AVONMOUTH WASTE TRANSFER STATION

Environmental Permit Variation Application

Fire Prevention Plan

Prepared for: Bristol Waste Company Limited

Environmental Permit Ref: EPR/EB3702MF

SLR Ref: 402.V54839.00001
Version No: V1
January 2025

BASIS OF REPORT

This document has been prepared by SLR Consulting Limited with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Bristol Waste Company Limited (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.

CONTENTS

DOCUMENT REFERENCES

TABLES

FIGURES

DRAWINGS

APPENDICES

1.0 Introduction

1.1 Report Context

Bristol Waste Company Limited (Bristol Waste) has instructed SLR Consulting Limited (SLR) to prepare an Environmental Permit (EP) variation application for the Avonmouth Waste Transfer Station (WTS) located in Avonmouth (EP Ref: EPR/EB3702MF) under the Environmental Permitting (England and Wales) Regulations 2016 (as amended). Herein the facility will be referred to as 'the site'.

The EP variation includes the following changes as summarised below:

- Modernisation and redevelopment of the existing WTS in Avonmouth;
- Incorporate within the EP the shredding activity currently run in accordance with the T6 exemption, in addition to the shredding of other currently permitted wastes;
- Addition of European Waste Catalogue (EWC) code for Absorbent Hygiene Products (AHPs); and
- Partial surrender of land occupied by an adjacent waste facility, located within the WTS EP boundary in the north west corner of the site.

This report follows the Environment Agency (EA) guidance for Fire Prevention Plans (FPPs)[1] and details the required mitigation and management methods to prevent a fire of combustible materials stored on site.

The information contained within this FPP aims to meet the 3 main objectives of the EA FPP Guidance:

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

A fire event occurred on site on the 6th September 2023. As a result, the local EA area officer has requested that a FPP be prepared to cover the following:

- Current site operations;
- Any aspects of the construction phase that could affect fire prevention and mitigation measures; and
- Final design of the redeveloped site.

The requested information is included as part of the FPP, and any fire prevention, detection or management measures that differ between the above scenarios have been outlined in separate sections throughout the document.

Under current fire safety legislation, a responsible person must carry out, or appoint a competent person to carry out, a suitable and sufficient fire risk assessment of the risks of fire to employees and others who may be affected by the site. A Fire Risk Assessment will be conducted before operations commence on site.

2.0 Types of Combustible Materials

2.1 Combustible Waste

The current site accepts up to 75,000 tonnes per annum (tpa) of household and commercial waste. Bristol Waste propose to increase the annual throughput to 150,000 tpa as part of the variation application, and redevelopment of the WTS.

[1] Fire Prevention Plans, last updated 11 January 2021.

A maximum of 1,000 tonnes of waste will be stored on site at any one time.

Drawing 005 shows the current site layout, and site layout during the construction phase, and Drawing 004 shows the final redeveloped site layout.

The EP allows for the following waste types to be accepted on site which are defined as 'combustible materials' in the EA's FPP Guidance:

- Paper and cardboard;
- General waste (mixed) (black bag waste);
- Plastics;
- Bulky waste;
- Green waste;
- Wood;
- Metals (cans);
- Tyres;
- WEEE (including fridges);
- Waste oils;
- Batteries;
- Carpets;
- Mattresses;
- Dry mixed recyclables (DMR); and
- AHPs.

The full waste list is included in Section 3.2.2 of the Working Plan which is included in Section 5 of this EP variation application.

2.2 Persistent Organic Pollutants (POPs)

Waste containing POPs are identified as part of Bristol Waste's Waste Acceptance Procedures (WAP) and are segregated from non-POPs waste and stored separately, under cover within the designated area in the existing Waste Transfer Building as illustrated on Drawings 004 and 005. POPs waste is not treated, and Bristol Waste are compliant with RPS 256.

In the event of a fire on site, Bristol Waste would make the Fire and Rescue Service (FRS) aware that wastes containing POPs are present on site, and where they are stored. If there is a fire involving POPs waste, then any residue will be segregated and treated following POPs regulations, including any fire water.

2.3 Other Combustible Materials

The site stores non-waste materials that are not covered by the FPP Guidance but are considered in this FPP due to the potential for them to cause or increase the impact of a fire on the site. The materials and their storage arrangements are shown in Table 2-1 below and illustrated on Drawings 004 and 005.

Table 2-1
Non-Waste Materials: Storage Arrangements

Type	Storage Location	Storage Arrangement
GTL/Diesel Tank	Designated storage area on western EP boundary	60,000 litre tank surrounded by a leakage containment bund capable of containing at least 110% of the volume of the largest container within the bund.
Gas Cylinders	Designated storage area in north eastern area of the site, adjacent to the existing tipping hall. Designated area in the eastern area of the site.	Impermeable base with a free venting cage.

3.0 Using this FPP

3.1 Where the Plan is Kept and how Staff Know how to Use it

A copy of this FPP is kept in the Site Office, located in the southern area of the site as illustrated on Drawings 004 and 005.

All staff will be made aware of the contents of the FPP and the procedures that are in place in the event of a fire on site during their induction and through periodic refresher training. Contractors working on site will be made aware as part of on-site working procedures. This will ensure that all staff and contractors working on site know what they must do:

- To prevent a fire happening; and
- During a fire if one breaks out.

3.2 Testing the Plan and Staff Training

3.2.1 Staff Training and Procedures

All operatives receive regular training on the use and selection of fire extinguishers, site evacuation, fire safety and all relevant emergency procedures, in addition to training according to their individual duties.

All staff and contractors working on site are made aware of the contents of the FPP and the procedures that are in place in the event of a fire on site during their induction. The staff training is refreshed every 15 months, or more frequently in the event of non-compliance.

Certain staff members on site receive enhanced training and are designated as Fire Marshals. There is always at least one Fire Marshal present on site.

The procedures for fires discovered on site are provided on-site notice boards.

Bristol Waste conduct a test of the FPP once a year, or in the event of any significant changes to site operations, to ensure that the contents are still relevant and that all staff members' knowledge is current and up to date. Exercises include what staff need to do to prevent a fire occurring and what to do during a fire if one breaks out.

3.2.2 Testing the FPP

This FPP will be implemented across the site and all fire management equipment will be tested on an annual basis and maintained in line with schedules set by Bristol Waste's maintenance procedure.

A fire drill is carried out and documented on a 6 monthly basis.

If any issues are found during these fire drills, the FPP will be updated or amended accordingly, and site operatives will be re-trained.

Regular checks are made of all escape routes and equipment.

The FPP is kept under regular review and revised where necessary, for example if:

- There is a reason to suspect it no longer meets the FPP objectives;
- The site has a fire or identifies a near miss of a fire;
- On site activities/operations are changed;
- The environment surrounding the site changes; or
- The EA ask Bristol Waste to revise the FPP due to concern over the risk posed by on site operations.

4.0 FPP Contents

4.1 Activities at the Site

4.1.1 Current Site

Treatment on site consists of manual sorting and separation, crushing, compacting baling and bulking of waste into different components prior to removal from site for further recovery or disposal.

Shredding on site is currently undertaken in accordance with the T6 exemption (treating waste wood and waste plant matter by chipping, shredding, cutting or pulverising) as well as the shredding of mattresses in accordance with the current working plan.

The areas of the current site are described further below, and the current site layout is illustrated on Drawing 005.

Waste Transfer Building

The Waste Transfer Building (WTB) located in the north eastern area of the site is currently used, and will continue to be used following the redevelopment of the site, for the storage of black bag waste, and food waste. In addition, designated bays are provided for the storage and bulking up of bulky waste (POPs upholstered furniture), paper and general waste (for disposal) prior to removal from site for further recovery or disposal.

External Concrete Storage Bays

The external concrete storage bays located in the south eastern area of the site are currently used, and will continue to be used, for the storage of waste plastics, green waste, glass, hardcore, metal, mattresses, carpet, wood, and general waste. WEEE is stored in stillages as illustrated on Drawing 005. Waste is bulked up, prior to removal from site for further recovery or disposal. Shredding of wood, mattresses and green waste occurs here currently under the T6 exemption and as per the working plan. The mobile, manual picking line is also located here.

4.1.2 Redeveloped WTS Site

The EP variation application proposes to modernise and redevelop the existing WTS. This will involve redesigning the site layout to change the waste storage areas as well as providing a range of new infrastructure, adding a new treatment activity to the EP, increasing the annual throughput, adding the 20 01 99 EWC Code and incorporating the T6 exemption as detailed below. The redeveloped site layout is illustrated on Drawing 004.

Treatment on site will consist of the existing activities as described above and the shredding activity, which is currently carried out in accordance with the T6 exemption and working plan. This will be incorporated into the EP removing the need for the exemption. To facilitate this, the following activity will be added to the EP:

- Physical treatment of non-hazardous waste.

There is no proposed change to the existing permitted list of R and D codes, and the WTB and external concrete bays will be maintained and operated as described above.

Waste Processing Building

A new steel portal frame building will be constructed in the western area of the site. The building will consist of concrete bays for the storage of recyclables such as paper, cans, plastic, and cardboard in addition to containing baling equipment, as shown on Drawing 004. Waste will be mechanically and manually sorted. In addition, DMR will be accepted within the building for processing. Recyclables will be baled, if required, and bulked up prior to removal from site for further recovery.

Wastes such as timber, furniture, scrap metal, batteries, WEEE, and other contaminates may be removed from the tipped loads within the processing building and segregated/sorted prior to storage in either of the waste buildings, relevant external concrete bays or suitable containers.

In addition, a new water tank, and associated pump house will be constructed in the external area immediately to the east of the new building.

External Bale Storage Area

A designated external bale storage area is proposed immediately to the south of the new Waste Processing Building (WPB). Baled cans and plastics will be stored in designated areas, as illustrated on Drawing 004. The area will also provide an outside storage location for food waste and AHP skips.

Upgrade to Drainage system

The surface and foul water drainage system has undergone an extensive upgrade as illustrated on Drawing 006.

4.1.3 Construction Phase

During the construction phase of the redevelopment, the area immediately to the south of the new WPB will consist of containers used for the storage and bulking up of wastes including compost, tyres, and plasterboard. The construction phase site layout is illustrated on Drawing 005.

4.1.4 Specified Waste Management Activities

The activities carried out at the current site, during the construction phase, and following the redevelopment of the site as defined under Annex II of the Waste Directive Framework can be summarised as follows:

- **D9:** Physico-chemical treatment of waste;
- **R3:** Recycling or reclamation of organic substances which are not used as solvents;
- **R4:** Recycling or reclamation of metals and metal compounds;
- **R5:** Recycling or reclamation of other inorganic materials;
- **R13:** Storage of waste pending any of the operations number R1 to R12;
- **D15:** Storage of waste pending any of the operations number D1 to D14; and
- **D14:** Repackaging prior to submission to any of the operations numbered D1 to 13.

4.2 Site Plan

The site is situated approximately 2km north east of Avonmouth and 9km north west of Bristol City Centre. The National Grid Reference (NGR) for the site is ST 53315 79858. Access to the site is via Kings Weston Lane.

The EP boundary is illustrated on Drawing 001 and the site's location is illustrated on Drawing 002.

The surrounding land uses and local receptors within 1km are also identified on Drawing 002, in addition to the cultural and natural heritage within 2km on Drawing 003.

4.3 Plan of Sensitive Receptors Near the Site

The site is set within the wider commercial/industrial area of Avonmouth, adjacent to the neighbouring Household Reuse & Recycling Centre (HRRC) which lies to the south east. Access to the site is via Kings Weston Lane.

A summary of the site's immediate surrounding land uses is identified in Table 4-1 below.

Table 4-1
Surrounding Land Uses

Boundary	Description
North	Clinipower Avonmouth LLP Waste Facility and open ground followed by surface water features. Beyond this lies Lawrence Weston Road, Merebank Road, and a large area of industrial/commercial units including Avon and Somerset Police Workshop.
East	Immediately to the east lies Lawrence Weston Road, and the wider commercial/industrial area of Avonmouth including Macfarlane Packaging Bristol, Yankee Candle Official and Elemis.
South	Avonmouth HRRC, followed by the site's access road and Avonmouth Sewage Treatment Works.
West	Immediately to the west lies a surface water ditch, followed by open ground and several surface water features, including a lake. Beyond this lies industrial/commercial premises and the Severn Estuary.

The surrounding land use within a 1km radius of the site is described in detail further below.

4.3.1 Industrial/Commercial Premises

The area surrounding the site predominantly consists of industrial/commercial premises. The closest are as follows:

- North: Clinipower Avonmouth LLP Waste Facility (adjacent);
- East: Yankee Candle Official (40m);
- West: DVSA, Avonmouth Bristol (300m); and
- South: Avonmouth HRRC (adjacent).

4.3.2 Residential Properties

The only residential properties within a 1km radius of the site are located at an extended distance of approximately 980m south of the EP boundary.

4.3.3 Sewage Works

Avonmouth Sewage Treatment Works is located approximately 10m from the site's southern boundary.

4.3.4 Local Transport Network

The site is bounded to the south by the site's access road which joins to Kings Weston Lane approximately 540m to the south west and Lawrence Weston Road which runs adjacent to the site's north eastern boundary. The M49 runs in an approximately north/south direction approximately 740m south east of the site.

The railway line is situated approximately 570m north east.

The local transport network is illustrated further on Drawing 002.

4.3.5 Surface Water Features

Surface water ditches lie adjacent to the site's north eastern and south western boundary. Several ponds/lakes are located approximately 40m to the west at their closest and the Severn Estuary is located approximately 1,450m from the site's western boundary.

4.3.6 Open Ground

Areas of open ground are found on all sides of the site. The closest areas are located adjacent to the sites northern boundary.

4.3.7 Solar Farm

A solar farm is situated approximately 760m south east. A second solar farm lies approximately 920m in the same direction.

4.4 Geology

A review of the British Geological Survey (BGS)[2] map reveals that the site is underlain by a bedrock of Mercia Mudstone Group – Mudstone and Halite-stone. Sedimentary bedrock formed between 252.2 and 201.3 million years ago during the Triassic period.

The superficial geology consists of Tidal Flat Deposits – Clay and Silt. Sedimentary superficial deposit formed between 11.8 thousand years ago and present during the quaternary period.

4.5 Hydrogeology

4.5.1 Aquifer Designations

The bedrock geology is classified as a Secondary (B) Aquifer on the Multi-Agency Information for the Countryside (MAGIC)[3] website. These are described by the EA as "predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering".

