

Appendix H

FIRE PREVENTION PLAN





Enva E-Waste England Limited

FIRE PREVENTION PLAN

Dartford WEEE Recycling Facility





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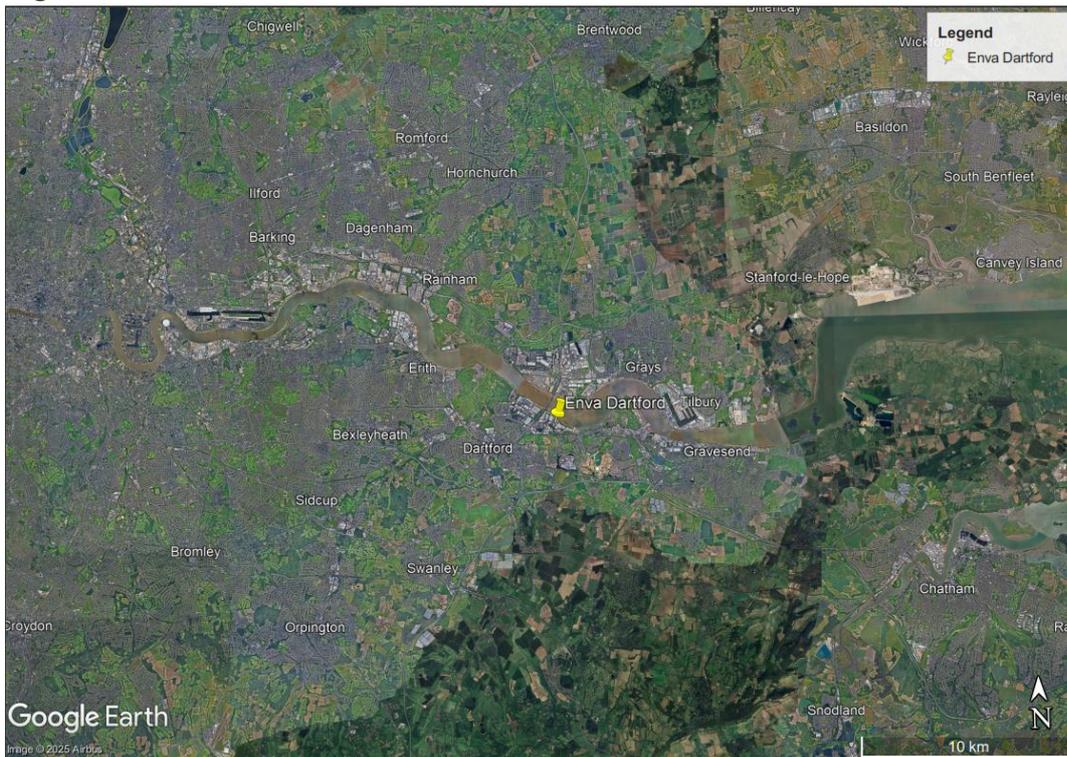
1 INTRODUCTION

1.1 REPORT CONTEXT

This Fire Prevention Plan (FPP) has been prepared by WSP UK Ltd on behalf of the operator, Enva E-Waste England Limited (hereinafter 'Enva') in connection with the new proposed development of a Waste Electrical & Electronic Equipment (WEEE) recycling facility in Dartford, Kent. Enva is a WEEE recycling and reuse business, operating a portfolio of sites across the UK. The proposed new site is to be located at the address given below and the area is highlighted in Figure 1-1:

Former Dartford International Ferry Terminal,
Clipper Boulevard,
Dartford,
Kent,
DA2 6QB

Figure 1-1 - Site Location





The proposed WEEE recycling facility will have the ability to deconstruct Waste Temperature Exchange Equipment (WTEE), consisting of fridges and freezers only, into their constituent parts, alongside the deconstruction of small mixed WEEE (SMW).

This FPP has been produced in accordance with the latest available guidance¹ from the Environment Agency (EA).

Throughout this report, potential causes and impacts of a fire are identified, alongside descriptions of the measures that will be implemented at the facility, to prevent the occurrence of a fire. Further to this, the FPP also outlines the planned response that will take place in the event of a fire-related incident, explaining aspects such as how firewater could be contained.

This FPP is a working document, and it is the intention that it is to be used as a reference document for anyone whose work directly impacts the permitted activities, including operational staff, contractors and regulatory authorities. This document is also intended for the Fire Rescue Service (FRS) in the event of a fire.

¹ [Fire prevention plans: environmental permits - GOV.UK](#)

2 TYPES OF COMBUSTIBLE MATERIALS

2.1 COMBUSTIBLE WASTE

From GOV.UK guidance on FPPs (Section 4)¹, combustible waste includes WEEE, and so all waste accepted and stored at the Dartford facility is considered combustible in nature. This guidance applies to all combustible materials, which at the Dartford site will include

- Paper or cardboard;
- Polystyrene;
- External polyurethane (PUR) storage;
- General Waste stored in skips and lift bins;
- Plastics from the recycling and recovery stages;
- Wooden pallets;
- Waste electrical and electronic equipment such as fridges, computers and televisions containing combustible materials such as plastic; and
- Fragmentiser waste – plastics from recovery process.

The guidance confirms that combustible waste encompasses all WEEE, including (not an exhaustive list):

- Fridges; and
- Computers and televisions containing combustible materials such as plastic (including any batteries within this equipment).

WEEE is to be accepted at the facility for various activities. The tables below detail the European Waste Catalogue (EWC) codes that will be received on site and the activities that they will be associated with.

Table 2-1 - EWC Codes Subject to the Treatment of Waste Temperature Exchange Equipment

EWC	Description
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 02	Wastes from electrical and electronic equipment.
16 02 11*	Discarded equipment containing chlorofluorocarbons, HCFC, HFC.
16 02 13*	Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12.
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	Separately collected fractions (except 15 01)
20 01 23*	Discarded equipment containing chlorofluorocarbons
20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 3 containing hazardous components.

Table 2-2 – EWC Codes Subject to the Mechanical Treatment of SMW and the Granulation of Hazardous Electrical and Communications Cable

EWC	Description
9	WASTES FROM THE PHOTOGRAPHIC INDUSTRY
09 01	Wastes from the photographic industry
09 01 11*	Single-use cameras containing batteries included in 16 06 01, 16 06 02, or 16 06 03
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 02	Wastes from electrical and electronic equipment
16 02 09*	Transformers and capacitors containing PCBs.
16 02 10*	Discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09.
16 02 12*	Discarded equipment containing free asbestos
16 02 13*	Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12.
16 02 15*	Hazardous components removed from discarded equipment.
16 06	Batteries and accumulators
16 06 01*	Lead batteries
16 06 02*	Ni-Cd batteries
16 06 03*	Mercury-containing batteries
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 06	Insulation materials and asbestos-containing construction materials.
17 06 03*	Other insulation materials consisting of or containing hazardous substances.
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	Separately collected fractions (except 15 01)
20 01 21*	Fluorescent tubes and other mercury-containing waste.
20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components.
20 01 36	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35.

Table 2-3 – EWC Codes Subject to other Waste Operations (such as storage of waste pending further operations, recycling / reclamation of organic substances not used as solvents, metals and metal compounds and/or other inorganic compounds)

EWC	Description
9	WASTES FROM THE PHOTOGRAPHIC INDUSTRY
09 01	Wastes from the photographic industry
09 01 12	Single-use cameras containing batteries other than those mentioned in 09 01 11
15	WASTE PACKAGING: ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED
15 01	Packaging (including separately collected municipal packaging waste)
15 01 01	Paper and cardboard packaging
15 01 02 15 01 03	Plastic packaging Wooded packaging
15 01 04	Metallic packaging
15 01 05	Composite packaging
15 01 06	Mixed packaging
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
16 02	Wastes from electrical and electronic equipment
16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13.
16 02 16	Components removed from discarded equipment other than those mentioned in 16 02 15
16 06	Batteries and accumulators
16 06 04	Alkaline batteries (except 16 06 03)
16 06 05	Other batteries and accumulators
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 04	Metals (including their alloys)
17 04 01	Copper, bronze, brass

EWC	Description
17 04 02	Aluminium
17 04 03	Lead
17 04 04	Zinc
17 04 05	Iron and steel
17 04 05 17 04 07	Tin Mixed metals
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 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 02	Ferrous metal
19 12 03	Non-ferrous metal
20	MUNICIPAL WASTE (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	Separately collected fractions (except 15 01)
20 01 23*	Discarded equipment containing chlorofluorocarbons.
20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components.
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 40	Metals

2.2 PERSISTENT ORGANIC POLLUTANTS

As a WEEE recycling facility, the types of waste to be accepted on site may contain persistent organic pollutants (POPs). According to EA guidance¹, POPs can be present in waste and can have significant effects on human health and the environment.

Waste containing, or suspected of containing, POPs will be segregated from other waste and stored separately. POPs plastics present in WTEE will be manually removed as part of the compressor removal process. All plastics arising from Small Mixed WEEE (SMW) recycling treatment will be treated as POPs waste. Due to this, once SMW has undergone mechanical treatment and POPs fractions are obtained, these will be stored under weatherproof covering, so as to prevent any associated risks, such as leaching of harmful pollutants. Once separated and stored, POPs plastics will be transferred to a Waste Treatment facility licenced to treat such plastics.

If there is a fire, the FRS will be notified of the presence of wastes containing POPs on site. Any residue, which could include firefighting water, from a fire involving POPs waste will be segregated and treated following the POPs regulations 2019².

2.3 OTHER COMBUSTIBLE MATERIALS

Other materials that are to be stored at the facility that are non-waste materials but are also combustible include the below materials.

