



CARDIFF TRANSFER STATION,
Bessemer Close, Cardiff
Fire Prevention Plan

Version 3.0 – November 2017

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APPENDICES

Appendix 1 Hot Works Permit

1. INTRODUCTION

1.1 Report Context

Biffa Waste Services Ltd (Biffa) has retained SLR Consulting Limited (SLR) to prepare a Fire Prevention Plan (FPP) for Cardiff Transfer Station, Bessemer Close, Leckwith Industrial Estate, Cardiff, CF11 8DL to accompany Environmental Permit number EPR/VP3199FC. Following feedback from the initial draft, and meeting with Natural Resources Wales (NRW), this FPP has been further updated by Biffa.

This report follows the Natural Resources Wales (NRW) guidance for FPP¹ and details the required mitigation and management methods to prevent a fire of combustible materials stored on site.

In order to ensure consistency in approach, Biffa has appointed Hampshire Fire and Rescue Service as primary fire authority, and seeks their advice in relation to preparation of Fire Prevention Plans and fire related matters, including training for all Biffa sites nationally.

This fire prevention plan will form part of Biffa's Management System. It sets out the fire prevention measures and procedures that are in place and are used on site, which are proportionate to the nature and scale of the waste management activities carried out.

This FPP identifies measures to be employed to reduce the likelihood of fires at the site. In addition, the plan identifies measures to be employed in the event of a fire in order to limit the damage caused to the environment or human health.

Under current fire safety legislation², a responsible person must carry out, or appoint a competent person to carry out, a suitable and sufficient assessment of the risks of fire to employees and others who may be affected by the site. A fire risk assessment will be carried out on an annual basis, or in the event of a change to operations on site.

1.2 Site Location

The site is situated within Leckwith Industrial Estate. The site is bound to the north by Bessemer Close, an empty industrial unit and trees, to the east by woodland and further industrial and commercial units, to the south by a band of trees and the A4232, and to the west by Bessemer Close Household Recycling Centre.

The National Grid Reference for the site is ST 16469 74716 and the site location is illustrated on Drawing 002. Access to the site is from Bessemer Close located to the north west of the site as illustrated on Drawing 001.

A summary of the immediate environmental site setting is provided in Table 1 below.

Table 1
Surrounding Land Uses

Boundary	Description
North	Bessemer Close, woodland and open space, further industrial and commercial properties.

¹ Fire Prevention and Mitigation Plan Guidance - Waste, Version 1, May 2016.

² Regulatory Reform (Fire Safety) Order 2005.

East	Commercial and industrial properties
South	Trees, A4232 – Grangetown Link
West	Bessemer Close Household Recycling Centre

The immediate surrounding land use is described in further detail below:

Residential properties

The closest residential properties are located within City Gardens, 440m north east of the site.

Industrial and Commercial Premises

Cardiff Council Civic Amenity Site is located adjacent the north western boundary of the sites. Industrial/commercial premises lie to the north and east of the site. An empty industrial property is located adjacent to the north-eastern boundary.

Educational premises

The closest school is Ninian Park Primary School located approximately 730m to the north east of the site boundary.

Major Roads and Transport Links

The site is accessed from Bessemer Close in the north-west corner of the site. The A4232, Grangetown Link runs adjacent the southern boundary of the site, a band of trees shields the site from the road.

The railway line is located 890m east of the site boundary.

The wider local road network is illustrated on Drawing 002.

1.3 Geology

The British Geological Society geology mapping³ for the area indicates that the site is located upon Mercia Mudstone. This is Sedimentary Bedrock formed approximately 200 to 251 million years ago in the Triassic Period when the local environment was dominated by hot deserts. The mudstone is underlain by Tidal Flat Deposit. These clay, silt and sand superficial deposits were formed up to 2 million years ago in the Quaternary Period when the local environment was dominated by shoreline.

1.4 Hydrogeology

British Geological Society⁴ mapping identifies that the site is located on an aquifer with low productivity. This is a largely argillaceous sequence with occasional sandstones yielding less than 0.5 L/s of water that can be highly mineralised.

The River Ely is located 70m west of the site and is illustrated on Drawing 002.

1.5 Flooding

³<http://mapapps.bgs.ac.uk>, accessed January 2017.

⁴ <http://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSHydroMap>, accessed January 2017.

The NRW's flood risk map⁵ shows the site falls within an area with a very 'low probability' of flooding.