The superficial geology beneath the site is classified by the EA as Unproductive Strata.

4.5.2 Source Protection Zones

The site is not situated within a groundwater source protection zone (SPZ).

---

[2] British Geological Survey Geology Viewer – Available at: https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/ , accessed March 2023
[3] Multi-Agency Information for the Countryside – Available at: http://magic.gov.uk, accessed March 2023

4.6 Hydrology

The main surface water features in the area are represented by a series of parallel rhines which collect water across the typically flat-lying surrounding area and channel it in a north westerly direction toward the Severn Estuary. The site is broadly equidistant between the Mere Bank Rhine, approximately 200m to the south west, and the Salt Marsh Rhine, approximately 200m to the north east. Both of these arterial rhines (Mere Bank and Salt Marsh) run in a north westerly direction and are fed by a complex network of smaller rhines, most of which are parallel or perpendicular.

The closest rhine (and hence closest surface water course) to the site is located immediately beyond the northern boundary. Walkover inspection of this rhine recorded imperceptibility slow flows and high-density of duckweed on the surface of the water.

The Groundwater Vulnerability layer on the MAGIC map reveals the site lies within an area known for groundwater vulnerability classified as low.

4.6.1 Flooding

EA mapping[4] indicates that the majority of the site is located within flood zones 1 and 2, with a low probability and medium probability of flooding respectively. Land in flood zone 1 in any year has less than a 0.1% chance of flooding from rivers or the sea, and flood zone 2 in any year has between a 1% and 0.1% chance of flooding from rivers and between a 0.5% and 0.1% chance of flooding from the sea.

Limited areas of the site are situated within flood zone 3 and have a high probability of flooding meaning in any year land has a 1% or more chance of flooding from rivers, or a 0.5% or more chance of flooding from the sea. The area does benefit from flood defences.

4.7 Ecology

The following information has been assessed in order to determine the ecological site setting:

- MAGIC website[5]; and
- EA Nature and Heritage Conservation Screening provided as part of enhanced pre-application advice.

4.7.1 Multi-Designated Site

The Severn Estuary is located approximately, 1,450m west of the site's boundary. The area is designated as follows:

- Ramsar;
- Site of Special Scientific Interest (SSSI);
- Special Protection Are (SPA); and
- Special Area of Conservation (SAC).

4.7.2 Local Nature Reserve

The Lawrence Western Moor Local Nature Reserve is located approximately 1,200m south east of the site's boundary.

[4] Flood Map for Planning – Available at: https://flood-map-for-planning.service.gov.uk/, accessed January 2023
[5] Multi-Agency Information for the Countryside – Available at: http://magic.gov.uk, accessed January 2023.

4.7.3 Local Wildlife Sites (LWS)

The Nature and Heritage Conservation screening provided as part of the EA's enhanced pre-application advice, identified the following LWS:

- Avonmouth Sewage Works and Hoar Gout: located approximately 10m from the site's western EP boundary at its' closest; and
- Lawrence Weston Road Rhines: situated adjacent to the site's eastern EP boundary.

4.7.4 Protected Species

The European Water Vole was identified during the EA's Nature and Heritage Conservation screening provided as part of the enhanced pre-application advice.

4.7.5 Protected Habitats

Coastal floodplain grazing marsh protected habitat has been identified to the south and east of the site.

The searches confirmed that there are none of the following within the 2km:

- Areas of Natural Beauty;
- National Nature Reserves; and
- National Parks.

4.8 Cultural and Heritage

The review of MAGIC revealed that there four listed buildings within 2km of the site's boundary as illustrated on Drawing 003, and described as follows:

- Grade II listed 'Wellington Farmhouse', lies approximately 1,460m east;
- Grade II listed 'Hallen War Memorial' is located approximately 1,670m east;
- Grade II listed 'Cambell's Farm and Attached Garden Wall and Railings' is situated approximately 1,700m south; and
- Grade II listed 'Perimeter Wall of Friends Burial Ground' lies approximately 1,880m south.

Two scheduled monuments are found within 2km of the site's boundary:

- The Mere Bank and Flanking Ditches are located approximately 360m south west.
- The Heavy Anti-aircraft Battery 520m east of Holes Mouth lies approximately 1,150m north west

The search on MAGIC confirmed that the following features do not lie within 2km of the site:

- World Heritage Sites;
- Registered Battlefields; and
- Registered Parks and Gardens.

4.9 Receptors

Table 4-2 and Drawings 002 and 003 identify the receptors which are considered to be potentially sensitive and could reasonably be affected by activities at the site.

Table 4-2
Identified Receptors

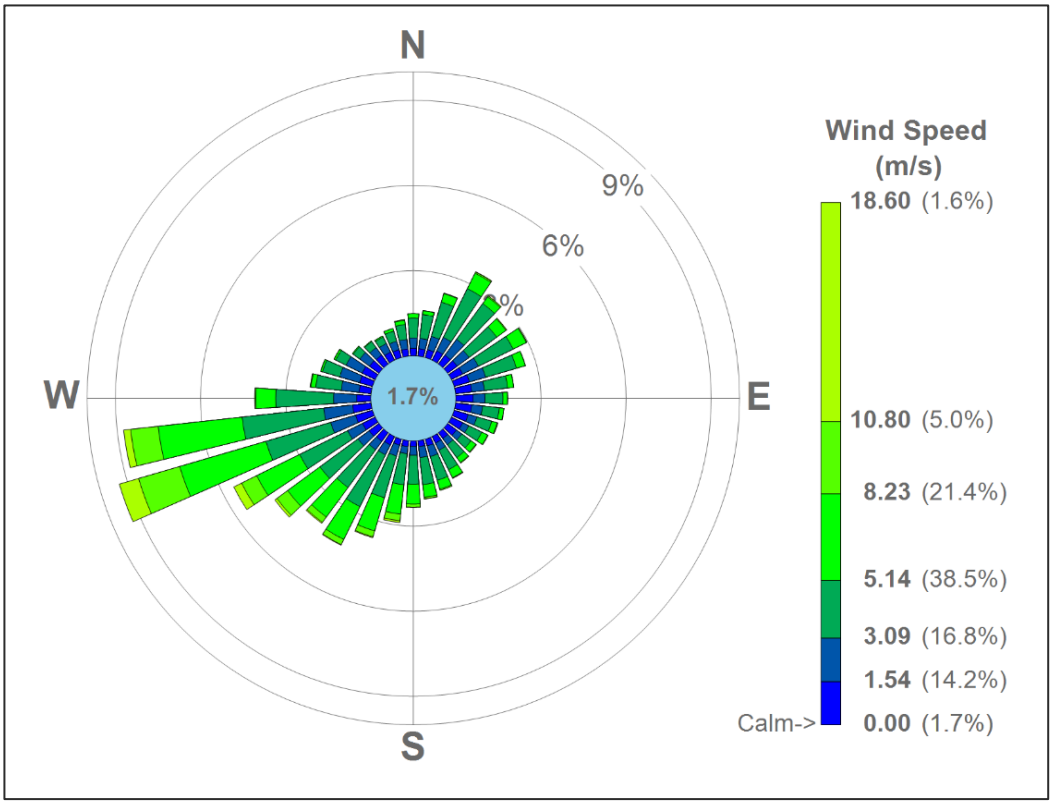
Receptor Name	Receptor Type	Direction from Site	Approximate Distance from Site Boundary (in metres)
Local receptors within 1km and ecological, cultural and natural heritage receptors located within 2km of the EP boundary as shown on Drawings 002 and 003.			
Secondary (B) Aquifer	Secondary Aquifer	N/A	N/A
European Water Vole	Protected Species	N/A	N/A
Avonmouth HRRC	**Industrial/Commercial**	**South and east**	**Adjacent**
Clinipower Avonmouth LLP Waste Facility	Industrial/Commercial	North	Adjacent
Unnamed Road	Local Transport Network	Southeast	Adjacent
Lawrence Weston Road	**Local Transport Network**	**North east**	**Adjacent**
Surface Water Ditch	**Surface Water Feature**	**North east**	**Adjacent**
Surface Water Ditch	Surface Water Feature	South west	Adjacent
Open Ground	Open Ground	North	Adjacent
Rhine	Surface Water Feature	North	Adjacent
Lawrence Weston Road Rhines	**Local Wildlife Site**	**East**	**Adjacent**
Coastal and Floodplain Grazing Marsh	**Protected Habitats**	**East**	**Adjacent**
Avonmouth Sewage Treatment Works	Sewage Works	South	10m
Avonmouth Sewage Works and Hoar Goat	Local Wildlife Site	West	10m
Yankee Candle Official	**Industrial/Commercial**	**East**	**40m**
Ponds/Lakes	Surface Water Feature	West	40m
Avon & Somerset Police Workshop	Industrial/Commercial	North	110m
Merebank Road	Local Transport Network	North	180m
Mere Bank Rhine	Surface Water Feature	South west	200m
Salt Marsh Rhine	**Surface Water Feature**	**North east**	**200m**
DVSA, Avonmouth, Bristol	Industrial/Commercial	West	300m

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from Site Boundary (in metres)
The Mere Bank and Flanking Ditches	Scheduled Monument	South west	360m
Kings Weston Lane	Local Transport Network	South west	540m
Railway Line	**Local Transport Network**	**North east**	**570m**
M49	**Local Transport Network**	**South east**	**740m**
Solar Farm	**Solar Farm**	**South east**	**760m**
Solar Farm	**Solar Farm**	**South east**	**920m**
Residential Properties	Residential Properties	South	980m
The Heavy Anti-aircraft Battery 520m East of Holes Mouth	Scheduled Monument	North west	1,140m
Lawrence Western Moor	**Local Nature Reserve**	**South east**	**1,200**
Severn Estuary	Surface Water Feature, Ramsar, SSSI, SPA, and SAC	West	1,450m
Wellington Farmhouse	**Listed Building**	**East**	**1,460m**
Hallen War Memorial	**Listed Building**	**East**	**1,670m**
Campbell's Farm and Attached Garden Wall and Railings	Grade II Listed Building	South	1,700m
Perimeter Wall of Friends Burial Ground	Grade II Listed Building	South	1,880m

4.10 Windrose

Figure 4-1 shows the average wind patterns from 2012-2016 as identified by the Filton meteorological station. The most prominent wind direction is from the west and southwest to the east and northeast. Winds from the north, east and south are relatively infrequent. Receptors highlighted in bold in Table 4-2 above are likely to be affected in the event of a fire as they are located in the path of the prevailing wind (from the west and southwest).

Figure 4-1
Filton Meteorological Station (2012-2016 Average)



5.0 Manage Common Causes of Fire

5.1 Arson

The site benefits from the following security measures in place to limit the likelihood of arson or vandalism:

- The site is surrounded on all sides by a minimum of 2m high fencing;
- Steel-framed gates of a similar height are provided at the site entrance and locked at all times when the site is unattended;
- CCTV covers operational areas close to the site entrance;
- Comprehensive lighting system to illuminate all operational areas;
- The administrative building is alarmed. If the alarm were to be activated, Bristol City Council control room would be alerted;
- Inspection and maintenance procedures; and
- A visitor sign in system.

No one is allowed to enter the operational areas of the site unless on official business or accompanied by site management. All visitors to the site are required to register in the visitor's book and sign out again on exit to minimise the risk of unauthorised visitors being present on site.

The site's planning permission does not restrict the hours of operation, and waste management activities may therefore occur 24 hours a day, 7 days a week. However, it is Bristol Waste's policy that the site is operated and manned Monday to Sunday 5am to midnight.

CCTV covers operational areas, and the site entrance, and is monitored regularly by site operatives during operational hours. Outside of operational hours, the site is subject to a remotely controlled security system with alarms to provide protection during the unattended night period. In addition, a roving security patrol is contracted to visit the site in response to alarms being triggered. If a breach in security is detected site operatives/the security patrol would contact the Site Manager and the emergency services as appropriate, both inside and outside of operational hours.

The gates, fencing, and lighting are inspected daily by site personnel to assess their continuing integrity. If necessary, and as a minimum, temporary repairs will be carried out to fences and gates before the end of the working day to ensure that the site remains secure. Full repair or replacement as necessary will be affected within seven working days of the damage being detected. Any failure of the lighting system would be remediated within seven working days of its occurrence. The findings of the security checks, the details of any works necessary to remedy failings and the date of their completion will be recorded in the site diary.

In the event of a breach of security at the site, the cause will be investigated, and appropriate mitigation measures implemented. This will be recorded in the Site Diary. Records maintained will include inspections and maintenance of doors and locks, breaches of security, investigations and actions taken. Should additional security measures appear necessary these will be discussed in advance with the EA.

5.2 Plant and Equipment

Plant and equipment are maintained in accordance with the manufacturer's recommendations and Bristol Waste's maintenance procedure. All new plant on site is fitted with telematics, which automatically highlights any faults, and local suppression as part of the minimum design specifications.

Plant and equipment are operated in accordance with the manufacturer's instruction manuals. Instruction manuals for plant and equipment are held either on site or online if a hardcopy is not available from the manufacturer.

Induction training and refresher training is provided to staff in the safe operation of plant and equipment relevant to their role, in accordance with the Working Plan.

Inspection of plant and equipment is undertaken twice daily to check for faults and ensure appropriate safeguards are in place and recorded in the mobile plant defect book and the Site Diary. The procedure also covers general housekeeping and cleaning of plant and all equipment on site. In addition, plant and equipment will be visually inspected prior to every use to ensure it is fit for purpose.

In the event of a failure or suspected fault with an item of plant or piece of equipment, the operator will ensure that the equipment is shut off in a safe manner and not used until the equipment can be repaired or replaced.

Any mobile plant not in use or requiring maintenance is temporarily stored in the designated area of the site as illustrated on Drawing 004 and 005.

5.2.1 Current Site

Mobile plant

The following items of mobile plant are currently held on site:

- RCVs/RRVs;
- Street cleaning caged vans/tippers/Sweepers;
- Other HGVs;
- Mobile tele-handler;
- Mobile front end loading shovel;
- 360 degree material handlers;
- Forklift trucks;
- Waste shredder;
- Bergmann Roll packer; and
- Mobile picking line.

Additional plant and equipment including, but not limited to, water bowser, and spray equipment are made available as required.

All mobile plant is fitted with fire extinguishers.

The mobile plant present on site during the construction phase will be the same as the current plant and equipment on site.