Table 2-4 - Non-waste Combustible Materials

Material	Use	Storage Arrangements
Ultra Low Sulphur Gasoil (ULSG)	Fuel for use in off-road diesel engine vehicles and stationary diesel engines designed to run on automotive diesel	Integrally bunded tank stored on impermeable hardstanding surface
Nitrogen, under low pressure	Inerting gas – used in shredding process	Gas drum
Carter EP 220	Industrial gear oil (low volumes, for maintenance purposes)	Drum, stored on bunded plastic pallet on impermeable hardstanding surface
Mobil Rarus 425	Air compressor oil (low volumes, for maintenance purposes)	Drum, stored on bunded plastic pallet on impermeable hardstanding surface
Taures Euro 10W-40	Industrial use lubricant and additive (low volumes, for maintenance purposes)	Drum, stored on bunded plastic pallet on impermeable hardstanding surface
UltraMax 46	Industrial use hydraulic fluid and additive (low volumes, for maintenance purposes)	Drum, stored on bunded plastic pallet on impermeable hardstanding surface

² <http://www.legislation.gov.uk/ukxi/2019/1099/made>

3 USING THE FIRE PREVENTION PLAN

3.1 FPP USE AND LOCATION

This FPP will form part of the management system (as a standalone document) that will be implemented at the Dartford facility, detailing fire prevention measures and procedures that are to be put in place on site.

This FPP is a working document and is intended to be used as a reference document for those roles with responsibilities that directly impact the permitted waste activities, including operational staff, contractors, and regulatory authorities. In the event of a fire, the FRS are also intended users of this FPP. Site Management and Shift Management will receive copies of this FPP.

A copy of the FPP will be available at the weighbridge on site or, alternatively, will be accessible from a box located at the entrance to the site, so that, in the event that the site is closed, the FPP remains available. An electronic copy of the FPP will also be stored on Tegos, Enva's data capture system.

Implementation and communication of this FPP is to be carried out by the Site Manager, with the support of other Enva staff. A nominated deputy will be appointed for the instances when the Site Manager is not present on site, which will result in the responsibility of ensuring that the FPP is adhered to becoming that of the nominated deputy, for example Operations Managers or Shift Supervisors.

Review of the FPP will be carried out at regular intervals (at least on an annual basis), by an appropriate person, to ensure suitability for the facility. Review will be undertaken following any of the events outlined below:

- Testing of the plan, to ensure it is sufficient and effective, and staff understand the relevant procedures for prevention of and during and after a fire;
- An incident;
- Change in legislation or formal guidance; and
- Prior to a change in activity on site.

3.2 TESTING THE PLAN AND STAFF TRAINING

As well as a copy of the FPP being made available to Site Management and Operations Management or Shift Management as mentioned previously, specific training on the FPP will be provided to Site Management and Operations Management or Shift Management on an annual basis, which will incorporate all aspects of the plan and site reviews to maintain compliance with measures in place. As part of the induction process, all staff are to receive FPP-related training. Fire drills will also be key in preparation and training, with scenario fires being covered under drill conditions at least annually. Following a drill scenario, a review of actions will be undertaken to ensure compliance with the FPP.

Fire marshal training will also be essential in ensuring that key personnel are supplied with sufficient guidance to carry out their duties effectively, in the event of a fire.

Rehearsals in relation to the actioning of the FPP will include the local FRS and will be undertaken regularly, so as to ensure that they are aware of the site layout and that they are educated on the areas of the site that pose the greatest risk, particularly in the event of a fire.

4 ACTIVITIES AT THE SITE

4.1 ASSESSING THE RISK OF FIRE

This FPP has been prepared with consideration to all possible causes of fire on site, including:

- Planned events, including planned downtime; and
- Reasonably foreseeable unplanned events, including temporary site closure.

Detail of the hazard, in terms of the materials that will be received, accepted, stored and treated on site, volumes of the materials and the potential causes of fire, are discussed in the below sections of this FPP, alongside information on sensitive receptors and the related impacts on them.

4.2 OVERVIEW OF SITE ACTIVITIES

At the facility, various activities that are to be undertaken contribute to the WEEE recycling process.

A number of activities listed in Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2016, as amended (EPR), plus Directly Associated Activities (DAA), will take place at the site, as detailed in Table 4-1.

Table 4-1 - Activities on Site

Activity listed in Schedule 1 of the EPR	Description of Specified Activity	Limits of Specified Activity
S5.3 A(1)(a)(ii) - Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment.	Treatment of waste temperature exchange equipment, involving stage 1 degassing and stage 2 mechanical destruction processes.	From treatment of waste by degassing and destruction to storage of treated waste. Treatment of waste temperature exchange equipment involving: Degassing of equipment, with collection of oil and refrigerants. Mechanical destruction of degassed equipment, including the sorting, separation of plastic, metal and foam fractions, and treatment of foam to remove and capture the blowing agent using cryogenic condensation. Treatment of refrigeration units shall be carried out within a building provided with weatherproof covering.
S5.3 A(1)(a)(ii) - Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment	Mechanical treatment of small mixed WEEE.	From mechanical treatment of waste to storage of treated waste. Treatment limited to sorting, shredding, granulating, and separating for the purpose of recovery of constituent parts and materials.

Activity listed in Schedule 1 of the EPR	Description of Specified Activity	Limits of Specified Activity
S5.3 A(1)(a)(ii) - Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment	Granulation of hazardous electrical and communications cable.	From treatment of waste by granulation to storage of treated waste. Treatment limited to granulation of cable and mechanical separation of metal from insulation material.
S5.6 A(1)(a) - Temporary storage of hazardous waste in a facility with a total capacity exceeding 50 tonnes pending any of the activities listed in Section 5.1, 5.2 and 5.3.	Storage of hazardous waste pending on-site treatment or off-site transfer.	From receipt of hazardous waste on site to its treatment on site or its transfer off-site.
Directly Associated Activities		
Storage of processed materials	Storage of recovered fractions and shredder residue following treatment.	From storage of processed materials to dispatch off site for recovery.
Raw materials storage	Storage of raw materials including nitrogen, lubricating oil and diesel.	From the receipt of raw materials to dispatch for use within the facility.
Abatement systems (for emissions to air)	Bag filters, carbon filters, HEPA filter and wet scrubber serving the treatment plant.	From the input of air to the abatement system to emission to air.
Surface water discharge from roof and yard areas	Uncontaminated surface water.	From collection of surface water in drainage system to discharge from site.
Waste Operations		
Treatment and storage of non-hazardous WEE/E		Storage and treatment of non-hazardous WEEE, baling of cardboard packaging waste generated from site operations, and storage of non-hazardous waste pending dispatch off-site for the purpose of recovery. Treatment operations limited to mechanical treatment of non-hazardous WEEE (including sorting, shredding, granulating, and separating), treatment of compressors (including manual dismantling and separating), and manual dismantling.



Summarising the activities above, the overall site activities will involve the receipt of waste (previously agreed with the customer under a pre-acceptance agreement) and storage of WTEE and SMW in designated storage areas. Following this, pre-treatment steps are to be undertaken to remove any items from the WEEE that could potentially contaminate fractions (including shelving in WTEE and accessible batteries in SMW). WTEE will then enter a two-stage recycling process. Stage 1 involves degassing and compressor removal and is followed by stage 2 deconstruction (shredding). These processes will be carried out within the main building, along with storage of fractions arising from deconstruction processes. Figure 4-1 below provides a process flow diagram for this process. For SMW, once batteries have been removed and stored in designated containers, the remaining waste will be conveyed into the main building for mechanical treatment in the form of shredding. Fractions arising from this process will be immediately conveyed out of the building, due to the potential risk of fire that arises from the possibility of batteries entering the shredding stages. Fractions will be collected in trailers, which will be covered with suitable weatherproof covering, awaiting dispatch from the facility. These will be transferred to alternative waste treatment facilities for further treatment. A process flow diagram for these operations is shown in Figure 4-2.