1.6 Ecology

European/International Sites

Searches conducted on the Multi Agency Governmental Information for the Countryside (MAGIC) Website⁶ indicate there are no RAMSAR sites, Special Protection Areas (SPA), or and Special Areas of Conservation (SAC) with 1 km of the site. A Sites of Special Scientific Interest (SSSI), Cwm Cydfin in Leckwith is located 485m south of the site.

Other ecological receptors

None of the following ecological receptors have been identified within 1km of the proposed permit boundary:

- National and Local Nature Reserves;
- World Heritage Sites;
- Registered Parks and Gardens;
- Area of Outstanding Natural Beauty
- Ancient Woodlands;
- Woodland Trust Sites; and
- National Forest.

Cultural Heritage

Searches on the MAGIC website confirm that there are none of the following within 1km of the application site:

- Listed Buildings;
- National Trust Properties;
- Registered Battlefields; and
- Scheduled Monuments.

1.7 Receptors

Table 2 and Drawing 002 show the locations of receptors that are considered to be potentially sensitive and could reasonably be affected by a fire at the Waste Transfer Station.

Table 2 Identified Sensitive Receptors

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from site boundary (at nearest point)
Identified receptors within 1000m of the Environmental Permit Boundary illustrated on Drawing 002			

⁵ <https://naturalresources.wales/our-evidence-and-reports/maps/flood-risk-map>, accessed January 2017.

⁶ MAGIC Website; [www://magic.defra.gov.uk](http://www.magic.defra.gov.uk), accessed January 2017.

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from site boundary (at nearest point)
Local Road network including Bessemer Close	Highways	North	Adjacent
A4232	Highways	West	10m
Commercial and Industrial Properties	Commercial and Industrial	North, East and, West	Adjacent
River Ely	Surface water	West	70m
Open space and Woodland	Openspace/Recreational	West	100m
Cardiff International Sports Campus	Recreational	North	865m
Allotments	Openspace/Recreational		380m
Residential properties	Residential	North east	440m
Cwm Cydfin	SSSI	South	485m
Cardiff City Stadium	Recreational	North	665m
Ninian Park Primary School	Educational	North-east	730m
Sevenoaks Park	Recreational	North-east	770m
Railway	Transport	East	885m

In event of an emergency, Biffa will take advice from South Wales Fire and Rescue Service (F&RS) and provide assistance to minimise the impact on the sensitive receptors identified in Table 2.

The main impact on the sensitive receptors from a fire will be as a result of smoke, which can drift and cause nuisance if not adequately dispersed by prevailing winds at the time. This could, in more extreme cases, affect the local road network including the A4232, where the visibility of drivers could be hindered. Based upon the wind direction and known sensitive receptors, the emergency services will be advised so that appropriate precautions can be implemented. Unburnt particulates of dust and ash can fallout and smoother ground surfaces in the vicinity and cause amenity issues. The neighbouring site will be alerted if there is a fire on the site.

1.8 Site Type

The site is permitted as a bespoke Tier 3 permit reference EPR/VP3199FC and consists of a non-hazardous Household, Commercial and Industrial Waste Transfer Station with treatment and a standard rule set SR2008 No9 – asbestos waste transfer station. The site is permitted for non-hazardous waste to be bulked up for disposal or recovery elsewhere and can be treated by physical sorting or separation of waste into different components, screening, bailing, shredding, crushing and compaction for recovery and disposal. Currently the only treatment carried out at the site is the sorting and segregation of non-hazardous waste; however other types of processing may be introduced in future. The standard rule permit allows up to 10 tonnes per day (or at any one time) of asbestos waste for storage/bulking pending disposal elsewhere.

The site accepts a variety of non-hazardous household commercial and industrial waste, including animal and food processing waste and offensive hygiene wastes, as well as mixed general waste and construction and demolition waste.

All general waste, hygiene and category 3 food waste is received and stored within the waste transfer/recycling building, which has concrete surfacing and sealed drainage. The only wastes stored outside the building are low risk, non-putrescible, materials segregated for

recycling comprising wood, cardboard, metals/WEEE, tyres and inert construction and demolition waste which are stored in containers or designated external bays.

Asbestos is also stored outside the building in a designated container on an area of impermeable pavement; however this waste type is non-combustible and therefore outside the scope of this FPP.

The site layout, including waste storage locations have been identified on drawing 001.

