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ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
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WASTE RESOURCE MANAGEMENT



ENDLESS ENERGY LIMITED

ENDLESS ENERGY FACILITY

FIRE PREVENTION PLAN

SEPTEMBER 2018

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SH11087-029	Key Receptor Plan
SH11087-030	Site Location
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548.02 (-) 003	Existing Site Plan with Site Constraints

1 INTRODUCTION

1.1.1 This Fire Prevention Plan has been prepared for the Endless Energy Facility. This plan has been prepared in accordance with Environment Agency guidance¹ and ACE² and applies to the storage of combustible waste at the facility.

1.1.2 This plan identifies the site operations that present a risk of fire, the prevention techniques to minimise the potential for a fire, fire suppression techniques in the event of a fire starting and the measures which will be employed to protect the environment in the event of a fire.

1.1.3 This plan meets the standards required by the Environment Agency to deliver a robust set of measures which will minimise the likelihood of a fire in waste. It shows how the objectives of the Environment Agency's Fire Prevention Plan Guidance will be met to:

- minimise the risk of a fire occurring;
- ensure fires are extinguished within 4 hours wherever possible; and
- minimise the spread of any fire.

1.1.4 Where the site delivers ACE standards (as opposed to EA FPP standards) these still deliver against meet the three key objectives of the EA guidance.

1.1.5 It is recognised that the Environment Agency guidance does not fit perfectly with Energy from Waste facilities. There are therefore a number of areas which, whilst they don't align with the guidance exactly, do deliver against the overall objectives as set out in section 1.1.3 above.

1.1.6 The differences between this FPP and the Environment Agency FPP guidance are as follows:

- Handheld monitoring devices will not be used to measure the temperature of waste within the bunker. However, an infrared camera system will instead be used to detect hotspots. Environment Agency guidance details methods in which the size of waste stockpiles and bays can be managed. As wastes are

¹ <https://www.gov.uk/government/publications/fire-prevention-plans-environmental-permits>, 29 July 2016

² ACE Technical Risks – Engineering Information Bulletin, Guidance Document

stored within a single waste bunker at the site, the management of pile sizes or stockpiles does not apply.

- ACE guidance specifies that firewalls should have 2 hours' fire resistance, as opposed to Environment Agency guidance which requires 120 minutes to allow the waste to be isolated and 4 hours to enable a fire to be extinguished.
- Environment Agency FPP guidance requires that a quarantine area is located on site for the storage of burning material. Non-compliant wastes delivered to the site are reloaded straight onto delivery vehicle if possible. If this is not possible, wastes will be transferred to the quarantine area, located to the south of the tipping hall and waste bunker. Wastes that are burning within the bunker can be dampened using the fire suppression system or transferred directly to the hopper using a crane within the waste bunker. Two cranes are provided within the waste bunker. One crane will be on duty, with the other on stand-by.
- Environment Agency FPP guidance requires that a water supply of at least 2,000 litres a minute for a minimum of 3 hours is required to extinguish a 300m³ pile of combustible waste. ACE guidance states that the water capacity on-site should be capable of supplying the entire fixed fire suppression system for 2 hours. A water tank will be constructed at the site with a capacity of 800m³. The capacity of the waste bunker is 2,200m³, meaning that there is a shortfall in the amount of water required to put out a fire. Mains water from a hydrant will provide the additional water required to put out a fire in the bunker. The water tank and hydrant will be charged from Yorkshire Water mains supply network.

1.1.7 This plan will form part of the Environmental Management System for the site which will be installed at the site. A copy of the Fire Prevention Plan will be kept on site, enabling ease of reference by site staff.

1.1.8 All staff will receive training to ensure that they understand their responsibilities in relation to the Fire Prevention Plan.

1.1.9 All contractors and visitors will be subject to a site induction before they are allowed on to the site. The induction briefing will also include information on the Fire Prevention Plan and the measures required specific to their attendance on site. The

Duty Manager will be responsible for ensuring that all contractors and visitors are inducted when they first arrive on site.

1.1.10 The Site Manager will be responsible for ensuring the Fire Prevention Plan is adhered to at all times, including all monitoring. In the Site Manager's absence, a suitably qualified member of staff will oversee adherence to the Fire Prevention Plan.