5.2.2 Redeveloped WTS Site

Fixed Equipment

The following fixed equipment will be present at the redeveloped WTS site:

- Waste materials sorting and picking line;
- Baler.

Mobile plant

There will be no change to the mobile plant located on site as a result of the redevelopment of the WTS. The quantity of each item of mobile plant will increase to meet demand, as required.

In summary, the following provisions are implemented:

- Plant maintenance schedules using the manufacturer's recommendations;
- Pre-use checks prior to using any plant or equipment;
- Reporting of defects and actions taken based on priorities;
- Daily cleaning to remove any dust build up from vulnerable areas;
- All vehicles onsite are fitted with portable fire extinguishers; and
- Mobile plant is kept away from combustible waste. This is achieved by allocating areas for mobile plant for storage when not in use as illustrated on Drawing 004 and 005.

5.3 Electrical Faults

5.3.1 Electrics certification

All electrics on site will continue to be fully certified by a qualified electrician and a record of the certification will be kept.

5.3.2 Electrical equipment maintenance arrangements

Regular safety inspections will continue to be carried out by a qualified electrician to ensure risks are minimised. Electrical equipment will continue to be regularly inspected prior to every use to ensure it is free from obvious damage and that it is fit for purpose. Regular safety checks and daily site inspections are recorded in the Site Diary. All building electrics are fully certified by a qualified electrician.

Annual PAT testing of any on site portable electrical appliances is carried out.

5.4 Discarded Smoking Materials

A designated smoking shelter is provided adjacent to the office building. The shelter is located a minimum of 6m from any combustible waste. No smoking outside of the designated shelter is permitted on site.

5.5 Hot Works Safe Working Practices

Bristol Waste operates a permit to work system which includes a 60 minute fire watch by a competent person at the end of the works. No hot works are undertaken by staff unless they are trained and have the relevant permit to work. The template hot works permit is included as Appendix 01.

Any works conducted outside of dedicated workshops takes place in a cleared area of the site at least 6m from any combustible wastes. A site operative performs a continuous fire watch during the hot work and for a minimum of 60 minutes after the work is completed.

5.6 Industrial Heaters

No portable heaters are utilised on site. Wall mounted convection heaters, however, are provided in the office and welfare areas. The Site Management ensure that the heater is switched off when an area is not in use.

5.7 Hot Exhausts and Engine Parts

Vehicles are turned off when not in use. Consideration is given to the high-risk time for hot exhausts (one hour after switching off when dust can settle on hot surfaces) and wherever possible vehicles are given time to cool down prior to site staff leaving site at the end of a shift.

Vehicle operatives conduct an inspection of each vehicle twice a day and record any findings in the mobile plant defect book. Operatives check the cleanliness of the plant paying particular attention to any build up of dust or waste around the engine and exhaust.

Bristol Waste staff parking is located in the western part of the site as illustrated on Drawing 004 and 005.

5.7.1 Fire Watch Procedures

A 1 hour fire watch is undertaken at the end of every shift where all mobile plant is switched off and exhausts are checked to ensure they are cool and that no dust has settled. Where possible, mobile and static plant are switched off at least 30 minutes before the last person leaves site and the site manager ensures that an inspection of all waste storage areas is undertaken looking for any signs of fire.

5.8 Ignition Sources

Potential ignition sources include hot exhausts and engine parts, heaters and hot works (all described above). All ignition sources will be kept a minimum of 6m away from the storage of combustible and flammable wastes. No naked lights will be permitted on site.

5.9 Batteries

The site is permitted to accept, segregate and store waste batteries. At the weighbridge all wastes undergo visual inspection by a site operative to confirm its description and composition against the relevant accompanying documentation. Should waste batteries be identified within the waste stream during visual inspection they will be removed and placed in a designated area illustrated on Drawing 004. Batteries will be stored in appropriate covered weatherproof containers to prevent them from coming into contact with any liquids and from being damaged.

5.10 Leaks and Spillages of Oils and Fuels

Plant and equipment are maintained to a high standard in accordance with the manufacturer's recommendations. All mobile plant is inspected twice daily to identify potential defects that could lead to a leakage of fuel across the site. Vehicle operatives record any findings and actions in the mobile plant defect book and Site Diary.

Inspection of any spillages or leaks from containment will be completed at least daily by site operatives. The results of all daily and weekly monitoring will be recorded in the Site Diary, as well as any remedial actions.

In the event of any potentially polluting leak or spillage occurring on site the protocol found within the following actions will be taken:

- Minor spillages will be cleaned up immediately, using sand or proprietary absorbent. The resultant materials will be placed into containers and will then be removed from site and disposed of at a suitably permitted facility. The incident will be logged in the site diary.
- Any dry wastes spilled on site will be collected and transported to the appropriate area of the site.
- In the event of a major spillage, which is causing or is likely to cause polluting emissions to the environment, immediate action will be taken to contain the spillage and prevent liquid from flowing

outside the EP boundary. The spillage will be cleared immediately and placed in containers for offsite disposal, and the EA will be informed.

All staff are trained and will implement the spill emergency plan in the event of spillage or leak on site.

5.11 Build-up of Loose Combustible Waste, Dust and Fluff

The risk of the build-up of combustible waste, dust and fluff is low due to the following measures implemented on site:

- The site will be operated in accordance with the Dust Management Plan (DEMP) (Ref: 402.V54839.0001/DEMP);
- All incoming waste is offloaded in close proximity to the storage areas to minimise unnecessary handling and transport distance therefore minimising the potential for wind-borne dust;
- All plant and equipment are subject to a programme of planned preventative maintenance which follows the inspection and maintenance schedule recommended by the manufacturer and Bristol Waste's maintenance procedure. This will include corrosion prevention where applicable;
- The site benefits from good housekeeping and all areas are cleaned on a daily basis. Waste storage areas are inspected on a weekly basis by the Site Supervisor and cleaned as necessary. The tipping of waste within the buildings is carried out in such a way that ensures all sections of the operational area are cleared completely at least once a fortnight. The cleared areas are swept clean and washed down as necessary;
- Site access roads and operational areas are maintained and swept regularly to reduce dust generation; and
- Daily visual inspection of the site and site boundary is carried out by site personnel.

Bristol Waste adopt good housekeeping measures on site.

5.12 Reactions Between Wastes

The site does not accept waste types which are potentially incompatible with each other. To ensure that incompatible materials are not received on site, the site implements strict waste acceptance procedures to check that the waste received matches the information provided during waste pre-acceptance. This will ensure the waste is as expected and that it can be accepted at the site. All vehicles bringing waste materials to the site report to the weighbridge or site office. All wastes will undergo a visual inspection to confirm its description and composition against the relevant accompanying documentation. Any non-conforming waste that is received, will either be removed to the designated quarantine area, or the driver will be required to return the material to the supplier. The site will have procedures for dealing with non-conforming waste including the maximum storage time for waste in the area.

Tanks containing fuel are constructed so that any leaks/spillages are contained. Tanks are surrounded by a leakage containment bund capable of containing at least 110% of the volume of the largest tank within the bund. Bunds are impermeable and resistant to stored materials.

5.13 Waste Acceptance and Deposited Hot Loads

No burning, reactive / reacting or visibly hot (producing steam or heat) loads are accepted on site. In accordance with the site's Waste Acceptance Procedure, each load is visually inspected upon receipt at the weighbridge to ensure compatibility with accompanying delivery notes, therefore minimising prohibited wastes and the acceptance of hot loads.

Instructions are given to suppliers to ensure no hot loads are accepted on site.

Should a hot load be deposited on site, it will immediately be removed to the dedicated quarantine area and extinguished immediately using a fire extinguisher. Any fire damaged waste will be removed from site the same day to a suitably licenced facility for disposal.

5.14 Hot and Dry Weather

During periods of extreme hot weather (defined as temperatures higher than 25°C on two consecutive days) the following actions will be carried out:

- Concentrated beams of sunlight or glare reflected onto stockpiles through surfaces will be minimised;
- Bales will be dampened by spraying with water to reduce the risk of ignition;
- Visual inspections of waste storage areas will be increased to four times per shift.

6.0 Prevent Self-Combustion

6.1 General Self-Combustion measures

Self-combustion of waste on site is not considered to be a significant risk due to effective stock management, the short storage times and because waste is segregated into dedicated storage areas. As such, the site has waste acceptance and stock management procedures which are upheld by all employees at the site.

The controls in place to reduce the risk from fire are summarised as follows:

- All deliveries are checked upon receipt at the weighbridge. Checks include both the paperwork and the full contents of the load. If the waste is found not to conform it will either be removed to the quarantine area or the driver will be required to return the material to the supplier;
- No loads are removed without an onsite operative in supervision;
- A visual fire watch is performed as the loads are received and unloaded;
- A quarantine area is kept available; and
- Waste is handled in accordance with a safe system of work. On site personnel will be instructed and trained on the safe system of work.

Unacceptable waste moved to the quarantine area is removed from the site to an alternative suitably permitted facility within a maximum of 5 days, but usually 48 hours.

Only wastes included in the EP are accepted at the site.

Non-waste materials that pose a risk of self-combustion are stored as indicated in Table 2-1.

6.2 Manage Storage Time

Bristol Waste implement stock management procedures which are effective in limiting the likelihood of self-combustion of materials stored on site. Under normal operating conditions putrescible waste is typically transported offsite within 48 hours of receipt, and for non-putrescible wastes within 2-6 weeks (see table 7-1 below). Over the weekends putrescible waste may be retained at the site for a longer period (typically 72 hours). During bank holiday weekends waste may be retained at the site for up to 96 hours.

Furthermore, the site will continue to adopt and implement a first in, first out system.

6.2.1 Method Used to Record and Manage the Storage of all Waste on Site

Drivers are required to weigh-in and weigh-out their loads at the site weighbridge. The weighbridge operator will inspect the waste, check delivery notes and/or duty of care transfer notes to ensure the wastes conform, and issue weighbridge tickets. In addition, the vehicle will be assessed to ensure that it is in a safe condition and unlikely to leak or spill contents. Any inadequacies are recorded and reported to the Site Manager, with the driver advised accordingly.

The site benefits from an electronic system which operates as the waste inventory and stock control system and includes the following information as a minimum:

- The date the waste arrived on site;
- The original producer's details (or unique identifier);
- A unique reference number;
- Waste pre-acceptance and acceptance information;
- The package type and size;
- The intended treatment or disposal route;
- The nature and quantity of wastes held on site;
- Where the waste is physically located on site;
- Where the waste is in the designated recovery process;
- The staff who have taken any decisions about accepting or rejecting waste streams and who have decided on recovery or disposal options;
- Details that link waste to relevant transfer notes; and
- Details of any non-conformances and rejections, including consignment notes for waste rejected because it is hazardous.

Suitably qualified site personnel will carry out daily checks of the site to identify the risks and inspect storage areas and stack height. This ensures that the site does not reach a level of overcapacity in respect to storage.

6.2.2 Stock Rotation Policy

Arrangements on site ensure a 'first in first out' approach is adopted so that storage of waste does not exceed the prescribed duration. The Site Management is responsible for stock rotation on site and ensures that waste with the earliest storage dates is processed first and removed from site first. This is managed via the waste inventory system.

6.3 Monitor and Control Temperature

6.3.1 Reduce the Exposed Metal Content and Proportion of Fines

Strict waste acceptance checks are carried out to ensure that only permitted waste is allowed to be accepted on site. Loads are visually inspected upon arrival. Any loads found to be contaminated will either be moved to the quarantine area prior to removal from site, or the driver will be required to return the material to the supplier.

The proportion of metal 'fines' within the waste is not considered to contribute to the risk of self-combustion. Segregated household and commercial waste is not known to have a high 'fines' content that would require management.

6.3.2 Monitoring Temperature

The site's current operational hours are Monday to Sunday 5am to midnight, during which the site is continually manned. Site operatives are asked to remain vigilant at all times and look out for signs of fire. Staff are trained in how to identify fires and fire hazards on site. Staff also receive training on the use and selection of fire extinguishers, site evacuation and shut down procedures, fire safety, and all relevant emergency procedures.

On a daily basis, at least twice per shift, during operational hours, site operatives visually inspect the storage areas for any anomalies, such as visual signs of heat, steam or vapour. Anomalies are actioned immediately by investigation and remedial action will be taken such as rotation of the waste within the storage area or removal of heated waste, which will be put in the quarantine area for assessment.

There is no temperature monitoring undertaken on site due to the short storage times and very low risk of self-heating.

6.3.3 Controlling Temperature

The following actions are taken to control temperature, reduce the risk of hot spots, and to minimise the risk of self-combustion within waste storage areas:

- Waste storage times are minimised by using a first-in-first-out principle and all waste is typically stored for a maximum of 48 hours under normal operating conditions before removal from site;
- Bays are sized according to the minimum required for operational efficiency;
- The waste tracking system allows real time management of waste storage times and will be used daily to assess the quantity of waste awaiting treatment and the amount due to be removed from site;
- Hotspots will be detected and controlled by twice per shift visual inspection during operational hours; and
- Waste is regularly moved, processed and removed from site within 48 hours under normal operating conditions. Therefore, due to the nature of the operations on site, waste is routinely turned releasing any heat generated within a pile.

6.3.4 Dealing with Hot Weather and Heating from Sunlight

Please see Section 5.14 above for the measures that will be taken during periods of extreme hot weather.

6.4 Waste Bale Storage

All bales of waste steel cans, aluminium cans, cardboard and plastic are stored and will continue to be stored for a maximum of 4 weeks under normal operating conditions. Therefore, a sampling and testing protocol for temperatures within the bales is not required due to the short storage times.

The actions described in Section 6.3 above will be carried out for the monitoring and management of temperature in the baled waste storage areas.

7.0 Manage Waste Piles

7.1 Maximum Pile Sizes for the Waste on Site

All incoming waste will consist of household, and commercial waste. Waste storage areas are illustrated on Drawings 004 and 005.

7.1.1 Current Site

The current site's waste storage areas are described in Table 7-1 below and illustrated on Drawing 005. Non-combustible material types are shaded grey in the table below and are included for completeness but are not subject to the FPP guidance requirements.