1.8.1 Waste Types, Quantities and Storage

The environmental permit allows for the following types of waste to be accepted on site, which are defined as 'combustible materials' in the Fire Prevention Plan Guidance¹.

- paper and cardboard;
- plastics, including hard plastics and UPVc;
- rubber;
- wood and wood composite;
- rags and textiles;
- compost and plant material;
- scrap metals;
- WEEE;
- Scrap Metal;
- Plaster board; and
- Green Waste.

The site is also permitted to accept a range of non-combustible wastes, not covered by the FPP Guidance, including inert construction and demolition waste, asbestos, and glass. The site also accepts T10 and T20 animal processing and food waste which is received and stored separately from other waste and is typically very wet. Therefore it is not considered to be combustible in the state in which it is stored and handled on site.

The maximum quantity of waste that the site is permitted to accept and process on site cannot exceed 150,000 tonnes per year.

In accordance with the current working plan, the site is restricted to a maximum of 500 tonnes accepted on any one day and has a maximum storage capacity of 500 tonnes, of which up to 30 tonnes may comprise offensive/hygiene wastes. In future, Biffa may wish to update the working plan to revise or remove these restrictions, but this is unlikely to impact on the FPP.

1.8.2 Site Access

The site is accessed via Bessemer Close at the north-west boundary. There are no alternative access points to the site.

The closest Fire Station is Cardiff Central Fire Station on Adam Street, to the north-west. Using Google directions and mapping⁷, the distance is approximately 2.3 miles between the site and the Fire Station. Ely Fire Station is located approximately 2.9 miles to the north east of the site.

⁷ www.maps.google.co.uk, accessed January 2017.

The site benefits from security fencing located along all boundaries which restricts unauthorised access into the facility. The site is also bounded by industrial properties to the east, west and road to the north and south.

Drawings 001 and 002, both dated January 2017, illustrate the site layout and potentially sensitive receptors respectively.

2. FIRE PREVENTION MEASURES

The following measures are implemented on site to minimise the causes of fires:

2.1 Inspections and Amenity Monitoring

The site is continuously inspected by operatives throughout the working day. Daily and weekly monitoring is recorded on check sheets and kept within the site diary.

Stockpiles are visually inspected throughout the day and all findings logged in the site diary at the start and end of each working day as a minimum.

All staff are trained in how to identify fires and fire hazards on site.

The site undergoes regular cleaning to prevent a build-up of debris on site and all floors are swept at the end of each working day. A dedicated site operative ensures the site is kept clean throughout the working day.

2.2 Pile Management

Pile heights and separation distances will not exceed those set out in the FPP guidance and specified in Table 3⁸:

Table 3: Maximum Pile Sizes and Minimum Separation Distance

Material	Max Height (M)	Length / Width (M)	Max Vol (M3)	Max Area (M2)	Min Separation
Paper, cardboard and rags	5	20	750	235	10m or firewall
Plastic rubber and other materials	5	20	450	235	22m or firewall
Unprocessed Wood	5	20	750	235	10m or firewall
Fridges, Computers and electrical equipment	5	20	300	235	In containers

During normal operation it is expected the actual maximum pile sizes and separation distances will be as specified in Table 4.

Table 4: Bessemer Close Pile sizes and separation distance

Combustible Stockpile	Material	Max Height (M)	Indicative Length/ Width (M)	Max Vol (M ³)	Min Separation /Fire Walls
Within Building					
General Waste		2	15	150	10m or fire wall (concrete alfablock)

⁸ Taken directly from Table 1 of the NRW Fire Prevention and Mitigation Plan Guidance, May 2016.

Hygiene Waste	2	6	55	10m or fire wall – (Concrete alfablock)
Within the Yard				
Card bay	2	15	30	Fire Wall
Unprocessed Wood bay	2	20	26.8	Fire Wall
WEEE (Covered skip)	3	6.1	26.8	n/a
Tyres (Covered skip)	3	6.1	26.8	n/a
Unprocessed Wood (Open skips)	3	6.1	53.6 (2 skips x 26.8)	9m to open stockpiles
Green Waste (Open Skip)	3	6.1	26.8	Grouped together, 9m from other open stockpiles, or firewall
Scrap metal (Open Skip)	3	6.1	26.8	
Plaster board (Open Skip)	3	6.1	26.8	

All waste is processed within the building and stored both within the building on an impermeable concrete surfacing or externally on hardstanding.

