Metal recycling, vehicle storage, depollution & dismantling (authorised treatment) facility

FIRE PREVENTION AND MITIGATION PLAN

Report Number 2135r5v1d0621

Site Location:
Pembrokeshire Metal Recycling
Carew pavilion
Carew Airfield
Tenby
SA70 8SX

Prepared with assistance from :
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Fire Plan

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1 INTRODUCTION

1.1 Purpose

There have been many waste fires in Wales over recent years. This has led to increased scrutiny and new guidance from NRW titled *Fire Prevention and Mitigation Plan Guidance - Waste Management* (Guidance Note 16 or GN16).

Natural Resources Wales (NRW) requires a Fire Prevention and Mitigation Plan (FPMP) to be in place which is subject to regular update and review.

This document has been prepared by Geotechnology Ltd based on the details of the overall approach developed by PMR to reduce the risk of fire during day-to-day operation of the site and to provide a single source of reference during a fire emergency.

This FPMP details the methods to be used to initially prevent and control fire of combustible materials at the scrap metal and end of life vehicle authorised treatment facility (ELV ATF).

1.2 Document Layout

The first part of this document is intended to provide a ready reference fire plan that is easy to use, includes site drawings and photographs and could be referred to in an emergency.

The second part of this document is a series of appendices documenting the background to the fire plan and justifying the measures adopted.

1.3 Emergency Details

Emergency contact details are summarised in Table 1-1.

Table 1-1 Emergency contact details

SITE DETAILS			
Site address: PMR Ltd, Carew Pavilion, Carew Airfield, Tenby			
Postcode: SA70 8SX			
Site Access Grid Reference: SN 05881 02639			
SITE CONTACTS	Name	Office Hours (specify)	Out of hours
Owner:	Mathew Jones	07795 002026	07795 002026
Landowner/Agent:	Phil Davies	01646 651442	07836 549939
EMERGENCY SERVICES		Office Hours	Out of hours
Emergency		999	999
REGULATORS		Office Hours	Out of hours
Health and Safety Executive (HSE)		0345 300 9923	0151 922 9235
Local Authority:		01437 764551	0845 601 5522
NRW (24 hour emergency hotline)		0300 065 3000	0300 065 3000
UTILITY/KEY SERVICES	Name	Office Hours	Out of hours
Water undertaker:	Welsh Water	0800 052 0145	
Electricity supplier:	SWALEC	0843 770 5091	
Fuel supplier:	Oil 4 Wales	01267 275 777	
Oil spill contractor:	Cres	01267 223500	
NEIGHBOURS	Name	Office Hours	Out of hours
Carew Karting		07974 540689	07974 540689

2 FIRE RISK

2.1 Combustible Waste at Site

An evaluation of the operation against the wastes typically found to be combustible, according to GN16, is provided in Appendix 1.

The main combustible waste types at the site are:

- Small amounts of plastics and textiles in ELVs
- Flammable fluids associated with the ELVs and their depollution e.g. fuels, oil
- Flammable fuels used to operate and maintain site pant and vehicles
- Loose tyres removed from ELVs
- Batteries removed from ELVs
- Gas cylinders used for hot works i.e. cutting metal

These combustible components form a small fraction of the predominantly non-flammable and non-combustible waste streams accepted at the facility. These mostly comprise non-flammable scrap ferrous & non-ferrous metal.

2.2 Flammable and Hazardous Substances

2.2.1 Fuel for Site Plant / Vehicles

Fuel for plant is delivered to the site and stored within a bunded tank located within the non-ferrous waste storage area. All deliveries are supervised.

The on-site storage vessel is transferred to the plant requiring fuel, as required, and so all re-fuelling occurs under the control of PMR and on sealed drainage.

2.2.2 Fuel and oil recovered during ELV depollution

Fuel and oil recovered during depollution will initially be stored in the integrated Autodrain tanks. From here, the fuel is then piped through a sealed system to external bunded storage tanks. A lock will be fitted to the tank valve to prevent unauthorised operation. All valves and gauges on the bund will be constructed to prevent damage caused by frost. The tank will be clearly marked showing the product within and also its capacity. Checks will be made of all bunds / fuel stores as part of the Weekly Checklist.

Further, all fuels and oil will be stored on the impermeable concrete with sealed drainage to provide an extra layer of environmental protection.

2.2.3 Cylinders

The following bottles are typically on site:

- 2 packs oxygen (24 bottles)
- 2 propane bottles (47kg)

All bottles are typically size WW. These are approximately 1.7m tall. Where available, the MCP have top eyelets for lifting and can be moved by forklift.

Gas cylinders not in use are stored in an external cage.

Due to actual or perceived difficulties in returning cylinders, orphan gas cylinders may be hidden in end-of life vehicles (ELVs). These cylinders can present considerable explosion risks if the ELV are baled and processed in crushers or fragmentisers. For this reason, PMR will pay particular attention to the inspection of ELVs during waste receipt. If such loads are discovered they will be immediately returned to a customer, if known, or the waste rejected.

If there is no alternative, orphaned cylinders will be placed into external safe storage cages.

2.2.4 Engine Blocks

Engine blocks separated from ELVs will be placed into a dedicated 40yd Roll On Roll Off (RORO) skip on the impermeable concrete. This will ensure that the engines are environmentally secure, separated from other wastes and available for off-site recovery when the skip is full. Once the full skip is taken it will be replaced by an empty skip to ensure continuous storage capacity.

2.2.5 Absorbents from spillages

Very small quantities of used absorbents will be bagged and placed into a covered steel drum before being taken off-site for disposal.

2.2.6 Batteries

Batteries will be stored upright indoors in clearly labelled, acid-resistant, leak-proof containers. Different types of battery will not be stored together.

2.3 Potential Causes

Potential causes of fire at the site are evaluated in Appendix 1. The likelihood of each cause occurring is ranked as either low, medium or high. The ranking takes into consideration the preventative actions taken during day-to-day operation to limit the possibility of fire occurring.

The main causes of fire at the site are considered to be:

- Hot works
- Ignition of combustible materials caused by sparks or electrical faults
- Smoking
- Sparks from tools

2.4 Ignition Sources

Obvious ignition sources are limited at the site as the following precautions are implemented:

- No smoking on site
- All batteries removed from ELV during waste acceptance and receipt
- Air tools used in the depollution and dismantling process
- Hot works undertaken in a dedicated corner of the site
- All potential ignition sources kept at least 6m away from combustible and flammable waste
- All personnel aware of the risks of fires developing and encouraged to actively identify and report fire risks or sources

- Inspections of all wastes and machinery will be made at the start, middle and end of each shift to check for heat or smoke
- All site personnel are trained in fire prevention and fire management
- Emergency procedures are in place

2.5 Self-Combustion

Due to the nature of the wastes and the very short storage duration the risk of self-combustion is considered to be very low. This is evaluated further in Appendix 1.

3 FIRE MINIMISATION

3.1 Waste Acceptance Measures

Fire minimisation starts with robust waste acceptance procedures. Waste acceptance measures are included in the EMS. These are aimed at preventing unauthorised waste, or waste that the site does not have the capacity to treat or store, being accepted.

3.2 Site Layout

The second layer of fire minimisation is setting out and operating the site in a way that separates potential ignition sources form combustible waste and providing adequate separation distances between different wastes. The current site layout shown in Figure 1 indicates separation of the ELV depollution process from the management of scrap metal and the isolation of hot works. The site layout is justified in Appendix 1.

The site has:

- A weighbridge with clear traffic management
- A steel clad building for storage of non-ferrous metals and ELV depollution
- Separate external areas for storage of ELVs and scrap metal
- ROROs for storage of tyres
- ROROs for storage of engine blocks
- ROROs for storage of alloy wheels

3.3 Stack Sizes

The waste typically held in storage at any one time is summarised in Table 3-1. ELVs in stacks will be managed so that the first in first out principle is applied to depollution and then removal from site once depolluted and baled.

Table 3-1 Typical Storage Arrangements

Waste type and form	Amount received daily	Amount typically in storage (maximum stack size)	Typical time in storage	Storage arrangement	Maximum Stack Dimensions	Separation distance	Applicable GN16 guidance
Ferrous scrap metal	20t	<400m^3	<4 weeks (scrap removed weekly)	Loose stockpile outdoors on impermeable surface with sealed drainage. See layout in Figure 1.	Typically 16m diameter, 6m high and conical	>25m from building 15m from polluted ELV	>25m from buildings and 6m from nearest waste
Polluted ELVs - typically whole vehicles	2	~13 tonnes/ 150m^3 (10 cars with each car occupying ~15m^3)	<4 weeks	Stacked outdoors on impermeable surface with sealed drainage. See stack arrangement on Figure 1.	Each car ~4.7m long, 1.7m wide and 1.8m high (~15m^3) Each stack capable of holding 10 ELV Each stack ~4.7m wide, 8.5m long x 2 vehicles high. Each vehicle accessible from at least one side. Max stack size ~143m^3	15m from scrap metal	Max. 6 months storage Max. 2 vehicles deep & 3 vehicles high Each vehicle accessible from at least one side.
Depolluted ELVs - typically whole vehicles prior to baling	0	~13 tonnes/ 150m^3 (10 cars with each car occupying ~15m^3)	<4 weeks	Stacked outdoors on impermeable surface with sealed drainage. See stack arrangement on Figure 1.	Each car ~4.7m long, 1.7m wide and 1.8m high (~15m^3) Each stack capable of holding 10 ELV Each stack ~4.7m wide, 8.5m long x 2 vehicles high. Each vehicle accessible from at least one side. Max stack size ~143m^3	6m from scrap metal	Max. 6 months storage Max. 2 vehicles deep & 3 vehicles high Each vehicle accessible from at least one side.
Baled depolluted ELVs	0	Up to ~436bales	<4 weeks	Stacked outdoors on impermeable surface with sealed drainage. Baled ELV will be placed where whole ELVs were stored i.e. in depolluted ELV storage area on Figure 1.	Each bale is ~1m high, 1m wide and 2m long. One interlaced stack with footprint of ~9.4m x 3.4m and 3 bales high could accommodate up to ~36 bales (max dimensions ~72m^3)	3m high	Max 4m height Max. 6 months storage
Individual batteries	2	<1 tonne (typically 2 boxes)	<4 weeks	Indoors	<2m^3	Standalone dedicated acid resistant container inside building	
Loose tyres separated from ELV	10	30m^3 RORO	<4 weeks	RORO on sealed drainage	Stored in dedicated 40yd steel RORO skip (~30m^3)	Isolated in steel RORO	6 months storage
Loose engine blocks	2	30m^3 RORO	<4 weeks	RORO on sealed drainage	Stored in dedicated 40yd steel RORO skip (~30m^3)	Isolated in steel RORO	6 months storage
Containerised liquids e.g. fuels/ oils from depollution	-	<3000 litres	<1 month	In dedicated Autodrain tanks in depollution Bay and also in 1000L tanks outdoors	<5 m^3	Either stored within depollution bay or externally away from site activity	

3.4 Separation Distances

Separation distances between loose ELV stacks will be at least 3.2m to allow for access at all times.