1.1.11 The site layout provides access to all areas so any fire outbreak can be easily accessed and extinguished.

2 WASTE ACTIVITIES AND COMBUSTIBLE WASTES

2.1.1 Combustible wastes stored on-site and addressed in this plan include:

- Mixed wastes; and
- Refuse derived fuel (RDF).

2.1.2 The facility will accept up to 148,800 tonnes per annum of suitable residual mixed household, commercial and industrial waste and RDF. Waste deliveries will be tipped directly into the bunker.

2.1.3 This FPP covers the storage of these wastes in the bunker pending thermal treatment.

2.1.4 There are no other activities on site that pose a fire risk.

3 SITE LOCATION AND LAYOUT

3.1.1 The site is located off Marley Road, Keighley. The site is located on the edge of the town of Keighley, 12 kilometres to the north west of Bradford. The site is bounded by industrial developments to the west, the A650 dual carriageway to the north and east, and a railway line to the south. The location of the site is shown on drawing SH11087-030.

3.1.2 Across the road to the east lies a sewage works, along with woodland and pastoral fields. The River Aire is located 185 metres to the north, along with a large pastoral

field and the Marley Activities and Coaching Centre. An industrial estate sits to the west of the site. Three gas holders from the previous gasworks border the site to the west, with a number of businesses also within the vicinity.

- 3.1.3 The main vehicular entrance to the facility is located at the northern boundary of the site, off Aire Valley Road. Access for emergency services will also be possible from Marley Road to the north west.
- 3.1.4 Two weighbridges will be installed at the facility, with video links to the main control room.
- 3.1.5 Vehicles are directed to the main reception hall within Building J for tipping. Waste is tipped into the waste bunker for storage prior to incineration. The incineration of waste, generation of power, treatment of flue gases and disposal of ash is undertaken within Building J, which comprises the tipping hall, waste bunker hall, boiler and flue gas treatment hall, bottom ash hall and turbogenerator hall.
- 3.1.6 The emergency diesel generator, air cooled condenser units, reagents unloading area, diesel oil tank and stack will sit to the north of the boiler and flue gas treatment hall. A building housing the rain water pit and industrial water pit will also sit to the north of the boiler and flue gas treatment hall, beneath the condenser units.
- 3.1.7 Building M lies to the west of building J. Building M will contain workshops, the water treatment hall and compressed air room. Building O to the north of building M will contain a substation, DNO switchgear room and step up transformer. The firefighting tank sits adjacent to building M.
- 3.1.8 The tank farm, forming building D, and tanker loading building (building C) will sit to the east of the site. These buildings serve the waste plastics process plant and do not fall within the permitted area.
- 3.1.9 The layout of the site is shown on drawing SH11087-032.

Site Drainage

- 3.1.10 Clean roof water from the facility will flow into the rain water pit, shown on drawing

SH11087-026. Overflow from the rain water pit will enter the attenuation tanks, part of the sustainable urban drainage system (SUDS). The attenuation tanks will initially store the water, prior to releasing the water into the surface water drain at a steady rate. This will prevent flooding of the surface water drain, which takes water from the roof of the facility and clean run-off from outdoor hardstanding. The surface water drain passes through a hydrocarbon interceptor prior to exiting the site on Marley Road.

3.1.11 Drawing SH11087-026 identifies the foul water drainage system that will serve the site. New foul drains will be installed during the construction of the facility, adding to pre-existing foul drainage that is currently present at the site.

4 SITE SETTING AND PROXIMITY TO SENSITIVE RECEPTORS

4.1.1 In developing the Fire Prevention Plan, consideration has been given to the need to protect nearby sensitive receptors. The protection measures provided at the site are designed to protect a number of receptors present within the vicinity, as shown in Table 4:1 below and on Drawing SH11087-029.

Table 4:1 List of Receptors		
Receptor	Distance from Site	Direction
Residential		
Regency Court Care Home	80m	South
Properties along Murdoch Street	250m	West
Industrial/Commercial		
Marley Playing Fields	90m	North West
Wells Spiral Tube	90m	West
Carmeleon	100m	West
Schools and Hospitals		
Long Lee Primary School	954m	South West
Strong Close Day Nursery	335m	West
Infrastructure		
Airevalley Road	5m	North
Airedale Railway Line	7m	South
Gas Works Road	120m	West
Marley Sewage Works	220m	East
Environmental		
River Aire	170m	North