Wood and card are stored in external storage bays and in skips. All skips have sufficient clearance to allow for access in event of a fire and to enable ease of movement. Where skips are enclosed, separation distances are not applicable as per current guidance. Some skips are not enclosed, such as the wood skips, but these are located greater than the minimum 9m separation required (assuming skip length approx .15m/pile dimension) to the nearest open stockpile (wood bays facing via open frontage). Due to the very small volumes of waste stored within the external containers/skips, it is possible to aggregate these into a single pile for the purpose of keeping within the maximum pile sizes specified in Table 3 above. Similarly the plaster board, green waste and metals are open, but grouped together, and would need to be located at least 9m away from the wood bays, but a firewall exists to the nearest side of the wood bays. .

During normal operations, combustible waste will be stored on site for the following maximum durations:

- General Waste – 7 days
- Hygiene Waste - 7 days
- Wood – 30 days
- Cardboard – 30 days
- Tyres – 90 days
- WEEE - 90 days
- Green Waste – 30 days
- Scrap metal – 30 days

- Plasterboard – 30 days

Therefore, no stockpiles of combustible waste will be sorted on site for more than 3 months.

Stockpiles of unprocessed and processed materials are managed as follows, to minimise self-combustion:

- stockpile storage times are minimised and in all cases are less than 3 months;
- risk factors (e.g. exposed metal content, mixing of materials and heat generated during treatment) are reduced;
- stockpile sizes are minimised where possible;
- moisture levels are controlled through use of sprays / misters;
- where possible and practicable, material is stored in its largest form prior to processing; and
- stockpiles will be stored for the minimum length of time practical, according to waste collection for onward transportation.

Wherever possible, the following measures are implemented on site to reduce self-combustion:

- separation of materials;
- isolation of combustible materials;
- restricting storage times; and
- keeping materials cold/minimising external heating during hot weather by providing shade from direct sunlight.

Stockpile sizes are maintained at or below the maximum sizes stipulated in table 3 through the use of visual aids. Markers will be drawn onto bay walls / floors to indicate approximate maximum stockpile sizes.

2.3 Management of Hotspots within Stockpiles

Site operatives undergo training on the management of stockpiles, including, recognising hot spots within stockpiles and managing hotspots.

The following action will be taken should a hotspot be identified:

- stockpile will be turned to bring the hotter areas to the surface to cool; and
- water hoses and/or odour suppression sprinklers will be utilised if wastes are dry.

In order to ensure stockpiles are sufficiently rotated and waste storage time is minimised, site will ensure that the oldest materials will always be removed or processed first.

Stockpiles will be visually inspected throughout the day and where appropriate findings logged within the Site Diary at the start and end of each working day as a minimum.

2.4 Plant and Equipment on Site

All mobile and fixed plant is included on an inspection and service schedule. The following items of plant and equipment are held on site:

Mobile Plant:

- Cat 950 Loading Shovel
- 4 tonne excavator with finger grab.

All existing and new mobile plant is fitted with a fire extinguisher.

All new site vehicles (on to site from January 2017) are fitted with fire extinguishers and their own automatic fire suppression system, whereby in the event of a fire the plant will shut down.

Fixed Plant:

- Dixi Cardboard Bailer.

Operatives are required to complete inspection records for all plant on a daily basis. Inspection includes checking vehicles radiators to ensure there is no build-up of dust. All plant is serviced in line with manufacturer's recommendations and instructions. A service schedule is displayed in the site office and records of all servicing and maintenance is stored within the site office.

All items of plant and equipment used on site are maintained in accordance with manufacturer's recommendations.

Plant and equipment is visually inspected prior to every use to ensure it is fit for purpose.

When not in use, mobile plant will be stored at least 6m away from any stockpiles, as illustrated on drawing 01.

2.5 Training

Training is provided to all site personnel in relation to how to prevent fires on site, how to identify fire risks and how to spot fires on site.

Site management will ensure that there is always a sufficient number of designated fire marshals on site when operational.

All staff and contractors working on site are made aware and understand the contents of the Fire Prevention Plan and the procedures that are in place in the event of a fire on site. This includes new starters, and periodic refresher training will be given.