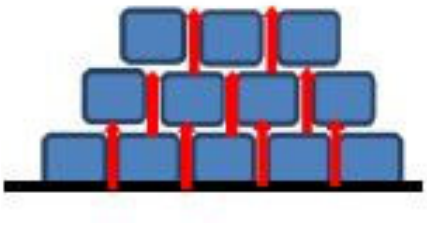
Tyres, alloy wheels and engine blocks will be separately stored in dedicated steel ROROs. There will be at least a 1m gap between the steel ROROs.

Loose scrap metal will be stored in a conical stockpile that could reach up to ~6m high and have a diameter of ~16m. Typically, it would be 4m high and diameter of ~10m. This stockpile would be ~25m away from building and polluted ELV.

Baled depolluted ELV will be placed into the footprint occupied by the loose depolluted ELV prior to being baled (~8.5m x 4.7m)

3.5 Baled Waste Storage

Where possible, the small quantities of ELV bales will be interlaced to limit the opportunity for the 'chimney stack effect' developing during a fire. The configuration for bale storage in shown below:



3.6 Use of Bays and Walls

There are currently no plans to enclose stacks at the site. All stacks of waste will be readily accessible.

Within the building, there is a concrete wall that separates the ELV depollution bay from the non-ferrous storage and sorting area but this does not run to the ceiling.

3.7 Hot Works

Where oversized material is received, a hand-held oxy-propane cutting kit will be utilised to cut the scrap metal to a suitable size. The cylinders will be stored within dedicated cages (oxygen and propane) at least 3 metres apart. The following controls will be utilised during the use of the hand-held oxy-propane cutting kit:

- only trained competent personnel shall undertake scrap metal processing using the hand- held oxy-propane cutting kit
- all equipment shall be checked for leaks and/or damage before use
- appropriate PPE and RPE shall be utilised
- all cylinders shall be fitted with flashback arresters
- the scrap metal will be moved to a safe location for carrying out hot work (a

minimum of 6 metres from any combustible or flammable wastes)
- any combustible materials near to the processing operation shall be moved
- after processing the cut materials shall be segregated from on-site stockpiles for up to 30 minutes after hot work finishes (i.e. 30-minute fire watch period)
- suitable fire extinguishers shall be in the area of the hot work
- gas cylinders shall be appropriately stored (in-line with HSE Guidelines) upon completion of the activity
- a fire-watch at the end of each working day

All other hot works are prohibited within the permitted area.

3.8 Other Wastes

3.8.1 Catalytic converts

These are placed in leak proof containers and stored in the site building.

3.8.2 Brake fluid

Very small quantities of brake fluid recovered during depollution are stored in the sealed Autodrain units which are stored inside the ELV depollution building. These are used in the operation of on-site plant which typically limits the volume in storage to less than 30 litres.

3.8.3 Coolant

Small quantities of coolant fluid recovered during depollution are stored in the sealed Autodrain units which are stored inside the ELV depollution building. These fluids are used in the operation of on-site plant which typically limits the volume in storage to less than 30 litres.

3.8.4 Screenwash fluids

Small quantities of screenwash recovered during depollution are stored in the sealed Autodrain unit which are stored inside the ELV depollution building. These fluids are used in the operation of on-site plant which typically limits the volume in storage to less than 30 litres.

3.9 Waste Stored in Containers in a Building

3.9.1 Oils and Fuels

Small quantities (typically <300 litres) of oils drained from ELVs will be stored in the Autodrain cylinders in the depollution bay. When these are full, the fluid is transferred through sealed pipework to external bunded storage tanks.

3.9.2 Batteries

Batteries will be stored upright indoors in clearly labelled, acid-resistant, leak-proof containers. Different types of battery will not be stored together.

3.10 Waste Stored in Containers Externally

3.10.1 Tyres

Loose tyres will be placed into a dedicated 40yd Roll On Roll Off (RORO) skip on the impermeable concrete.

3.10.2 Engine Blocks

Engine blocks separated from ELVs will be placed into a dedicated 40yd Roll On Roll Off (RORO) skip on the impermeable concrete. This will ensure that the engines are environmentally secure, separated from other wastes and available for off-site recovery when the skip is full. Once the full skip is taken it will be replaced by an empty skip to ensure continuous storage capacity.

3.10.3 Fuel and Oil Storage

Fuels and oils recovered during depollution will be stored in secure bunded containers externally, as indicated in Figure 1.

3.11 Stack Management

PMR recognises that the early identification and separation of hotspots can be critical in reducing the severity and spread of fire. The need for active hot spot identification should be overcome by the proposed short storage durations. Throughout each shift all operatives will, however, be encouraged to be vigilant for signs of a hot spot or burning material. This would include identifying areas where hot spots may develop and the detection of smoke or odours and/or the presence of steam, heat and heat haze. This is evaluated further in Appendix 1.

3.12 Waste Rotation

Due to the compact size of the waste processing areas, the successful operation of the site relies upon rapid turnover of waste. This ensures that the first in first out principle is achieved and waste is not stored for longer than stipulated in GN16. On this basis, additional waste rotation is not considered necessary under normal operating conditions as the waste is only in storage for very short time periods. For this reason, there is no formal stock rotation management procedure other than ensuring that the oldest ELVs are always selected for depollution.

3.13 Alternative waste management options

The success of the operation requires rapid processing and turnover of the wastes to be treated. If such turnover cannot be achieved, PMR would divert customers to alternate ELV ATF facilities. Similarly, there are several waste off-takers to choose from in South Wales that accept baled ELVs and scrap metal. On this basis, closing the site at short notice should not cause significant long-term disruption to the local waste recycling network. PMR customers would hold the scrap at their facilities until it is collected by PMR following re-opening.

3.14 Seasonality

Based on past experience, PMR does not consider the operation to be distinctly seasonal. The market for scrap metal is, however, prone to fluctuations over relatively short time periods due to changes in metal prices. This can lead to changes in storage times but the whole operation is reliant upon rapid turnaround and this will not change.

3.15 ELV Off-Take

There are no waste supply contracts in place so in the case of any interruptions to site operations, waste acceptance can be ceased until further notice.

3.16 Utilities

There are no known utilities at the site apart from electricity. The main electrical box is shown on Figure 1.

3.17 Key Infrastructure

Electrical transmission pylons traverse overhead ~50m east of the site.

The A477 runs west to east 500m north of the site.

3.18 Requirements of Third Parties

The insurance company has not stipulated any specific demands on PMR.

3.19 Plant Storage and Parking

Plant comprises:

- 1 Fork lift
- 1 Tracked excavator

Overnight, the forklift is parked indoors but excavator remains outside, at least 6m away from all wastes and buildings.

4 FIRE DETECTION

4.1 High Asset Value Equipment and Plant

Apart from the inherent value of the scrap metal and ELV in storage, the most valuable assets at the site are the ELV depollution equipment and the site plant.

Although the overall aim of this FPMP is to prevent a fire occurring in the first instance, PMR is to install fire extinguishers in the offices, welfare areas, building and ELV depollution bay. Extinguishers will also be located alongside the baler and hot works area and within each item of plant.

Within the ELV depollution area, automatic fire extinguisher balls will also be placed above the Autodrain tanks where small quantities of fuel and oil are stored. These balls are designed to explode following detection of flames releasing a powder that is intended to extinguish or knock back a fire. These comprise a ball shaped device, similar to a football, that have an activation strip embedded into the ball's outer casing. When the activator is exposed to flames, the ball bursts open releasing a dry fire extinguishing agent inside.

4.2 Fire Detection During Operations

Visual inspection of the compact site and stored waste will be undertaken daily during operations. This is considered proportionate to the type of wastes in storage.

The aim of these inspections will be to identify obvious evidence of fire or potential fire. Steam is considered a good early indicator for the waste accepted.

At the end of each shift, all site areas will be inspected with the inspection aimed at identifying indications of potential hotspots. The inspection will aim to identify such areas by detection of smoke odours and/or the presence of steam, heat, heat haze and smoke.

Any signs of a hot spot will trigger action to minimise fire spread.

4.3 Fire Detection Outside of Operating Hours

Automatic fire extinguisher balls are to be installed in the ELV depollution bay. In the event of flames being detected a flame suppressing powder will be ejected from the ball. These are aimed at containing small fires and preventing / limiting fire spread.

5 EMERGENCY PREPAREDNESS

Whilst measures have been made to minimise and potentially detect a fire starting in the first instance, PMR has also prepared an action plan should a fire occur. This includes providing clear and safe points of entry and exit, access to fire water, training and suitable plant.

5.1 Emergency Escape Routes and Assembly

The site is rectangular with only one point of access and egress. The building has three points of access and egress.

Emergency evacuation routes are indicated on Figure 2. In the event of a fire all personnel would exit the site via the only point of access / egress and muster at the assembly point, next to the site entrance.

5.2 Fire Rescue Service Access

A minimum width of road of 3.7m and clearance height of 3.7m will be maintained at all times to the site. This is required for efficient operation of the site during day-to-day operations and will provide good access for the FRS. Site access will always be kept clear.

5.3 Off-Site Emergency Grab Pack

Within the staff parking area, a secure box will contain a copy of this fire plan. NRW and FRS will have coded access to the box.

5.4 Protective Clothing and Pollution Control Equipment

Within the staff parking area, a marked box will contain:

- Fire Marshall high viz vest
- Spare PPE - (nitrile gloves, PVC gauntlets, overalls, overshoes, safety goggles)
- Additional Fire extinguishers and fire balls
- Spill kits with absorbents (granules) and small booms
- First Aid Kit
- Additional Copy of FPMP
- Disposal bags
- Cable ties
- Duct tape
- Spare drip trays
- Emergency signage
- Tool box

Alongside the box will be larger pollution control kit:

- Empty Skips (sealable)
- Sand bags
- IBC water bombs

5.5 Quarantine

In the case of a fire outbreak or identification of hot / steaming materials, the waste will be moved into the quarantine area wherever safe to do so to isolate it during an incident. The location of the fire quarantine area is shown on Figure 1, although in an emergency any empty skip / RORO could also be used.

