in the quarantine area), skips will be used within the quarantine area to maintain separation between the wastes.

8.2 Fire walls construction standards

Fire walls will be installed within the buildings as required by the fire insurers and in accordance with Buildings Regulations. The location and specification for fire walls will be subject to detailed design of the Facility, and dependent on the layout to be further developed by the EPC Contractor. The indicative locations of the fire walls are presented in Appendix A.6.

Subject to the location of the process equipment, operational areas will be segregated into fire zones (the "Fire Zones"). In accordance with NFPA 850, certain specific Fire Zones such as the waste bunker and boiler hall will be separated from each other by fire barriers with a minimum of 2-hour fire resistance rating, spatial separation, or by other approved means. The specific Fire Zones to which this applies, and the means of separation, will be subject to agreement with the fire risk insurers.

As part of the detailed design process, a fire risk assessment will be undertaken for each Fire Zone to identify the appropriate fire detection and protection systems in association with appropriate civil work design principles to control:

- the risk of fire propagation;
- the spread of fumes and smoke;
- firewater flooding; and
- to maintain the integrity of dedicated fire partition walls in the event of fire.

The fire zoning will be subject to the approval of Viridor and the fire risk insurers.

The dividing wall between the waste bunker hall and boiler hall and all other walls within the bunker will be suitably constructed in concrete, block work or a suitably rated cladding system up to roof level to form a continuous 2-hour fire rated barrier for the full width and height of the building structure. In addition, the base of the bunker will be constructed of reinforced concrete, and the whole structure will be designed as a water retaining structure. The structural design and construction of this dividing wall shall be such that the integrity of the fire barrier is maintained in the event of the collapse of the bunker hall roof due to a fire in the bunker. These walls and the base of the bunker will be resistant to crane grab impact and the impingement of water cannon jets. The structure of the waste bunker itself therefore will have adequate fire resistance.

All openings in fire barriers will be provided with fire doors, including fire dampers, penetration seals (fire stops), or other approved means having a fire protection rating consistent with the designated fire resistance rating of the barrier. Windows in fire barriers (e.g. control rooms, observation windows, computer rooms, etc.) will be provided with appropriate fire protection to

maintain the integrity of the fire barrier, e.g. by means of a fire shutter, automatic water curtain, window sprinkler system, etc. All cable trays or piping systems passing through fire barriers will be fitted with fire stops.

In addition, the glass partition in the control room/crane cabin will be 2-hour fire rated, and hence resistant to fire. Therefore, the site staff will be able to continue operating the crane for a limited amount of time in the event of a fire, depending on severity.

8.3 Storing waste in bays

Waste which is delivered to the Facility will not be stored in bays, and incoming waste will be stored within the waste bunker. Therefore, the requirements of the FPP Guidance will not apply to the Facility.

9 Quarantine area

9.1 Quarantine area location and size

A suitable area for the quarantine of unacceptable waste will be designated as part of the detailed design stage; however, it is anticipated that this will be a designated area within the Tipping Hall.

The quarantine area will be designed in accordance with the requirements of the FPP Guidance, i.e. it will:

- hold at least 50% of the waste delivery load; and
- where practicable, have a separation distance of at least 6 metres, or alternative equivalent measure (such as a thick concrete wall between the bunker and the quarantine bay), around the quarantined waste.

With regards the first requirement, this is stated in the FPP guidance as holding "*at least 50% of the volume of the largest pile, row or block of containers*" at the Facility. As pile size requirements and separation distances do not apply to the waste bunker, the waste stored within the bunker is not considered to fall under the definition of a waste 'pile' as per the FPP guidance. The largest pile or container of waste at the site will therefore be waste contained within delivery vehicles. It can be confirmed that the quarantine area will have sufficient capacity to hold at least one waste delivery vehicle load. This will allow the segregation of the whole waste delivery should a hot load be identified upon arrival at the Facility.

With regards the second requirement, depending on the size of the waste pile requiring quarantine, it may not be possible to maintain a separation distance of 6m around the quarantined waste. However, in the unlikely event that there is more than one pile of waste (for example, two loads requiring storage in the quarantine area), skips will be used within the quarantine area to maintain appropriate separation between the wastes. The use of skips will also provide contingency in the event that the quarantine area is required for the storage of a hot load whilst it is being used for the storage of another unacceptable load. The skips will prevent contact between the hot load and the unacceptable load, with the hot load extinguished immediately upon placing into the skip.

When depositing waste in the quarantine area, the site operative will attempt to place the waste so that a reasonable separation distance is maintained around the waste and it does not lie directly adjacent to any walls. Suitable fire detection and suppression systems will be installed in the quarantine area to reduce fire risk within this area. The quarantine area will be kept clear at all times when it is not being used for the storage of unacceptable waste.