Table 7-1
Current Storage Areas: Waste Types and Dimensions

Waste Received	Maximum Storage Time	Length (m)	Width (m)	Height (m)	Maximum Volume (m^3)
Waste Transfer Building					
Black Bag Waste Bay x 2 bays	Usually 24 hours ,96 hours over bank holidays	11.9	8	3	285.6
Food Bay	Usually 24 hours ,96 hours over bank holidays	11.9	3	3	107.1
Bulky Waste Bay/POPs	1 week	5.8	10	3	174
Paper Bay	1 week	5.8	10	3	174
General Waste (for disposal)	1 week	5.8	10	3	174
External Waste Storage					
Wood Bay	2 weeks	13.3	12.7	3	318[6]
Mattresses Bay	2 weeks	10	7	3	210
Flock Bay 1	2 weeks	8	6.2	3	148.8
Flock Bay 2	2 weeks	8	6.2	3	148.8
Plastics Bay	2 weeks	7.7	6.2	3	143.2
Green Waste Bay	2 weeks	6.3	5.2	3	98.28
Glass Bay	2 weeks	6.3	4	3	75.6
Hardcore Bay	2 weeks	7	6.3	3	132.3
Cardboard Bay	2 weeks	12.5	6.3	3	236.2
General Waste Bay	2 weeks	17	6.3	3	318[7]
General Waste after Picking Bay	2 weeks	6.2	4.7	3	87.42
Metal Bay	2 weeks	6.2	4.7	3	87.42

[6] A line will be painted on the floor of the wood bay to indicate a maximum storage volume of 318m^3.
[7] Volume calculated based on a truncated rectangular pyramid.

Waste Received	Maximum Storage Time	Length (m)	Width (m)	Height (m)	Maximum Volume (m^3)
Carpet Bay	2 weeks	5.3	6.3	3	100.17
Fridges, Tyres (stored in designated containers) and Plasterboard (stored in designated containers)	2 weeks	13.9	6	3	250.2

7.1.2 Redeveloped WTS Site

The redeveloped site's waste storage areas are described in Table 7-2 below and illustrated on Drawing 004. The redeveloped site consists of a new WPB for the storage of recyclables and a designated external bale storage area immediately to the south of the new building. There is no significant change proposed to the existing WTB, or external storage bays, but these sections have been reproduced in Table 7-2 below for completeness. As above non-combustible material types are shaded grey in the table below and are included for completeness but are not subject to the FPP guidance requirements.

Table 7-2
Redeveloped WTS Storage Areas: Waste Types and Dimensions

Waste Received	Maximum Storage Time	Length (m)	Width (m)	Height (m)	Maximum Volume (m^3)
New Waste Processing Building					
DMR	2 weeks	10.7	6.1	3	167
Baled Cardboard Storage Bay	2 weeks	10.7	6.1	3	167
Cardboard Storage Bay	1 week	10.7	6.1	3	167
Cans Storage Bay	2 weeks	10.7	6.1	3	167
Plastics Storage Bay	2 weeks	10.7	6.1	3	167
Existing Waste Transfer Building					
Black Bag Waste Bay x 2 bays	Usually 24 hours ,96 hours over bank holidays	11.9	8	3	285.6
Food Bay	Usually 24 hours ,96 hours over bank holidays	11.9	3	3	107.1
Bulky Waste Bay/ POPS	1 week	5.8	10	3	174
Paper Bay	1 week	5.8	10	3	174
General waste (for disposal)	1 week	5.8	10	3	174
New External Bale Storage Area					

Waste Received	Maximum Storage Time	Length (m)	Width (m)	Height (m)	Maximum Volume (m^3)
Baled Cans and Plastic Storage Area x 2	2 weeks	13	10	2.4	312
Overflow Bale Storage Area	2 weeks	14.4	7.1	2.4	245
Food Storage Containers x 2	Usually 24 hours, 96 hours over bank holidays	6.1	2.4	2.6	38
AHP Storage Containers x 2	72 hours	6.1	2.4	2.6	38
External Waste Storage					
Wood Bay	2 weeks	13.3	12.7	3	318[8]
Mattresses Bay	2 weeks	17.2	12.7	3	210
Flock Bay 1	2 weeks	8	6.2	3	148.8
Flock Bay 2	2 weeks	8	6.2	3	148.8
Plastics Bay	2 weeks	7.7	6.2	3	143.2
Green Waste Bay	2 weeks	6.3	5.2	3	98.28
Glass Bay	2 weeks	6.3	4	3	75.6
Hardcore Bay	2 weeks	7	6.3	3	132.3
Cardboard Bay	2 weeks	12.5	6.3	3	236.2
General Waste Bay	2 weeks	17	6.3	3	318[7]
General Waste after Picking Bay	2 weeks	6.2	4.7	3	87.42
Metal Bay	2 weeks	6.2	4.7	3	87.42
Carpet Bay	2 weeks	5.3	6.3	3	100.17
Fridges, (stored in designated containers) and Plasterboard (stored in designated containers)	2 weeks	13.9	6	3	250.2
WEEE	2 weeks	1.5	1.5	1.5	3.375
Auto Batteries	2 weeks	1	1	1	1
Dry Cell Batteries	2 weeks	1	1	1	1
Waste Oil	2 weeks	1.5	1	1	1.5
Textiles	2 weeks	1.5	1.5	1.5	3.375
Spectacles	2 weeks	1	1	1	1

[8] A line will be painted on the floor of the wood bay to indicate a maximum storage volume of 318m^3.

7.1.3 Construction Phase

The waste storage areas during the construction phase of the site are described in Table 7-3 below and illustrated on Drawing 005. During the construction phase, the area immediately to the south of the proposed WPB will consist of containers for the storage and bulking up of wastes including compost, tyres, and plasterboard. There will be no change to the existing WTB or external storage bays during the construction of the redeveloped site. As above non-combustible material types are shaded grey in the table below and are included for completeness but are not subject to the FPP guidance requirements.

Table 7-3
Construction Phase Storage Areas: Waste Types and Dimensions

Waste Received	Maximum Storage Time	Length (m)	Width (m)	Height (m)	Maximum Volume (m^3)
Existing Waste Transfer Building					
Black Bag Waste Bay x 2 bays	Usually 24 hours ,96 hours over bank holidays	11.9	8	3	285.6
Food Bay	Usually 24 hours ,96 hours over bank holidays	11.9	3	3	107.1
Bulky Waste Bay/POPs	1 week	5.8	10	3	174
Paper Bay	1 week	5.8	10	3	174
General Waste (for disposal)	1 week	5.8	10	3	174
External Waste Storage					
Wood Bay	2 weeks	13.3	12.7	3	318[9]
Mattresses Bay	2 weeks	17.2	12.7	3	210
Flock Bay 1	2 weeks	8	6.2	3	148.8
Flock Bay 2	2 weeks	8	6.2	3	148.8
Plastics Bay	2 weeks	7.7	6.2	3	143.2
Green Waste Bay	2 weeks	6.3	5.2	3	98.28
Glass Bay	2 weeks	6.3	4	3	75.6
Hardcore Bay	2 weeks	7	6.3	3	132.3
Cardboard Bay	2 weeks	12.5	6.3	3	236.2
General Waste Bay	2 weeks	17	6.3	3	318[7]
General Waste after Picking Bay	2 weeks	6.2	4.7	3	87.42
Metal Bay	2 weeks	6.2	4.7	3	87.42

[9] A line will be painted on the floor of the wood bay to indicate a maximum storage volume of 318m^3.

Waste Received	Maximum Storage Time	Length (m)	Width (m)	Height (m)	Maximum Volume (m^3)
Carpet Bay	2 weeks	5.3	6.3	3	100.17
Fridges, (stored in designated containers) and Plasterboard (stored in designated containers)	2 weeks	13.9	6	3	250.2
External Container Storage Area					
Tyre Containers x 3	2 weeks	6.1	2.4	2.6	38
Compost Container	2 weeks	6.1	2.4	2.6	38
Plasterboard Container	2 weeks	6.1	2.4	2.6	38

7.2 Storing Waste Materials in their Largest Form

Waste is stored on site in its largest form before processing. Waste treatment activities on site will continue to consist of manual and mechanical sorting and separation, crushing, compacting, baling, bulking and shredding of waste into different components for disposal or further recovery.

Once processed, under normal operating conditions putrescible waste will continue be removed from site within 48 hours. Over the weekend waste may be retained at the site for a longer period (typically 72-hours). During bank holiday weekends waste may be retained at the site for up to 96-hours. Other non-putrescible waste storage times are as described above, in Tables 7-1, 7-2, and 7-3.

8.0 Waste Stored in Containers

8.1 Types of Containers you are Using

8.1.1 Current Site and Redeveloped WTS Site

On both the current site and following the redevelopment, the following containers will be present on site as illustrated on Drawings 004 and 005:

- 40 yard containers;
- 1 cubic metre container; and
- 4 cubic metre container.

8.1.2 Construction Phase

During the construction phase of the site, the area immediately to the south of the proposed waste processing building will consist of 40 yard Ro-Ro containers for the storage and bulking up of wastes including compost, tyres, plasterboard as illustrated on Drawing 005.

8.2 Accessibility of Containers

All containers currently on site, during the construction phase, and at the redeveloped WTS will continue to be accessible from more than one side so a fire could be quickly extinguished.

8.3 Moving Containers in a Fire

In the event of a fire, the site's ability to move containers quickly would be utilised to reduce the risk of fire spread. The affected container would be moved immediately by site operatives, qualified in the operation of the mobile plant, to the quarantine area.

9.0 Prevent Fire Spreading

9.1 Separation Distances

Waste is currently stored within the designated storage areas as illustrated on Drawing 005. During the construction phase of the site waste will be stored as illustrated on Drawing 005, and Drawing 004 shows the designated waste storage areas at the redeveloped site. Separation distances during all phases of the site will be reduced due to the fire wall construction as detailed below in section 9.2. Where there is no segregation provided by a firewall, the waste will be at least 6m from the perimeter, buildings and other combustible or flammable materials.

9.2 Fire Walls Construction Standards

The bay walls are, and will continue to be constructed from Legioblock, Alpha blocks and L-shaped walls and have the fire resistance properties shown below:

- Have a fire resistance period of at least 4 hours;
- Class A1 fire resistance in accordance with clause 4.3.4.4 of BS EN 13369;
- Walls have a designed work life of 50 years as defined in BS EN 1990:2002;
- Bay walls are 3m within the WTB and the external waste storage area and are 4m within the WPB;
- Are a minimum of 0.8m thick; and
- Have no joints that require sealing.

The proposed walls are detailed in Appendix 03.

9.3 Storing Waste in Bays

Tables 7-1, 7-2, and 7-3 show the maximum waste storage heights for the current site, proposed redeveloped site, and the construction phase of the site respectively. During all iterations of the site, the following measures will continue to be employed to minimise the risk of fire spreading:

- All waste will be processed on a first-in-first-out basis to keep storage times to a minimum;
- Storage times are kept to a minimum. Once processed, under normal operating conditions putrescible waste will continue be removed from site within 48 hours. Over the weekend waste may be retained at the site for a longer period (typically 72-hours). During bank holiday weekends waste may be retained at the site for up to 96-hours. Other non-putrescible waste storage times are as described above in Tables 7-1, 7-2, and 7-3;
- The specification and construction of the fire walls offers a thermal barrier exceeding 4 hours;
- The fire walls within the WPB benefit from a freeboard of 1m and open faces are located at least 6m from other sources of combustible materials to minimise the potential risk of lighted material igniting other wastes; and

- In the event of a fire occurring, a designated quarantine area will be used to segregate non-burning waste in order to isolate and minimise the potential impact of the incident.

10.0 Quarantine Area

10.1 Quarantine Area Location and Size

The location and size of the site's quarantine areas does not vary between the current site, redeveloped site, or during the construction phase.

During all iterations, the site will benefit from two quarantine areas which are used for both fire management, and non-conforming waste.

The location of the quarantine areas is illustrated on Drawings 004 and 005 and detailed in Table 10-1 below.

Table 10-1
Quarantine Area Dimensions

Quarantine Area	Primary Use	Length (m)	Width (m)	Height (m)	Volume (m^3)
Fire Prevention and Non-Conforming Waste	Dousing of burning/smouldering waste and/or separation of unburnt waste. Separation of non-conforming waste prior to removal from site.	10	5.5	3	165
Fire Prevention and Non-Conforming Waste	Dousing of burning/smouldering waste and/or separation of unburnt waste. Separation of non-conforming waste prior to removal from site.	10	5.5	3	165

Both quarantine areas have been sized to hold 50% of the largest waste bay, where the largest bay is the external general waste bay, and wood bay which has a maximum volume of 318m^3, and therefore the quarantine area can hold at least 159m^3 of waste. A 6m separation distance is maintained around all sides of the quarantine areas, at all times.

The placement of the quarantine areas is based on the following factors:

- It allows for the prompt and direct removal of smouldering, burning or fire damaged wastes from the waste storage and to allow access by the Fire & Rescue Service (FRS);
- Proximity to flammable liquids – the quarantine area is situated at least 6m from any potentially flammable liquids on site such as diesel tanks; and
- Firewater containment – any water used to extinguish a fire within waste moved to the area would be contained in line with the measures outlined in Section 15 below.

10.2 How to Use the Quarantine Area if there is a Fire

The Site Management will instruct all site operatives when and how the burnt/burning waste, or any hot loads delivered accidently to site, will be moved to the quarantine area. Both quarantine areas can be used to hold burning waste or unburnt waste. The following procedure will be implemented on site:

- When it is safe to do so, a loading shovel or 360 degree material handler will be used to move the waste to the quarantine area. The mobile plant is available at all times;
- The movement of the waste will be overseen at all times by the Site Management to minimise any spillages and ensure the area is not overfilled;
- To limit any spillages, plant will not be overfilled when moving the waste;
- If the waste is burning/smouldering it will be doused using the relevant fire extinguisher, a fire hose located on site connected to the mains, a fire hose supplied by the FRS or water pumped from the fire engine; and
- Burnt waste will be taken off site to a suitably permitted facility within 48 hours.

All site operatives will be trained to follow this FPP and all procedures listed in the above sections.

10.3 Procedure to Remove Material Stored Temporarily if there is a Fire

In the event of a fire, any non-compliant waste will be removed from the area within 1 hour and temporarily stored at least 6m from any other combustible material of ignition sources on site.

11.0 Detecting Fires

11.1 Detection Systems in Use

11.1.1 Current Site

The site is currently operational from Monday to Sunday between the hours of 5am and midnight. During this time the site is constantly manned by operatives who have been trained in the early detection and management of fires. Site operatives visually inspect the waste storage areas for any signs of anomalies, such as visual signs of heat, steam or vapour at least twice per shift to ensure the early detection of fires in waste storage areas. Anomalies are actioned immediately by investigation and remedial action will be taken such as rotation of the waste within the storage area or removal of heated waste, which will be put in the quarantine area for assessment. In addition, site operatives are asked to remain vigilant at all times and look out for signs of fire. Staff are trained in how to identify fires and fire hazards on site. Staff also receive training on the use and selection of fire extinguishers, site evacuation procedures, fire safety and all relevant emergency procedures.