Fire training has been carried out via the primary fire authority, comprising early intervention training. This would enable site staff to deal with an incident, and includes identification of fires, evacuation of site, early intervention (moving plant out of the way to enable fire service access, isolation of essential services), containment of firewaters, dealing with the media etc. This is geared towards initially dealing with the incident to minimise impact and enabling the fire and rescue service to deal with the incident on their arrival, This training was completed on 1st June 2017.

2.6 Security measures

A 6 foot chain link security fence and stock fencing where there is a natural barrier of thick scrub is located around the perimeter of the site. Perimeter inspection will be undertaken on a daily basis and any repairs temporarily made good by the end of the working day. Arrangements will be made to have permanent repairs completed within 1 week. The site entrance gates are fitted with a padlock to BSI standard and locked outside the hours of operation.

The site is monitored by CCTV. Outside operational hours the CCTV is monitored by an external security company providing 24 hours security, although note below that site is normally operational.

The site is operational on a 24 hours, 7 days a week basis. The control office/weighbridge is manned during all operational hours, therefore there is a security presence on site on a 24 hours basis.

All visitors and contractors are required to sign in at reception and regular contractors undergo a site induction. If a site induction has not been completed, visitors must be escorted at all times by a member of staff.

2.7 Fire Sources and Prevention Measures

Table 5 below provides a summary of the potential causes of fire on site and associated preventative measures and is taken from the Fire Prevention Plan guidance.

Table 5: Fire Sources and Preventative Measures

Cause	Preventative Measure
Arson and vandalism	The site has a number of security measures in place to limit the likelihood of arson or vandalism including a perimeter security fence, fence inspection and maintenance procedures, CCTV, a manned weighbridge and a visitor sign in system.
	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 Accident and Incident Record. Records maintained will include inspections and maintenance of security fencing and gates, breaches of security, investigations and actions taken.
Self-combustion	Effective stock management limits the likelihood of the self-combustion of materials stored on site. As such, the site has waste acceptance and stock management procedures which are upheld by all employees at the site.
Plant or equipment failure	Plant and equipment are operated in accordance with the manufacturer's instruction manuals. Instruction Manuals for plant and equipment are held on site.
	Plant is subject to blow down at the end of the day to remove any dust or fluff accumulations from waste processing operations.
	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 EMS.
	No industrial heaters are utilised on site.
	Inspection of plant and equipment is undertaken on a daily basis to check for faults and ensure appropriate safeguards are in place, this includes checking radiators to ensure no build-up of dust. All inspections are recorded on daily check sheets.
	At the end of the working day and when not in use, plant is stored away from any stockpiles of combustible waste or other flammable materials.
	All mobile plant is fitted with fire extinguishers.
	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.
	All new site vehicles (on to site from January 2017) are fitted with fire extinguishers and their own automatic fire suppression system, whereby in the event of a fire the plant will shut down.

Cause	Preventative Measure
Electrical faults (Including damaged or exposed electrical cables)	Regular safety checks and daily site inspections are recorded in the site diary. All buildings electrics will be fully certified by a qualified electrician. Annual Portable Appliance Testing (PAT) testing of any portable electrical appliances is carried out. Bales and conveyors are left empty of waste at the end of each shift.
Naked lights	No naked lights are permitted on site.
Discarded smoking materials	Smoking is only permitted in the designated smoking area located at the site entrance and away from waste storage and treatment areas. Biffa operate a permit to work system. No hot works are undertaken by staff unless they are trained and have the relevant permit to work (Appendix 1). Any hot works/cutting tools are carried out indoors and at a safe distance from combustible materials.
Hot works	All sources of ignition are at least 6m away from any stockpile of combustible or flammable material. No hot works are permitted within 6m of any stockpile. A fire watch will be provided continuously during the works, including breaks, and 1 hour after completion.
Hot exhausts	Vehicles are turned off when not in use. Consideration is given to the high risk time for hot exhausts (one hour after switch off when dust can settle on hot surfaces) and wherever possible vehicles will be given time to cool down prior to site staff leaving site at the end of each day. Flammable/combustible materials are stored in the designated areas away from frequent vehicle movements.
Open burning	Burning is not permitted on site. If any fires are found at sites located in close proximity, Biffa will report the incident to the Fire and Rescue Service and neighbouring site.
Reactions between incompatible materials	Strict waste acceptance procedures implemented on site ensures only permitted wastes are accepted. Unauthorised wastes are quarantined and incompatible wastes are separated
Neighbouring sites	The site is located within an industrial/commercial area, accessed via Bessemer Close at the north west boundary. Industrial/Commercial premises border the site to the north, east and west. Employees remain aware at all times and report activities or behaviour which could represent a fire risk from neighbouring sites to the Site Manager. The manager will then take action as appropriate to address the risk.
Incompatible Wastes (Including reactions between incompatible materials)	All wastes arriving onsite are checked in accordance with the waste acceptance criteria to ensure no materials of unknown composition are accepted at the site. Any waste oils and fluids collected from vehicles are stored separately within the designated tanks/vessels. Spillages and leakages of fuels and oils are prevented through the application of measures detailed within the Accident Management Plan. In the event, of a leak or spill of fuels or oils, the procedure within the Accident Management Plan is followed.