Following completion of detailed design, plans showing the location of all quarantine areas will be developed. The plans will show the size of the quarantine area, clearance areas around the perimeter, and infrastructure associated with the quarantine area. A drawing which shows the indicative location of the quarantine area is presented in Appendix A.7 of this report.

9.2 How to use the quarantine area if there is a fire

The quarantine area will be used to temporarily store, if needed, any unacceptable waste prior to removal from site. Unacceptable waste is broadly defined as waste which does not meet the requirements set out in the fuel supply agreements which have been agreed with waste suppliers for the Facility, or other waste which is unsuitable for incineration and/or not compliant with the EWC codes stated in the EP. In the event that a hot load was of unacceptable waste, this would be extinguished and stored in the quarantine area.

Any waste placed within the quarantine area will be removed in a timely manner (i.e. typically within 24 hours), so it is highly unlikely for a situation to arise whereby the quarantine area is already 'full' and another load needs to be placed within the quarantine area. Any hot loads would be placed in a location within the quarantine area which is away from any loads which have already been transferred to this area. If the waste is burning when it is transferred to the quarantine area, it will be extinguished immediately upon placing in the quarantine area to prevent the spread of fire to any loads already within the quarantine area.

Where unacceptable waste is identified inside the bunker, it will be back-loaded from the bunker into the back-loading bay/quarantine area using the waste crane, for examination and/or removal from the site to a suitably licensed waste treatment facility.

Depending on the location of the fire, there may be a requirement for an alternative quarantine area, particularly when it has been identified as unsafe or not practical for hot loads to be transferred to the dedicated quarantine area. In this situation, the FSM or deputy FSM will undertake a dynamic risk assessment should additional quarantine areas be required. The dynamic risk assessment will take into account the potential for contaminated firewater runoff resulting from water suppression; the location of fire suppression systems; and the potential for the spread of fire.

9.3 Procedures to remove material stored within the quarantine area

Hot loads stored within the quarantine area will be removed as soon as possible (i.e. within 1 hour of a fire starting). Appropriate fire detection and protection measures (e.g. smoke/flame detectors, hose reel, sprinklers, fire extinguishers) will be installed in the quarantine area. Therefore, if a fire was to occur within the quarantine area, it will be extinguished prior to the waste being transferred off-site. If required, the emergency services would be called for assistance. The final design of the quarantine area will be subject to detailed design and agreed with the fire risk insurers.

The unacceptable waste will be segregated from all other incoming waste, allowing it to be collected and loaded into appropriate road vehicles for removal off-site, once deemed safe to do so.

Unacceptable waste will typically not be stored within the quarantine area for more than 24 hours. The waste supplier would be contacted immediately upon identification of an unacceptable load, and provisions will be made for the waste to be collected and removed from the site. However, to allow for extended periods where waste deliveries are not occurring (such as bank holidays), the maximum time that waste could remain in the quarantine area will be up to 7 days. However, it can be confirmed that Viridor will co-ordinate with the Waste Supplier to ensure that unacceptable waste is removed from the site as soon as possible. This will reduce the risk of two separate loads requiring storage in the quarantine area. Notwithstanding this, contingency measures are in place in the event that more than one load requires storage in the quarantine area, through the use of skips located in the quarantine area – refer to section 9.1.

Typically, unacceptable loads would be identified immediately upon tipping into the bunker. In this case, the waste delivery driver would be asked to remain at the site, the load would be rejected and the waste backloaded into the delivery vehicle for transfer off-site. Should the delivery driver have left the site, waste would be removed from the bunker using the crane and deposited within the quarantine area.

10 Detecting fires

Procedures will be in place at the Facility to detect a fire in its early stages, in order to reduce the impact of the fire.

The choice of fire detection system (smoke/heat/flame detectors) to be installed within the Facility will be subject to detailed design. However, it can be confirmed that the fire detection systems will be covered by a UKAS-accredited third-party certification scheme or equivalent. This will be confirmed prior to the commencement of commissioning at the Facility.

During detailed design, appropriate fire detection systems will be proposed for the different areas of the Facility. The chosen fire detection systems will be appropriate to the activities undertaken in the different areas. Following completion of detailed design, a plan showing the fire detection systems in each area will be included into this Fire Prevention Plan.

10.1 Detection systems in use

There will be a fire detection and alarm system which will cover all of the waste processing areas within the Facility. The fire alarm systems will include the following:

- local detectors/transducers and call points;
- sounders/high intensity flashing beacons;
- cabling and containment systems;
- local control and indication panels; and
- remote control and indication panel (incorporating integral printers) will be in the control room.