The circular quarantine area, with a dimeter of 8m, shown on Figure 1, provides an area of ~200m^3 for loose scrap material 3m high and could readily accommodate over 10 ELV. The quarantine area is more than 6m away from any waste. The area is capable of holding more than 50% of the largest waste stack.

5.6 Occupied Buildings

During office hours there are no permanently occupied areas. Personnel may be in the site office, site building or in external areas.

5.7 Site Traffic Movements

There is limited traffic movement and traffic control is relatively straightforward and naturally self-limiting by space availability and the position of the weighbridge i.e. typically only one vehicle at a time is accepted. This restricts vehicles to crawling speed whilst they are on site and as they enter and leave. All vehicles access and leave the site via the same point after turning in the yard. This minimises the need for reversing.

5.8 Prevailing Wind

Based on the experience of the operator, the prevailing wind direction experienced at site is typically from the southwest and west.

6 FIRE RESPONSE

6.1 Response Plan

The sequence of these steps may vary according to the nature and circumstances of the fire emergency, but priority will always be given to the safety of staff and visitors, followed by the prevention of impact on infrastructure and identified local human or environmental receptors. PMR will follow the instructions of the FRS and provide plant, personnel and financial resource as required.

The following procedures are to be followed on the discovery of fire or smoke. The steps are numbered sequentially but in reality, they will likely be implemented in parallel by different members of staff.

Raise Alarm

1. Upon discovering smoke or fire personnel will raise the alarm by shouting to each other as the site is small. Evacuation will be through the single site entrance.
2. The person discovering a fire should inform the Site Manager immediately and provide an assessment of the situation. The Site Manager must immediately go to the vicinity of the fire (if considered safe to do so) to assess the situation and decide upon a course of action.
3. If safe to do so, the burning waste will be isolated from other wastes. This may involve placing into an empty skip or dragging / moving with site plant away from other wastes and infrastructure.
4. All plant will then be moved to safety and turned off and all electrical items isolated. The electrical power to the site should be turned off if safe to do so.

Evacuate and Call 999

5. The person discovering a fire should then call the fire brigade on ''999" providing details of the fire's location and scale.
6. All non-essential persons should be instructed to leave the area and report to the designated Assembly Point on Figure 2. As this is next to the site entrance, a direct escape route should be followed. Persons evacuating must obey Site Managers instructions, ensure other workers also evacuate, assist any person who needs help (if safe to do so), not stop to collect any personal belongings, proceed directly to the Assembly Point and remain there until officially instructed otherwise.
7. The Site Manager and other trained personnel should access the Pollution Control Box and don the high viz Fire Marshall jackets and grab fire extinguishers / fire balls.
8. The signage informing customers that the site is temporarily closed should also be grabbed from the Pollution Control Box and erected at the site entrance. A staff member wearing a high-viz vest should staff the entrance and re-direct any deliveries to other sites and direct FRS as they arrive.

Roll call

9. The Site Manager will collect the roll call list and confirm the presence of staff and visitors at the assembly point.

Trained personnel tackle fire or stop its spread

10. If safe to do so, the person or persons discovering the fire should seal off the area and fight the fire using appliances provided. Persons with no specific training are not expected to fight a fire.
11. Where possible, machine operators are to move their machines to a safe area only returning to assist in the separation of waste to the quarantine area (to limit fire spread)

and placement of skips / IBC water bombs at the direction of the senior fire officer or Site Manager.

12. If it is safe to do so, a search of all work areas of the site will be undertaken by the Site Manager to ensure that everybody has evacuated the site.

Update FRS upon arrival

13. Upon arrival, the Site Manager will issue the FRS with a copy of the Fire Plan. The FRS will assume control of the situation and all instructions/advice given by them will be followed. A copy of the Plan will also be available in a safe box fitted with a combination padlock on the external wall of the site.
14. The Site Manager/Supervisor is to advise the Officer in Charge of the emergency services if someone is missing.
15. After all occupants are evacuated and visitors and staff are accounted for, wait for the 'all-clear' from the FRS before returning staff to any affected area.

Post Incident Investigation

16. The Site Manager is responsible for ensuring the conditions that led to the fire are investigated (in association with the FRS and Police as appropriate). The Manager is also responsible for ensuring plant is safely recommissioned, accident plans and management systems documents are reviewed and improved, training requirements for staff personnel are reviewed and that any remedial measures (including further fire reduction measures and new procedures) are implemented.

6.2 Specialist Support

In addition to in-house resources, PMR can call on CRES waste management based in Carmarthen to assist with site management and clean-up.

6.3 Additional Financial Resources

Additional finances will also be made available for additional resources and site clean-up. The company credit card will be available with a balance of several thousand pounds readily accessible.

All staff members can be contacted 24/7 and most live within 20 minutes of the site.

7 EXTINGUISHING SMALL FIRES

All personnel will be trained to tackle a small fire with the aim of extinguishing or knocking back until the FRS attend site. This will primarily involve personnel using fire extinguishers, fire balls, IBC water bombs and plant / skips to isolate burning waste.

7.1 Fire Extinguishers

Fire extinguishers are red with a coloured label to indicate their type. The different types of fire extinguishers are intended for use on specific classes of fire. The fire extinguishers to be deployed are summarised in Table 7-1.

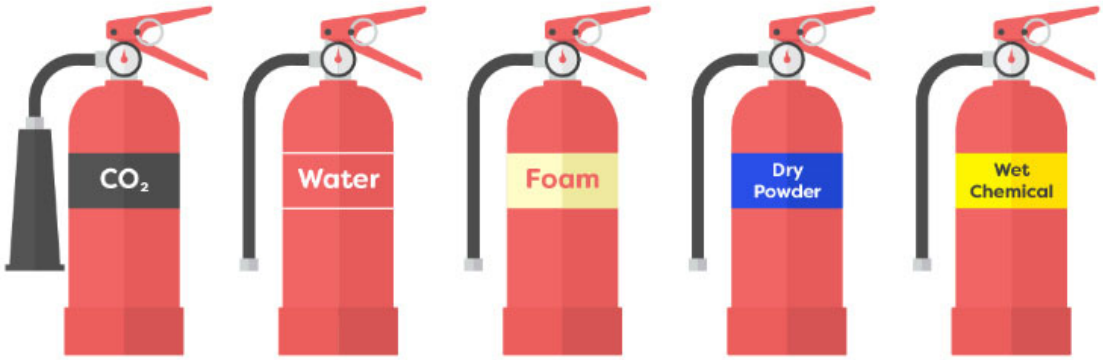


Table 7-1 Suitability of Fire Extinguishers

Extinguisher Type	Class A Organic Materials (e.g. Paper & Coal)	Class B Flammable Liquids (e.g. Petrol & Paint)	Class C Flammable Gases (e.g. Butane & Methane)	Class D Flammable Metals (e.g. Lithium & Magnesium)	Electrical Electrical Equipment (e.g. Computers & Servers)	Class F Cooking Oils (e.g. Olive Oil & Fat)	**Location at site**
Water	✓	X	X	X	X	X	Site office
Dry Powder	✓	✓	✓	✓	✓	X	Site office Depollution bays Plant Baler Non-ferrous shed Bunded areas

Each fire extinguisher will be fully charged and ready for use at all times.

Fire balls, containing dry powder, will be deployed in the depollution bay and fuel storage areas.

7.2 Fire Balls

Automatic fire extinguisher balls are to be installed in the building with spare balls to be available in the Pollution Control Box for use as fire extinguishing 'grenades'. The aim of the approach is to limit the need for FRS to enter buildings where there is no life at risk and to have an automatic fire suppression system that either extinguishes the fire or knocks it back to limit spread.

7.3 Fire Separation

In the event of a fire, suitable plant (with fire resistant hydraulics) would be used by trained personnel to separate potentially hot / burning wastes during the early stages of a fire incident and work, as directed by FRS, during a major incident. All personnel live within close proximity.

Training of on-site personnel in hot spot identification, firefighting techniques, fire prevention, response and the fire protection aspects of the site will be provided by established professionals on an annual basis. The FPMP will form the basis of the training programme. Personnel will be informed of the use and limitations of firefighting equipment available onsite and undertake practical exercises. Records of this training will be included in the operating record for the facility.

7.3.1 IBC Deluge ('Water Bombs')

The site will be equipped with 15 x (1000L) IBCs filled with water which, in the event of an incident will be quickly hoisted / tipped by the excavator or fork lift (on site) and dropped on to any small fires/hot spots (one by one and only if safe to do so and under direction of a competent person or the FRS where relevant). Alternatively, the water in the IBCs may be used to quench small burning items if they were encountered. These water deluge 'bombs' will provide an instant large volume of water to aid the extinguishing of a fire (especially in the early stages). These will be clearly labelled and covered with a loose lid and stored adjacent to site entrance and scrap metal processing area.

7.3.2 Quenching

Used in combination with a skip, the water from the IBCs could alternatively be used to form a water bath for quenching hot or burning waste in a skip. The skip could also be topped up with mains water or by the FRS. This would provide a rapid and effective means of cooling, quenching and isolating waste whilst significantly reducing fire water demand.

8 FRS FIRE WATER SUPPLY

8.1 Requirements

According to GN16, a 300m^3 stack comprising of wholly combustible material would normally require an average water supply of at least 2000 litres/minute for a minimum of 3 hours. This is equivalent to ~7 litres / minute / m^3 of waste.

There are 3 main stacks at the site :

- Loose scrap: ~ 400m^3 of non-combustible ferrous scrap with incidental quantities of potentially combustible material and likely 20-30% free air void space.
- ELV: a full single stack of ELV will occupy ~143m^3. This includes significant free air void space within the vehicle and the actual volume of combustible material is a small fraction of the total vehicle volume.
- Baled ELV / metal: a full interlaced bale stack would occupy ~72m^3

In this context, the quantity of water required to satisfactorily extinguish a fire is difficult to estimate as each stockpile comprises primarily non-flammable metal with significant void space and small amounts of flammable material.

8.2 Reducing Demand

Consideration has been given to reducing fire water demand.

8.2.1 Small Stack Sizes

Small stack sizes have been integrated to the site layout. This minimises the amount of fire water required and reduces possibility of fire spread.

8.2.2 Separation

Separation of burning material from unburned material will be one of the first steps taken during an incident. This will immediately reduce the volume of fire water potentially required.