Table 4:1 List of Receptors		
Receptor	Distance from Site	Direction
River Worth	520m	North West
Miscellaneous/Other		
Stables / Farm	34m	North East
East Morton Golf Course	940m	North East
National Trust East Riddlesden Hall	465m	North East

- 4.1.2 The majority of surrounding receptors are industrial and commercial businesses, which reflects the local area. The site sits within an industrial setting, with numerous businesses operating nearby, including car repair firms and a manufacturer of spiral tubes.
- 4.1.3 There is one care home, one school and no hospitals within 1,000m of the site. The nearest residential receptors are located 250m to the west.
- 4.1.4 There are no electricity pylons on or adjacent to the site however, an electricity sub-station is located on site as shown on the General Arrangement drawing.
- 4.1.5 Two high pressure gas mains are located within the site boundary. The gas mains sit within an easement of 28 metres. The easement line transects the site in a north westerly / south easterly direction. The gas mains run adjacent to the southern boundary of the site. Drawing 548.02 (-) 003 shows the gas mains and the ground within the easement.
- 4.1.6 There are no European Sites or SSSI's within 1km of the site. Southern Pennine Moors, designated as a SSSI, SAC and SPA, is located approximately 2.5km to the north east.
- 4.1.7 There are no known water supply boreholes within 1km of the site. The site does not lie in a source protection area, although it is located on a Secondary A aquifer. A groundwater abstraction is located 678m to the south west for the purpose of industrial, commercial and public services. A surface water abstraction is located 840m to the north west for the purpose of industrial commercial and public services. Surface water features in the area are shown on Drawing SH11087-029.
- 4.1.8 To protect the aquifer and the nearby aquatic ecosystems care will be taken to prevent

the escape of firewater to the environment.

5 CAUSES OF FIRE

5.1.1 There are a number of potential causes of fires at the facility. Potential causes of fire include:

- Arson or vandalism;
- Self-combustion (e.g. due to chemical oxidation);
- Plant or equipment failure;
- Electrical faults and damaged cables;
- Discarded smoking materials;
- Heat sources such as sparks from grabbers, loading buckets, space heaters, hot exhausts, hot works and naked lights;
- Reactions between incompatible materials; and
- Incompatible wastes.

5.1.2 Robust measures including good housekeeping will ensure that the risk of fire is kept to a minimum. Further details are provided in section 6 below.

6 FIRE PREVENTION AND DETECTION

6.1 General

6.1.1 The site will employ fire prevention techniques to minimise the risk of fire, including both design and operational measures.

6.2 Physical Separation of Wastes to Prevent Fire Spread

6.2.1 Wastes will only be stored within the bunker as shown on drawing reference SH11087-032. The bunker will be constructed from concrete walls which will be sealed to ensure they are fire resistant. These walls will provide a minimum of 2 hours' fire resistance in accordance with ACE guidelines. The thickness and construction of the walls will be sufficient to stop a fire spreading outside of the waste bunker and minimise radiant heat.

6.2.2 Wastes will remain within the bunker until moved by grab to the feed hopper for incineration.

6.2.3 Waste will be stockpiled to a maximum height of 1 metre below the top of the bunker.

6.3 Design Measures

6.3.1 Design measures to be provided at the site to prevent fire include CCTV, site security, automated detection system, fire alarms, dust suppression, a designated smoking area, fire quarantine area, portable fire extinguishers at appropriate locations and a fire suppression system. These are discussed below.

CCTV

6.3.2 The weighbridge, reception hall and waste bunker will be equipped with CCTV and will be monitored by personnel in the site office during operational hours. The system will be fitted with a thermal camera to detect hotspots within the waste bunker. Control room staff and crane operators will monitor the system to visually identify the presence of smoke and/or flames. Thermal imaging cameras will be UKAS accredited, and calibrated to the required standards. The design and specification of the detection system will be in accordance with BS 5839 Part 1, meaning fire detection in all areas.

Smoke and Heat Detection

6.3.3 Smoke and heat detectors will be installed within the tipping hall and waste bunker. Outbreaks of fire or smoke will trigger the fire alarm and the automated fire suppression system if it is not possible for the crane operator to charge the hopper with the waste in question. This will ensure that fires can be detected at an early stage.

Alarms

6.3.4 An automated alarm will be installed at the site as part of the fire detection and suppression system.

6.3.5 In the event of a hotspot being detected by the thermal camera, an automated alarm will require direct action by the crane operator to prioritise that waste for loading into the hopper.