All fire detection systems will be installed in accordance with BS 5839, Part 1 (2002) and subsequent amendments to give level P1 + M coverage in accordance with the requirements of the Loss Prevention Council ("LPC") guidance, or equivalent standard. In low fire risk areas, such as the Boiler Hall, the requirements for a P1 detection system may be relaxed.

In areas which are identified as having a low fire risk, the proposed fire detection method(s) will be agreed with the requirements of the fire service and fire risk insurer. The fire detection, protection and alarm systems will comply with the requirements of the fire service and fire risk insurer. All fire detection systems will be design, installed and maintained in accordance with an appropriate UKAS-accredited third-party certification scheme or equivalent.

It is anticipated that the following fire detection systems will be incorporated into the design of the Facility:

1. Tipping hall fire detection will be provided by flame or temperature detectors in accordance with an appropriate risk study. Fire suppression in the tipping hall will likely be provided by an automatic sprinkler system or similar, to protect roofing and steelwork, with fire hose reels used manually in the case of vehicle fires or similar ground-level fires. The tipping hall fire detection and suppression systems will be subject to detailed design of the Facility.
2. Waste bunker fire detection will be provided by thermal imaging cameras and/or flame detectors which will be fixed around the perimeter of the bunker with automatic scanning of the entire fire zone. The thermal imaging cameras will provide a continuous thermal ‘map’ of the surface of the waste within the bunker. The thermal mapping will be displayed in the control room and will be used by the crane operator to manage temperatures within the bunker. The staff within the control room, as well as the crane operator, will be trained in the identification and implementation of corrective measures in the event of elevated temperatures within the bunker. The thermal imaging cameras will enable the crane operator and/or the control room

staff to identify and react to hot areas in the bunker and undertake mixing or feeding of waste as appropriate. In extreme cases, the use of firewater cannons which covers the entire extent of the waste bunker to extinguish any smouldering/burning waste may be required.

- Water cannons and manual fire hoses are considered to be the primary means of fighting a bunker fire.
- To proactively prevent fires, it is anticipated that the fire detection systems will be configured to sound an alarm based on certain conditions. This would involve the thermal imaging cameras being set with two alarms at two different 'trigger' temperatures. These are described below.
  - Temperature set-points would be determined during detailed design of the Facility and in consultation with the fire service. It is understood that the system will be designed so that trigger temperatures can be amended if required.
  - High temperature alarms in other UK waste incineration plants operate with a trigger temperature of approximately 90°C, with high-high temperature alarms operating with a trigger temperature of approximately 120°C. For the Facility, this is subject to detailed design, and will be set in consultation with the Fire Service. However, it is estimated that the trigger temperatures will be approximately 90°C and 120°C for the high temperature and high-high temperature alarms respectively. The system can be designed so that the trigger temperatures for the fire detection systems can be amended if required from operational experience.
- Following activation of the high temperature alarm in an area within the bunker, the area with an elevated temperature can be readily identified and, if possible, extinguished based on operator action through mixing within the bunker or fed into the hopper to be incinerated.
- Following activation of the high-high temperature alarm in an area within the bunker, the area with an elevated temperature will be targeted and the firewater cannons will be activated to reduce the temperature in the area where self-heating has occurred.
- Furthermore, the crane will be sized appropriately so that the time for waste mixing, feeding and management is within an acceptable time range for feeding waste to the feed hopper.

3. Feed hopper area fire detection will be provided by the waste feed hopper supervision camera or other suitable detection system, and a deluge system or firefighting nozzles to flood the feed hoppers if required.
4. In the boiler house the main cable trays and other fire sensitive areas will be protected with a sprinkler system or other suitable/equivalent fire suppression system. There will be suitable fire detection measures in place (e.g. a wire and fusible link system or heat detector and solenoid valve) so that in the event of an external or internal fire, the local fuel supply isolation valve (fuel oil) is automatically closed.
5. Electrical rooms with significant concentrations of electrical equipment will be fitted with suitable fire detection systems and suppression systems (such as a gaseous extinguishing system) if appropriate.
6. All oil-filled transformers shall be located outdoors wherever possible. Dry type transformers are preferred for indoor installations. Oil type transformer protection will comply with the requirements of NFPA 850 or have an equivalent level of fire protection. If appropriate, enclosures for dry-type transformers will be provided with suitably designed fire detection systems.
7. The fire sensitive areas of turbine-generator and ancillaries will be protected by a dedicated fire detection and automatic sprinkler fire protection system or equivalent.

8. Procedures will be developed in the operation of the fire detection systems. Training will be provided to the relevant staff in the different fire detection systems. Training records in the operation of the fire detection systems will be retained on-site.
9. All automatic fire detection and alarm systems will be designed and maintained by a suitably qualified, experienced and registered fire protection engineer.
10. Detailed design calculations, risk assessments and system drawings to demonstrate compliance with the requirements of the building control officer, fire officer and the insurer's requirements will be produced during detailed design.
11. It will be the responsibility of the operators and shift managers to monitor fire alarms.