8.2.3 Quenching

If burning waste were to be placed into a skip, the overall fire water requirement would be expected to be significantly reduced as some of the waste would become submerged and the fire would be contained in a fixed volume. As such processes do not occur to the same extent in a loose stockpile, the fire water demand would be expected to be much lower.

8.2.4 Recycling Fire Water

Fire water will be available to the FRS for re-use if required. This water is not, however, likely to be suitable for use due to suspended solids but this decision will be made by FRS during an incident.

8.2.5 Suffocation

Soil, sand, crushed brick and/or gravel can potentially be used to help suppress a fire if smoke is threatening local communities.

Sand bags are to be kept on site in the Pollution Control Box to enable small fires to be rapidly suffocated without generating fire water. Skips will also be available to aid such actions.

8.3 Supply

8.3.1 Fire Hydrant

There is no on-site hydrant or hydrant located within the wider airfield. The FRS is aware of this position and has confirmed that additional resources could need to be supplied should there be an incident at the site.

8.3.2 On-site supply

PMR will ensure that there is 15,000 litres of water immediately available for firefighting. This water will be stored in IBCs.

This is in addition to any rainwater available from the 30,000 litre underground sealed tank.

8.3.3 Sprinklers

There are no sprinklers at site as there is little combustible waste stored inside.

8.3.4 Water Curtains

There are no water curtains at the site.

8.3.5 Portable Bowser

A portable bowser is not going to be used.

9 FIRE WATER MANAGEMENT

The overall approach to fire-water control is to minimise generation and 'control at source'. The layout of the site is intended to minimise fire spread and the first actions to be taken when a fire is identified is to separate burning material from unburnt material. These actions are intended to minimise overall fire size and therefore the amount of potential fire water generated during its extinguishing.

9.1 Fire Water Control

Fire water run-off has the potential to contain harmful combustion by-products, fire-fighting chemicals or un-combusted waste materials washed from the site. The volume of water involved and the subsequent dilution of these compounds will vary based on the scale and nature of any fire. Minimising potential impacts to the environment and local infrastructure is a key consideration of this FPMP and has been integrated to the design of the facility.

During a fire incident, any fire water sprayed onto the scrap metal processing area would drain to the sealed underground tank. When this is full, the fire water would then pond at surface. As this site is bunded by a concrete kerb, some 200m^3 of fire water could be held.

Fire water applied within the building would fall onto impermeable concrete and ultimately drain towards walls and doorways. As all of the walls are concrete, fire water would migrate towards doorways.

9.2 Fire Water Management

During and following an incident, PMR would work with NRW and CRES to determine the most appropriate route for fire water disposal. This decision making would likely be informed by visual inspection of the fire water, discussion with FRS to understand if any additives had been added during the fire fighting and testing to determine fire water chemistry. The outcome may involve off-site tankering or discharge to sewer after pre-treatment through the full retention interceptor.

10 DURING AND AFTER AN INCIDENT

10.1 Potential Impacts of Fire

Waste fires can cause significant direct and indirect harm to people, the environment, commercial activities and public resources. Impacts may include:

- Use of firefighting resources that cannot then tackle other emergencies (not related to waste)
- Release of airborne smoke and particulates. This can smother vegetation and cause risk to human health through inhalation
- Transport of potentially contaminated firefighting fluids to drainage systems and controlled water (surface water and groundwater) which can impact water quality and wildlife
- Explosions and falling debris may result in physical harm to humans and infrastructure
- Use of firefighting resources that cannot then tackle other emergencies (not related to waste)
- Heat and flames can directly harm people, infrastructure and the environment
- Loss of business

On-site and off-site impacts of a fire can be influenced by a number of environmental factors. These include wind direction and rainfall and also run-off and presence of surface and groundwater. At the PMR site:

- Controlled waters are protected by the impermeable surface and sealed drainage system
- Wind direction is typically from the southwest

10.2 On-site Assets

Although the assets are of economic importance, PMR recognises that these items can be replaced and that, at no time, should personnel or the FRS risk human life in their protection.

10.3 Business Continuity

The un-announced immediate closure of the site would cause temporary disruption. As most of the scrap metal is held in containers at customers sites prior to it being transferred to PMR there would be a delay in collection. With regards ELVs, these could be diverted to several local outlets.

10.4 Human and Infrastructure Receptors within 1km of site

There are few potentially sensitive receptors within approximately 1km of the site that could be directly affected by an incident, as shown in Figure 3.

Following the incident, the Managing Director will meet with the neighbours to explain what has happened and the steps that will be taken to minimise fire risk in the future. The neighbours will also be encouraged to provide feedback that would be accommodated in the FPMP.

10.5 Removal of Solid Fire Waste

Following any fire there is likely to be burnt or partially burnt waste and/or their materials requiring off-site waste management. This will prevent potential future emissions to land and/or water.

Each of these waste types will need to be classified in accordance with WM3 and appropriate Duty of Care implemented at all stages. This may require the waste to be sampled and tested.

Until the waste is fully classified, the waste will be monitored and assessed for residual/ smouldering fires in an area separate from other wastes e.g. quarantine. This will be achieved by turning the waste, if possible and safe. During this process, the waste will be inspected for residual sources of heat and smoke. Where suitable, and agreed with NRW and FRS, scrap that is still hot may be laid out into a thin layer using heavy plant and then quenched with cooling water.

10.6 Becoming Operational Again

The precise actions required following an incident will be dependent on the scale of any fire. Protection of the environment, specifically groundwater, will be prioritised and the clean-up operation will be carried out in full consultation with NRW. Permitted activities will not re-commence without NRW approval.

Before the site becomes operational following a fire incident, the site will be cleared of all fire wastes, fire waters and all relevant infrastructure will be inspected for damage that may have been caused. This will include structural assessments of all infrastructure and buildings. Drainage will be tested to ensure that the system is still sealed and has not become blocked.

Following an internal review of the cause of the fire the findings will be integrated to an updated FPMP. Such a review would also accommodate any observations made by NRW, FRS or other third parties.

10.7 Notification of Fires to NRW

After any fire related to waste management activities that cannot be extinguished within 10 minutes of discovery occurs, NRW will be notified.

The notification will include:

- Contacting by telephone as soon as possible, but no later than 4 hours following fire discovery, and
- Providing a written description of the cause and extent of the fire and the resulting fire response within 14 days of fire detection.

The facility will provide NRW with as much information as possible regarding the fire and fire-fighting efforts, as soon as possible after the fire occurs.

The fire prevention and fire control procedures for the facility will be revisited following the occurrence of a significant fire to determine if modifications are warranted.

11 REVIEW AND MONITORING

11.1 Routine Review

Each year this FPMP will be subject to review. This will be aimed at ensuring that the procedures implemented on site match those documented in the FPMP.

11.2 Monitoring

The following Key Performance Indicators will be used to monitor the effectiveness of this FPMP:

- Number of fires recorded annually / number of fire related incidents
- Achieving set schedules and time frames (evacuation drills and building audits)
- Measuring the number of Fire Service call outs against cause
- Number and nature of enforcement, alterations or prohibition notices from statutory authorities
- Quarterly / six monthly/ annual premises inspection and meetings to ensure actions and progress are made
- Annual audit of all fire systems by external party

Fire extinguishers would be subject to monthly visual inspection to check for damage and accessibility and annually tested and serviced, as required, in accordance with manufacturers requirements.

Fire extinguisher balls would be replaced in accordance with manufacturers requirements.

11.3 Audit

PMR recognises that it is important for the day-to-day activities to implement what is written in this FPMP to manage fire risk. Therefore, in addition to the pro-active monitoring programme, a planned programme of internal and external audit will be implemented. Internal audits will be undertaken quarterly and external audits annually and coupled to the annual review. The findings of all audits will be documented. During the audits, the following aspects will be evaluated:

- Paperwork & Records – Maintenance schedules, daily fire checks, staff training, transfer notes, stock rotation, location and site plans
- Procedures - Waste Treatment, waste acceptance, ignition sources, dust management, integrity of infrastructure
- Prevention – check of stockpile sizes, detection systems, fire walls, suppression system and site security
- Emergency Response - Containment, disposal of waste, firefighting equipment, water supply

A compliance assessment may not be limited to these areas, but it gives a good indication of what an assessment may comprise.

11.4 Update following Incident

In addition to the regular annual review and six monthly monitoring and audit, this FPMP would be reviewed and updated where necessary following a fire incident. This could be following discovery of a minor fire where the FRS was not called or did not need to assist or following an incident where the FRS lead the fire-fighting.

A review would also be prompted if the activities at the site changed, if the waste types accepted changed, if waste volumes accepted increased or if new infrastructure (buildings or plant) was installed.

All aspects of the FPMP would be available for review during any update or review. Focussed attention would, however, be made to ensure that the document captures potential changes to the risk of fire occurring and additional preventative and management techniques required.

11.5 Communication of Plan

All staff will be trained on the relevant sections of this FPMP during their induction training and this training will be refreshed annually or after any amendment to the FPMP, whichever occurs soonest. Training will be recorded in each individual employees training records.

All contractors will be made aware of the key elements of the FPMP. This will be recorded in the Site Induction Training file.