Cause	Preventative Measure
Hot loads deposited at site	No burning, reactive / reacting or visibly hot (producing steam or heat) loads are accepted on site. Loads are visually inspected at the site entrance to ensure compatibility with accompanying delivery notes, therefore minimising prohibited wastes.
Fire on waste delivery or collection vehicles	Minimise duration of time spent within waste reception building or loading pit for tipping or loading. Vehicles only called into building immediately prior to tipping or loading and to exit as soon tipped or loaded.

3. FIRE MANAGEMENT

3.1 Site Infrastructure

The facility consists of a waste transfer building, external waste storage areas, vehicle and skip parking areas, a weighbridge and a site office.

The waste transfer/recycling building is constructed of a steel portal and stanchion-framed unit with brick and blockwork walls to all sides. The roof consists of aluminium cladding and roof-lights. A number of internal walls are sited to separate elements of the waste and recycling activities. These walls are constructed of reinforced concrete and are 3m high and 300mm thick. Whilst not supporting the structure of the building, they are inspected on a routine basis, with repairs undertaken in the event of any damage. The internal reinforced concrete walls act as a fire wall.

This type of concrete wall is Class A1 fire resistant in accordance with clause 4.3.4.4 of European Standard EN 13369, which is the highest possible designation as a non-combustible material and therefore provides an effective thermal barrier between stockpiles that would resist fire for at least 120 minutes. In addition, the hygiene waste is contained on 2 sides with 3m high concrete Alfablocs⁹, which will also act as a fire wall

Vehicular access to the waste recycling building is via roller shutter doors. These doors are closed whenever practicably possible to reduce wind entering the building.

Clean surface water run-off from the roofs of the waste recycling building, staff welfare office and offices is discharged to the surface water drains via interceptors, prior to pumped discharge to the surface water sewer.

Sorted waste is stored externally in designated storage bays and covered skips. The wood, cardboard and storage bays are bounded by 3m high concrete Alfablocs. These areas are paved with block pavements which provides an impervious surface to divert surface water run-off to sealed drains. All external paved areas are laid with falls to drainage gullies, which falls, via fuel interceptors, to two holding tanks. Any oil collecting in the petrol/oil interceptor is removed at appropriate intervals to maintain storage capacity.

All containers storing waste are accessible so a fire within the container can be extinguished.

All site surfacing is inspected on a routine basis. Any defects or damage is repaired promptly and details are recorded in the site diary.

A separate area outside of the waste transfer/recycling building has been provided with impermeable pavement as a dedicated area for the storage and transfer of asbestos wastes under a separate Standard Rules Permit under SR2008No9.

The site will not continue to accept waste if there is an active fire on site. Waste will be diverted to a nearby suitably licenced site such as Biffa's Avonmouth site or Biffa's Viking Place site. These are example of sites that could be used during a fire but alternative will also be considered at the time. If possible, waste producers will be notified in advance to prevent delivery vehicles arriving on site.

⁹ <https://poundfield.com/precaster-and-prestressed-concrete/concrete-retaining-wall-alfabloc/alfabloc-accessories/>

The waste transfer building is constructed to the appropriate standards. Should fire compromise its stability or integrity the building and site will be immediately evacuated and the F&RS will be contacted.

3.2 On site fire management equipment and fire detection

Due to the nature of the waste recycling building at Bessemer Close being a large open sided barn construction with a very high ceiling, Biffa adviser from the F&RS, Dave Clements (GIFireE) of Hampshire F&RS, does not consider a fixed fire suppression system, such as a deluge or high level sprinkler systems to be the appropriate or Best Available Technique (BAT) in this case).