In addition, fire detection cameras are mounted around the site and cover the waste transfer building, and external bays. The cameras are active 24 hours a day, and are monitored regularly by site operatives during operational hours. Outside of operational hours, the cameras are linked to a monitoring service, who would contact the FRS and Site Manager if a fire was detected.

11.1.2 Redeveloped WTS Site

The existing fire detection systems in place at the site will continue to be in place at the redeveloped site.

Visual inspections will be extended to include the waste storage areas within proposed waste processing building, and the external bale storage area.

In addition, Bristol Waste propose to install an accredited automatic fire detection and suppression system within the proposed new waste processing building.

The system will benefit from a camera detection system that will be able to detect flames/smoke/thermal activity. On detection of a fire, the on-site sound beacons will be activated along with the corresponding foam cannon automatic fire suppression system. The detection system will be connected to a monitoring service who

monitors the alarm 24 hours a day, 7 days a week, including outside of operational hours. On detection of a fire, the Site Manager and FRS will be contacted immediately.

In addition, manual call points will be installed throughout the building and the automatic detection system can be overridden remotely by site operatives.

Details of the proposed Fire Shield Systems automatic detection and suppression system are included as Appendix 02.

11.1.3 Construction Phase

During the construction phase, there would be no change to the existing fire detection system, as described in Section 11.1.1 above.

11.2 Certification for the Systems

The following aspects of the proposed detection system will be accredited to the following standards:

- Fire pumps to BSEN12845;
- Foam cannons to EN 13565-1, NFPA 850;
- Camera detection to BS 5839;
- Pipe work to LPCB, Vds & FM listed for fire protection.

12.0 Suppressing Fires

12.1 Suppression Systems in Use

12.1.1 Current Site

There is no automatic suppression system currently in place on the site. The site focuses on early detection and monitoring of waste piles to minimise the time it would take to extinguish a fire in the waste storage areas. This allows any potential fire to be detected and managed at the earliest possible stage, when on-site plant can be utilised to move material and isolate a fire so that it can be suppressed and extinguished quickly with extinguishers. The site's current detection system is described in Section 11.1.1 above.

The site is manned between the hours of 5am and midnight, from Monday to Sunday. Therefore, fires will be detected early by trained employees during these times. Outside of operational hours, the site's automatic camera detection system would detect a fire.

The local FRS will assume full control for the approach to suppression/extinguishing of any fire once it is in attendance at the site. The locations of all fire extinguishers are illustrated on Drawing 005. A range of extinguishers including foam, carbon dioxide, powder, water and lithium battery are provided across the site. Extinguishers are inspected on an annual basis.

12.1.2 Redeveloped WTS Site

In addition, to the existing manual fire suppression measures described above, the new waste processing building at the redeveloped site will benefit from an automatic suppression system. The suppression system will be integrated into the detection system and automatically activated if a fire is detected. The system can also be manually activated by site operatives.

The system consists of foam cannons which provide coverage of all waste storage and processing areas within the building. The cannons are supplied by the new water tank. The system allows any potential fire to be automatically detected and managed at the earliest possible stage.

Details of the proposed automatic suppression are included as Appendix 02.

12.1.3 Construction Phase

During the construction phase, there would be no change to the existing fire suppression system as described in Section 12.1.1 above.

12.2 Certification for the Systems

The following aspects of the proposed suppression system will be accredited to the following standards:

- Fire pumps to BSEN12845;
- Foam cannons to EN 13565-1, NFPA 850;
- Camera detection to BS 5839;
- Pipe work to LPCB, Vds & FM listed for fire protection.

13.0 Firefighting Techniques

13.1 Active Firefighting

13.1.1 Fire Extinguishers and Fire Hoses

The closest fire station is Seven Park FRS to the north west of the site. Using Google directions and mapping [10], the drive time is approximately 5 minutes and it is approximately 1.9 mile between the site and the fire station.

See section 12.1 for details on fire extinguishers and fire hoses, at the current site, redeveloped site, and during the construction phase. Fire extinguishers and/or hoses are to be used in the following circumstances:

- Where operators are trained in use, and if confident to tackle the fire; and
- On very small fires, or to facilitate own escape if trapped by fire.

13.1.2 Small Fire

A small fire or area of smouldering waste will be dealt with as follows:

- A fire or area of smouldering waste will not be dealt with in-situ, mobile plant will be utilised to pull the affected waste into the open and away from any further waste that could become a light on contact; and
- Depending on the size / nature of the fire the waste will either be:
    - Extinguished immediately[11] utilising the fire extinguishers or hoses; or
    - Moved to the appropriate quarantine area and extinguished[12].

Depending on the size, location and nature of the fire the burning waste will be pulled into the dedicated fire prevention quarantine area following the procedures detailed in Section 10.2.

[10] Google Maps, Accessed in October 2023
[11] Should a single item of the waste stream be alight, and the fire is well contained, then the waste will be doused via use of an extinguisher or fire hose as it is pulled from the waste pile. The burned / fire- damaged portion is then removed to the quarantine area and the remaining waste returned to the pile.
[12] If the fire is not easily contained to a single item, then the obviously alight portion of the waste will be removed to the quarantine area.

Once a small fire is dealt with the remaining area will be visually inspected immediately by site operatives for any signs that a fire / smouldering waste still remains. The same procedure, detailed in this Section, will be implemented should this be the case.

13.1.3 Uncontainable Small Fire or Large Fire

The following procedure is in place on site that will be followed in the event of a small fire becoming uncontainable or in the event of a major fire onsite;

- The Site Management and FRS will be contacted immediately. The EA will be notified at the first opportune moment.
- Following arrival of the FRS, all site staff will take instructions from the FRS which may include any of the following:
    - If possible, waste that is unburnt will be dampened down to prevent the fire from spreading further;
    - If possible, unburned material will be separated from the fire using heavy plant;
    - The burning area will be isolated, and attempts will be made to extinguish the fire utilising the onsite fire extinguishers if safe to do so; and
    - The site and buildings will be evacuated.

14.0 Water Supplies

14.1 Available Water Supply

14.1.1 Current Site

Immediately available water supplies located on site, or within 100m of the site are as follows:

- **3 x 25,000 litre fresh water tanks** located immediately to the east of the existing tipping hall, which can be used in the event of a fire; and
- Agreed by the EA during the determination of the FPP for the adjacent HRRC, Bristol Waste has agreed with Wessex Water that the **clean water lake** located to the west of the site can be used as the water source in the event of a fire. The lake is located approximately 100m to the west, and Bristol Waste will ensure that access to the water source is arranged. The location of the lake is shown in Figure 14-1 below. Avonmouth is located within a designated flood plain with a high water-table which will enable the lake to have a constant source of water throughout the year. Site operatives make regular checks on the water level within the lake and will increase these checks during periods of drought and throughout the summer months.

The FRS may also collect, and reuse firewater run off as part of normal operating procedures.

Figure 14- 1 Lake Water Supply Location

14.1.2 Redeveloped WTS Site

The redeveloped WTS site will continue to benefit from the water sources available to the current site, as described above. In addition, an additional immediately available water supply will be constructed in the form of a new 400,000 litre water tank and pump house. The tank and pump house will be situated immediately to the east of the new waste processing building, as illustrated on Drawing 004.

14.1.3 Construction Phase

The available water supply on site during the construction phase of the site will be the same as the water supply available on the current site as described in Section 14.1.1 above.

14.2 Water Supply Calculation

14.2.1 Current Site

Based upon the FPP guidance firewater calculations, it is estimated that approximately 383,508 litres (383.5m^3) of water would be required to put out the largest combustible stockpile on the current site[13].

[13] Based on a 318m^3 bale stockpile being the largest combustible pile on the current site and it requiring 6.7 litres of water per cubic metre to extinguish. 6.7 * 318 = 2,130.6 litres/min. 2,130.6 * 180 = 383,508 litres/3 hours.

Maximum pile volume (m^3)	Water supply needed (l/min)	Overall water supply needed over 3 hours (litres)	Total water available on site (l/min)
	Pile volume x 6.67	Water supply x 180	
318	2,130.6	383,508	**Tanks**: 3 x 25,000 litre tanks = 75,000 litre **Lake**: See footnote[14]

14.2.2 Redeveloped WTS Site

Based upon the FPP guidance firewater calculations, it is estimated that the water requirement for the proposed redeveloped WTS site will be the same as the water requirement for the existing site as described above.

Maximum pile volume (m^3)	Water supply needed (l/min)	Overall water supply needed over 3 hours (litres)	Total water available on site (l/min)
	Pile volume x 6.67	Water supply x 180	
318	2,130.6	383,508	**Tanks**: 3 x 25,000 litre tanks = 75,000 litre 1 x 400,000 litre tank. **Lake**: See footnote[14]

14.2.3 Construction Phase

The water requirements for the construction phase layout of the site will be the same as the current site as described in Section 14.2.1 above.

15.0 Managing Fire Water

15.1 Containing the Run-Off from Fire Water

15.1.1 Current Site

The site's drainage layout is illustrated on Drawing 006. All waste is stored and treated on impermeable surfacing, with a sealed foul system. All runoff from waste storage and treatment areas drain to the controlled drainage system, prior to subsequent discharge directly to the Avonmouth Sewage Treatment Works located 10m to the south of the site.

The firewater pump in the northern area of the adjacent HRRC (also operated by Bristol Waste) is linked to the automatic detection system. In the event of a fire, the pump would be automatically switched off, when the fire detection system is activated to ensure that no potentially contaminated firewater can enter surface water. The

[14] The capacity of the lake is unknown however the area is approximately 17,750m^2. Therefore, the water level would need to be 3cm in order to provide the whole firewater requirements for the site. It is known that the depth of water within the lake far exceeds 3cm.

location of the firewater pump is illustrated on Drawing 006. The water would then be pumped to the north eastern area of the site, where it would be contained with the loading bay illustrated on Figure 15-1 below.

The water containment capacity of the loading bay is illustrated on Figure 15-1 below, and described as follows:

- The bay measures 39.4m by 4.2m and is 1.35m deep and has a volume of 223.4m^3;
- The left hand ramp down to the loading bay has an area of approximately 118m^2, and an average depth of approximately 1.35m, and therefore has a volume of 79.65m^3; and
- The right hand ramp up from the loading bay has an area of approximately 117m^2 and an average depth of 1.35m and therefore a volume of 78.97m^3.

As a result, the total containment volume of the loading bay is **382m^3** and is in accordance with the firewater containment requirement described in Section 14.2.1 above.

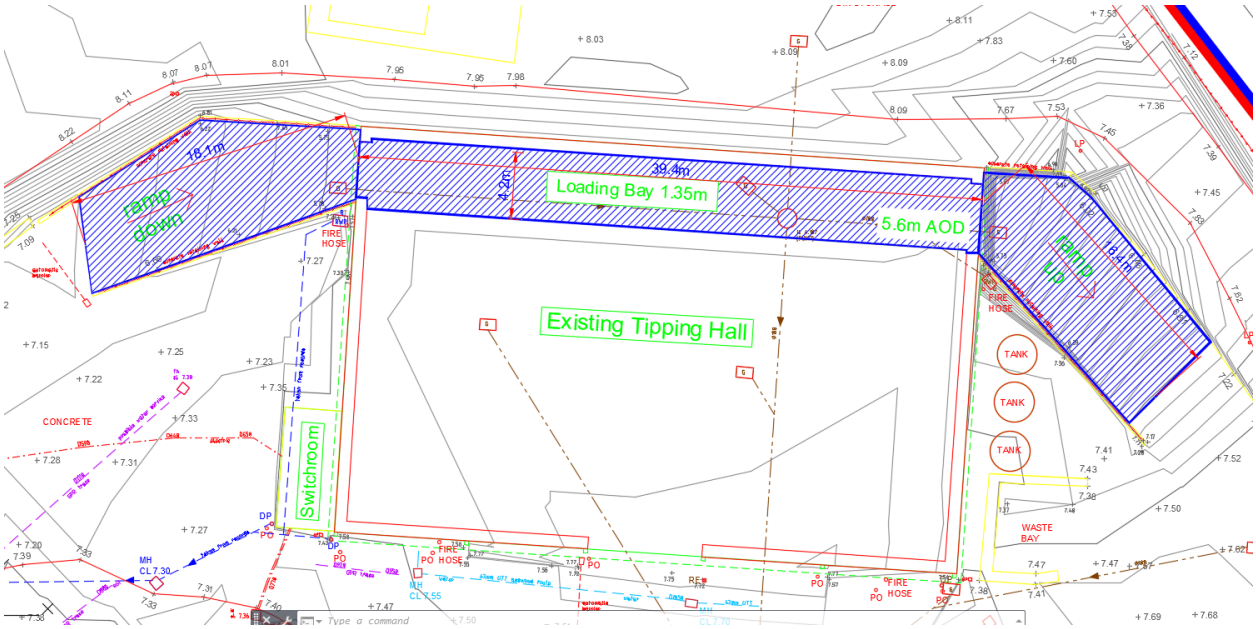


Figure 15- 1 Loading Bay Firewater Containment

15.1.2 Redeveloped WTS Site

External Concrete Storage Bays

At the redeveloped WTS site, the loading bay to the north east of the site will continue to be used for containment of firewater used to extinguish a fire in the largest stockpile located within the external bays as described in Section 15.1.1 above. There is no change proposed to the largest stockpile on site, and therefore the bay will be able to contain the required volume of firewater.

Waste Processing Building

Fire water storage has been designed to be contained within the new waste processing building. The building has been designed with a shallow slope in the floor to a central valley. The buildings drainage is illustrated on Drawing 006. Water containment within the new waste processing building is illustrated on Figure 15-2 and described as follows:

- The volume of water within the building at the deepest point is 250mm in the central valley;
- The main valley is 30m wide and 36m long at 250mm deep;

- Perimeter at the top of the valley is 1,493m^2;
- Perimeter at the bottom of the valley is 510m^2;
- The average perimeter is 1,001m^2;
- The depth is 0.2m;
- Plus 50mm across the whole of the building area;
- Width = 35.76m, length = 60.18m;
- Area = 2,152m^2, depth = 50mm, volume = 107m^3 (slight overestimate due to shape at door) reduced to 80m^3.