Figure 4-1 - Process Flow Diagram of WTEE Recycling Process

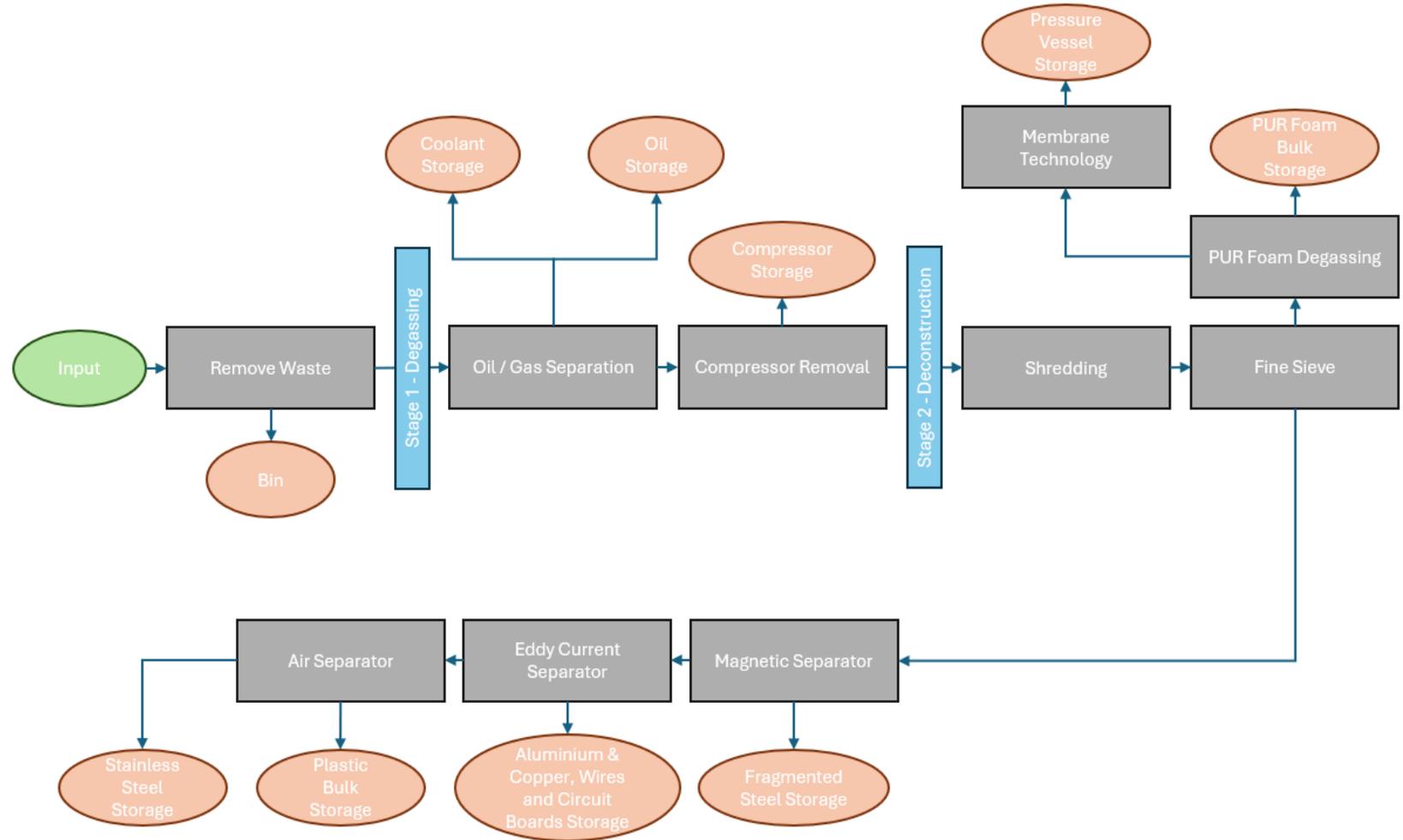
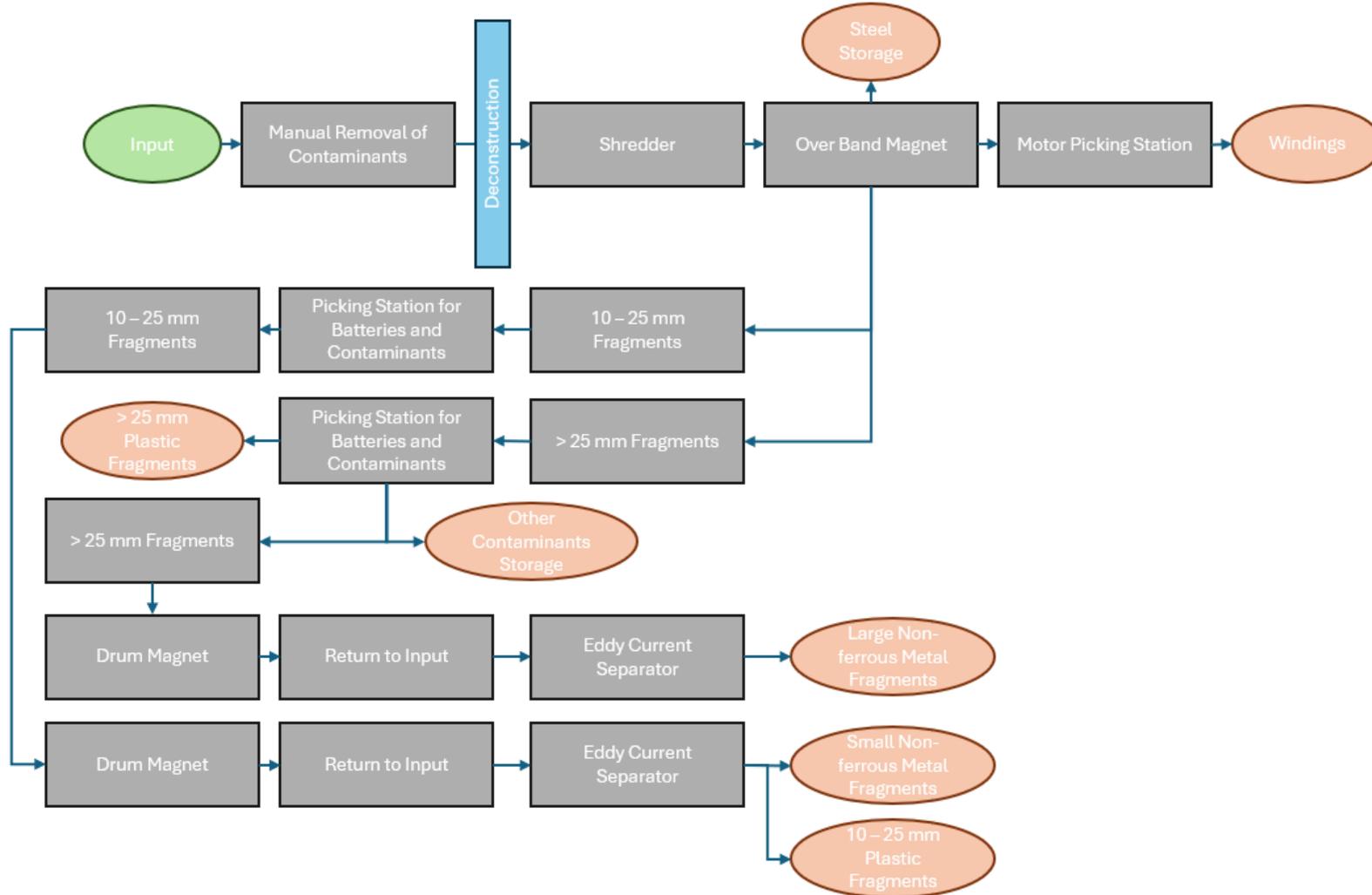


Figure 4-2 - Process Flow Diagram of SMW Recycling Process



4.2.1 RECYCLING ACTIVITIES

Various processes are involved in the overall recycling treatment that is to be carried out at the facility. As outlined above, two recycling streams will be in operation at the site: one for WTEE and one for SMW.

Table 4-2 below summaries the fire risks associated with each stage of WTEE treatment.

Table 4-2 - Fire Risk Assessment of WTEE Recycling Activities

Activity	Fire Risk	Mitigants
Pre-treatment		
Removal of foreign matter (such as food or drink), stored in a closed bin, pending disposal.	None	N/A
Removal of 'waste' components and loose parts (including, shelving, etc).	None	N/A
Manual removal of parts stipulated in Annex II Section 1 of Directive 2002/96/EC (including electric cables and light bulbs).	None	N/A
Stage 1 – Degassing and Compressor Removal		
With the compressor on the underside of the fridge, the fridge is to be positioned on the conveyor. A suction / drilling head will attach to the compressor, and a seal will be established. A hole is to then be drilled in the compressor and the oil / coolant mixture extracted, under vacuum.	Gas explosion	This will take place under vacuum, negating fire risk.
Oil / coolant mixture will be separated into an oil and pressurised coolant storage tank. Oil and coolant will be dispatched off site for destruction. Using hydraulic shears, the compressor will be removed.	Gas explosion	Vessels to be used for gas capture will be stored in a contained building, in order to prevent risk of collision. Vessels will also be fitted with safety valves, to prevent over filling.
	Oil fire	Separate storage tanks will be used for the draining of oil, which will be transferred off-site and emptied by a third-party contractor.

Activity	Fire Risk	Mitigants
Stage 2 – Deconstruction		
The WTEE carcass will be fed via a conveyor into an automated single stage shredding machine.	None	N/A
<p>Fractions will progressively be reduced in size to small pieces of fragmented scrap material. Fragments will be 1 – 3 sq cm in size. Rotating chains inside the shredder will be responsible for producing the fractions.</p> <p>The fragmentation process will effectively remove all adhering insulation foam from the metal and plastic constituents, producing a powder.</p>	Pentane fire	<p>Using nitrogen, an inert atmosphere with a positive pressure will be maintained during the shredding process. O₂ levels will be monitored within the building and if levels exceed 4% O₂, safety shut off valves can be deployed.</p> <p>The inert atmosphere negates the need for internal fire suppression systems; however, equipment such as water hoses and fire extinguishers will be strategically located throughout the warehouse.</p>
A fine sieve will be used for the removal of PUR powder from the fragmented material stream.	Dust fire	An inert environment will still be in place for this separation. Regular housekeeping will ensure that any dust released will be cleared.
Foam will be heated to a sufficient temperature to adequately release blowing agent gases. Via a cryogenic process, blowing agent gas will be captured, frozen, liquefied and then stored in a pressurised tank.	Dust fire	<p>An inert atmosphere will continue to be applied for this stage of the process. O₂ levels will be monitored within the building and if levels exceed 4% O₂, safety shut off valves can be deployed.</p> <p>The inert atmosphere negates the need for internal fire suppression systems; however, equipment such as water hoses and fire extinguishers will be strategically located throughout the warehouse.</p> <p>Regular housekeeping will ensure that any dust released will be cleared.</p>
PUR foam is stored in bulk bags, pending dispatch off site to an external waste treatment facility.	Dust fire	Three bags (1.5 tonne bags) will be attached to the equipment at one time, to collect dust. Once filled, bags will be stored in suitable locations on site, pending dispatch for further treatment.

Activity	Fire Risk	Mitigants
Ferrous material will be removed from the fragmented material via magnetic separation.	Electrical fault	Equipment will be designed to trip to 'safe mode', stopping machines and pinpointing where the fault is, to enable tracing and correction.
Non-ferrous metal is to be separated from the chipped plastic via an Eddy Current separator.	Electrical fault	Equipment will be designed to trip to 'safe mode', stopping machines and pinpointing where the fault is, to enable tracing and correction.

For the SMW recycling process, the fire risks and associated mitigation measures that will be implemented are described in Table 4-3.