All training on the FPMP will focus on the actions necessary to:

1. Prevent a fire occurring; and
2. Actions necessary if a fire breaks out.

USEFUL RESOURCES

Waste Industry Safety and Health Forum (WISH) – WASTE 28 Reducing fire risk at waste management sites issue 2 – April 2017
https://wishforum.org.uk/wp-content/uploads/2017/05/WASTE-28.pdf

WISH - https://wishforum.org.uk/

Regulatory Reform (Fire Safety) Order 2005
http://www.legislation.gov.uk/uksi/2005/1541/pdfs/uksi_20051541_en.pdf

"Fire Safety Risk Assessment - Factories and Warehouses".
https://www.gov.uk/government/publications/fire-safety-risk-assessment-factories-and-warehouses

'Guidance for the storage and treatment of aerosol canisters and similar packaged wastes'
https://www.gov.uk/government/publications/sector-guidance-note-s506-recovery-anddisposal-of-hazardous-and-non-hazardous-waste

Health and Safety Executive (HSE) Guidance
http://www.hse.gov.uk/search/search-results.htm?q=hot%20works%20guidance%20-%20gsc.tab=0&gsc.q=hot%20works%20guidance&gsc.page=1#gsc.tab=0&gsc.q=hot%20works%20guidance%20-%20gsc.tab&gsc.page=1

Removal of LPG Tanks - Guidance
https://www.gov.uk/government/publications/removal-of-lpg-tanks-guidance

End of life vehicles (ELVs): guidance for waste sites
https://www.gov.uk/guidance/end-of-life-vehicles-elvs-guidance-for-waste-sites

Depolluting end-of-life vehicles: guidance for treatment facilities
https://www.gov.uk/government/publications/depolluting-end-of-life-vehicles-guidance-fortreatment-facilities

Containment systems for the prevention of pollution (C736)
http://www.ciria.org/Resources/Free_publications/c736.aspx

Fire Prevention & Mitigation Plan - https://naturalresources.wales/media/682159/eng-guidance-note-16-fire-prevention-mitigation-plan.pdf

Fire Safety Risk Assessment - Factories and Warehouses. - https://www.gov.uk/government/publications/fire-safety-risk-assessment-factories-and-warehouses

Health and Safety Executive (HSE) Fire Safety Guidance - https://www.hse.gov.uk/toolbox/fire.htm

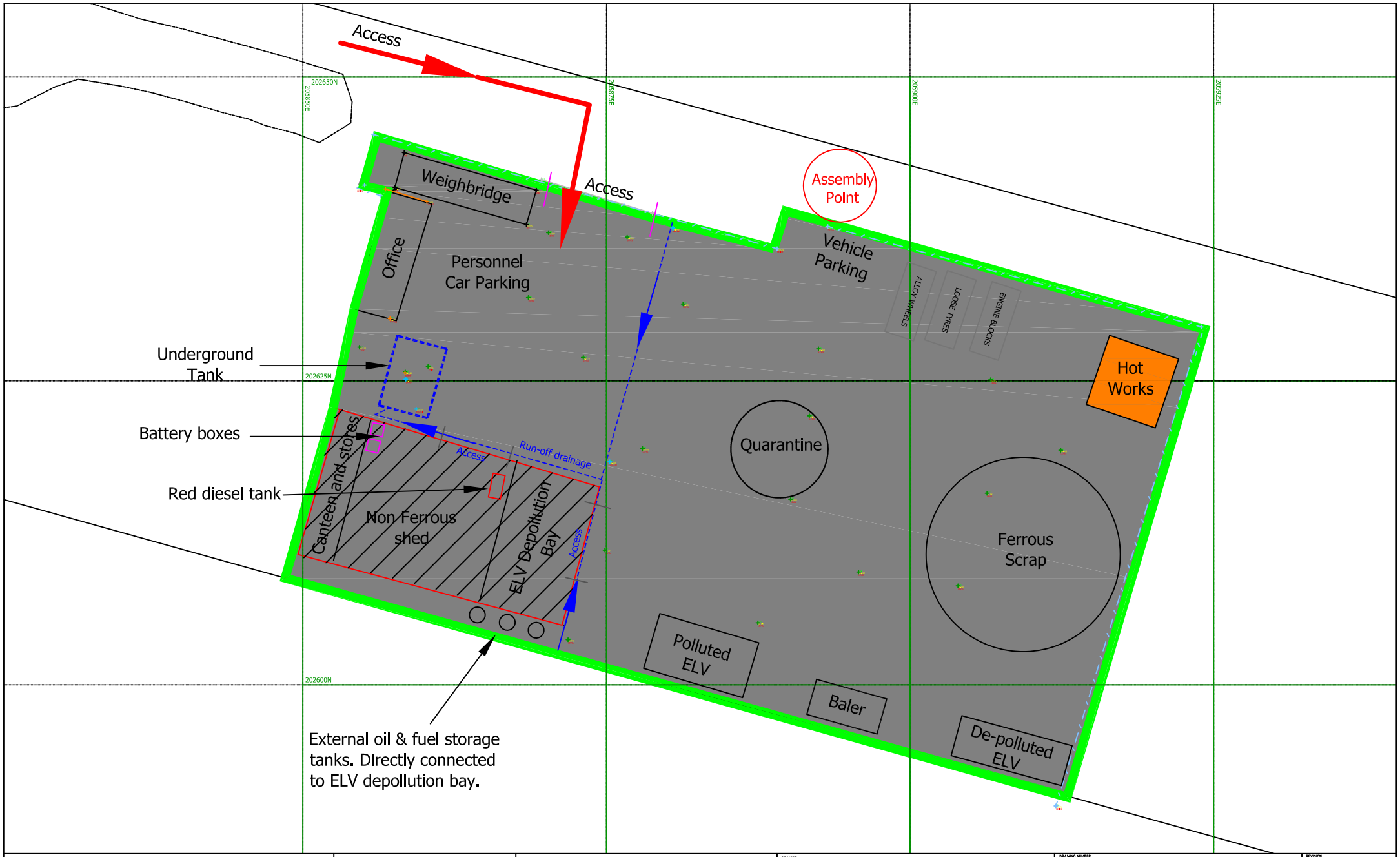


Figure Number 2135/1	NOTE	CLIENT: Pembrokeshire Recycling Ltd	PROJECT: ELV ATF	DRAWING NUMBER: 2135/1		REVISION: 0
Legend: Concrete; Concrete In Building				SCALE: As Shown	DATE: 06/21	DRAWN: BR
		Rev / Date / Status/Ammendments	TITLE: Site Layout and Access	Geotechnology, Ty Coed, Cefn-yr-Allt, Aberdulais, Neath, SA10 8HE, 01639 775293, www.geotechnology.net		CHECKED

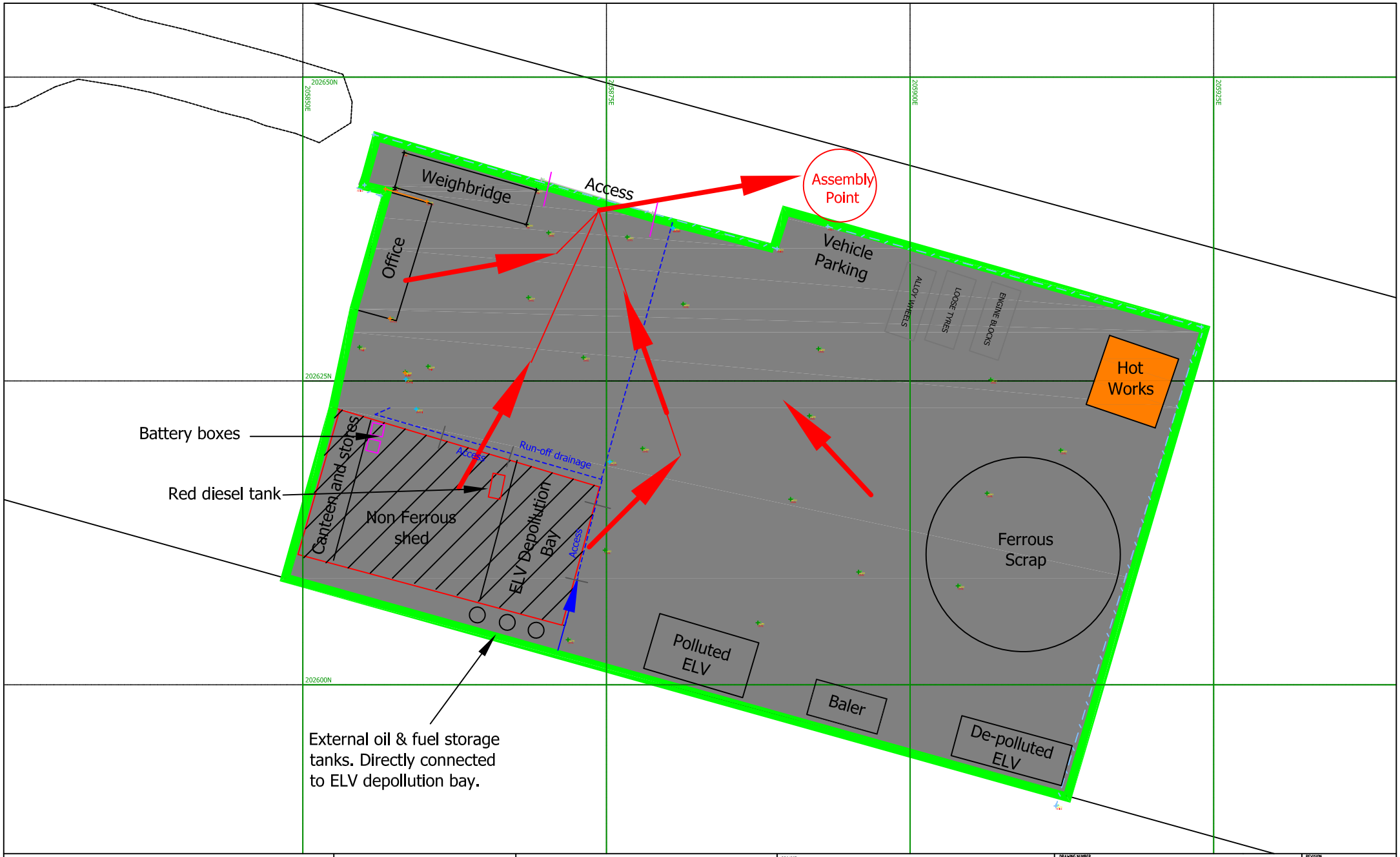


Figure Number 2135/2

Legend

- Concrete
- Concrete In Building

NOTE

CLIENT: **Pembrokeshire Recycling Ltd**

Rev	Date	Status/Ammendments

PROJECT: **ELV ATF**

TITLE: **Emergency Evacuation Routes**

DRAWING NUMBER	SCALE	DATE	DRAWN	CHECKED	REVISION
2135/2	As Shown	06/21	BR		0

Geotechnology
Ty Coed, Cefn-yr-Allt,
Aberdulais, Neath
SA10 8HE
01639 775293
www.geotechnology.net

Drawing Number 2135/3	NOTE	CLIENT	PROJECT	DRAWING NUMBER	REVISION
Legend Permit Boundary Permit Boundary beneath overhead bridge		Pembrokeshire Recycling Ltd	ELV ATF	2135/3	0
				SCALE AT A2: As Shown / DATE: 06.21 / DRAWN: KP	CHECKED
		Rev / Date / Status/Ammendments	TITLE: Sensitive Receptors	Geotechnology Ty Coed, Cefn-yr-Allt, Aberdulais, Neath SA10 8HE 01639 775293 www.geotechnology.net	GEO TECHNOLOGY

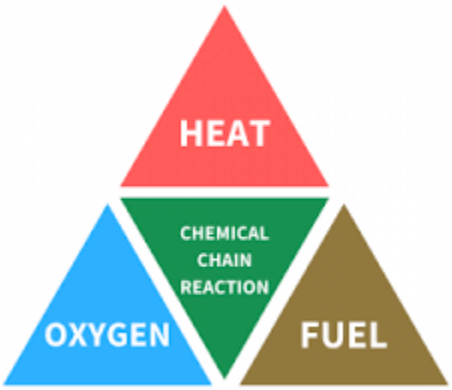
PEMBROKESHIRE METAL RECYCLING BESPOKE PERMIT

FIRE PREVENTION AND MITIGATION PLAN

Appendix 1
Fire Plan Justification

Report Number 2135r5v1d0621

Metal recycling, vehicle storage, depollution & dismantling (authorised treatment) facility



APPENDIX 1.
FIRE PLAN JUSTIFICATION

Report Number 2135r5v1d0621

Commissioned by

Pembrokeshire Metal Recycling
Carew pavilion
Carew Airfield
Tenby
SA70 8SX

Fire Plan

List of Tables

1 INTRODUCTION

This document forms an appendix to the fire plan. This document is intended to document some of the decision making underpinning the fire plan and to provide the waste regulator with additional information regarding the background to the development of the plan.