10.2 Certification for the systems

The Facility will be designed and operated in accordance with relevant standards and guidelines, or alternative recognised international standards where they are available. This may include, but not be limited to, the following:

- BS EN 54: fire detection & alarm systems
- BS 5266: emergency lighting
- BS 5306: fire extinguishing installations
- BS 5839: fire detection & alarm systems for buildings
- BS 7273: operation of fire protection measures
- BS 7974: Application of fire safety engineering principles to the design of buildings. Code of practice
- BS 9990: Non automatic fire-fighting systems in buildings. Code of practice
- BS 9997: Fire risk management systems. Requirements with guidance for use
- NFPA 1: Fire Code
- NFPA 3: Recommended Practice for Commissioning of Fire Protection and Life Safety Systems
- NFPA 10: Standard for Portable Fire Extinguishers
- NFPA 11: Standard for Low-, Medium-, and High-Expansion Foam
- NFPA 13: Standard for the Installation of Sprinkler Systems
- NFPA 14: Installation of Standpipe and Hose Systems
- NFPA 15: Standard for Water Spray Fixed Systems for Fire Protection
- NFPA 16: Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
- NFPA 20: Standard for the Installation of Stationary Pumps for Fire Protection
- NFPA 22: Standard for Water tanks
- NFPA 24: Installation of Private Fire Service Mains and Their Appurtenances
- NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
- NFPA 30: Flammable and Combustible Liquids Code
- NFPA 37: Standard for the installation and use of stationary combustion engines and gas turbines
- NFPA 70: National Electrical Code
- NFPA 72: National Fire Alarm and Signalling Code
- NFPA 80A: Recommended Practice for Protection of Buildings from Exterior Fire Exposures

- NFPA 110: Standard for Emergency and Standby Power Systems
- NFPA 231: General Storage
- NFPA 291: Recommended Practice for Fire Flow Testing and Marking of Hydrants
- NFPA 297: Guide on Principles and Practices for Communications Systems
- NFPA 850: Recommended practice for fire protection for electric generating plants and high voltage.
- NFPA 2001: Standard on Clean Agent Fire Extinguishing Systems
- PD 7974-7: Application of fire safety engineering principles to the design of buildings. Probabilistic risk assessment
- PD 7974-6: Application of fire safety engineering principles to the design of buildings. Human factors. Life safety strategies. Occupant evacuation, behaviour and condition (Sub-system 6)
- PD 7974-3: Application of fire safety engineering principles to the design of buildings. Structural response to fire and fire spread beyond the enclosure of origin (Sub-system 3)
- PD 7974-2: Application of fire safety engineering principles to the design of buildings. Spread of smoke and toxic gases within and beyond the enclosure of origin (Sub-system 2)
- PD 7974-1: Application of fire safety engineering principles to the design of buildings. Initiation and development of fire within the enclosure of origin (Sub-system 1)
- Chubb Insurance. Renewable and Alternative Energy Plants Guideline.
- Requirements/guidance from the Insurer.

Records associated with the certification of the fire prevention and suppression systems will be retained on site throughout the lifetime of the Facility.

11 Suppressing fires

The suppression systems for the Facility will be subject to detailed design. The main features of the fire suppression systems are described in sections 11.1 and 11.2.

11.1 Suppression systems in use

There will be a fire suppression system installed in the locations considered by the fire strategy and NFPA 850 to be at risk of fire. It is anticipated that the fire suppression systems will include the following (in appropriate locations at the Facility):

- automatic sprinkler/water deluge systems for the fuel reception areas, waste bunker, waste feed hopper, fire pump container and the emergency diesel generator;
- automatic systems for the turbine generator and lube oil systems, auxiliary burners; and
- inert gas suppression and carbon dioxide gas suppression for the electrical rooms and CEMS container.

The automatic fire suppression systems will be designed and maintained by a suitably qualified, experienced and registered fire protection engineer. The fire suppression systems will be covered by a recognised (typically UKAS) third party certification scheme.

Detailed design calculations, risk assessments and system drawings to demonstrate compliance with the requirements of the building control officer, fire officer and the insurer's requirements will be retained on site throughout the lifetime of the Facility.

11.1.1 Bunker cannons

Thermal cameras will be installed over the waste reception bunker to detect any hot spots in the waste. If the temperature of any hot spot exceeds a defined set-point (for the Facility, this is subject to detailed design, and will be set in consultation with the Fire Service. However, it is estimated that the trigger temperatures will be approximately 90°C and 120°C for the high temperature and high-high temperature alarms respectively, subject to agreement with the fire risk insurers), water cannons installed around the bunker can be used to prevent the potential for fire spreading within the bunker.