Table 4-3 - Fire Risk Assessment of SMW Recycling Activities

Activity	Fire Risk	Mitigants
Visual inspection of waste for non-compliant material.	Li-ion battery compromise and printer cartridge explosion	Printer cartridges and batteries to be removed from appliances, where practical, prior to loading onto conveyor.
Material is conveyed into shredder, which reduces fraction sizes.	Li-ion battery compromise and printer cartridge explosion	Printer cartridges and batteries to be removed from appliances, where practical, prior to loading onto conveyor.
Ferrous component is removed using an overband magnet.	Hot material causing fire	As all fractions from SMW shredding is to be conveyed out of the building immediately, a visual inspection of all ferrous material will be undertaken on the out-feed belt.
Size separation of the remaining material is to be carried out by passing through a trommel.	Dust explosion	Visual inspections will help to identify any potential fire risks. Fire suppression equipment, such as water hoses and fire extinguishers, will be strategically located throughout the warehouse.
Conveyed material will be passed through a picking station for the recovery of non-ferrous and other non-conforming waste streams.	None	N/A
Remaining non-ferrous material will be separated by an Eddy Current separator, which the material passes over.	Electrical failure	Equipment will be designed to trip to 'safe mode', stopping machines and pinpointing where the fault is, to enable tracing and correction.

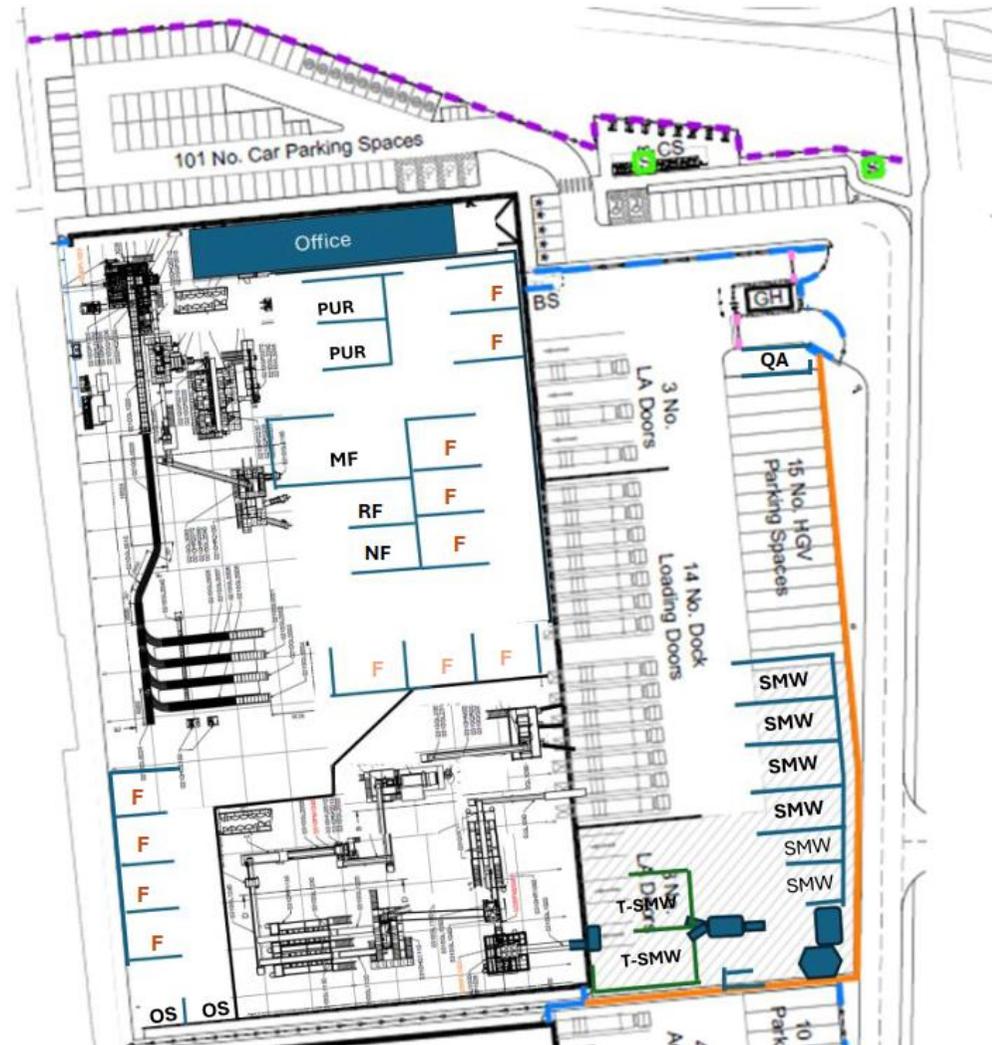
Activity	Fire Risk	Mitigants
Stored material stored awaiting dispatch to alternative waste treatment facilities.	Hot material causing fire	Materials will be stored in line with the guidelines outlined in this FPP.

4.3 SITE PLAN

Below, the site layout for the Dartford WEEE recycling facility is outlined in Figure 4-3. This includes the designated bays for storage, each separated by concrete bay walls. Bay dimensions are also included in the diagram.

Figure 4-3 - Site Layout with Marked Bays

- F** – Fridges to be recycled bay
Size 10m x 12m x 3.6m
- F** – Fridges to be recycled bay
Size 12m x 10m x 3.6m
- PUR** – PUR bags bay
Size 12m x 10m x 3.6m
- MF** – Metal frag (loose)
Size 20m x 10m x 3.6m
- NF** – Non-Ferrous frag (stillages)
Size 10m x 12m x 3.6m
- RF** – Rest ferrous (stillages)
Size 10m x 12m x 3.6m
- OS** – Overspill storage bays
Size 12m x 3m x 3.6m
- SMW** – Pretreated SMW
Size 16m x 8m x 3.6m
- SMW – Pretreated SMW
Size 8.4m x 4.5m x 3.6m
- T-SMW** – sorted SMW
Size 10m x 9m x 3.6m (a)
Size 15m x 9m x 3.6m (b)
- QA** – Quarantine area
Size 10m x 3,5m x 3.6m



4.4 PLAN OF SENSITIVE RECEPTORS NEAR THE SITE

The site for the proposed development is situated between the River Thames and the Crossways Boulevard in Dartford, approximately 3 km northeast of Dartford town centre. The site is in close proximity to a range of industrial building types, offices and a hotel, as well as being near to the A206. The nearest residential receptors are within 1 km of the site, situated to the southeast. These receptors are shown in Figure 4-4.

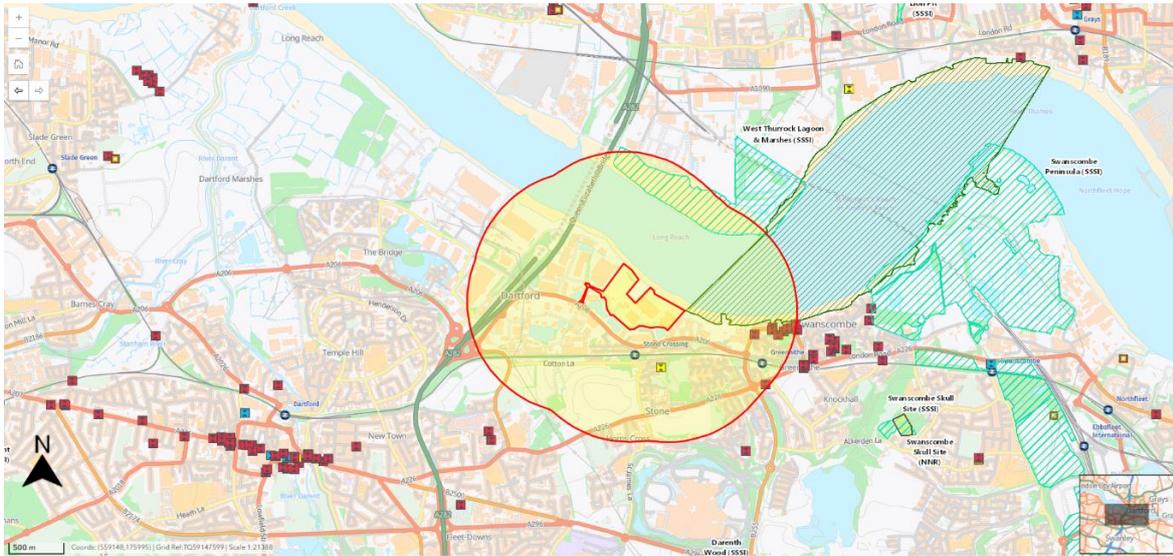
Ecologically designated sites have also been identified. Within 1,000m of the facility there are the following ecological receptors:

- One Marine conservation zone – Swanscombe
- One Nitrate vulnerable zone – North Kent
- One Site of Special Scientific Interest (SSSI) – West Thurrock Lagoon & Marshes SSSI
- No Ramsar, Special Protection Areas (SPA), Special Areas of Conservation (SAC), National Nature Reserves (NNR), Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), or National Parks.

Figure 4-4 - Sensitive Receptors within 1 km of the Site

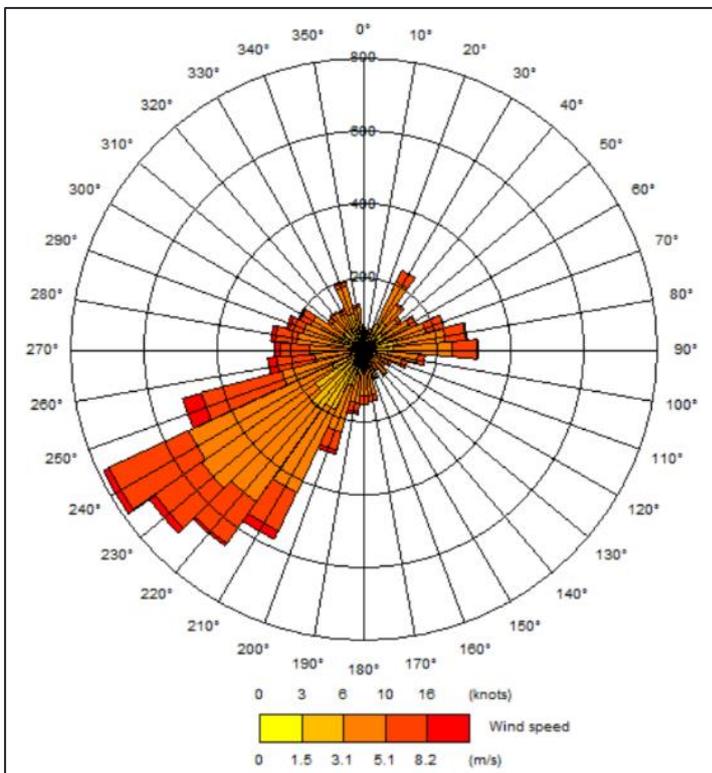


Figure 4-5 - Ecological Receptors within 1 km of the Site



The nearest observed meteorological station to the site is London City Airport, which is situated approximately 15.6 km north east. With a difference in elevation of 2.8 m, the meteorological conditions at London City Airport can be considered representative of the site. The wind rose using data from 2024 is presented in Figure 4-6; this shows a south westerly prevailing wind direction.