Therefore, the total containment volume of the building is **280m^3**. Where the largest combustible stockpile stored within the waste processing building measures 167m^3 and requires 201.4m^3 of water to extinguish a fire, the volume of fire water storage within the building exceeds the requirement.

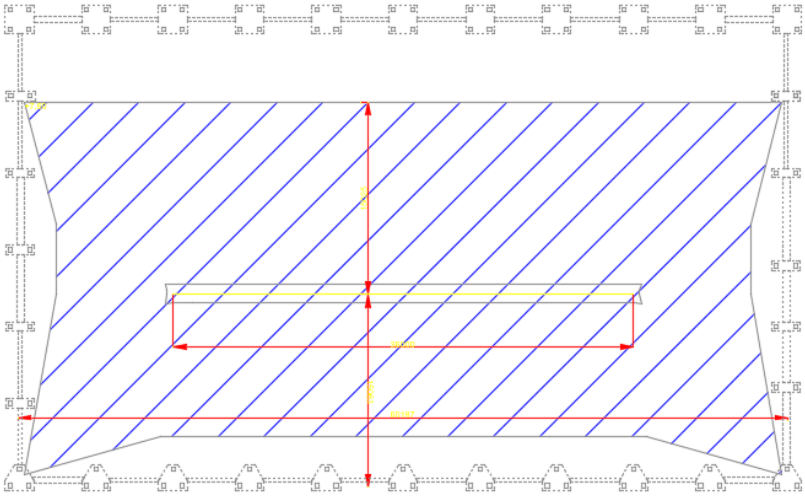


Figure 15- 2 Waste Processing Building Firewater Containment

15.1.3 Construction Phase

During the construction phase, the firewater containment arrangement will be the same as at the current site and will utilise the loading bay as described in Section 15.1.1 above.

16.0 During and After an Incident

16.1 Dealing with Issues During a Fire

The site will not continue to accept waste is there is an active fire on site. If possible, waste producers will be notified in advance to prevent delivery vehicles arriving on site during and immediately after a fire.

16.2 Notifying Residents and Businesses

An emergency contact sheet is included in Appendix FPP01. In the event of a fire the following procedure will be followed:

- The Site Management or individual nominated by the Site Management will locate the emergency contact list included in Appendix FPP01;

- In the event of a large fire, 999 will be dialled first;
- The Site Management or individual nominated by the Site Management will phone each of the local businesses included in Appendix FPP01; and
- Finally the EA incident hotline will be dialled once the situation is under control.

16.3 Clearing and Decontamination after a Fire

After a fire event, the following procedure will be implemented depending on the severity of the fire:

1. A small and containable fire that can be safely dealt with in-house using suitably trained staff and firefighting equipment located on site: The fire will be recorded in the site diary, including the causes of the fire and methods used to manage the fire. An assessment will be carried out to determine whether further mitigation measures could have prevented the fire. Any outcomes to be implemented onsite will be incorporated within this FPP and the site's EMS as required.

2. A larger fire that requires the presence of the FRS: If the site operatives have been told to evacuate or cease operations by the FRS, the site will wait until told safe to re-enter site and resume operations. Any closure of the site will be followed by informing customers and the regulatory authorities. The fire will be recorded in the Daily Site Log and in an online incident report and will detail the causes of the fire and methods used to manage the fire. An assessment will be carried out to determine whether further mitigation measures could have prevented the fire. Any outcomes to be implemented onsite will be incorporated within this FPP and the site's EMS as required.

Should damage be sufficient to prevent the site from being able to store waste, the site will cease accepting waste.

The Site Management will liaise with the EA to determine a plan-of-action to introduce normal operations at the site, and the timescales involved to achieve this.

A visual assessment will be carried out by the Site Management and wherever possible, unburnt wastes will be separated from fire damaged piles. If waste piles have become mixed, then it is likely that the waste will be removed from site to a suitably permitted facility.

16.4 Making the Site Operational after a Fire

After a significant incident, an assessment will be undertaken by a suitably qualified individual. Technically competent managers and/or engineers will assess the degree of damage caused by a fire and the residual risk from fire damaged waste, emissions or equipment. Burnt waste material will be kept on site for a short period of time if required for a subsequent internal investigation. Following this, any burnt material will be transferred off site to a suitably permitted disposal facility.

17.0 Conclusion

This FPP is considered to be a 'working' document that is reviewed and updated annually or as required should any of the following occur:

- A fire on site;
- A change or review of legislation; or
- If the site is instructed to do so by the EA.

It is the responsibility of the Site Manager or nominated person to maintain this FPP and to ensure it is adhered to in the event of a fire on site.

APPENDIX FPP01

Emergency Contact List

Contact	Phone Number
Clinipower Avonmouth LLP	0117 982 0520
Macfarlane Packaging Bristol	0117 317 2660
Yankee Candle Official	0117 316 1200
Elemis	0117 316 1888
Restore Harrow Green	0117 938 0666
Kuehne & Nagel	0117 916 2940
GENeco	01225 524560
Nationwide Platforms	0345 600 1494

APPENDIX 01

Hot Works Permit

HOT WORK PERMIT

PTW Number: _____

Before proceeding with hot work, <u>confirm</u> that work cannot be carried out with hand tools or outside of the operational area.

Confirmed by: _____

Restrictions

*Hot Works is NOT permitted in Confined Spaces unless a Confined Spaces risk assessment and Permit has been issued in conjunction with this permit.

*Hot Works is NOT permitted on containers or tanks until the contents have been identified as non-combustible. Where hazardous substances have been identified the container or tank must be cleaned and / or other protective measures utilised (i.e. purging with inert gas).

Description of work

For all operations involving flame, welding and hot cutting:

Location of Work

Building	Floor	Room	Location

Date Required *(max. duration 1 day)*		Valid From (time)		To	

ANSWER ALL OF THE FOLLOWING QUESTIONS *(Checklist is only valid when all sections are complete)*			
Hot work precautions checklist			
(The person carrying out this check should tick as appropriate):	**Yes**	**No**	**N/A**
	Please tick ✓		
Normal security measures properly observed and in force			
Adequate and suitable extinguishers available			
Contractors shown the location of fire exits and escape routes (and the means of raising the alarm)			
Smoking policy observed			
Portable/mobile space heaters not introduced			
Where sprinklers, automatic fire alarm systems or carbon monoxide alarms are installed they are operative, not impaired and precautions have been taken against false activation			
Cutting and welding equipment is in good repair, cylinders are adequately secured and safety devices i.e. flashback arrestors are fitted where necessary			
Precautions within 15m of work			
There are no combustible vapours, gases or dust present			
Floors swept clean of combustible materials			
Combustible floors protected by wetting down and covering with damp sand or sheets of non-combustible material			
Combustible materials, stock and flammable liquids protected with non-combustible curtains or sheets, or moved to a safe distance			
All floor and wall openings covered with sheets of non-combustible material			

All gaps in walls and floors through which sparks could pass are covered with sheets of non-combustible material			
Where work is above floor level, on an upper floor or on the roof, non-combustible curtains or sheets are suspended beneath the work to collect sparks			
Work on walls and ceilings			
Combustible constructions are protected by non-combustible curtains or sheets			
Combustibles are moved away and are clear of any metal likely to conduct heat. (Where metal beams are being worked on, and extend through walls or partitions, precautions must be taken on the far side of such a wall)			
Work on enclosed equipment such as tanks, containers, ducts and dust collectors			
Is all equipment cleaned of all combustibles?			
Are all containers free of flammable vapours, dust and gases?			
Fire watch (hot work)			
During the work and 2 hours fire watch (30 minute intervals) after work ceases, in the work area and the adjoining area to which sparks and heat may spread			

NEGATIVE RESPONSES and ADDITIONAL CONTROLS

Negative responses may indicate a failure to control a hazard. If the Hot Work Permit is to proceed, additional control measures **MUST** be put in place.

AUTHORISATION and ACCEPTANCE

☐ **Risk assessment approved** ☐ **Method statement approved**

The checklist has been satisfactorily completed at the location of the proposed work and attached to a completed BWC Permit to Work form. There are no safety reasons why the work cannot proceed. All responses and entries on the forms have been agreed by both parties / signatories.

Authorised by:

Print: _____ Sign: _____ Position: _____

Work by: ☐ **Contractor** ☐ **In-house staff**:

Print: _____ Sign: _____ Position: _____

Date:

HANDBACK and COMPLETION

I confirm that the work has been completed and the area returned to a safe condition. The work area and all adjacent areas to which sparks and heat might have spread have been inspected and found to be free of fire following completion of the work. The area has been accepted back into use.

Authorised person:

Print: _____ Sign:_____

Work completed by:

Print: _____ Sign:_____

Date:

HOT WORKS PERMIT CHECKLIST

1.	All equipment for the hot work is in good condition	☐
2.	All gas cylinders are safely secured and hoses are undamaged	☐
3.	All gas lines are fitted with spark arresters	☐
4.	Immediate floors and surrounding area cleared of combustible materials. Non-combustible covers where necessary to protect fixed machinery and combustible materials outside the immediate working area	☐
5.	Floor and wall in the vicinity of the hot work operation is protected against the ingress of sparks	☐
6.	Flammable liquids removed from the working area	☐
7.	A competent person equipped with two ABC power fire extinguishers is present during hot work operations and for 60 minutes after work cease	☐
8.	If sprinklers are installed they are operative	☐
9.	If automatic smoke detectors are installed they are isolated only in the vicinity of the working area	☐
10.	Personnel involved in the work have been advised of the Company's fire evacuation plan and fire alarm points	☐
11.	Any substance that can produce a flammable gas has been removed to a safe distance (check COSHH sheets)	☐
12.	The working area will be regularly checked for sparks and smouldering fires both during the work and at least 60 minutes after completion of the work	☐
13.	The persons completing the hot work task are competent to perform their duties	☐

Person undertaking the task

This is a true and accurate record of the control measures taken to prevent the likelihood of a fire during hot working. I undertake to maintain these controls through the duration of the task.

Sign…….

Print…….

Date…….

APPENDIX 02

Proposed Automatic Fire Detection and Suppression System

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

Design Methodology Document Bristol Waste Avonmouth Site Q3247

Document No:	3247
Site Name:	Avonmouth
Prepared by:	Russell Bonnett
Created Date:	16/3/2023

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

Design Methodology Document Bristol Waste Avonmouth Site Q3247

Contents

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

Design Methodology Document Bristol Waste Avonmouth Site Q3247

1. Prequalification of Fire Shield Systems Ltd

Chosen specialist for protection providers for a number of key operators, Fire Shield Systems Ltd operates in accordance with BS EN ISO 9001:2015 and is registered with BSI. We are committed to finding the right solution for your risk. This begins with gaining a key understanding of your processes, plant and associated hazard types. From the experience of operators and personnel in the field, interface with existing building and process management systems through to key considerations regarding downtime and the potential commercial impacts of fire, our fire suppression solutions are individually tailored for your business from design to implementation and ongoing service support.

Having invested in a core team of management personnel experienced in fire protection solutions for waste, recycling and associated power generation applications, our fixed & mobile fire suppression solutions are individually tailored for your business from design to implementation and ongoing service support.

Utilising robust, tried and tested detection and agent distribution systems, our solutions are engineered to last in often harsh, unforgiving industrial environments.

We design, install and maintain watermist systems for Turbine halls and associated machinery spaces, high velocity deluge systems for local application protection and foam systems for high calorific RDF, WtE and power generation in addition to gaseous systems for electrical risks.

We work closely with a network of internationally recognised fire industry manufacturing partners to provide 3rd party certified solutions for specific applications to meet the requirements of your industry regulator or insurer whilst offering commercially viable options to assist your business to implement continuous improvements in fire safety.

bsi.

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that: Fire Shield Systems Ltd
Stump Cross House
London Road
Quarrington
Sleaford
NG34 8NX
United Kingdom

Holds Certificate Number: FS 720609

and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

The design, supply, installation, management and maintenance of fire suppression and detection systems, both fixed installations and on mobile plant and machinery.

For and on behalf of BSI:

Andrew Launn, EMEA Systems Certification Director

Original Registration Date: 2020-09-10
Latest Revision Date: 2020-09-10

Effective Date: 2020-09-10
Expiry Date: 2023-09-09

Page: 1 of 1

...making excellence a habit.™

This certificate was issued electronically and remains the property of BSI and is bound by the conditions of contract.
An electronic certificate can be authenticated online.
Printed copies can be validated at www.bsigroup.com/ClientDirectory

Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP. Tel: + 44 345 080 9000
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

Alcumus SafeContractor

Achilles UVDB QUALIFIED

Constructionline
A UK GOVERNMENT CERTIFICATION SERVICE

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

Design Methodology Document Bristol Waste Avonmouth Site Q3247

2. Basis for design methodology

This solution has been both tried and tested on numerous sites across the UK and Ireland by utilising both our working relationships with key manufacturers of specialist fire detection and suppression technology providers in the UK and EU and the industry experience of both our design and project management team and installation and service teams. Key client references & case studies can be provided as part of this tender submission demonstrating our track record.

With reference to the Environment Agencies FPP requirements for UKAS accredited solutions the system proposed is comprised of key active fire protection components both proven throughout high-risk industries (including Waste & Recycling) in the field and are tested and certified by UKAS accredited 3rd Party Laboratories.

The use of Fire Fighting Monitors are referenced in WISH (Waste Industry Safety & Health Forum) guidance Issue April 2017 Annex 4 as providing effective means of suppression.

The guidance also lists NFPA in Section 4.3. 'Existing guidance on fire engineering for waste management.' In the absence of a British Standard specific to the application of Monitors for waste and recycling operations NFPA 850 guidance on WtE plants is referenced. The monitors in our installation will have an application rate exceeding those quoted in NFPA 850 and be combined with non hazardous Class A Wetting agent.

The efficiency benefits of Class A wetting Agent has long been recognised by the fire industry and local Fire and Rescue Services alike. The reason for this is that Class A foam, when properly deployed, allows the fire to be extinguished more quickly and with far less water than would be required if it were not being used. *'On average, the use of Class A foam increases water's wetting capability ten-fold. In more simplified terms, "making water wetter."'** In addition, the amount of time required post extinguishment during overhaul or mop up is greatly reduced.

The performance enhancing benefits of Class A wetting agents were confirmed in the WISH's Waste Fire Burn Trials summary report - Version 2 - October 2018. These tests are summarised by Angus Sangster (appointed by WISH for the conducting of these RDF fire test protocols referenced above) in FRM Journal**.