6.3.6 Manual alarm points will also be available to site personnel and will be located at strategic points within the site buildings for site operatives to raise the alarm should they observe the outbreak of fire. The detection of a fire will be swift and will ensure that if a fire starts actions can be taken without unnecessary delay in order to

extinguish it.

6.3.7 All fire alarms will signal to a permanently manned location, from where the fire service can be called.

Dust Suppression

6.3.8 The accumulation of dust will be minimised through the design of the buildings, with shape and method of installation minimising the surface area where dust can settle.

6.3.9 Accumulated dust will be removed using a portable / fixed pipe vacuum cleaner of a type approved for dust hazardous locations or low velocity water spray nozzles or hose.

6.3.10 Maximum storage capacities and durations are shown in Table 6:1.

Table 6:1: Combustible Wastes – Storage Form, Method, Quantities and Restrictions					
Waste types	Form	Storage Method	Storage Dimensions	Max Amount Received (Daily)	Others Storage Restrictions
Incoming Unprocessed Waste / Refuse Derived Fuel	Loose	Bunker	6m(h) x 25.5m(l) x 17.3m(w) Max area 441m ² Max volume 2646.9m ³	Up to 700 tonnes of mixed household, commercial and industrial waste	Waste will be turned and mixed whilst in the bunker to prevent heating.

Fire Quarantine Area

6.3.11 A Fire Quarantine Area will provide dedicated storage for smouldering wastes at risk of combusting. The purpose-built pad will be located to the south of the site, as shown on drawing SH11087-032. The pad will consist of an impermeable pavement and will ensure that firewater run-off will not permeate the ground surface when mobile booms are deployed around the pad. The design, installation and maintenance of all concrete impermeable pavement will be covered by an appropriate UKAS accredited third party certification scheme.

Fire Extinguishers

6.3.12 Portable fire extinguishers will be provided at strategic locations around the site. Further information is provided in section 7.

Fire Suppression System

6.3.13 The bunker will be provided with a fire suppression system. The system will be supplied by a 800m³ water tank located to the west of the site. Initially wastes on fire will be prioritised for loading into the hopper but if required the system will target hotspots using the thermal imaging system. The design, installation and maintenance of the fire suppression system will be covered by an appropriate UKAS accredited third party certification scheme.

6.3.14 Further information and specification is provided in Section 7.

Designated Smoking Area

6.3.15 A designated smoking area will be provided at the site entrance. This area will provide an area, away from all waste treatment and storage, where smoking is safe. Receptacles will be provided for discarded cigarettes.

Other

6.3.16 All site vehicles will be fitted with fire extinguishers and dust filters. Bucket loaders will be fitted with rubber strips to prevent sparks when the bucket comes into contact with hard-standing and other surfaces.

6.3.17 Combustible liquids are not permitted for treatment at the site and will not be accepted. Mobile plant and the crane grab will be inspected at the start of each working day, with any damage or faults recorded within the site diary. Part of inspections will include checks for any leaks or spillages of fuel, hydraulic fluids or coolant. If leaks or spillages are observed coming from site plant or waste delivery vehicles, these will be addressed immediately. If a vehicle delivering waste is leaking fuel or other oils the driver will be notified immediately and advised that the vehicle requires attention before it can re-join the public highway.

6.3.18 In the event of a spillage of fuel or other combustible liquid, sand or other suitable material in the spill kit will be used as an absorbent material. Sand is effective at containing free running liquids in the event of a spill or leak of fuel or other combustible liquid. Sand will be provided as part of the on-site spill kit, which contains a sand bucket, plastic bags, broom and shovel. Contaminated sand will be sealed in a bag and disposed of at a permitted facility.

6.4 Operational Measures

6.4.1 Operational measures to be provided at the site include waste acceptance checks, appropriate storage of wastes, health and safety measures, monitoring regimes and maintenance programmes. These are discussed in turn below.

Waste Acceptance Checks

6.4.2 The facility will be permitted to accept a range of household, commercial and industrial wastes. Incoming wastes will be visually checked for signs of combustion (e.g. smouldering, flames) at the weighbridge and again when tipped into the bunker.