Figure 4-6 - Local Wind Rose



5 MANAGE COMMON CAUSES OF FIRE

Outlined below in the following sections are the measures and actions that will be taken to manage the common causes of fire that are discussed in Section 7 of EA guidance on FPP¹.

5.1 ARSON

The Dartford site will benefit from security fencing around its perimeter and security lighting, in addition to CCTV that is monitored 24 hours per day, 7 days per week, by a third-party organisation. As the CCTV system, covering all areas of the site, will be motion-sensored, unauthorised individuals attempting to access the site will be identified. There will also be weighbridge staff present at all times, monitoring inbound and outbound loads and personnel at the entrance / exit, ensuring that the facility is manned at all times. Security alarms will also be in operation across the site, out of hours, to alert and notify of any intruders.

5.2 PLANT AND EQUIPMENT

Process machines will be subject to daily maintenance checks, so as to ensure that no process equipment reaches a critical operating temperature and become a potential cause of fire. Furthermore, there will be monitoring and preventative measures ongoing in control rooms across the site, such as air conditioning in the power room within the WEEE line, to ensure machines remain at a safe operating temperature. Monitoring of plant also involves ensuring that any belts and products do not create a fire hazard underneath, via regular cleaning, often at the end of each shift.

Plant and equipment on site are to be inspected as part of a routine maintenance regime, by a relevant, competent person. Additionally, all equipment will be operated in accordance with manufacturer recommendations, with any defective equipment undergoing repairs, which will be undertaken and logged by a relevant, competent person.

The system to be implemented for recycling treatment at the facility will have an automated shutdown system built in, so that, in the event of any issues or faults arising, processes are shutdown, and the fault is identified. By implemented an automated shutdown system, with a diagnostic aspect in place, equipment can be maintained, without faults being able to progress and cause issues longer term, including posing a fire-related risk.

All vehicles and mobile plant operated by Enva on site will be fitted with fire extinguishers and mobile plant that is not being used will be kept away from combustible waste.

5.3 ELECTRICAL FAULTS INCLUDING DAMAGED OR EXPOSED ELECTRICAL CABLES

5.3.1 ELECTRICS CERTIFICATION

As part of the assembly of buildings on site, such as warehouses, qualified electricians will install the fixed wiring of the facility, with regular checks following in later years (as part of yearly and 5 yearly inspections), which will also be conducted by a fully qualified electrical engineer.

5.3.2 ELECTRICAL EQUIPMENT MAINTENANCE ARRANGEMENTS

Daily and monthly planned, preventative maintenance will be undertaken by engineers on site. Daily checks incorporate control of electrics within each power room. Electrical faults are designed to trip to safe mode, causing machines to stop and allowing time for faults to be traced and corrected.

Regular checks of fixed wiring at the facility will be conducted by a fully qualified electrical engineer. as part of yearly and 5 yearly inspections. Regular checks and monitoring will also be carried out by the onsite electrical engineer.

5.4 DISCARDED SMOKING MATERIALS

A designated, external smoke shelter will be available at the Dartford site – this will be the only permitted area for smoking on site, in line with fire and process precautions. This smoke shelter will be external to the factory and not in the vicinity of any waste materials. Deep cigarette bins will be supplied for this area, preventing any discarded smoking materials from entering the process facility.

5.5 HOT WORKS SAFE WORKING PRACTICES

Where there are no alternative measures, hot works, including welding, will be required in the case of some faults. In the event that such works are necessary, Enva engineers are to carry out a full risk assessment in relation to the work to be undertaken, alongside obtaining the relevant permits to work that cover the use of the equipment generating heat and flame and portable fire extinguisher trolley. After completion, all hot work is to be monitored for at least 1 hour of cooling time. Active hot works certificates will be completed and subsequently closed once the work has been finalised. Hot works will be undertaken in a separate building, away from flammable materials, where possible. Maintenance across the site will be available 24 hours per day, 7 days a week, which means that there is no risk of any hot works being left unmonitored, even if it is 'end of day' work. Gas cylinders will be stored safely in a cage, in close proximity to the workshop.

5.6 INDUSTRIAL HEATERS

No industrial heaters will be used on site.

5.7 HOT EXHAUSTS AND ENGINE PARTS

Hot exhausts from vehicles and mobile plant across the site could potentially be a cause of fire. All forklift trucks that will be utilised across the facility will be fitted with under-body exhaust systems, to expel any heat generated to ground level, rather than to air, to prevent the potential risk of fire. Due to regular inspection and maintenance, no dust is able to settle on hot exhausts, which could also pose the risk of fire. Inbound HGVs will be required to switch off engines during the unloading process, and the inbound goods area will be permanently manned with adequately trained staff. Staff are to be vigilant to the risk of hot exhausts causing fires. When not in use, trucks will be parked outside the yard (> 6 m from any building). Despite constant operation within the inbound goods area, as well as constant forklift truck use, parking areas will be included in the site storage plan for material handling equipment (MHE) if, and when, required. There will be no hot exhaust risk associated with processing equipment as this will all be powered by electricity. Mobile plant will all be supplied with fire extinguishers to allow for a quick response in the event of a fire and will be parked in the inbound goods area during periods when use is not necessary (which is anticipated to only be for very short periods of time, minutes in length).

5.8 IGNITION SOURCES

There will be no naked flames, space heaters, furnaces, incinerators or other sources of ignition within 6 m of combustible and flammable waste.

5.9 BATTERIES

Due to the nature of waste to be accepted at the facility, batteries will be found on site. Upon receipt of WEEE, following the process determination stage, batteries will be removed from appliances, prior to loading into mechanical treatment processes.

In particular, lithium-ion batteries can be viewed as a hazard in the process of recycling/disposal of small domestic appliances (SDA). Therefore, it will be embedded into protocols, and posters in the vicinity, to conduct visual checks of many items (including cameras, calculators, and remote controls) at the picking point, to capture and prevent lithium-ion batteries from entering into the WEEE process line. Sufficient fire extinguisher points will be incorporated into the area that accommodates the WEEE processing line, as a result of the thermal runaway-related hazards of batteries.

During induction, Enva staff will be trained in recognising untreatable wastes, which include lithium-ion batteries. Batteries will be collected from WEEE treatment processes and stored, pending collection, in designated, external shipping containers in isolated yard areas, at least 6 m from buildings. Storage of batteries will be by type and in small plastic containers within a large shipping container, dedicated to battery storage. Each small plastic container will also contain vermiculite, to prevent hazards arising from battery storage. This is considered to be the preferred method for storage of batteries, due to the high risk of self-combustion. The designated container for battery storage will encompass an internal fire suppression system, which will also be linked to an internal heat detection system – therefore, in the event that a rise in temperature is detected within the container, the internal suppression system will be triggered.

Batteries in end-of-life vehicles (ELVs) will not form part of the waste types that will be accepted onto site.

5.10 LEAKS AND SPILLAGES OF OILS AND FUELS

It is important that fuels, and other combustible liquids, are prevented from leaking or trailing on site.

In terms of preventative measures, any vehicles that are required to be on site overnight will be parked outside the buildings in a designated parking area. All vehicles and mobile plant will be serviced and maintained in accordance with manufacturers' recommendations, so as to reduce the risk of fuel loss via leakages. ELVs will not be received on site.

In the event that a leak or spillage is to occur, anti-spillage equipment will be provided at the site to mitigate any fire risks. The site will also have a spillage procedure as part of its management system.

All liquid wastes and oils will be fully bunded and their containers will form part of the inspection and maintenance regime.

Across the site, Enva will supply appropriate spill kits, including within the engineering workshop – these kits will undergo weekly inspections to ensure that they are complete and provide sufficient spillage treatment measures. Any waste oil that is collected on site will be stored in a bunded oil tank.

Incidents and near misses will be logged and subsequent reviews will take place to ensure that the most effective measures are available and implemented where necessary.

5.11 BUILD-UP OF LOOSE COMBUSTIBLE WASTE, DUST AND FLUFF

The build-up of loose combustible waste, dust and fluff is most likely to be expected in the SMW treatment process line. In order to prevent the build-up of loose waste, dust and fluff, and therefore prevent a fire risk, under conveyor cleaning is to be undertaken within the WEEE line because this area in particular is anticipated to generate such fluff. Within other operational areas that generate dust particulates, dust is controlled via extraction and cleaning. Combustibles will be monitored via daily cleaning and housekeeping programmes, with shift cleaning logs to be maintained.

Enva engineers will also be required to conduct weekly inspections, particularly in high-level, inaccessible areas, to identify any areas of built-up dust and fluff – areas of concern may be addressed via the use of cherry picker equipment.