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

For comparison, a fire tackled with water only at an application rate of 950 l/m required 20 minutes to extinguish resulting in 19,000 litres being used. With the addition of Class A Wetting Agent at the same application rate, the fire was extinguished in 2 minutes with a total of 1,900 litres being used, dramatically reducing contaminated run off and confirming the factors of increased efficiency referenced by IFPM.

**International Fire Protection Magazine https://ifpmag.mdmpublishing.com/firefighting-foam-making-water-wetter/*

***http://www.ifcgroup.com/content/documents/FRM_%20Article_Waste_Fires_OCT-018.pdf*

3 Standards referenced & components used

The challenges from a design and compliance perspective that waste and recycling operations present require a considered design approach, drawing on a number of standards to provide a solution deemed fit for purpose by all stakeholders and authorities having jurisdiction. In order to fully satisfy this requirement our design approach draws on a number of key recognised British & International standards, third party certification and type testing protocols to provide the best fit the risks presented at typical waste and recycling sites:

Pump Systems – BSEN12845 - VdS Listed Fire Pumps

Foam Cannon Systems - EN 13565-1, NFPA 850 – Bureau Veritas Type Testing Approval

Camera Detection System – BS5839 – CE Marked

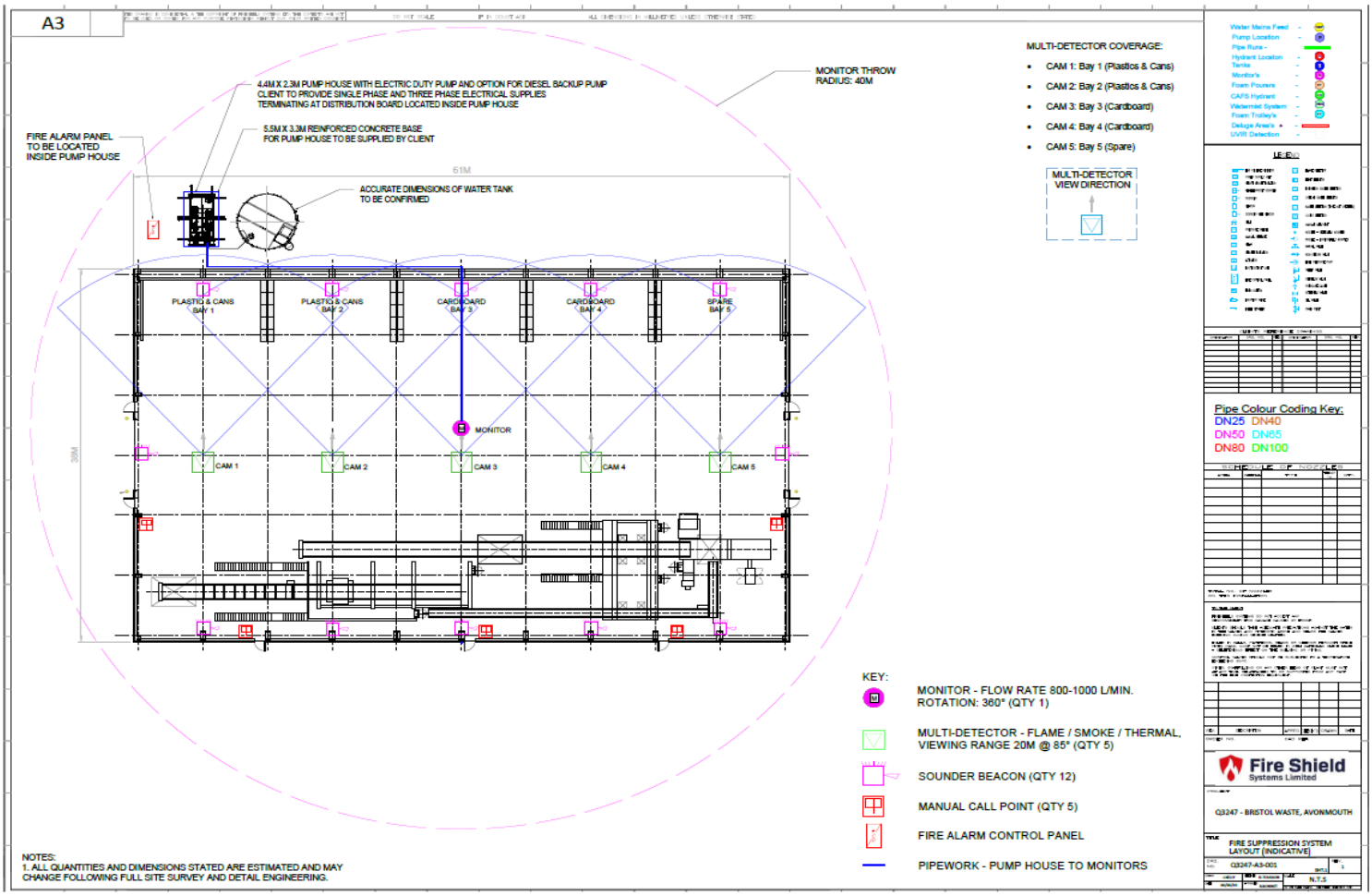
Pipework – LPCB, Vds & FM listed for fire protection usage

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

Design Methodology Document Bristol Waste Avonmouth Site Q3247

4 Indicative Design



Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

Design Methodology Document Bristol Waste Avonmouth Site Q3247

5 Handover and Ongoing Support

All project installations are supported with complete ‘as installed’ documentation:

- As Installed Layouts
- User Guides/O&M manuals
- Program & Instrumentation Drawings
- Relevant Manufacturer Datasheets
- Client Routine Service Inspection requirements and Handover Training
- Service Level Agreements and Customer Portal


Fire Shield Systems Limited

Certificate of training attendance

This is to certify that

[redacted]

Has attended a Fire Shield Systems Ltd training session at [redacted] MRF System.

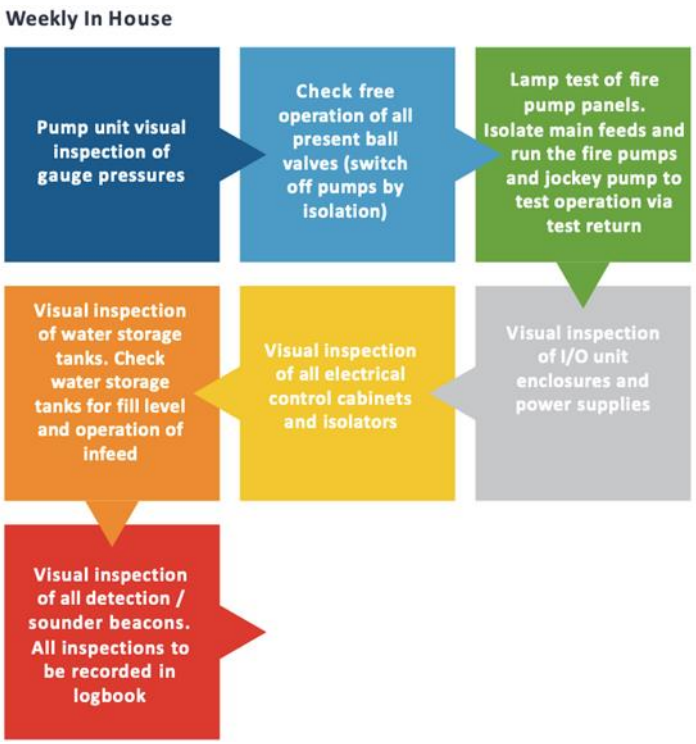
- System familiarisation and capability session.
- Candidate can Identify all key components and equipment that make the system up including locations.
- The above person has been trained in the operation and use of the equipment below:

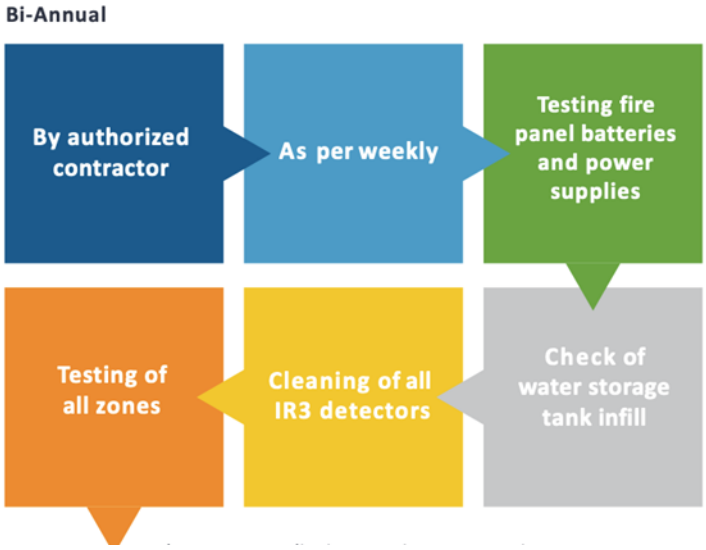
a. How to open the valve in the pumphouse in the event of a fire.
b. How to successfully operate the cannon with the Joystick Controls.
c. How to stop the system safely and reset the pump and Fire Alarm Panel.
d. Knows how to reset the system after manual or automatic activation.
e. Drain down the system where applicable and leave in a healthy state.
f. Top up used wetting agent to the required amount for operation.
g. How to carry out an effective weekly check and fill in relative check sheets and report faults.

All of the above training is carried out in accordance with site rules and procedures signed checklist in the event of a fire.

Presented by S.Frankland (Project Manager) Date: [redacted]

Fire Shield Systems Limited





Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

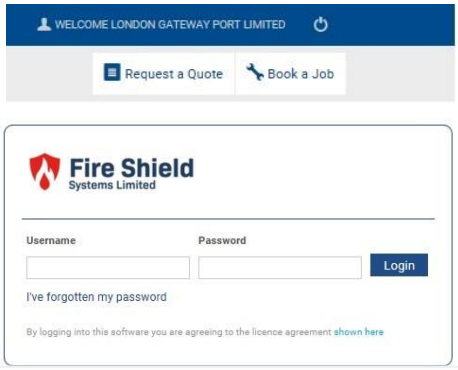
Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

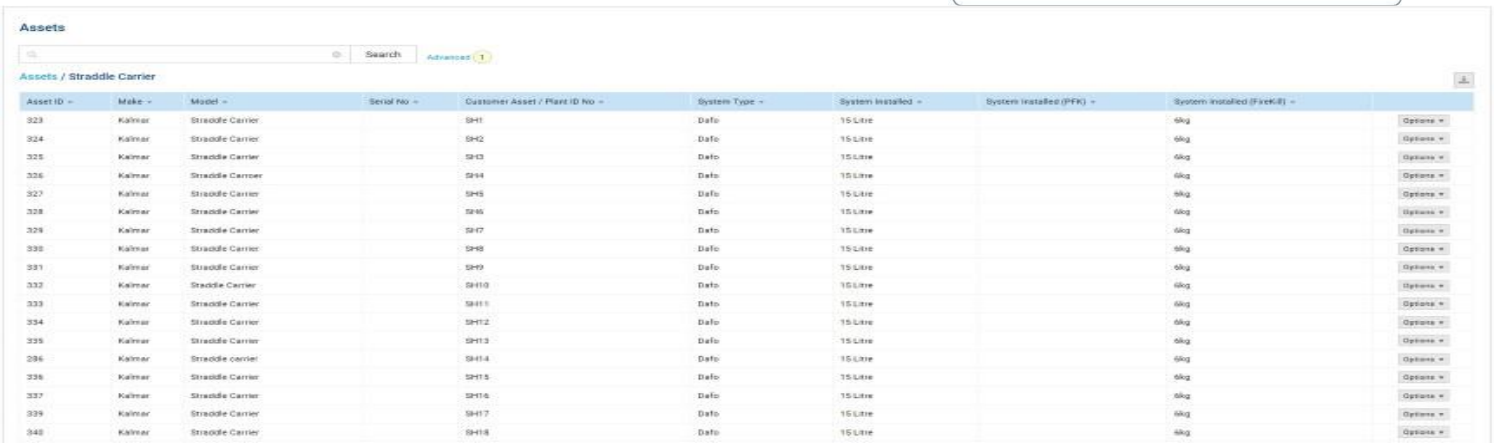
Design Methodology Document Bristol Waste Avonmouth Site Q3247

Customer Portal After Care:

The customer portal is your unique online area to access all your fire suppression installation work. A full audit trail of jobs completed, with associated photos and service due dates.

Book a service, request a quote or call out and look back at previous work carried out. View photos, system data and information.