6.4.3 Visual observations will also identify the presence of non-compliant or unstable wastes during tipping. No inherently reactive or unstable wastes are included in the list of permitted wastes under the environmental permit. Any such wastes would not be permitted to be accepted at the site. In accordance with the Operating Techniques document, any unstable or incompatible wastes discovered in mixed loads will be reloaded onto the delivery vehicle by hand or by using mobile plant as appropriate or moved to the quarantine area. Environment Agency guidance will be sought if necessary. This will be the decision of the Site Manager, prior to removal from the site.

6.4.4 In the event that smouldering loads or non-compliant wastes are identified arriving at site they will be reloaded onto the vehicle or quarantined, and the vehicle will not be permitted to tip its load. Tipped wastes identified as being at risk of combustion or on fire will be transferred to the hopper or dampened using the suppression system.

Appropriate Storage of Waste

6.4.5 Wastes will be mixed by the crane in the bunker to ensure that hotspots do not occur. Wastes will be transferred to the hopper and will not be allowed to build up in the bunker excessively.

6.4.6 Wastes stored within the bunkers will not be exposed to direct sunlight. This will minimise external heating.

6.4.7 A freeboard will be maintained by the provision of a clearly marked line on the bays walls, which will show the maximum permitted height for stored waste. The freeboard will be physically retained at all times.

6.4.8 Wastes will be subject to measures including monitoring and mixing by the crane in order to minimise the risk of self-combustion.

6.4.9 The crane will be mixing waste for 60% of the time, which equates to over 14 hours per day. During the remaining time the crane will be loading waste to the hopper.

6.4.10 Wastes that are present within the quarantine area during the event of a fire will be removed from site as quickly as possible. Using mobile plant wastes will be loaded into Ro-Ro containers, which will be taken to a licenced waste disposal facility at the earliest opportunity. This will ensure that there is full capacity for burning wastes that may be removed from the building or wood storage area in the event of a fire. This Fire Prevention Plan will form part of the Environmental Management System (EMS) for the site.

6.5 Health and Safety Measures

6.5.1 A range of health and safety measures will be employed at the site.

6.5.2 The Fire Prevention Plan, including evacuation drill and methods of firefighting will be made known to all employees and published on notice boards. Fire drills will be held at regular intervals and will be co-ordinated by the Site Manager.

6.5.3 Appropriate safety and fire prevention procedures training will be given to each member of staff (and contractors), the type of training provided will be dependent on their role on-site. Training will be a regular event with routine refresher training provided. A training record will be maintained for each member of staff. Training records will be held by site administration staff and will be the joint responsibility of the Finance Manager and each member of staff to ensure that they have received all training required.

6.5.4 New staff (and contractors) will not be able to work on site until they have completed their safety and fire prevention procedures awareness training as part of their induction. The duty manager (or designated responsible person) will complete the induction of all sub-contractors and visitors.

6.5.5 Specialised safe working practices for undertaking hot working such as welding or

cutting will be developed. Other specialised safe working practices will cover the fire risks from use of mobile plant and space heaters. Safe working practice guidelines will be developed before the site begins commissioning using waste. Training will be given to all employees in the use of fire extinguishers and their locations.

6.5.6 Signage will be provided across the site with regards to fire awareness and emergency procedures to be implemented in the event of a fire being detected on site. Safe working messages will also be reinforced through signage.

6.5.7 Sources of ignition such as heating pipes, light bulbs and space heaters will be kept at least 6m away from stockpiles of combustible materials and as far as possible naked flames will not be permitted on site. Mobile plant that is not in use will be stored at least 6m away from combustible wastes. Where it is not possible to maintain these requirements ignition sources shall be enclosed or screened by a protective covering.

6.5.8 Smoking will only be permitted in a designated location that is located away from combustible materials, as shown on drawing reference SH11087-032. Secure disposal will be provided for discarded cigarette wastes. A no smoking policy will be applied in all areas where waste is treated or stored.

6.6 Monitoring Inspections

6.6.1 Regular site inspections of stored wastes and infrastructure will be undertaken and will be recorded on the daily check sheet. The inspections shall include the following aspects that directly relate to fire risks:

- security fencing and site signage;
- hardstanding and impermeable areas;
- containers for integrity and fitness for purpose;
- condition of waste piles;
- ensuring stockpile limits are not exceeded;
- maintenance of bay walls; and
- flammable wastes.

6.6.2 A daily check sheet will be provided to site staff which sets out the required actions to be undertaken throughout the day. Particular attention will be paid to the site inspection at the end of each working day to ensure that there are no smouldering

wastes or indications that a fire has started or may start.