5.12 REACTION BETWEEN WASTES

Within the proposed processes that will be occurring on site, it is not anticipated that there will be any issues or concerns identified in relation to incompatible materials and the potential reactions that may occur between them. This is because there will be strict criteria for waste acceptance at the facility, with materials received being limited to WEEE and any non-conforming waste will be either rejected or stored safely on the inbound trailer, out of the vicinity of the processing and storage areas, pending a suitable solution for further treatment or disposal. Furthermore, pre-acceptance protocols will enable Enva to have full understanding of the incoming WEEE, prior to its arrival on site, which will enable the required action to be undertaken at the earliest opportunity, whether that be to reject the load or accept and unload into the correct areas. Quarantine areas will be utilised in instances where incompatible wastes have been discovered. Health and Safety Management will be involved in such processes. Only wastes detailed within the environmental permit will be accepted on site, and as such, there are no concerns in relation to incompatibility and subsequent reactions.

5.13 WASTE ACCEPTANCE AND DEPOSITED HOT LOADS

It is essential that waste with elevated temperatures or containing contaminants that could lead to ignition is identified and handled in a suitable manner, to prevent risks on site.

Unloading processes on site will always require involvement from Enva staff, with adequate training on inbound protocols. Hot materials will not be accepted on site. In the instance that hot material is identified during unloading processes, the material will be transferred to the designated quarantine area, where it will be allowed to cool, prior to being returned for processing or storage as necessary.

Waste acceptance procedures will be implemented at the Dartford facility, which will enable data to be captured in relation to waste being accepted on-site. These procedures will involve ensuring that the anticipated WEEE matches the received load (based on pre-acceptance agreements) and that Waste Transfer or Consignment notes and unit count sheets accompany incoming loads to gather further information on the waste. Due to the nature of the waste to be accepted and treated at this facility, contaminants that could pose a risk of fire that are anticipated to be present in incoming waste loads include batteries (including lithium-ion batteries). Awareness of such components will be promoted at the facility and procedures that will be followed will account for such items being identified and allow for them to be safely removed from the WEEE.

5.14 HOT AND DRY WEATHER

Due to the nature of waste to be accepted at the facility, it is not expected that hot and dry weather will have an impact in terms of a potential cause of fire. No glass will be stored in direct sunlight, which will reduce the risk of magnification of sun rays causing a fire. There are to be no piles of material which could be susceptible to increased internal heating.

6 PREVENT SELF-COMBUSTION

6.1 GENERAL SELF-COMBUSTION MEASURES

As stated in GOV.UK guidance¹, many materials can self-combust under certain conditions: when a material is able to self-generate heat at a faster rate that it can be lost to the environment, there is a continuous rise in temperature until the auto-ignition temperature is reached, resulting in self-combustion. Management of self-combustion often requires consideration of storage times, pile volumes and height, and waste temperatures.

A process monitoring procedure will be introduced to avoid self-combustion of products – this is because it is recognised that heat introduced to certain products during processing can pose a greater risk when held in storage, particularly bagged products. High-risk material will be determined on site, which will include batteries, often identified in SMW. Enva will introduce a quality system at the facility, incorporating temperature checks and regular monitoring by supervisory staff, as well as heat detection and flame detection imaging cameras. Such measures will enable the efficient identification of any self-combustion events on site.

A base fire alarm will be installed (such as an Advanced MxPRO5 system with Apollo XP95 protocol equipment fitted, or equivalent), which will provide the control backbone for supplementary detection and suppression across the site. Within the low-risk storage areas (open area storage), a FlameSpec-IR3 flame detection system (or equivalent) will be used, whereas, in process plant areas, a video smoke and flame detection system will be used, which uses a CCTV based technology for quick identification of smoke signs. Smoke detection, as well as flame detection, provides a better chance of early detection in what are expected to be ‘busy’ environments. The Araani FireCatcher video smoke detection (VSD) (or equivalent) will operate as part of the on-site CCTV system.

Batteries are at high risk of self-combustion and so the most appropriate storage method for batteries involves external storage within containers. All batteries identified within inbound WEEE loads will be removed and stored in a designated battery storage container, external to the main building: there will be no storage of batteries inside buildings. The designated battery storage container will be fitted with an internal suppression system, as well as a heat detection system. In the event of elevated temperatures being identified within the container, the internal suppression system will be triggered, to prevent fire outbreak.

6.2 MANAGE STORAGE TIMES

Waste tracking is to be implemented across the site, to ensure that the fate of all waste accepted at the Dartford facility is tracked and documented – further details on waste tracking protocols that are to be implemented are included in the main application supporting report. Collection or removal of stored wastes and materials will be undertaken at frequent intervals so that storage requirements are adhered to, and pile sizes do not exceed those permitted.

Managing storage at the site is a key consideration in reducing the risk of fire. The maximum waste storage timescales for various waste types are outlined below, in Table 6-1.

Table 6-1 - FPP Permitted Waste Storage Timeframes

Waste / Residual Material	Maximum Permitted Storage Time
Compressor Oil	3 months
Refrigerants	3 months
HC Refrigerants	3 months
Blowing Agent	3 months
HC Blowing Agent	3 months
Polyurethane (PUR) Foam	6 months
Ferrous Metal	6 months
Non-ferrous Metal	6 months
Plastic and Rubber	12 months
Mercury Switches	12 months
Batteries	3 months
Others	12 months

Storage timeframes and storage methods are to be implemented in such ways so as to prevent the fire risk and maintain a minimal quantity of combustible material on site, as this could become fuel source to a fire.

The storage timeframes demonstrated in Table 6-1 above will be supported by other measures for managing wastes and preventing self-combustion, including temperature monitoring, as recommended in EA guidance¹.

It is proposed that storage areas will typically be cleared during periods of the year that are quieter in terms of the levels of waste accepted on site: February and October, when demand for recycling cooling appliances is reduced. During normal operating periods on site, stock rotation will be achieved by emptying each storage bunker in rotation, which will be essential in ensuring that no appliance remains on site for a period > 3 months. During busy periods, incoming WEEE loads can be diverted to other Enva sites, to prevent overloading the Dartford facility.

6.3 MONITOR AND CONTROL TEMPERATURE

6.3.1 REDUCE THE EXPOSED METAL CONTENT AND PROPORTION OF 'FINES'

This site is not expected to produce many fines, with annual amounts anticipated to be < 200 tonnes. Any fines that are produced will be stored and dispatched as soon as a full load is available.

Fractions produced as a result of shredding and separation activities at the facility can be described as chunks, as opposed to fines.

6.3.2 MONITOR TEMPERATURE

Across operations that will be conducted on site, Envva will conduct temperature checks to ensure that a safe operating temperature is maintained at the facility and among materials stored on site. Envva will identify high-risk materials, in line with other Envva sites and will approach the hazard by implementing a quality system for temperature checks.

A base fire alarm system will support all fire detection and suppression that will be required across the facility. As mentioned above, FlameSpec-IR3 flame detection system (or equivalent) will be used in areas of lower risk (open area storage), whereas higher risk process plant areas will be fitted with a VSD, too. Via the IR3 system, detection an alert is expected to be within milliseconds of fireballs / explosion and 1 - 2 second detection time (for a 0.1 m² fire at up to 15 m distance). The VSD system will also allow for early intervention, before heat build-up.

All staff that will be working at the Dartford facility will receive adequate training in relation to both safety on site and the general operations. In particular, those supporting in SMW recycling will receive specific training, as there is greater risk of fire, due to the presence of batteries in incoming loads of SMW. Hotspots in waste will be further monitored via heat detection cameras, which will be operated and watched by a third-party organisation. If a hotspot is identified, an alert will be triggered, which will be received by the Site Manager, who will have specific training to organise a response to such an incident.

If there is a heat spike detected via the IR3 monitoring system or the VSD, site management will be notified by the third-party organisation responsible for such monitoring. Necessary action will then be taken and a controlled response to the temperature spike / potential fire will be coordinated. In the event that the flame or smoke detection system is triggered, both the site management and FRS will be notified and, again, a controlled response will be coordinated. The outside suppression system will also be automatically triggered.

The weighbridge will always be manned and there will always be a staff presence on site.

6.3.3 CONTROLLING TEMPERATURE

Controlling temperature and preventing high temperatures becoming uncontrollable is to be embedded throughout the processes that will be undertaken on site. For example, hot works are monitored for at least one hour of cooling time, to ensure that temperatures reduce and are controlled. Any hot material is not to be accepted onto site – if hot material is discovered during unloading, quarantine areas will be used whilst the material cools, before returning to processing or standard storage arrangements.

Further to this, all internal storage areas will have the added protection of a site water canon system, to be activated in the event of elevated temperature or fire. As well that this, within storage areas, sufficient space will surround each pile, to ensure sufficient air flow and encourage cooling when temperatures are elevated.

Residual wastes arising from treatment will be bagged and stored in bays. The only piles will be steels from WTEE treatment and SMW treatment – these will be emptied on a regular basis.



6.3.4 DEALING WITH HOT WEATHER AND HEATING FROM SUNLIGHT

The types of waste that will be accepted at the facility are not expected to be materially affected by hot weather. Glass will not be stored in direct sunlight, preventing magnification of the sun's rays and there are to be no piles of material which could be susceptible to increased internal heating.

6.4 WASTE BALE STORAGE

Within the operations that are to be carried out at the facility, baling of waste will be limited to general waste from the WEEE picking station. This will involve formation of bales that are not densely packed and are also not wrapped up, ensuring sufficient air flow through the bale is available, preventing internal heat build-up. Such material will be stored in the designated storage area, in permitted pile sizes.

7 MANAGING WASTE PILES

Waste pile sizes will be minimised and waste stored in its largest form. By managing waste piles effectively, the risk of self-combustion is prevented, and the scale of a fire will be limited if one does break out.

7.1 STORING WASTE MATERIALS IN THEIR LARGEST FORM

By storing waste in its largest form for as long as practically possible, prior to treatment, the risk of self-combustion is reduced. WEEE will be received at the facility in its whole form. Various protocols, in terms of storage, are to be in place in areas within which received WEEE is stored, pending treatment. WEEE treatment processes begin with manual dismantling to remove various components that could present a hazard, before further breakdown can commence. This ultimately prevents risk of fire.