The water cannons will be located in positions to optimise the horizontal and vertical coverage of spray for total firefighting suppression across the entire area of the bunker.

Through detailed design of the waste bunker, the number and position of the fire monitors and cannons will be established, alongside the manual and/or automatic remote-control systems. Thermal imaging screens will be installed within the control room.

11.1.2 Fire hose reel system

Hose stations will be designed in accordance with NFPA 14, Standard for the Installation of Standpipe, Private Hydrants and Hose Systems, or BS equivalent (e.g. EN 671). Fire hydrant systems equipment will be provided at strategic positions within the Facility for firefighting in fire risk areas.

For firefighting purposes, hose reels and extinguishers will be provided within the main buildings at the Facility.

The positioning of hose points will take into account the following:

- location and physical protection as to avoid potential damage by vehicles;

- size and number to be determined for the specific works layout (e.g. push wall positions);
- ease of use, maintenance, and storage, such as through the use of continuous-flow, non-collapsible hose reels; and
- protection from freezing in unheated areas.

Following detailed design of the Facility, a plan identifying the location of the fire hose reels will be developed.

11.1.3 Fire hydrants and mains

Fire hydrants will be designed in accordance with NFPA 14 Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems (or BS equivalent – refer to section 10.2), and will be connected to a ring main at strategic positions around the Facility to provide firewater supplies to external fire risk areas. The fire hydrants will be designed in accordance with the requirements of the Building Regulations and the fire service. Fire hydrants shall be positioned such that all hydrants are no more than 90m from a building entrance (in accordance with BS 9990) and within 12 m of the building.

The location of hose reels and hydrants will be subject to detailed design and will be agreed with the fire risk insurers and the fire officer. The positioning of fire hydrants will take into account:

- location and physical protection as to avoid potential damage by vehicles;
- size and number to be determined for the specific layout; and
- protection from freezing.

The fire hydrants will be fed from the fire water storage tank and maintain the required pressure in accordance with the requirements of the fire service.

Following completion of detailed design, a plan identifying the location of the fire hose reels and hydrants will be developed. An indicative drawing showing the possible locations of fire hydrants is presented in Appendix A.5 of this report.

11.1.4 Fire extinguishers

Fire extinguishers will be strategically located throughout the operational areas in accordance with the requirements of BS 5306 (or NFPA equivalent).

The location of the fire extinguishers will be subject to implementation of the recommendations of the fire officer for the Facility. Following completion of detailed design, a plan identifying the location of the fire extinguishers will be developed.

11.2 Certification for the systems

The relevant standards for the fire prevention and suppression systems are described in section 10.2.

It is anticipated that the automatic fixed fire suppression systems for the Facility will be designed in accordance with the requirements of Chubb Guidance Document – Energy from Waste - Fire Systems, Chubb Guidance Document – Waste Processing Plant – Fire Systems, NFPA 850 and other NFPA or BS equivalent standards.

12 Firefighting techniques

12.1 Active firefighting

An immediate firefighting response will be allowed to be made by staff if the following criteria have been met:

- the fire alarm has been raised;
- the fire is identified to be 'small' and it has been deemed safe by the individual to attempt fire suppression; and
- such firefighting action (e.g. use of a single fire extinguisher) is deemed safe and likely to have a direct and immediate effect on the fire.

Team firefighting will be permitted in the event of a larger fire by the use of multiple fire extinguishers and the fire hose reels if the following criteria are met.

- the fire alarm has been raised;
- the FSM (or deputy FSM) is in attendance;
- a sufficient number of trained staff are available;
- an escape route is always available;
- staff are not deemed to be at risk of smoke inhalation, significant heat exposure or other relevant fire risks; and
- such firefighting action is deemed safe and likely to have a direct and immediate effect on the fire.

12.2 Alternative fire detection and suppression measures

In addition to the fire detection and suppression systems identified in sections 10 and 11, the design of the Facility will include 'additional measures' to prevent the spread of fire, such as fire walls (Section 8.2).

It is acknowledged that the Facility is not designed strictly in accordance with all of the requirements of the FPP guidance (specifically, the provision of water for firefighting, refer to section 13). However, the overall design of the Facility, including the fire detection and fire suppressions systems, where applicable, have been designed to achieve the requirements of the guidance, namely:

- minimising the likelihood of a fire happening;
- aim for a fire to be extinguished within 4 hours; and
- minimise the spread of fire within the site and to neighbouring sites.

In addition, in the event of a significant fire within the waste bunker, the plant can be shut-down which will include the shut-down of the induced draft (ID) fan and the extraction of combustion air from within the bunker. The plant shut-down will reduce the risk of fire spread between the 'fire compartments' within the Facility.