- 6.6.3 Site personnel will not be able to monitor waste piles using a thermal probe as waste will be stored within a bunker. Instead, an infrared thermal imaging camera system will be used to detect hotspots within the waste. Sufficient thermal imaging cameras will be provided to cover all areas of the bunker. Site staff will be trained to detect and manage hotspots.
- 6.6.4 Wastes within the bunker will be turned using the crane, which will allow for any localised warming to dissipate. Waste will be turned for 14 hours per day.
- 6.6.5 A member of staff will be designated to carry out a fire watch at the end of each shift, and whenever high-risk activities such as hot works are undertaken. Regular inspections will be made of any areas where settling dust may ignite. Hot exhausts will be inspected three times per day (morning, noon and at the end of shift) and brushed off as necessary. In the event of hot works being undertaken on site, following their completion a fire watch will be carried out. All inspections, fire watches and preventative actions taken will be recorded within the site diary.
- 6.6.6 Inspections to identify build ups of loose combustible wastes, dust and fluff will be undertaken daily within the tipping hall as part of the overall monitoring regime by a member of staff. It will be the responsibility of all site personnel to maintain a visual awareness of potential dust emissions during the working day. Routine checks (recorded in the site diary) of the state of the site will identify build ups of litter and combustible material. Dusty material will be removed using a vacuum cleaner or low velocity water spray nozzles or hose.

6.7 Maintenance and Repairs

- 6.7.1 Endless Energy Limited will maintain the site in accordance with a robust and proactive Maintenance Plan for all site infrastructure and equipment.
- 6.7.2 Maintenance will be undertaken by suitably qualified individuals as required. Maintenance will be undertaken in accordance with safe working practices which also minimise the risk of starting a fire.

- 6.7.3 The fire suppression system will be maintained in accordance with the manufacturer's instructions.
- 6.7.4 Visual electrical inspections will be carried out by site staff as part of the monitoring regime. Maintenance of onsite electrics, legally required or procedural electrical inspections and repairs will be carried out by qualified electricians. All onsite electrics will be certified by a qualified electrician. In the event of an electrical fault or damaged equipment, repairs or replacements will be undertaken at the earliest opportunity.
- 6.7.5 Regulatory electrical safety standards will be complied with at all times. Damaged equipment that may be a safety risk will not be used. The Working Plan states that preventative inspections and maintenance plans shall be implemented for mechanical diesel-powered equipment used in the waste treatment facility.
- 6.7.6 Sources of ignition such as heating pipes and light bulbs shall also be maintained in accordance with regulatory standards and company procedures due to their potential to start fires.
- 6.7.7 Since sparks may be caused by faulty equipment all plant and equipment will be subject to inspection, servicing and maintenance in accordance with the manufacturer's recommendations. Staff will be trained to be vigilant and to report loose connections, damaged cables etc. which will be repaired as soon as possible. Where necessary equipment will be taken out of use until it can be repaired to prevent the risk of fire.
- 6.7.8 Details of all inspections, servicing, maintenance and repairs will be recorded.

6.8 Site Security Measures to Prevent Arson

- 6.8.1 The site will be operational 24 hours per day and so will never be unmanned. The risk of unauthorised access will further be reduced by use of galvanised steel security fencing and security gates. The minimum height of the fencing will be value metres. The perimeter fence has a security top and surrounds the entire site. The office area will have security bars on all external windows to prevent unauthorised access.
- 6.8.2 Security infrastructure will be backed up by a CCTV system monitored 24/7 from the

control room. Exterior areas of the site are equipped with security lighting and cameras installed, with circuit breaker and infrared detection alarms.

7 FIREFIGHTING INFRASTRUCTURE

7.1 Fire Extinguishers

7.1.1 Handheld firefighting equipment will be provided in all parts of the facility and mobile plant. Fire exit extinguishers will be installed to the standard BS 5306 Part 8: Code of Practice for the Selection and Installation of portable fire extinguishers. Portable fire extinguishers will be provided at strategic locations around the site and could include the following:

- Red – water-based extinguishers, including spray (with additives) and mist;
- Blue – powder-based extinguishers;
- Cream – foam-based extinguishers;
- Black – carbon dioxide-based extinguishers; and
- Yellow – chemical-based extinguishers.