7.2 MAXIMUM PILE SIZES

Maximum pile sizes are defined for the Dartford site in Table 7-1 below. To separate piles on site, concrete will be used to separate each bay, acting as fire walls. The walls will be formed of concrete blocks, each with dimensions 1200 mm x 600 mm x 600 mm, stacked 6 blocks high. Only those wastes considered to be combustible have been considered in the table below. Other materials that are not considered to be inherently combustible are stored at the facility; however, these have not been considered against FPP requirements.

Table 7-1 - Materials to be Stored in Piles

Material	Maximum Pile Size	
	Volume (m ³)	Dimensions (m x m x m)
Ferrous Metals	120	10 m x 12 m x 1 m
Non-Ferrous Metals	120	10 m x 12 m x 1 m
Plastics	36	12 m x 3 m x 1 m
PUR Foam	420	10 m x 12 m x 2.6 m
Unprocessed WTEE	312	10 m x 12 m x 2.6 m
Unprocessed SMW	332	16 m x 8 m x 2.6 m



Unprocessed WTEE will be stored in piles that do not exceed 2.6 m in height, to support the effective containment and extinguish of a fire via the internal suppression system. Bunkers that are to be used for storage will be designed with added protection of sealed and solid concrete fire walls of at least 60 cm in thickness. Concrete used in bays will be in the form of blocks 1200 mm x 600 mm x 600 mm in size.

Storage areas are to be shown in the site layout plan, which is provided in the Figure 4-3

Across the facility, equipment required for heavy lifting will be available and permanently manned, which will be useful in ensuring that materials can be removed in the event of an incident, under the command of the FRS.

8 WASTE STORED IN CONTAINERS

8.1 TYPES OF CONTAINERS YOU ARE USING

Shipping containers will be utilised on site, stored in external areas. Storage within such containers will predominantly consist of fixtures and fittings that may be required, such as HGV parts. Other storage containers will be used for the storage of batteries and other related items. Due to the risk of self-combustion of batteries, containers holding batteries are best situated in external areas. All containers will be static. Combustible materials will be stored in containers > 6 m from any building, which will help to prevent the spread of fire.

Table 8-1 - Materials to be Stored in Containers

Material	Container Type	Dimensions of Container (m x m x m)
Batteries	Plastic containers inside larger shipping Container	12.19 x 2.44 x 2.59
Compressor Oil	Drums	250 litres
Refrigerants and Blowing Agent	Drums or iso tank	12 x 205 litre drums or 25,000 litre iso tank

8.2 ACCESSIBILITY OF CONTAINERS

All storage containers will be accessible from at least one side, allowing a fire to be extinguished if one should occur. If required, it will be possible that handling equipment on site will be able to be used to move the storage containers.

8.3 MOVING CONTAINERS IN A FIRE

If required, it will be possible that handling equipment on site will be able to be used to move the storage containers. The containers themselves will contain the waste and prevent it from spreading.

9 PREVENT FIRE SPREADING

There are two main ways in which fire can be prevented from spreading.

9.1 SEPARATION DISTANCES

Separation distances between waste piles will be very beneficial in the prevention of spread of fire, allowing active firefighting to be undertaken. Waste piles will be stored with a separation distance of at least 6 m between other waste piles, the site perimeter, any buildings or other combustible or flammable materials unless a concrete structure is used as an alternative to prevent fire spread.

9.2 FIRE WALLS CONSTRUCTION STANDARDS

Storage bunkers on site will be protected by concrete block fire walls, supporting normal storage. Concrete is automatically certified as a fire-resistant material. The concrete fire walls will at least 60 cm in thickness and constructed to a height that allows for 1 m of freeboard space above the relevant pile contained within – each bay will be constructed to be six concrete blocks tall, meaning a height of 3.6 m.

9.3 STORING WASTE IN BAYS

Storage bays will be used for the storage of fractions and residual material produced from recycling operations to be undertaken at the facility. These are highlighted on the site layout plan. Bays will offer a thermal barrier and prevent fire spread at the facility. This is to be provided by the concrete fire walls that will form the bay structures – this will be designed to withstand fire for at least four hours, though it is expected that they will be resistant for a longer timeframe. Bays will be formed by concrete blocks, each with dimensions 1200 mm x 600 mm x 600 mm, 6 blocks in height. Bay dimensions will vary (these are detailed in the site layout plan in Figure 4-3).

Video flame and smoke cameras (as discussed before) will cover areas within bays to ensure that temperature is monitored. Within bays, a minimum of 1 metre freeboard space will be maintained at all times between piles and the top of the bay – this will be key in prevention of fire spread. Residual materials will be dispatched from the facility at a frequency to be in line with the storage times outlined in this FPP. In the event of a fire, wastes at risk of ignition will be removed to quarantine areas, using JCB material handling shovels and forklift trucks fitted with clamp attachments, if safe to do so. This will be key in isolating bays containing burning waste and preventing the spread of fire.

Bay rotation of unprocessed stock will support the requirement for frequent stock rotation and ensure that wastes are not stored for unnecessary lengths of time. Stock rotation will be achieved through bay rotation of unprocessed stock, removing all items and photographing an empty bay. Rotation will be performed at least every 6 months. Waste to be stored is not organic material and therefore won't biodegrade and is also not susceptible to hotspots. Due to the nature of SMW and components, increased movement increased the fire risk – therefore, a 6 monthly rotation is suitable for this waste.

Flame height and radiation calculations have not been conducted, however consideration for the 1 m of freeboard space will be accounted for in the storage layout. Any lighted materials will be contained within the bay, and it is not anticipated that that these will be removed. The fire will be contained within the bay in which the lighted material is situated, and any stock movement will only be relevant to those materials that are not on fire.

10 QUARANTINE AREAS

In the event that an incoming load is on fire, quarantine areas may be used as the holding area for these trailers, whilst the fire is being extinguished. Waste stored on site that is burning will not be moved to the quarantine area and will instead be tackled in situ. Unburnt wastes may be moved to these quarantine areas for isolation and to prevent them from catching fire. However, as Enva will be fully aware of the waste being accepted on site, due to the pre-acceptance agreement arrangements in place, it is not anticipated that quarantine areas will need to be utilised for the temporary storage of non-compliant waste types.

10.1 QUARANTINE AREA LOCATION AND SIZE

Impermeable concrete with a sealed drainage system will be used as the surface for all areas on site, including quarantine areas.

The total area on site allocated as the quarantine area will be large enough to cater for the following:

- Hold at least 50% of the volume of the largest pile, row, or block of containers at the facility; and
- Have a separation distance of at least 6 m round the quarantined waste.

The site plan in Figure 4-3 shows the areas designated to be used as quarantine areas.

Due to the nature of the pre-acceptance agreements that will be implemented at the facility, Enva are not anticipating that quarantine areas will be required for use for any other purpose other than during a fire or other incident.

10.2 HOW TO USE THE QUARANTINE AREA IN CASE OF FIRE

Quarantine areas will not be used for general storage at any time. Instead, quarantine areas will be solely used for storage during an incident (fire) or other necessary event (e.g. temporarily store non-permitted waste). During an incident, JCB material handling shovels and forklift trucks (or equivalent mobile plant types), fitted with clamp attachments, will be accessible to assist the fire bridge in the removal of material from an affected area to the quarantine area, when necessary.

Furthermore, to protect the surrounding environment, drainage from across the site, including quarantine areas, will be diverted to an attenuation tank that will be fitted with a penstock valve. The penstock valve can be deployed to contain the run-off in the attenuation tank, preventing potentially contaminated fire water from causing pollution to the external environment.

10.3 PROCEDURE TO REMOVE MATERIAL STORED TEMPORARILY IN CASE OF FIRE

Quarantine areas will be used during a fire-related incident where necessary. Written procedures will be in place regarding the appropriate use of quarantine areas and how these should be cleared, when required.

11 DETECTING FIRES

Detecting fires in their early stages is key in reducing impacts. Detection measures are outlined in this section.

11.1 DETECTION SYSTEMS IN USE

At the Dartford facility, Enva will install a fire detection alarm system. This will be linked throughout the facility to call points and IR3 sensors. This system will be programmed to detect smoke, flames or heat. Call points, located at each fire door, will also be able to be used to trigger the alarm. The alarm system will be a key alert for staff, with the site always being manned. This can then be communicated to the Company Director. Once triggered, the system will automatically sound the alarm across the site and will be able to highlight, on the alarm panel, the area of activation. Weekly tests of the alarm system will be carried out and documented.

In the event of the fire alarm sounding, site evacuation procedures will be triggered, with protocols to ensure that all on site are accounted for. An on-site crew will be allocated, who will be responsible for investigating and attempting to control / extinguish the fire, whilst preventing risk to themselves. If there is a notification from the external security monitoring company of an external heat build-up, they will communicate with the Shift Management at the facility, who will be responsible for contacting the FRS and Company Director if a genuine fire is discovered.

Due to the proposed operating hours, there are very rare occasions when the site will be vacant. However, in the event that a fire incident occurs during vacant periods (e.g. Christmas Day, New Year's Day and Easter Sunday), external monitoring will continue to be conducted by the third-party security organisation, who will be responsible for identifying an incident via thermal imaging cameras that will be installed on site. Early evidence of heat spikes will be detected, and the Site Manager will be alerted. This will also work simultaneously with fire alarm systems on site. The protocol for such an incident initially requires contact with the emergency services, advising them of details for access to the site (e.g. code to the key safe), followed by notifying the Company Director of the incident. The Company Director will attend the site and contact Enva staff to support the emergency services on site.

11.2 CERTIFICATION FOR THE SYSTEMS

This fire detection system will be designed, installed and maintained by an accredited, third-party company. An external security monitoring company will also be constantly monitoring the system – they will also be accredited.