2 FIRE RISK

2.1 Combustible Waste at Site

An evaluation of the operation against the wastes typically found to be combustible, according to GN16, is provided in Table 2-1.

Table 2-1 Identification of Combustible Wastes

Potentially combustible wastes covered by GN16	**Applicability to Ammanford operation**
Paper or cardboard	No waste paper or cardboard accepted at site Small quantities present in site office and welfare facilities
Plastics	No separate plastics stored at site but plastics will be present in ELVs and attached to some metals
Rubber (natural or synthetic, including whole tyres, baled tyres, tyre shred, crumb and fibre)	**Whole tyres stored at site following removal from ELVs**
Wood & wood composites (planks, boards, pallets, crates, sawdust, shavings & chips	No wood accepted at site but small quantities may be present attached to scrap metal.
Fragmentiser waste (from processing end of life vehicles (ELV's), plastics and metal wastes from materials recovery facilities)	No fragmentised waste accepted or generated
Rags and textiles	Such waste not accepted or generated in significant quantities but textiles will be present in ELVs
Scrap metals including ELV's	**ELVs and scrap metal are the main waste type accepted and processed at the site**
Waste fuels – including residual combustible waste, RDF and SRF	No waste fuels are accepted or generated at the site
Waste electrical and electronic equipment (WEEE) such as fridges, computers and televisions containing combustible materials such as plastic	No WEEE is accepted at the site but small electrical items / wiring will be present in ELV
Batteries within ELV's	**Batteries will be present in the ELVs**
Compost and plant material	No composting to be undertaken at the site
Biomass facilities	No biomass facilities at the site

Guidance Note 16 was prepared in response to a series of burn tests carried out by WISH (Waste Industry Safety and Health Forum). These tests aimed at replicating, as closely as practical, 'real life' waste fires. The tests were conducted on a variety of wastes including cardboard, plastic, RDF and SRF, tyre crumb, wood, paper and card, loose frag fluff (plastics, foams etc. from dismantling ELV) and shredded tyre. Based on the results of these burn tests, guidance on maximum stack sizes, fire break/separation distances and fire water requirements were developed and set out in a code of practice titled Reducing Fire Risk at Waste Management Sites.

As the site is an ATF and scrap metal recycling facility some of the specific results of the tests are not directly applicable to the main waste types accepted and handled. This is particularly true when it comes to considering the maximum stockpile sizes and separation distances for stockpiles of predominantly steel scrap which is not combustible. This is because such metals are not as high risk as other metals, such as magnesium and titanium.

The fire water demand calculations set out in the GN16 guidance are also not considered to be directly applicable to the wastes. This is because the calculations are based on tackling dense, highly calorific wastes whereas most of the wastes handled have a higher void ratio and are predominantly non-combustible. However, these wastes still do pose particular fire risks, along with other site activities, which require careful management and so the overall objectives and principles of the guidance still underpin the fire plan.

2.2 Potential Causes

Potential causes of fire at the site are evaluated in Table 2-2. The likelihood of each cause occurring is ranked as either low, medium or high. The ranking takes into consideration the preventative actions taken during day-to-day operation to limit the possibility of fire occurring.

Table 2-2 Potential causes of fires and control measures to be adopted

Potential Cause of Fire	Likelihood of Risk	Control Measures
Arson or Vandalism	Low Risk	• Routine inspection programme to ensure no breaches of site boundary • Daily/Weekly Inspection programme to ensure no breaches of security measures
Visitors and Contractors	Low risk	• Ensure all visitors and contractors are signed-in and familiar with site rules • Brief all visitors with key health and safety information including fire prevention procedures • Ensure relevant contractors provide RAMS that include fire prevention
Ignition Sources	Medium risk	• Open burning not permitted anywhere on the site • Smoking not permitted • Space heaters, furnaces, incinerators, heating pipes and naked flames not permitted/ not typically used on site. • Hot metal not generated during depollution/dismantling • Air tools and drills with earth leads used during depollution to prevent static electricity and sparking • All potential ignition sources (see other causes of fire) will be kept at least 6m away from combustible waste • Batteries removed from ELVs during waste acceptance • Scraping of concrete surfaces with metal to be kept to a minimum to prevent spark formation
Self-combustion	Low Risk	• Tyres will be stored for less than 3 months • All waste stored separately for less than 3 months • Robust waste acceptance procedures will ensure that waste does not represent any increased self-ignition risk • Daily visual check of all waste stockpiles to identify smoke/steam
Plant or Equipment Failure	Low risk	• All plant and equipment to be serviced and maintained as per manufacturers' requirements • Preventative maintenance programme to be implemented • Daily plant and machinery inspections carried out by trained plant operatives. All defects reported by end of the working day • All plant to be parked 6 metres from combustible waste where possible
Discarded Smoking Materials	Low risk	• Smoking only permitted in dedicated areas • Cigarette disposal bins provided in smoking area
Hot Works e.g. cutting and welding	Medium risk	• Hot works to be primarily undertaken in dedicated zone • If hot works are necessary, they must be carried out (>6m) away from waste storage areas • Firefighting extinguishers will be available at all times during hot works • Following all hot work, a fire watch will be maintained in relevant areas until end of shift to ensure there is no residual ignition source or smouldering fire
Industrial Heaters	Low risk	• The site does not use industrial heating of any kind
Poor Housekeeping	Low risk	• Daily inspections of working area to identify need for cleaning • Daily dry brushing of any loose combustible waste, dust and fluff in all areas • Immediate clean-up of leaks and spills with spill kits
Hot Exhausts	Low risk	• Tyres will be kept away from the working area • All other wastes in working area will be visually checked throughout operations for signs of heating • Upward pointing exhausts used where possible
Damaged/ exposed electrical cables	Low risk	• All relevant electrical items will be regularly PAT tested • Mobile power tools and power supplies will only be used for temporary maintenance tasks • Firefighting equipment will be available on site at all times (powder and foam extinguishers and extinguisher fire balls)

Potential Cause of Fire	Likelihood of Risk	Control Measures
Hot loads deposited at site	Low risk	• No hot loads are accepted at the site • Any hot loads would be rejected or placed into quarantine and NRW informed
Build-up of loose combustible waste, dust and fluff	Low risk	• ELV depollution does not generate significant quantities of dust and fluff
Tramp metal in machinery	No risk	• ELV depollution does not lead to generation of material that could get caught in machinery
Batteries in waste	Low risk	• Disconnect/remove all batteries from ELVs as soon as possible after reception to prevent short-circuiting • All waste inspected at reception. Inspection aimed at identifying prohibited waste stowed away including lithium batteries
Batteries in ELVs	Low risk	• Disconnected during waste acceptance • Stored in dedicated battery container with dismantling building
Leaks and spillages of oils and fuels	Low risk	• ELV depollution utilises purpose built Autodrain for depollution of fuels, oils and other liquids • Prevent leaks by using appropriate containers • Prevent leaks by not over-filling appropriate containers • Prevent spillages by using funnels etc. to fill appropriate containers • Prevent spillages by using drip trays • Ensure materials used to absorb combustible liquids are correctly stored before disposal as hazardous waste
Poor Waste Acceptance Inspections/ Problematic waste stowed away	Medium risk	• Visual inspection of all waste accepted will include assessment of potentially hot wastes and abnormal loads with increased fire risk such as lithium batteries and gas cylinders • Quarantine area to be maintained for problematic loads
Open Burning	Low risk	• No burning of wastes is allowed anywhere on the site (see site rules)
Sparks from Loading Buckets	Low risk	• Dragging/pushing of buckets along concrete floor should be kept to a minimum • Dry (wire) brushing to be used to maintain site cleanliness in waste storage area • All operatives to look out for sparking and to inform management immediately • Air tools and drill with earth lead used to limit sparks and electrostatic
Neighbouring Site Activities	Low risk	• Be aware of activities at adjacent yards • Establish good communications between all parties and understand processes /risks
Reactions between wastes	Low risk	• Understand risk of lithium batteries entering site during pre-waste acceptance checks – this is because damaged lithium batteries can cause fires • Inspect waste deliveries for gas cylinders • Ensure rapid turnover of all wastes to minimise potential build-up of heat due to chemical oxidation • Maintain quarantine area for problematic wastes
Cylinder storage	Low risk	• Ensure cylinders are carefully handled and stored in dedicated cage • Specialist contractor to be used to collect cylinders for off-site recovery / disposal
Leaks of fuel and oils	Low risk	• Depollution of fuels occurs via proprietary closed system (Autodrain). Suction minimises vapour loss • Drip trays regularly emptied to reduce vapour accumulation • Depollution occurs at ground level so vapours can't accumulate in an inspection pit • Depollution bay is ventilated to outdoor air • Fuels retained in sealed vessels and quickly utilised on site • Autodrain equipment not kept near potential ignition sources • Correct storage and disposal of materials used to absorb combustible liquids
Cooking	Low risk	• No cooking facilities provided in welfare facilities

2.3 Self Combustion

According to GN16, many materials can self-combust under certain conditions, and the risk generally increases when materials are stored for prolonged periods, whether internally or externally, and in general the smaller the particle size the higher the risk.

Storage time limits presented in GN16 are reproduced in Table 2-3 alongside the predicted storage duration at the site. These timeframes are considered as starting points for the consideration of storage and self-combustion and used to inform stock management and rotation requirements.