13 Water supplies

13.1 Available water supply

The Facility will have a firewater storage tank designed in accordance with the requirements of BS 5306 (or equivalent standard). The firewater storage tank will be connected to the local water supply and will be installed with a suitable system to prevent freezing. It is anticipated that the firewater storage tank will be fitted with a local external water level indicator as well as with remote water level control and level alarm indication to the distributed control system (DCS). The firewater tank will be designed to ensure the required firewater capacity is always available for fire protection.

It is estimated that the size of the firewater storage tank will be approximately 1,600 m^3. The exact size of the firewater tank will be confirmed following detailed design. The firewater tank will be designed to ensure the required fire water capacity is available for fire protection at all times. When specifying the sizing for the firewater tank, it will be based on early fire detection and automatic fire suppression systems in the waste reception and storage areas such that any fire can be rapidly contained and extinguished.

The FPP Guidance requires a supply of firewater of 2,000 l/min for 3 hours for a 300 m^3 pile of waste but this is based on an open pile of waste with free run off, rather than storage in a bunker which contains the water. For a waste bunker with a waste storage capacity of 30,625 m^3, the guidance implies the need for a 36,750 m^3 fire water tank, which is excessive. It should be noted that the potential volume of firewater required to extinguish a fire in the bunker will be considerably less than the total 'airspace' volume of the bunker, as the waste present in the bunker will reduce the available volume.

It is acknowledged that the provisions for the supply of firewater at the Facility are not in strict accordance with the EA's FPP guidance. However, the proposed management systems; the design considerations of the Facility; and the provision of the fire prevention and fire-fighting measures detailed within this FPP are considered to be in excess of the requirements of the FPP guidance. Therefore, the requirements of the EA's FPP guidance should not apply to the Facility.

The waste bunker will be a contained concrete structure, with thick fire resistant concrete walls. The provisions for firefighting in this area will be in accordance with NFPA 850 and as required by the fire risk insurers. In addition, foam may be used as an additive in the firewater system which will reduce the quantity of water required for firefighting – this is subject to detailed design of the Facility. Early fire detection methods and fast suppression will mean that the full contents of the firewater tank are unlikely to be required. The requirements for firewater provision in the FPP guidance have been discussed with the EA on previous projects (similar to the Facility) and it was agreed that they would not be applied.

It is proposed that the design of the systems for the provision and containment of firewater are confirmed via a pre-operational condition or similar.

14 Managing fire water

14.1 The containment of fire water

The waste bunker will be design and constructed as a water retaining structure in accordance with BS EN 1992-3. This will protect against the leak of contaminated firewater from the bunker and minimise the risk of contamination of groundwater in the event of a fire within the bunker.

Drainage systems will be designed for the prevention of flooding of equipment. Fire water retention will be accomplished through the installation of one or a combination of:

- waste bunker;
- process water tank/pit;
- surface water drainage system (including attenuation storage);
- floor drains/floor trenches;
- areas of hardstanding and kerbs for containing or directing drainage; and/or
- pits, sumps, and sump pumps.

It is anticipated that the provisions for drainage and any associated drainage facilities will be sized to accommodate the concurrent flow due to operation of the following components (in accordance with NFPA 820):

- the spill of the largest single container of any flammable or combustible liquids in the area, where the bund around oil tanks should be large enough to contain the oil and the water from suppression systems;
- the maximum expected number of fire hose lines (31.5 L/sec (500 gal/min) minimum) operating for a minimum of 10 minutes (i.e. firewater resulting from all hoses operating at once for at least 10 minutes); and
- the maximum design discharge of (maximum amount of firewater resulting from) fixed fire suppression systems operating for a minimum of 10 minutes (fixed fire suppression systems include sprinklers and water cannons).

There are three different types of firewater flows which will be required to be contained if there was a fire at the Facility:

1. Firewater resulting from treating fires in the bunker and tipping hall area. This firewater will be routed to the bunker which is watertight and hence can contain large amounts of firewater. The total below-ground volume of the bunker will be approximately 15,000 m^3, however, it is acknowledged that this will be reduced by the quantity of waste present.
2. Firewater from inside any other process building or from the IBA storage area. Such firewater is expected to be extremely rare and small in quantity so only small amounts of firewater will arise. This drainage will be contained, to prevent contaminated water discharging off-site. It is anticipated that the dirty water pit (process water tank) will have a capacity of approximately 250 m^3.
    a. Under normal operation, process effluents will be re-used in the process and only temporarily stored within the dirty water pit prior to reuse. Therefore, at any one time, there will only be a small amount of process effluent being stored within the dirty water pit. In the unlikely event that excess process effluents are generated (e.g. resulting from emptying the boilers), these will be tankered offsite. Therefore, large quantities of process effluent are not likely to be stored within the dirty water pit at any one time. Emptying of any excess process effluents offsite will be co-ordinated with periods of planned

maintenance, as part of the documented management systems in place at the site. This will ensure that when excess process effluents are generated (e.g. during maintenance activities), they are not stored for significant periods of time, and they are removed in a timely manner. Taking the above into consideration, it is considered that the process drainage system (including the dirty water pit) will have sufficient capacity to store the small quantities of firewater that would be generated as a result of fires in process areas at the site. This capacity will be maintained through regular emptying of the dirty water pit as part of planned maintenance procedures at the site.