Because these systems rely on being activated by heat sensors located in the roof of the building, they need to detect a temperature well above 50 degrees in order to be activated. However in large open sided buildings such as the recycling building at Viking Place, a 'cold air plug' would typically develop at ceiling level during the early stages of a fire, due to cold air becoming trapped above the rising hot air. This means that the system is only likely to be activated in this type of building once a fire has become deep seated. Following extensive consultation, Dave has advised that the most effective way of minimising the time it would take to extinguish a fire and preventing a deep seated fire in this type of building is to focus on early detection and monitoring of hot spots within waste piles. This allows any potential fire to be detected and managed at the earliest possible stage when it is possible to use onsite plant to move waste and isolate a fire so that it can be suppressed and extinguished quickly using fire hoses and extinguishers.

The site has foam, carbon dioxide, powder and water fire extinguishers and 3 fire hoses connected to the main water supply. Each fire hose has been specifically located across the site, to ensure that they are readily accessible and signposted and all stockpile areas can be reached by a hose in the event of a fire. The indicative location of this equipment is shown on drawing 001.

The waste transfer building contains a maximum of 205m³ of combustible waste and benefits from a Mistair odour suppression system. Whilst this is provided primarily in order to maintain adequate controls within the building for odour and dust, the fact that it is a permanent operating system, means that the building has a permanent water misting system to dampen down waste. This system has the benefit of reducing potential for combustion by preventing waste from being dry, but is not an aid to fire-fighting itself and could not therefore be relied on in the event of a fire.

All firefighting equipment is kept in good condition, unobstructed and is serviced at least once a year by a competent person.

Fire detection is carried out through the visual inspection of stockpile throughout the day. All findings are logged in the site diary. CCTV is monitored on a 24 hours basis and if a fire is identified the F&RS will be called.

Any burning waste within a stockpile will be isolated and removed to the quarantine area using onsite equipment, if safe to do so, therefore suppressing a fire.

The provision of the above fire systems, procedures and equipment are deemed to provide the most appropriate fire management and detection systems for this relatively low risk permitted site storing small quantities of combustible waste which have less possible ignition sources within them due to their composition. Only 205m³ (in 2 stockpiles separated by a fire wall and 6m separation distance) of combustible waste is stored within the building and this material is not stored for any longer than 7 days.

An up-to-date site plan is on display in the site office and details:

- site layout;
- waste storage arrangements;
- firefighting equipment locations;
- fire detection equipment; and
- PPE.

In addition, all procedures relating to emergency procedures on site, including fires, are held within the site office and can be easily found and readily available.

3.3 Site Procedures

The following procedures are in place on site that will be followed in the event of a major fire onsite:

- the Site Manager and Fire Brigade will be notified immediately and NRW as soon as practicable;
- existing drainage infrastructure (drains and gullies) will ensure that firewater is directed to the underground storage tanks to prevent the percolation of firewater into the ground;
- In the event of a fire, the underground tanks would be isolated to contain fire water and prevent its discharge to surface water.
- fire water would be contained in the tanks until it could be tankered off or pumped to foul water sewer under consent from Welsh Water;);
- if possible, waste that is unburnt will be dampened down to prevent the fire from spreading further and any contaminated runoff will be withheld within the temporary bunded area;
- if possible, unburned material will be separated from the fire using heavy plant. If necessary, vehicles already on site, or vehicles from the nearby Biffa depot can be called in to move containers or skips away from burning materials;
- 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.

3.4 Fire waters

All waste stored with within the waste transfer building will benefit from impermeable concrete surfacing and a sealed drainage system. Cardboard and wood waste are stored in external bays and containers on hardstanding.

In the event of a fire, action will be taken to prevent potentially contaminated firewater from entering clean surface water drains. Drawings from Welsh Water have been obtained and included in this fire prevention plan, to show the location of all external surface water and foul water drainage, and alternative fire hydrant locations. This will assist in ensuring that appropriate measures can be taken to prevent any flows of firewater escaping off site and entering clean water drainage systems.

Firewater calculations have been based on the 'worst case scenario', and given the combination of fire walls and 6m separation distances between piles that are proposed, plus the actions to be taken to prevent in the event of a fire to prevent its spread, this is considered to be the largest stockpile being on fire. Based upon the FPP guidance firewater calculations,

it is estimated that approximately 180,900 litres of water would be required to put out the largest stockpile on site.¹⁰ This equates to 1005 litres per minute or 16.75 litres per second.