All of the waste is to be in storage for very short duration and so on this basis the risk of self-combustion is considered to be very low.

Table 2-3 Evaluation of maximum storage time of combustible wastes

Waste	Max storage according to GN16	Storage time at site under normal conditions	Implications for site management
Non-shredded or similarly treated wastes (that is wastes whose particle size has not been reduced)	6 month	ELVs (polluted and depolluted) to be in storage for **<1 month**	Short duration storage indicates no need for stock rotation or hot spot monitoring under normal conditions
Baled and compacted wastes	6 month	Interlaced bales of depolluted ELVs to be in storage for **<1 month.**	Short duration storage indicates no need for stock rotation, hot spot monitoring, sampling, temperature readings, turning or re-baling under normal conditions
Shredded and similarly treated wastes (that is wastes whose particle size has been reduced)	3 month	No shredding or size reduction to be undertaken. All wastes to be on site **<3 months**	Not applicable
Combustible fines/dusts & very small particle size wastes	1 month	No fines / dust accepted or generated. All wastes to be on site **<3 months**	Not applicable

According to GN16, some materials are at risk of self-combustion if stored for more than 3 months. An evaluation of these wastes against the operation is provided in Table 2-4.

This indicates that the planned storage times fall well below the timeframes for potential self-combustion i.e. self-combustion could occur after ~90 days (3 months) but wastes will be stored for much less than this. This suggests that self-combustion is not likely which has significant implications for site management and fire detection. These implications are detailed in Table 2-3 and 2-4.

Table 2-4 Evaluation of materials at risk of self-combustion

Waste	Typical timeframe for risk of combustion according to GN16	Storage time at site under normal conditions	Implications for site management
Green material	>3 months	No green waste at site	Not applicable
Compost	>3 months	No compost at site	Not applicable
Wood	>3 months	No wood at site	Not applicable
Wood products	>3 months	No wood at site	Not applicable
General / mixed waste including residual waste, RDF and 'fines'	>3 months	No fines at site	Not applicable
Tyres (whole)	>3 months	Loose tyres to be placed in RORO and stored for <1 month	Short duration storage indicates no need for stock rotation or hot spot monitoring under normal conditions
Tyres (processed)	>3 months	No processed tyres on site	Not applicable
Smaller size or graded materials either stored or mixed	>3 months	Not applicable	Not applicable
Material that has not had potential hazards removed before stacking e.g. rust which can generate heat	>3 months	ELVs to be in storage <1 month Batteries removed prior to ELV storage	Short duration storage indicates no need for stock rotation or hot spot monitoring under normal conditions
Treated materials which are not cold before storage e.g. treatment can generate heat	>3 months	All materials from hot works to be allowed to cool prior to stockpiling Depollution does not generate heat All waste to be in storage <3 months	Short duration storage indicates no need for stock rotation or hot spot monitoring under normal conditions
Presence of Lithium batteries	Not mentioned under self-combustion but such batteries can combust if damaged causing metal fire	Thorough waste acceptance measures to be adopted to ensure rogue batteries are identified	Quarantine skip to be maintained for non-permitted waste Sand bags to be available to isolate problematic waste

3 FIRE MINIMISATION

3.1 ELV Management

GN16 does provide specific guidance on the storage of ELVs as follows:

Each vehicle should be accessible from at least one side:

- to allow a fire to be fought
- so unburnt vehicles can be accessed and moved to prevent the fire spreading.

These rules will limit any row to a depth of 2 vehicles.

Where ELVs are stored on top of another, or on racking, this should be limited to 3 vehicles high so the stack can remain stable during a fire.

Minimum separation distance between rows or blocks of vehicles should be in accordance with Graph 1.

These aspects, and those related to baled ELV, have been incorporated into the site configuration.

In addition to the specific ELV requirements, the GN16 graphs are also underpinned by several assumptions. Evaluation of the main assumptions underpinning the graphs used to generate separation distances against the operation is presented in Table 3-1.

3.2 Separation Distances

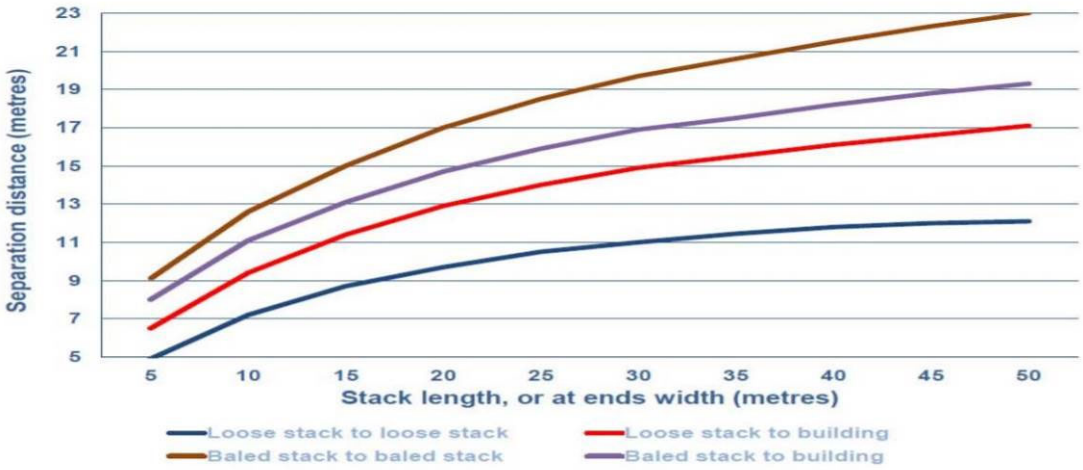
One of the key aspects of GN16 is the approach recommended to limiting the size of waste stacks and ensuring sufficient separation distances between stacks. In GN16 this is achieved through the use of look-up tables and graphs. Two approaches are provided in GN16 for to different types of waste:

- Graph 1 – to be used for determining stack lengths and separation distances for external storage of waste with typical maximum burn temperature of 950°C. This is waste such as general wastes such as RDF, SRF (Refuse Derived Fuel and Solid Recovered Fuel), wood and paper.
- Graph 2 - to be used for determining stack lengths and separation distances for external storage of waste with typical maximum burn temperature of 1200°C. This is waste such as plastics and rubber.

The notes detailing the wastes that Graphs 1 and 2 apply to do not explicitly include stacks of ELVs or scrap metal. It is, however, understood that NRW considers that Graph 1 should be used for determining separation distances between stacks of loose and baled ELVs and scrap metal. Graph 1 from GN16 is reproduced below for reference.

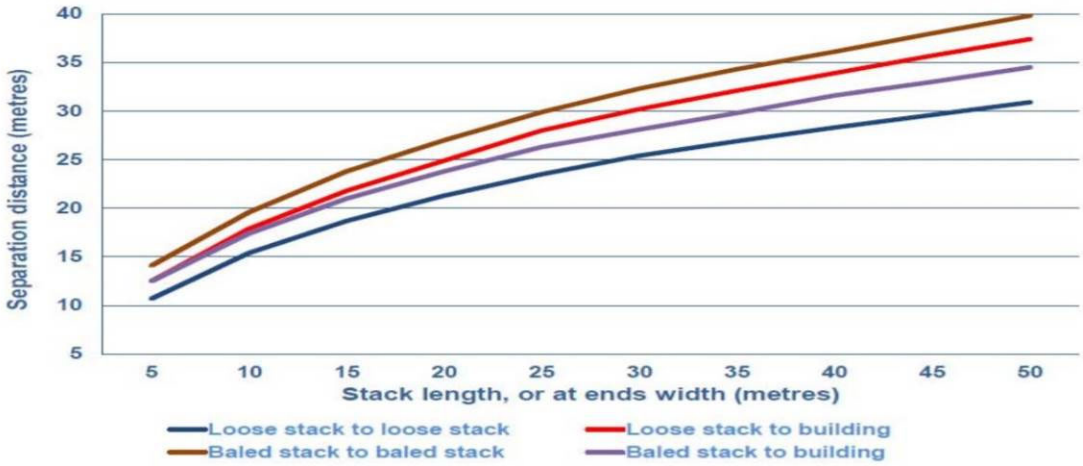
Stacks of tyres, comprising rubber, should be evaluated in accordance with Graph 2 and so this is also reproduced below and considered in the site layout.

Graph 1. Stack lengths and separation distances general wastes (typical max burn 950 °C)



To determine your separation distance, mark your stack length on the horizontal axis of the graph and draw a line up to the relevant graph line (stack to stack, to buildings etc.). Then draw a horizontal line across to the vertical axis and read-off separation distance. This can also be done in reverse. For example, at your site separation distance may be constrained by site size. Therefore this distance can be marked on the vertical axis and maximum stack length read-off on the horizontal axis

Graph 2. Stack lengths and separation distances plastic/rubber wastes (typical max burn 1,200 °C)



To determine your separation distance, mark your stack length on the horizontal axis of the graph and draw a line up to the relevant graph line (stack to stack, to buildings etc.). Then draw a horizontal line across to the vertical axis and read-off separation distance. This can also be done in reverse. For example, at your site separation distance may be constrained by site size. Therefore this distance can be marked on the vertical axis and maximum stack length read-off on the horizontal axis.

ELVs contain less combustible materials and greater void space than many of the other wastes that the separation graphs refer to. On this basis, a site specific approach has been adopted based on providing easy access to each stack of ELV. The site arrangement is summarised in Table 3-1.

Table 3-1 Evaluation of assumptions underpinning separation distance

Assumption in GN16	Applicability at operation
Max stack height of 4m or 4 bales	ELVs to be stacked no higher than 2 high
Max stack width of 10 – 20m (providing access is available on both sides)	Max stack width <20m
Free air separation to other stacks	See site layout plan
Free air separation to buildings	>6m
Dividing wall height, freeboard and structure	No dividing walls to be used
Max width of bunkers 10m	No bunkers to be used for fire separation

3.3 Baled Waste Storage

3.3.1 Sampling and Testing

As the bales are to be in storage for very short duration there is no benefit of sampling and testing. As the bales comprise metal, the use of a temperature / moisture probe would not provide representative readings or be practical.

3.3.2 Representative Readings

Given the rapid turnover of waste and the nature of the waste, no monitoring will be undertaken.

3.3.3 Turning of Bales

Given the rapid turnover of waste no turning of the bales is considered necessary under normal conditions.