7.2 Fire Suppression

7.2.1 A fire suppression system will be installed over the bunker. The fire suppression measures set out below take into account the hazards and activities that are present on site, potential risks to people, the environment and property, the types of materials that are stored on site (plus their form and length of time needed to extinguish a fire involving them), the availability of firewater containment facilities and local topography, weather conditions and fire scenarios.

7.2.2 The automated fire suppression system will be activated in the event of the fire alarm being activated. This will ensure any fire is tackled swiftly and so restrict its spread.

7.2.3 In the event of a fire within the waste bunker, the primary remedial option will be to pick up the burning waste using the grab and drop it into the hopper. From there the waste will be transferred to the grate for incineration.

7.2.4 The fire suppression system within the bunker will douse hot material or fires that develop within the waste. The bunker will utilise both an automatic sprinkler system and water cannons. The sprinkler system will protect the roof area against structural

damage, with a coverage area including the entire Hopper Deck. The water cannons will be located so as to allow coverage of the entire pit area, with at least two streams operating simultaneously. Due to the distance between the bottom of the bunker and the suppression systems, hoses and monitor nozzles may also aid in firefighting.

- 7.2.5 In the event of a fire the priority will be the suppression of that fire and the prevention of it from spreading. Alternatively, and if safe to do so, mobile plant may be used to move inert materials such as soils or sand to cover burning wastes and extinguish a fire within the tipping hall, where there is approval from the Environment Agency. Water may also be used to cool unburned material, but care will be taken to prevent this water from causing or adding to water pollution.
- 7.2.6 Following the discovery of a fire and prior to the Fire and Rescue Service's arrival at the site, Site Operatives may be required to aid in firefighting efforts where safe to do so. Only employees who have been properly trained will be allowed to operate firefighting equipment. Persons under the age of 18 will not be expected to use fire-fighting equipment.
- 7.2.7 The fire suppression system will be supplied by a 800m³ water tank, located to the west of the site. The system will comply with BS EN 12845:2015 and will incorporate a galvanised steel tank with appropriate seal to contain water. The tank will be at suitable elevation to provide the correct pressure to a suppression system within the building.
- 7.2.8 The design and specification of the suppression system will be as per the ACE specification, which states that fire protection should be installed in accordance with National Fire Protection Association (NFPA) 850 Recommended Practice for Fire Protection for Electric Generating Plants, in particular Chapter 9. Sprinkler systems will be fitted to comply with NFPA 13 Standard for the Installation of Sprinkler Systems. Water spray / deluge systems will be fitted to comply with NFPA 15 Standard for Water Spray Fixed Systems for Fire Protection.
- 7.2.9 The tank will be provided with a diesel back-up pump in the event that the electricity sub-station has to be isolated.

- 7.2.10 Endless Energy Limited will maintain the mains water connection throughout the operational life of the site as well as maintaining the water supply tank, to ensure that sufficient water supply is provided at the site in the event of a fire.
- 7.2.11 Firewater run-off will not permeate the ground surface as the site is designed with impermeable surfacing with sealed drainage. Mobile booms will be deployed in areas of egress such as doors, or in external areas where there is a risk of firewater escaping the site. Booms will be deployed within 1 hour of an outbreak of a fire. The deployment of booms will be subject to regular testing and training under the EMS. An indicative specification for mobile booms is provided in section 10.
- 7.2.12 In the event of a fire all drains will be sealed using robust drain covers. The covers will not lift no matter how much liquid surrounds it. The drain cover ensures that spilt liquids and firewater will not get into the drain.
- 7.2.13 A fire hydrant connected to the mains water network is located within close proximity of the site entrance. The hydrant is provided by Yorkshire Water. The Fire and Rescue Service will be able to connect to the mains water supply on Aire Valley Road using the hydrant, located as shown on drawing SH11087-032, which can provide up to 0.57l/sec. According to the EA guidance the likely maximum amount of firewater required to extinguish the fire in 4 hours will be 3,484.8m³ for a maximum stockpile size of 2,200m³, although it is expected that the bunker is full of water then the fire will be extinguished. The provision of the water tank on site is designed to provide this volume of water independent of the mains supply at the time of any fire.
- 7.2.14 The fire hydrant and main water supply at the site will provide additional water for firefighting to augment the supply within the tank if required.
- 7.2.15 Specific routes are provided for emergency vehicles to provide safe and efficient access to all parts of the site as shown on drawing SH11087-032. Site roads will be cleared in the event of emergency services requiring access to the site.
- 7.2.16 The locations of the firefighting infrastructure are also shown on drawing SH11087-032.