12 SUPPRESSING FIRES

12.1 SUPPRESSION SYSTEMS IN USE

Where waste will be stored or handled within a building, a suitable fire suppression system will be installed, proportionate the nature of the materials handled in that area.

12.1.1 BUILT-IN SUPPRESSION SYSTEM

The only extent of handling of waste within a building will be during recycling activities which will be performed within the main building. The design of the recycling equipment will contain a built-in fire suppression system, consisting of dousing systems located on various conveyor belts within the recycling plant.

Shredder outfeed conveyors will be fitted with automatic deluge systems, supported by ember detection (which triggers a process-stop and an alarm) and a flame detection (FlameSpec IR3 detection, or equivalent) system (which is to trigger deluge). The suppression system would be shaped like a goalpost and will be mounted over the conveyor. The suppression density is expected to be approximately 10 mm / m² / minute. Each deluge zone will be wholly independent, so faults on other systems are not expected to affect the operation of the local system.

12.1.2 WATER CANNON SYSTEM

External areas of the site will be supported by a 'continuous flow' Fire Rover Early Detection & Targeted Suppression System (or equivalent), which incorporates three fire detection methods in their detection zones; thermal, flame and video smoke detectors. They also will have a water cannon on board, which will have the coverage arc of up to 180°. All alarm incidents will be transmitted, via internet connection, to a remote monitoring centre, where footage is reviewed (to check for false alarms) and remote manual control is taken by an operator to operate the cannon, to tackle the fire. The water cannon will flow at a rate of approximately 2000 litres / minute at 6.5 bar (at the cannon inlet).

This will offer a more targeted approach to tackling a fire, as well as a more efficient water consumption for the site in the event of a fire. Regular inspection will be undertaken, and documented, alongside maintenance and servicing at least biannually, carried out by an external specialist organisation. This method will be employed in those areas external to the main building, where storage areas will be located. Fractions arising from recycling activities that pose a risk of fire (from SMW recycling) will be conveyed outside of the building as soon as possible. This means that, in the event of a fire incident, the Fire Rover (or equivalent) will be the system used to tackle it.

12.1.3 FIRE EXTINGUISHERS

Across the site there will be numerous fire extinguisher points in accessible locations, for an immediate firefighting response. Mobile plant will also be fitted with fire extinguishers. Regular, weekly checks of all fire extinguishers will be undertaken and logged, to check that they remain accessible, undamaged and fully charged (check of pressure gauge). They will also be subject to annual professional servicing by a qualified third-party contractor and, additionally, depending on the type, extended servicing every five or ten years.



12.2 CERTIFICATION OF THE SYSTEMS

Across the site, British Standards for fire sprinkler systems will be adhered to, with the system to be maintained and inspected by the UKAS accredited third-party company, Nu-Form Fire Limited.

13 FIREFIGHTING TECHNIQUES

13.1 ACTIVE FIREFIGHTING

The site will be designed and equipped to allow for active firefighting, enabling a fire to be extinguished within 4 hours, by ensuring that the most suitable resources for tackling a fire are always available.

The following resources will be available on site to allow active firefighting:

- Plant to move waste around;
- Suitably trained staff; and
- Available water supply.

As outlined previously, JCB material handling shovels and forklift trucks fitted with clamp attachments will be available to assist the fire brigade in the removal of material from affected areas (transporting to the quarantine area if required). Once the fire has been extinguished, burnt materials will be removed from the scene of the fire, for storage within the quarantine areas to be designated on site. Such waste will be stored in these areas pending removal off site by a third-party waste handler. A dynamic risk assessment approach will be taken, in order to formulate the best response to a fire and the best location for burning and un-burnt materials.

All staff will be trained with regards to how to act in the event of a fire, including fire marshal training and the use of fire extinguishers for key personnel. If required, the FRS will be contacted as soon as practically possible. Fire extinguishers are to be positioned across the site in various locations, to provide an initial firefighting response in the event that a small fire is discovered. Regular, weekly checks of all fire extinguishers will be undertaken and logged.

There will be access to mains water supply on site; both to supply the integrated dousing system (within the equipment) and external water cannon (refer to Section 13) and for FRS-use (refer to Section 15). Due to other fire prevention provisions that will be implemented on site, including the site layout, use of storage bays and storage arrangements allowing for fire breaks, it has been anticipated that, in the event of a fire, sufficient water supply will only be required for the volume of material stored in one bay.

Managing waste storage is a key factor to prevent fires breaking out, but also in the mitigation of the impact of fires if they were to break out.

Contact details for personnel that should be communicated with during the event of an emergency are to be clearly displayed on site. It is also key that access to the site is provided in the event of a fire.

The firefighting procedure detailed in Section 'During and After an Incident' must be adhered to if a fire should occur on site.

14.2 REQUIRED WATER SUPPLY CALCULATIONS

Based on GOV.UK guidance, FPP guidance indicates that a 300m³ of combustible materials will require a water supply of at least 2,000 litres a minute for a minimum of 3 hours, if there are no other actions in place, such as a fire break. However, EA guidance also states that materials that are stored in bunkers or containers would only require enough water to fill the bunker or container. Firefighting water will not be being recirculated at the facility.

The maximum total volume of combustible wastes stored within the largest bays at the site will be 312 m³. Fire breaks will be accounted for in the site layout, as well as the use of suitable bays for storage. Therefore, the water supply required will only need to be equivalent to the volume of the largest bunker or container.

Based on the estimation above, the volume of water that would be required to manage the maximum total volume of materials contained within the largest bay would be as shown below, in Table 14-1.

Table 14-1 - Required Water Supply Calculations.

Maximum Pile Volume (m ³)	Water Supply Required (l/min)	Overall Water Supply Required Over 3 Hours (l)	Total Water Available On-Site (l)
Enter volume e.g. 300	Pile volume x 6.67	Water supply per minute x 180	
332	2,220	399,560	N/A as the nearest fire hydrant will provide the necessary water

15 MANAGING FIRE WATER

Run-off from fire water will be contained on site to prevent harm to sensitive receptors and pollution of the environment.

15.1 CONTAINING THE RUN-OFF FROM FIRE WATER

Anti-spillage equipment will be readily available across site, alongside environmental booms and drainage covers that can be utilised in the event of an emergency incident. Such measures will be essential in blocking drains and preventing the escape of water from the site, and will be readily available at all times, contained within the Fire and Emergency response procedure. Further to this, spill kits in the 'wheelie bin' format will be made easily accessible by Enva at key locations at the facility, which will be regularly inspected to ensure that they are sufficiently stocked.

As an additional precaution, during an emergency incident, automatic water control penstock valves installed on the attenuation tank (into which surface water run-off is diverted), will be closed to ensure that all drains that leave the site are sealed – penstock valves are connected to the fire alarm system, allowing timely activation in the event of a fire or other incident. Enva will ensure that hourly checks are undertaken on valves during these emergency incidents, so as to ensure that any fire water does not escape to the surrounding environment from the attenuation tank.

To prevent run off from the site, the fire water deployed in the event of a fire will be captured and all drain valves will be kept closed, to restrict any fugitive releases.

Fire water capture in internal areas will involve impermeable, concrete flooring, where water will be able to gather, and a pit that will collect water. External areas will also have impermeable concrete flooring, supported by drainage that will be sealable, via the attenuation tank. The holding tank will be installed on site, with a capacity of 1000 m³, however this will not be used for recirculation to tackle a fire.

If there is a risk that maximum water levels that can be held on site are to be exceeded, tanker companies will be arranged to attend the facility to collect fire water and remove it off-site for treatment. Collections will be made by 30,000 litre tankers and all draw off points are at least 6 m from any combustible materials.

16 DURING AND AFTER AN INCIDENT

16.1 DEALING WITH ISSUES DURING A FIRE

It is considered that the event of a fire is unlikely to occur, however, if this should happen, then any outbreak of fire will be regarded as an emergency and immediate action will be taken to extinguish the fire.

Only those personnel with training in the use of fire extinguishers should attempt to fight a fire, and only if this can be carried out without any risks. Alongside this, if it is reasonable and safe to do so, on site machinery (JCB material handling shovels and forklift trucks fitted with clamp attachments) will be used to move relevant items to areas away from the location of the incident. As well as this, if safe to do so, all transport is to be removed from the facility. However, if it is not possible to do so, due to the location of the incident, Enva shall await the FRS's risk assessment, before attempting to remove.

During an incident, local transport deliveries will be suspended and there is potential for diversion to other Enva facilities, whilst the incident is resolved. In the event of a fire, an Enva Director will be contacted and made aware of the incident and will attend site.

Penstock valves on the attenuation tank, as discussed in earlier parts of this plan, will be closed, to prevent firewater escaping to and polluting the surrounding environment.

At the earliest convenience, the EA will be informed (via the incident hotline: 0800 807060) and a visual check of the surrounding environment is to be undertaken to assess for any pollution arising from firewater. communications will be made by senior management, following FRS advice, to surrounding neighbours, relating to the incident.

16.2 NOTIFYING RESIDENTS AND BUSINESSES

Communications will be made by senior management, following FRS advice, to surrounding neighbours, relating to the incident.

16.3 CLEARING AND DECONTAMINATION AFTER A FIRE

Once a fire has been extinguished, burnt materials will need to be removed from the scene and stored within designated areas on site (quarantine areas). Firewater recovery will be undertaken by appointed external waste companies who will attend the site. Burnt and potentially contaminated stock will be removed for storage in the hazardous waste disposal area, once the scene has been deemed safe to do so. Decontamination measures will be implemented so that toxic remnants are not able to cause pollution. Sand may be used to assist with the removal of such materials, as it acts as an absorbent.

16.4 MAKING THE SITE OPERATIONAL AFTER A FIRE

Enva Senior Directors have a detailed business continuity plan, which will be essential for the recovery process. This is confidential in nature.



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