Under abnormal conditions, no feasible scenario is envisioned where bales would be in storage for anywhere near 12 weeks, the time beyond which the risk of self-combustion is higher according to GN16. On this basis, the need for turning of metal bales is very low but would be undertaken if site inspections identified the need e.g. if potential hot spots were identified.

3.3.4 Breaking Open and Re-Baling

Given the rapid turnover of waste and the nature of the waste, it is not considered necessary to break open and re-bale metal bales to reduce fire risk.

Under abnormal conditions, no feasible scenario is envisioned where bales would be in storage for anywhere near 12 weeks, the time beyond which the risk of self-combustion is higher according to GN16. On this basis, the need to break open bales of metal and re-bale is very low but would be undertaken if site inspections identified the need e.g. if potential hot spots were identified.

3.4 Stack Management

Given the nature of the ELV and scrap metal waste materials the use of a probe, such as a temperature or moisture content probe, to identify deep seated core heat is not considered practicable – the probe could not penetrate effectively, could break and would not provide useful data with which to reduce and manage fire risk. The types of wastes prone to self-heating (such as frag wastes/steel can wastes) are not permitted and all wastes will be stored for much less than 3 months. Similarly, moisture content monitoring within stacks / bales of

metals is also not considered to be practical or provide useful information upon which to make risk based management decision.

Given the nature of the wastes and outdoor storage, natural moisture levels will be allowed to develop. Stockpile under-drainage will be provided to a sealed system. Given the nature and free-draining properties of the stockpiled metallic wastes, further moisture control is not considered to be necessary at this stage. As moisture levels can be important in promoting potential chemical oxidation reactions, this aspect will be reviewed.

To avoid self-combustion, high turnover of stock will be achieved and storage times will not approach 3 months. As the site is relatively small, waste will be processed and sent off site for recovery/disposal within 2 weeks. This is the only way that the operation is economically viable and so there is an underlying financial incentive for rapid waste turnover. Stock management will be based on the 'first-in-first-out' principle to avoid metal wastes being in storage longer than planned. Given the small nature of the site, this will be implemented by ensuring that waste to be taken off-site for recovery is first taken from the oldest stock on site. This will be implemented by ensuring stockpiles are removed in the order they were placed, starting with the oldest. Measures to reduce self-combustion are evaluated in Table 3-2.

Table 3-2 Evaluation of measures to reduce self-combustion

Fire prevention principle in GN16	Applicability at site	Implications for operation
Reduce risk factors	All waste to in storage <12 weeks No heat generated during treatment No fines accepted or generated	No need for stock rotation or formal hot spot monitoring
Minimise stack sizes	All waste will be kept separate in smaller stack sizes before maximum stack size is reached	
Control moisture	All waste on site for <12 weeks	Moisture control not considered necessary due to short-term storage.
Good stock rotation and monitoring	All on site <12 weeks	Routine stock rotation, formal hot spot monitoring and temperature readings not considered necessary due to short-term storage.
Store material in largest form	No size reduction required during depollution Baling undertaken weekly with bales in storage for <4 weeks	Ensure bales are routinely removed from site.
Monitor stack temperature	All ELVs and tyre waste on site <12 weeks	Temperature and moisture content monitoring of loose ELV or bales not considered practical or necessary due to nature of waste and short-term storage.
Regularly turn stacks	All waste on site <12 weeks	Routine turning of stacks (loose ELV or baled ELV) not considered necessary given short-term storage. Stacks of loose ELV or baled ELV would be turned under abnormal conditions if need identified by observation and consultation with FRS.
Detect and control hotspots	All waste on site <12 weeks No heat generated during treatment Dedicated hot works area provided	Temperature monitoring of loose ELV or baled ELV not considered practical or necessary due to nature of waste and short-term storage. Visual observation, such as presence of steam, will be used as good indicator of hotspot during daylight hours. Bales could be split open if required but not considered likely – NRW / FRS would be consulted if this need arose.
Define maximum storage times	All wastes to be on site <12 weeks	ELVs to be date marked (day/month) using spray paint and rotational stocking areas to ensure first-in-first-out principle implemented.
Minimise external heating	All wastes to be on site <12 weeks	No additional shading from sunlight considered necessary at this stage given short-term storage times

4 FIRE DETECTION

4.1 Early Fire Detection

GN16 requires operators to give consideration to adequate procedures to detect a fire in its early stages so that its impact can be potentially reduced.

4.1.1 Active Control Measures

Active fire detection measures such as those listed below have been considered:

- smoke and heat detectors including temperature probes
- CCTV visual flame detection systems
- spark, infrared and ultraviolet detection

As there are few ignition sources and the site has good lines of sight, the risk of fires developing un-noticed during working hours is very small. On this basis, installation of active fire detection measures is not considered necessary for such times.

However, to protect the identified valuable assets, automatic fire ball extinguishers are to be mounted on the wall of the ELV depollution bay above the Autodrain tanks that will contain small quantities of oil or fuel.

4.2 Waste in a Building

According to GN16, if an operator stores waste in a building, they should seek competent advice on the potential installation of a fire suppression system. This system should be proportionate to the nature and scale of waste management activities carried out and the associated risks.

At site, there is little combustible waste stored in a building as all ELVs will be stored externally. In this context, the focus is on preventing fires and protecting valuable assets within the ELV depollution bay. On this basis, fire extinguishing balls will be placed into each of the buildings but sprinklers, manual open deluge system and deluge/water spray systems have been ruled out at this stage. The insurers have not placed any specific demands on the site.

4.2.1 Passive Control

As the site is open with good lines of sight , the addition of signage is not considered necessary at this stage. Escape routes within the building will, however, be signposted. All escape routes are external and through the single point of access and egress. Only personnel familiar with the site layout are ever present at site.

4.2.2 Hot spot and Fire Monitoring

Early identification and separation of hotspots can be critical in reducing the severity and spread of fire. However, no formal hotspot monitoring is considered to be necessary to overcome potential problems of hot spots developing due to the short-term storage planned.

Throughout each shift, all operatives will be encouraged to be vigilant for signs of a hot spot or burning material. This would include identifying areas where hot spots may develop and the detection of smoke or odours and/or the presence of steam, heat and heat haze.

If indications of a potential hot spot were observed in the waste, then the waste would be separated and turned. This would be done in the quarantine area to provide as much free air for cooling as possible and the ability to extinguish. The local FRS would be consulted.

5 EMERGENCY PREPAREDNESS

No additional comment.

6 FIRE RESPONSE

6.1 Overall Philosophy

The operator acknowledges that the FRS may not be able to or will choose not to enter a building during a fire and sometimes will allow waste to burn out. Such decisions are often made based on dynamic risk assessments informed by the timing of the incident and risks to human life, high value assets and the environment. For this reason, the underlying principle of the approach is to operate and layout the site to minimise the risks of fire starting and spreading in the first instance and to provide a sufficient, reliable and adequate supply of fire water to the site.

The operator recognises that fires in waste sites can be difficult to extinguish, needing a lot of resources for long periods, and can have serious effects on public health, the environment, safety to firefighters and local communities. Impacts may be short term or long term, including:

- Public health impacts on responders and communities
- The public being evacuated or sheltering in place
- Environmental impacts
- Pollution of groundwater
- Road closures
- High demand on fire and rescue services and other agency resources
- Large-scale financial losses and disruption

When dealing with anything other than hotspots or small fires, the operator expects the FRS incident commander responding to have the ultimate say in how the incident will be managed and the strategy that will be used to bring the incident to a satisfactory conclusion.

During an incident, particularly large incidents, there are often a number of conflicting views, pressures or powers from interested parties such as the public, environmental regulators and local authorities.

These conflicting views can be difficult to manage alongside the views of the site operator/ land owner and can place the incident commander under considerable pressure to find a solution that fits the differing priorities from different organisations. For this reason, the operator will provide the FRS with all the resources it requires and is keen for this FPMP to be developed through consultation with relevant parties.

As noted in GN16, fires in stacks can be particularly difficult to extinguish using conventional firefighting approaches. This is particularly the case at sites storing treated wastes such as tyre crumb, wood chip or compost, because of the small particle size of the waste and the density of the stack.

Direct application of water, with or without firefighting additives such as foam, to burning stacks is often ineffective and may generate large volumes of polluted fire water and/or increase the hazard from the smoke plume, due to lower combustion temperatures. At ELV ATFs there is also the possibility of large quantities of fuel or oil creating running fires.

Fortunately, at the site there are no stacks of high density calorific wastes and only ever very small quantities of fuel / oil, most of which is diesel. On this basis, any fires should be able to be tackled using relatively conventional means. Each fire is, however, unique and so the

precise approach adopted by the FRS will be dependent upon a number of inter-related factors and ultimately their decision.

Typical firefighting methods for burning solid waste may include smothering the waste, separating burning material from other waste and controlled burn. Controlled burning is a defensive operational tactic to prohibit or restrict the use of extinguishing media on fires to allow the combustion process to continue uninhibited. This is sometimes used as UK law and does not require the FRS to extinguish fires. A controlled burning strategy may warrant consideration in certain circumstances, including protecting the environment, where the benefit from offensive firefighting does not outweigh the risks, or where available resources and media are insufficient to successfully resolve the incident. The decision of FRS to adopt a controlled burn strategy, as with smothering, would likely be made following consultation with relevant parties.

6.2 Strategy

In arriving at the firefighting strategy the operator has considered:

- the layout of the site – ignition sources, scale & nature of the environmental hazards and activities that take place
- remote location
- key environmental receptors
- risks posed to people
- risk posed to the environment
- risks posed to property
- type of materials stored on site
- availability of firewater containment facilities
- local topography, weather conditions and fire scenarios that could reasonably be expected on site

The site layout has been designed to allow for active firefighting, to minimise fire spread and to allow a fire to be extinguished within the shortest time possible. This includes ensuring good access for FRS at all times and large free air separation distances between small waste piles. Despite the range of activities at the airfield and its history, the operator and the FRS is aware that there are no hydrants at the site. For this reason, in the event of a fire, FRS understand that they would tun up with additional fire water and that PMR will provide easy access to rainwater stored in the underground tank and in IBCs placed around the site. As the whole site is bunded, impounded fire water may also be available for re-use.

7 EXTINGUISHING SMALL FIRES

No additional comment.

8 FRS FIRE WATER SUPPLY

No additional comment.

9 FIRE WATER MANAGEMENT

No additional comment.

10 DURING AND AFTER AN INCIDENT

No additional comment.

11 REVIEW AND MONITORING

No additional comment.

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