3. Firewater from outside any building. Such firewater will be contained in the site surface water drainage systems. The underground attenuation systems will have a combined capacity of approximately 2,284 – 3,312 m^3, subject to detailed design of the drainage systems. It is acknowledged that the storage capacity of the attenuation systems will be reduced by the quantity of water already present within the system. It is not anticipated that the attenuation systems will regularly store large amounts of water, as the required attenuation capacity was calculated assuming a 'worst case flow' (i.e. allowing for SUDS and climate change requirements). Therefore, there should be sufficient capacity available to hold excess firewater in the event of a fire. The drainage system will be installed with a penstock valve or similar isolation system which will prohibit the discharge of contaminated surface water off-site in the event of a fire or other emergency. Additional storage for used firewater will also be available from site raised kerbing and areas of hardstanding. It is expected that hardstanding and kerbing will provide additional containment capacity. Therefore, the full volume of the firewater tank can be contained within the site in the surface water drainage systems and site kerbing (of 100mm depth).
    a. It is acknowledged that the capacity of the surface water attenuation systems will be reduced by the quantity of water already present within the system; however, it is not anticipated that the attenuation systems will regularly store large amounts of water, as the required attenuation capacity was calculated assuming a 'worst case flow' (i.e. allowing for SUDS and climate change requirements). Therefore, there should be sufficient capacity available to hold excess firewater in the event of a fire. Furthermore, the additional capacity from areas of kerbing and hardstanding will ensure that there is sufficient capacity to store used firewater resulting from external areas, following a full discharge of the contents of the firewater tank.
    b. As the maximum depth of site kerbing will be 100mm, the firewater itself will be a maximum of 100mm in depth (although it is highly unlikely that the full containment capacity of kerbing/hardstanding will be used). This is the maximum depth that a typical passenger vehicle can travel through. The depth that a fire engine or special purpose fire vehicle can travel through will be greater than this. Therefore, hardstanding areas will remain accessible to firefighting vehicles despite small quantities of firewater being present at the site.
    c. The surface water attenuation tank itself will be design and constructed as a water retaining structure in accordance with EN 1992-3:2006, Eurocode 2, thereby preventing the release of any contamination should the surface water attenuation tank be required to retain used firewater.

Measures to prevent the discharge of contaminated firewater off-site are presented in Appendix A.9 (Indicative Firewater Storage and Containment). An isolation valve will prohibit the discharge of contaminated firewater from the site surface drainage systems. The water used for firefighting will be sampled and analysed to identify whether it is suitable to be used as process water or suitable for discharge offsite, or if treatment/disposal is required. If the firewater is considered to be contaminated, it will be transferred off-site, via tanker, to a suitably licensed waste management facility.

A plan showing the proposed landscaping to surround the site (which shows the locations of natural and unmade ground surrounding the Facility) is presented in Appendix A.11 of this report.

15 During and after an incident

15.1 Dealing with issues during a fire

Emergency procedures will be developed during the construction and commissioning phase. The emergency procedures will include, but not be limited to:

- fire identification and reporting procedures;
- an evacuation plan;
- emergency communication procedures;
- responding to chemical spillages;
- containment of firewater;
- requirements for diverting incoming waste; and
- Notification of any adjacent residential properties and businesses which may be impacted by the incident.

All staff and contractors will be trained in the site-wide emergency response procedures. Where specific responsibilities are given to specific staff, training will be provided to those employees. Training records in the emergency response procedures for all staff and contractors will be retained on-site as part of the documented management systems.

The effectiveness of the emergency response procedures will be reviewed following any emergency incidents on-site. Following an emergency incident, the procedures will be updated if required, and staff trained in the updated procedures.

A copy of the emergency procedures will be maintained at the gate house, or other suitable location, and may include the fire system mimic panel to allow co-ordination of the emergency response to a fire in the event that the main offices are unavailable.

On a periodic basis, testing of the emergency procedures will be undertaken. The intention of the testing is to verify that all staff and contractors are aware of the emergency procedures. Following all tests, the implementation of the procedures will be reviewed. If appropriate, the procedures will be amended, or additional training provided to all staff and contractors.

In the event of an incident resulting in the Facility not being capable to receive waste, waste deliveries to the Facility will be stopped or diverted to a suitably licensed alternative waste management facility.