7.2.17 The steps and measures to be followed if a fire breaks out on site are detailed in Section 8.

7.2.18 In the event of a fire, no wastes will be accepted at the site.

8 MANAGEMENT OF ENVIRONMENTAL IMPACTS

8.1 General

8.1.1 When using firewater as part of firefighting, Endless Energy Limited will ensure that active measures are employed to avoid both water and air pollution.

8.2 Management of Firewater

8.2.1 Firewater will be retained within the waste bunker. The bunker will be equipped with impermeable concrete walls which will provide complete containment. Water will be removed from the bunker using a pump, with water sent offsite for treatment at a permitted facility.

8.2.2 Firewater will be prevented from leaving the site and will therefore be unable to enter any surface water drain or water course however, as a precaution, in the event of a fire all drain covers will be sealed using plastic drain covers. Further information is provided in Section 7.

8.2.3 Following an incident, firewater will be collected by tanker before the booms are removed.

8.2.4 All firewater containment equipment will be kite-marked, ensuring their quality and fitness for purpose. The equipment will be operated in accordance with the manufacturer's guidance.

8.2.5 All pollution control equipment will be stored in accordance with the manufacturer's recommendations, in the Site office, to prevent it from being damaged during normal site operations.

8.3 Emissions to air

8.3.1 A waste fire can result in a variety of harmful emissions to air. The burning of waste

produces smoke, which can contain a range of particulates. Soot and dust produced by the fire can spread across the local area and has the potential to spread over a wider area due to wind action. Smoke and particulates if inhaled can cause respiratory irritation. Flora and fauna may also be harmed as a result of exposure to emissions of smoke. In addition, waste fires can result in the production of a variety of gases such as Carbon Monoxide, Volatile Organic Compounds (VOC) and Polycyclic Aromatic Hydrocarbons (PAH). A number of these gases are toxic.

8.3.2 In the event of a fire, site staff and visitors will be evacuated to a safe area, and local residents and businesses will be kept informed of the size of the fire and potential airborne products. They will be informed of any toxic gas releases and advised to keep doors and windows closed.

8.3.3 The dominant wind direction in the area, according to data from a wind rose for Bingley Meteorological Station, is from the west south west. The highest wind speeds of over 8.2m/s are predominantly seen from the west south west and south west. The average wind speed for the area is 3.85m/s.

8.3.4 In the event of a fire the Emergency Plan will be followed. Firefighting by both suitably trained staff and the emergency services will ensure that the fire is extinguished as swiftly as possible, ensuring that the production and spread of aerial emissions is minimised.

8.4 Emissions to Land

8.4.1 Pollutants can end up in the ash that is produced as a result of the fire. The disposal of all fire damaged wastes will be to engineered, non-hazardous landfill to minimise the potential for emissions to land.

9 MANAGEMENT PLAN

9.1.1 This fire prevention plan will form part of the Environmental Management System for the site that will be developed prior to site operations commencing. This standalone document will be kept on site, enabling ease of reference by site staff. Staff will receive training to ensure that they understand their responsibilities in relation to the fire prevention plan and that they know where to locate the plan should they need to refer to it.

9.1.2 Once every six months an exercise will be carried out to test that all staff understand this fire prevention plan and know what to do in the event of a fire.

10 POST-FIRE SITE CLEAN-UP

10.1.1 In the event of a fire a range of measures will be undertaken before the site can be fully operational again. Endless Energy Limited will inform the Environment Agency of progress with these measures. All 'Duty of Care' obligations will be complied with at all stages of the clean-up.

10.1.2 Firewater will be pumped into tankers for off-site disposal at a suitably permitted facility.

10.1.3 Saturated solid wastes that are no longer suitable for solid treatment will be sent off-site for disposal at a suitably permitted facility.

10.1.4 Once the site has been cleared of affected wastes, the infrastructure, including impermeable pavement will be inspected as required by suitably qualified engineers to determine whether any repairs are required.

10.1.5 If the fire was limited to only part of the site operations at the site will be restricted to the unaffected area, providing that the site can comply in full with the permit conditions. No site operations will commence in the affected area until all inspections and necessary repairs have been affected.

10.1.6 The Environment Agency will be notified of the inspections and repairs undertaken within five working days and the recommencement of full site operations. All repairs will be undertaken with independent CQA supervision.

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