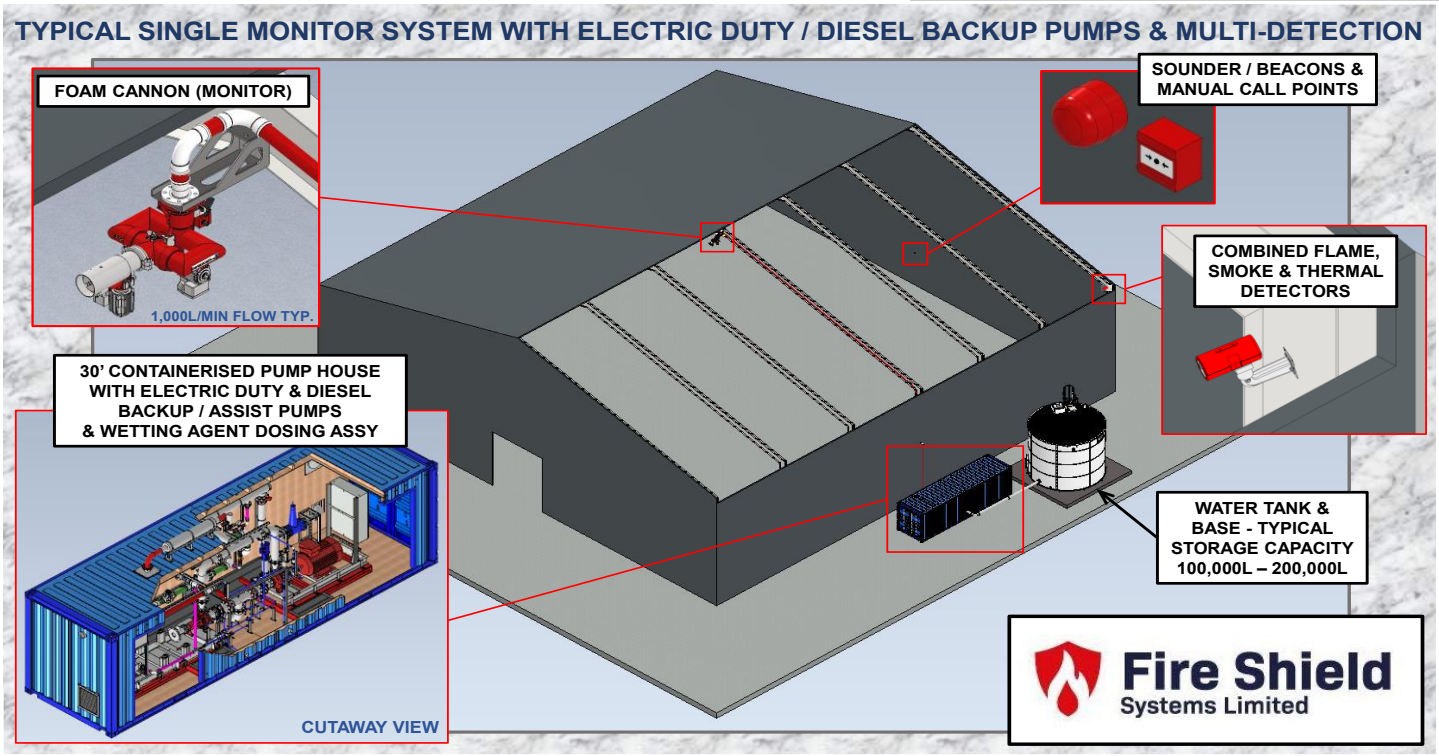
Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

QUOTATION NO. 3247

Bristol Waste Company

Quote No:	3247
Site Name:	Avonmouth
Site Contact:	
Salesperson:	James Mountain
Created Date:	16/03/2023
Valid For:	30 Days



Summary	
Pump House & Foam Dosing Assembly	£56,547.73
Automatic & Remote Controlled Foam Cannon	£79,706.90
Camera Detection System & Fire Alarm	£89,072.32
Sub-Total ex VAT	£225,326.95
VAT	£45,065.39
Total inc VAT	£270,392.34

Summary - Optional	
Optional Diesel Back Up Pump	£39,553.57

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

QUOTATION NO. 3247

The Fire Shield Systems Multi-Detection Targeted Foam Cannon Solution for Bristol Waste Company, Avonmouth site:

Further to the information provided and our assessment of your requirement to provide protection for the "Processing Building" we have proposed a multi-detection camera system to activate an automatic foam cannon system. The system includes an electric pump (with option of a diesel back up pump) housed in a custom-built weatherproof pump house, all pipe work, cabling, fire alarm, design work, installation, system training and commissioning. The client will provide a water storage tank. On detection of a fire, the foam cannon will automatically be directed to target pre-set suppression zones providing oscillations to give maximum suppression and cooling into the area.

Pump House & Foam Dosing Assembly

Item	Quantity
Supply - Foam Dosing Station - Inductor Valve Assembly DFI 50 and associated agent, fittings and storeage	1.00
20' Containerised Electric Duty Pump House - Lined c/w Electrics & Heating	1.00
Electric Duty Only Fire Pump	1.00
Standard Labour	

Section Sub-Total ex VAT	£56,547.73
VAT	£11,309.55
Total inc VAT	£67,857.28

Automatic & Remote Controlled Foam Cannon

Item	Quantity
RCM 80 Incendium Foam Cannon - Automatic and Manual Override	1.00
Suppression System Mapress - Stainless Steel 88.9 Main Feed per metre	70.00
Standard Labour	

Section Sub-Total ex VAT	£79,706.90
VAT	£15,941.38
Total inc VAT	£95,648.28

Camera Detection System & Fire Alarm

Item	Quantity
Fire Alarm System for use with Video Fire Detection Systems	1.00
Detection System – 5 Camera Multi Detection System	1.00
Standard Labour	

Section Sub-Total ex VAT	£89,072.32
VAT	£17,814.46
Total inc VAT	£106,886.78

Sub-Total ex VAT	£225,326.95

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

QUOTATION NO. 3247

VAT	£45,065.39
Total inc VAT	£270,392.34

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

QUOTATION NO. 3247

Optional - Optional Diesel Back Up Pump

Part #	Item	Quantity
WGS-6720 ANG 19010604	Deisel Pump Set to EN12845 (1199 l/m) @ ** bar See attachments for details and options	1.00
	Standard Labour	

Exclusions:

Civil Works - We have not allowed for any builders works with the exception of external plant enclosures where referenced to protect the system from the elements where required, foundations/plinths for equipment other than framework, fixings and other consumables to mount fire detection and suppression equipment to the fabric of the building other that those where stated as 'optional' extras.

Power Supplies - will be required by ‘others’ to supply each Pump Control Panel and to ensure that the system remains powered in 'automatic' status at all times. Please note, any power supplies quoted below are estimates at the time of quoting and will be confirmed at design phase should you choose to proceed. No allowance has been made for backup power supplies. Earthing and bonding will be by ‘others’.

Fire panel power - 3amp fuse spur unswitched
Cannon control panels – 230v
Butterfly valve feeds - 3 amp unswitched fuse spur.
3 phase Pump supply - Estimated 55 KW – confirmed on detailed hydraulic design

Water Supply - A water supply will be required up to the agreed tank(s) location infill valve.

Access - No allowance has been made for Mobile Elevated Working Platforms or any other specialist access having assumed that the client or main contractor will be providing these services where required. These can be provided by ourselves but at additional cost. Fire Shield take no responsibility for any additional costs incurred for hire equipment due to any delays within the forecasted project times.

Unloading – We have not allowed for any off-loading of materials other than by hand on site and will require assistance.

Trace Heating & Lagging - A power supply will need to be provided for a 'trace heating system' should you require this service from Fire Shield Systems. An allowance has been made where applicable for wet areas from Tank to Pump House. It is not possible until an agreed detailed design has been completed to quote for any additional requirements on trace heating and lagging. This is dependent on locations of equipment. On completion of the detailed design, we will make you aware of any additional areas that will require trace heating and lagging. We can provide a cost to complete these works or you can take responsibility for these works. Failure to complete these works or to complete these to a professional standard can lead to substantial damage to the system in the event of temperature changes that will not be covered in any warranty policy.

All Labour quoted as during normal working hours between 8am – 6pm Monday to Friday. No allowance has been made for out of hours working. Rates for out of hours working available on request.

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

QUOTATION NO. 3247

In the event the engineer cannot continue or carry out works as scheduled for reasons beyond our control ie operations, access and availability of MEWPs supplied, additional costs will be incurred. The chargeable rate of £450.00 per day per engineer will be incurred for a full scheduled days work.

Our price is based on information supplied at the time of quoting. Please note that any significant design changes that will alter dimensions / layouts of the proposed system could result in a change to our quoted price. Any alterations made during the contract will attract appropriate costs with associated works.

Payment Terms:

30% - Deposit on confirmation of order (materials will be ordered once deposit received)
35% - Due on date of commencement of works
30% - Staged throughout install (dates to be agreed)
5% - following commissioning

Once final 5% payment for commissioning has been received, all handover documents will be provided within 7 days. Costs are inclusive of Design, Supply, Installation, Commissioning and Handover package incorporating 'As Installed' Design documentation. Please note - in order to maintain agreed timeframes, the agreed payment terms must be met to ensure prompt delivery of goods and personnel mobilisation.

Lead Times & Delivery Schedules:

Delivery schedule can only be confirmed on receipt of deposit payment. Estimated project completion time is based upon full access to required areas Mon-Fri 7am-6pm, access equipment to be provided at necessary times and timely payments in line with staged payment dates. It is also your responsibility to have all works not included in the scope of this quote to be in place within the timeframes required to ensure continuity of work an commissioning (includes but not limited to: power supply, water supply, kiosk enclosure and trace heating & lagging if applicable).

Design:

Where relevant Fire Shield Systems Limited will reference national and international standards and available appropriate 3rd party test data to provide a solution deemed fit for purpose for the brief given. Due to the nature of the risks present in the industries we operate, we may at times propose solutions which we feel are justified in the absence of any international standard or 3rd party certification scheme. By proceeding with any proposal by Fire Shield Systems Limited you acknowledge your responsibility to obtain any necessary validation of the proposed solution by your Authority Having Jurisdiction.

Warranty, Service and Maintenance:

Unless otherwise stated, all system components are subject to standard 1 year warranty from commissioning with the caveat that the system be maintained periodically by Fire Shield Systems LTD and routine maintenance checks are carried our by the clients representative in line with training packages provided by ourselves at handover.

Bi-Annual Maintenance Visits - 9am to 5pm – costs

Fire Shield Systems Ltd
Stump Cross House
London Road, Quarrington
Sleaford, Lincs
NG34 8NX

Tel. 0800 9755767
www.fireshieldsystemsltd.co.uk
VAT Reg. No. 277995719
10978450

QUOTATION NO. 3247

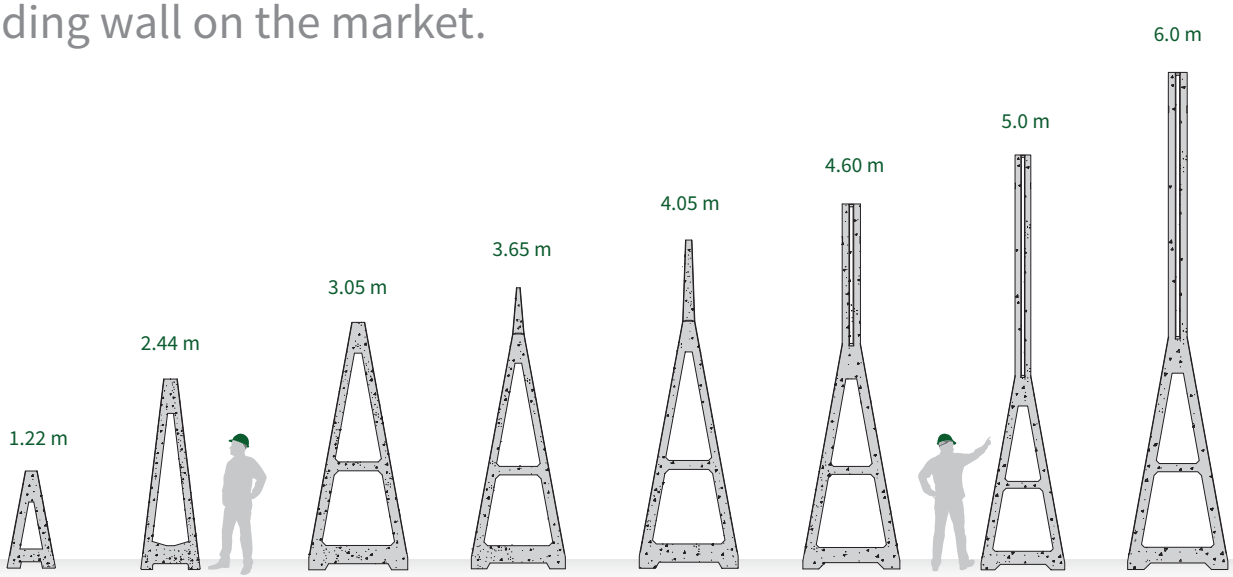
APPENDIX 03

Fire Wall Alfabloc Fact Sheet

ALFABLOC®

POUNDFIELD PRECAST
A PPG COMPANY
'INNOVATION in CONCRETE'

The only interconnecting, freestanding wall on the market.



Height	1220mm	2440mm	3050mm	3650mm	4050mm	4600mm	5000mm	6000mm
Length	2000mm	1220mm	1220mm	1220mm	1220mm	1200mm	1200mm	1200mm
Depth	610mm (at base)	762mm (at base)	1220mm (at base)	1220mm (at base)	1220mm (at base)	1220mm (at base)	1220mm (at base)	1220mm (at base)
Weight	1.64 tonnes	1.90 tonnes	2.94 tonnes	3.11 tonnes	3.29 tonnes	4.11 tonnes	4.50 tonnes	5.29 tonnes

Summary

The Alfabloc® is the only 'A' shape, interconnecting freestanding precast concrete wall system on the market. Its patented jointed mechanism aids in the spread of the load horizontally against the units. It is designed to be freestanding for the majority of uses, but can also be ground fixed for higher loading applications.

The Alfabloc® is the ideal solution when you need to avoid mixing materials. Sealant used between the blocks can prevent migration of fine materials to reduce the risk of cross-contamination.

Alfablocs® are used in many sectors including Agriculture, Waste & Recycling, Ports & Shipping etc.

Alfabloc® has many advantages as a retaining wall solution:

- The biggest advantage is the ability to connect the blocks and create one solid wall which is why it out performs the competition
- Easily transported
- Can be lifted without chains or shackles
- Fast and easy one-man installation
- Easily configured meaning you can change the layout in minutes
- No protruding toe (means the loading shovel won't catch)
- Easy to clean
- Load one or both sides
- No casting holes to be filled.

CE EN 15258:2008 – Precast concrete products. Retaining wall elements.

The Grove | Creeting St Peter | Ipswich | Suffolk | IP6 8QG
01449 723150 | enquiries@poundfield.com | **www.poundfield.com**

EUROPEAN OFFICES

United Kingdom

AYLESBURY
T: +44 (0)1844 337380

BELFAST
T: +44 (0)28 9073 2493

BRADFORD-ON-AVON
T: +44 (0)1225 309400

BRISTOL
T: +44 (0)117 906 4280

CAMBRIDGE
T: + 44 (0)1223 813805

CARDIFF
T: +44 (0)29 2049 1010

CHELMSFORD
T: +44 (0)1245 392170

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: + 44 (0)1392 490152

GLASGOW
T: +44 (0)141 353 5037

GUILDFORD
T: +44 (0)1483 889800

LEEDS
T: +44 (0)113 258 0650

LONDON
T: +44 (0)203 805 6418

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE
T: +44 (0)191 261 1966

NOTTINGHAM
T: +44 (0)115 964 7280

SHEFFIELD
T: +44 (0)114 245 5153

SHREWSBURY
T: +44 (0)1743 23 9250

STAFFORD
T: +44 (0)1785 241755

STIRLING
T: +44 (0)1786 239900

WORCESTER
T: +44 (0)1905 751310

Ireland

DUBLIN
T: + 353 (0)1 296 4667

France

GRENOBLE
T: +33 (0)6 23 37 14 14