Deliveries of waste to the Facility will not be recommenced until it has been deemed safe for the Facility to be restarted following the incident. During a complete shutdown of the Facility, the fire detection systems will remain operational.

15.2 Notifying residents and businesses

The site will be operated in accordance with an Environmental Management System (EMS) certified to the ISO 14001 standard. The EMS will include procedures for the response to and documentation of emergency situations. A Fire Emergency Response Procedure will be developed which will detail specific actions which must be carried out in the event of a fire.

Depending on the nature and scale of any incidents, it may be necessary to notify local residents and adjacent businesses of the incident. Prior to commencement of operation of the Facility, and

as part of the development of the documented management systems associated with the operation of the Facility, suitable external communication procedures will be developed and implemented.

In the event of a significant fire, the EA will be notified as soon as practically possible. Following any fire incidents, the FSM will advise the EA what remedial measures or actions have been taken to prevent any further incidents.

15.3 Clearing and decontamination after a fire

Following a fire which requires the presence of the emergency services; materials, building structures, furnishings, vehicles, equipment and raw materials could be damaged. Once the fire has been fully extinguished and the emergency services given approval to enter the Facility, an assessment will be undertaken by the management team for the Facility, insurance assessors, structural engineers and fire damage/salvage specialists to assess the extent of the damage.

Once a full inventory of the damage and equipment has been completed under the strict supervision of specialist structural engineers, any building or structure will be made safe. Severely damaged equipment or building materials will be removed from site by a licenced waste/scrap company. Building structures that are deemed safe will be cleaned, as necessary.

Waste within the bunker which is not suitable to be incinerated will be backloaded from the bunker into HGV's and removed from site by a licenced waste carrier. Affected areas will be cleaned and washed before equipment and structural repairs will take place.

15.4 Making the site operational after a fire

If there was a significant fire requiring a full shutdown of the Facility, the Facility would not restart operations until the relevant regulatory authorities (Fire Service, Health and Safety Executive, Environment Agency, etc.), as well as the fire risk insurers, advised that it was safe to do so.

Records will be maintained of the following:

- fire incidents including post-incident investigation;
- feedstock management;
- training of site operatives;
- site inspections and monitoring;
- maintenance activities;
- testing of firefighting equipment; and
- complaints.

Records will be maintained in accordance with the requirements of the EP and any documented management systems.

Appendices

A Plans and drawings

A.1 Site location plan

A.2 Site layout plan

A.3 Waste storage areas plan

A.4 Access points around the perimeter to assist fire-fighting

A.5 Indicative locations of fire hydrants

A.6 Indicative locations of fire walls

A.7 Indicative location of quarantine area

A.8 Materials storage areas

A.9 Indicative firewater storage and containment

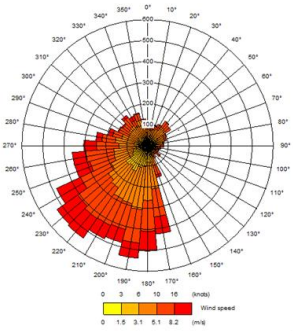
A.10 Fire Receptor Plan

A.11 Areas of natural or unmade ground

A.12 Indicative location of gas cylinders and mobile plant

B Wind roses

2015



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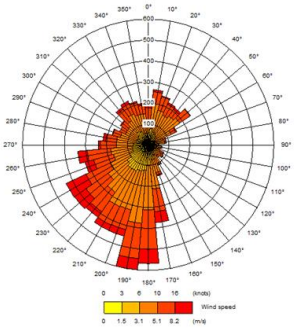
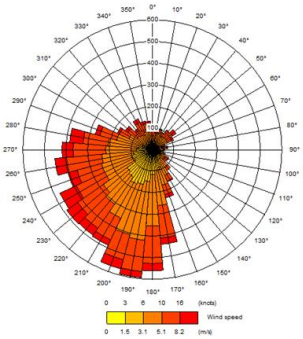
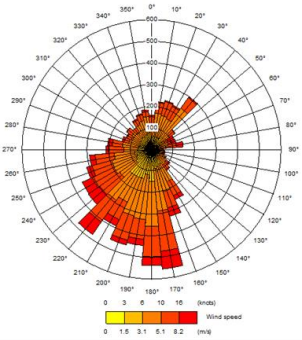


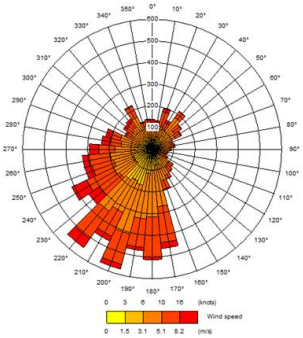
2017



2018



2019



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