If a fire were to take hold, unburnt waste would be removed from the area with onsite equipment, if safe to do so. Therefore, it is unlikely this quantity of water would be required.

In event of a fire, the following onsite water resources will be utilised to extinguish a fire as required:

1. 3 x Fire Hoses – connected to main's water supply
2. On site fire extinguishers.

In addition, should the F&RS be called to site, the following water resources will be utilised:

3. Fire Hydrant located on Bessemer Close – it is estimated each hydrant could supply up to 4500 litre per minute¹¹. The hydrant could also be twinned, when the fire brigade use 2 hoses from one hydrant, therefore creating a flow of 9000 litres per minute. This capacity may not be realisable due to low water pressures, but please note above, that for the largest stockpile on site a flow of 1005 litres per minute has been calculated as being necessary, which is significantly less than theoretical hydrant capability.
4. Water on board the fire engine, if necessary.
5. Discussions have taken place with South Wales Fire and Rescue Service concerning low water pressures in the external fire hydrants. This has been identified as an issue affecting all properties on the estate. It has been documented that in the event of a fire, additional water carrier tenders would be required to compensate for low water pressures. In the event of a fire, Biffa would advise the first responders of this requirement when summoning the Fire Service.

The water supply available is sufficient to extinguish any size of fire on this site with 3 hours

During a fire it is not anticipated that 180,000 litres of water will run off the waste. Taking into account absorption of firewater by waste and evaporation as part of the firefighting process¹² it is estimated 45,225 litres of water would require containment. Fire water would be directed to two underground storage tanks, via existing drains and gullies, as shown on drawing 001. Fire water would be contained within the tanks and prevented from entering the surface water system. Storage tank 1 has a capacity of 60,000 litres and storage tank 2 has a capacity of 110,000 litres. Therefore, there is more than sufficient containment on site should the largest stockpile site on fire.

Any fire water that has pooled on site surfacing could be utilised by the firefighting team, if possible.

Following a fire, the contained fire water would be pumped into a tanker and disposed of at a suitably licensed facility or Welsh Water may be contacted to agree a discharge into an appropriate external foul drain, as identified on the services plans obtained from them.

¹⁰ Based on a 150m³ stockpile, being the largest stockpile on site, and would require 180,900 litres of water over a 3 hour period.

¹¹ Based on the Local Government Association and Water UK – National Guidance Document on the provision of water for firefighting, January 2007.

¹² Assuming 25% water absorbed and 50% evaporated. Assuming most water hitting the target area will be evaporated with drainage increasing during the damping down operation. These assumptions have been used in previous Biffa FPPs which have been accepted by the Environment Agency.

3.5 Management after a Fire Event

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 dealt with in-house using suitably trained staff and firefighting equipment located on site: The fire will be recorded in the site log, 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 Fire Prevention Plan and the site's EMS as required.
2. *A larger fire that requires the presence of the F&RS*, the site personnel will wait until told safe to re-enter site and resume operations. The fire will be recorded in the site log, 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 Fire Prevention Plan and the site's EMS as required.

Following a fire, should damage be sufficient to prevent the site from being able to treat and store waste, the site will cease accepting waste and will divert to a suitably licensed facility such as Biffa's Avonmouth Site or Biffa's Viking Place Site. These are examples of sites that would be used in this situation but alternatives would also be considered at the time.

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

3.6 Fire Damaged Waste and Quarantine Area

The quarantine area, as illustrated on drawing 001, will be utilised in the event of a fire on site or where smouldering wastes are present. The quarantine area will be used to contain and treat burning and smouldering waste within containers or as an area to move unburnt materials. The quarantine area and containers will be sufficient to cope with a major incident. The quarantine area will be kept clear at all times, unless it is being used in the event of a fire. In event of a fire, unburnt waste will immediately be separated from fire damaged piles using heavy plant and moved to the quarantine area, if safe to do so.

Following a fire, a visual assessment will be carried out by the Site Manager to determine whether the waste can be treated on site. 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 licensed Biffa facility.

Any quarantined waste, awaiting removal from site, will be stored in containers in the quarantine area. The burnt waste will be removed off site within 24 hours. The quarantine area will benefit from a clear 10m area around the perimeter to aid separation and management of wastes during an incident.

4. CONCLUSION

This Fire Prevention Plan is considered to be a 'working' document that will be 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 NRW.

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