Report: *CWM1005/FPP*
Date: *April 2018*

FIRE PREVENTION & MITIGATION PLAN
MATERIALS RECYCLING FACILITIES,
NANTYCAWS WASTE MANAGEMENT SITE,
LLANDDAROG ROAD,
NANTYCAWS,
CARMARTHEN, SA32 8BG

Prepared for
CWM Environmental Limited

Prepared by

The Beacon Centre for Enterprise
Dafen
Llanelli
SA14 8LQ

Tel: 01554 780544
Fax: 01554 759988
Web: www.thesiriusgroup.com

Project Quality Assurance
Information Sheet

FIRE PREVENTION & MITIGATION PLAN

Report Number	:	CWM1005/FPP	***Report Status***	:	Final
Report Date	:	April 2018			
Prepared for	:	CWM Environmental Limited			
Prepared by	:	Sirius Environmental Limited The Beacon Centre for Enterprise Dafen Llanelli SA14 8LQ			

Written by:

Lucy J Edds
Environmental Consultant

Reviewed & Approved by:

Mark L Griffiths
Environmental Director

FIRE PREVENTION & MITIGATION PLAN

MATERIALS RECYCLING FACILITIES,
ENVIRONMENTAL PERMIT VARIATION APPLICATION,
NANTYCAWS WASTE MANAGEMENT SITE,
LLANDDAROG ROAD,
NANTYCAWS,
CARMARTHEN,
SA32 8BG

CONTENTS

DRAWINGS

Drawing No.	Title
CWM1005/5/FPP01	Indicative Operational Layout
CWM1005/5/FPP02	Indicative Drainage Layout
CWM1005/5/FPP03	Site Receptor Plan
CWM1005/5/FPP04	Water Supply & Firewater Management Plan

APPENDICES

Appendix No.	Title
FPP1	West Wales Fire Safety – Fire Risk Assessment (RWMRF and Clean MRF)
FPP2	Nantycaws Fire Strategy Plan
FPP3	Emergency Contact Details
FPP4	End of Shift Check sheet
FPP5	Plant Temperature Check Sheet
FPP6	Housekeeping Schedule
FPP7	Example Stockpile Rotation Record Sheet
FPP8	Exercise Plan
FPP9	Legioblock Fire Resistance Certificate

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

1.1 Scope

1.1.1 Sirius Environmental Limited (Sirius) has been commissioned by CWM Environmental Limited (CWM) to prepare a Fire Prevention and Mitigation Plan (FPMP) to support the operation of their Materials Recycling Facilities (both the Residual Waste Materials Recycling Facility and the 'Clean' MRF) at Nantycaws Waste Management Facility, Llanddarog Road, Nantycaws, Carmarthen, SA32 8BG.

1.1.2 This Fire Prevention and Mitigation Plan (FPMP) has been prepared in order to identify the potential fire risks associated with the handling, storage and processing of combustible materials. This plan presents the methods of fire control that are employed at the site, which includes emphasis upon fire prevention, detection, containment and potential mitigation techniques. Further to this a "Fire Fighting Strategy" (see Section 4.8) in place which will be implemented should a fire break out).

1.1.3 The wider Nantycaws Waste Management Facility includes a number of waste activities including landfill disposal, In Vessel Composting (IVC) and Open Windrow Composting (OWC) and Household Waste Recycling Centre (HWRC). These activities are considered outside the scope of this Fire Prevention & Mitigation Plan.

1.1.4 The Fire Prevention and Mitigation Plan has been compiled in accordance with the EP Regulations and with cognisance to the Natural Resource Wales Guidance "Fire Prevention & Mitigation Plan Guidance – Waste Management, Version 2, August 2017" and Waste Industry Safety and Health Forum (WISH) document "WASTE 28 – Reducing Fire Risk and Waste Management sites, Issue 2" which was published in April 2017. The document seeks to provide guidance for the prevention and management of potential waste fires at the site and seeks to minimise the potential impact of a fire on the environment.

1.1.5 The completion of a Fire Risk Assessment by a competent person has been included in **Appendix FPP1**, which addresses the requirements of the Regulatory Reform (Fire Safety) Order 2005 for both the RWMRF and the Clean MRF.

2.0 SITE DETAILS

2.1 Site Setting

2.1.1 The site under consideration of this Fire Prevention and Mitigation Plan is Nantycaws Materials Recycling Facilities (RWMRF and Clean 'MRF)) located at Nantycaws Waste Management Facility, Llanddarog Road, Nantycaws, Carmarthen, SA32 8BG.

2.1.2 The site is located approximately 1.3km to the south east of the village of Nantycaws, on the southern side of the A48 dual carriageway between Cross Hands and Carmarthen. The small village of Llanddarog is situated approximately 2.9km to the south east. The site is situated at National Grid Reference 247312, 217627.

2.1.3 The site is bounded in all directions by the wider footprint of the applicant's landholding. The 'clean' MRF for sorting co-mingled recyclates, is situated immediately adjacent to the RWMRF, with a hedgerow and open windrow composting activities to the west. There are open fields (which are owned by the applicant) and further hedgerows situated to the north, beyond which the A48 dual carriageway runs in a broadly east/west alignment. The site is bound upon its southern boundary by the unclassified site access road beyond which lies the site offices, weighbridge and car parking facilities.

2.1.4 The site is bounded by a combination of steel palisade gates, fencing and in places landscaped hedge lines. The main access gate is kept secure out of hours. During operational hours, the main access gate to the north of the wider site (just off the A48) is kept open for staff, customers and visitors. In addition to this the MRF operations will be undertaken within buildings which will be kept secured (locked) during out of hours.

2.1.5 The land use surrounding the wider area of the applicant's landholding is predominantly rural in nature interspersed with farm properties and small villages, as well as the busy A48 dual carriageway.

2.2 Site Activities

2.2.1 The site is authorised to operate a Household, Commercial and Industrial Waste Transfer Station (referred to as a Residual Waste 'Dirty' Materials Recycling Facility) with treatment, including the production of Refuse Derived Fuel (RDF). Wastes accepted at the Residual Waste 'Dirty' Materials Recycling Facility (RWMRF) are limited to inert and non-hazardous wastes which are permitted to be treated via manual and/or mechanical sorting, separation, screening, baling, shredding, crushing, compaction and bulking of permitted wastes for the purposes of recovery or disposal to the adjacent landfill. Please note, at present, crushing and shredding is not conducted at the site. RDF is produced via the use of suitable residual materials remaining from the mechanical processing of wastes at the site, as well other authorised wastes which are accepted under the Environmental Permit. Please note this Fire Prevention and Mitigation Plan

has been produced in support of an Environmental Permit Variation Application to consolidate the RWMRF and Clean MRF activities at Nantycaws, which are currently permitted by separate Environmental Permits. The maximum quantity of waste accepted at the RWMRF is 125,000 tonnes per annum.

2.2.2 The 'Clean' MRF is permitted to accept up to 75,000 tonnes per annum of non-hazardous waste. With the exception of "specified waste", (which predominantly comprise non-hazardous inert materials), all bulking, transfer and treatment of waste is carried out within a dedicated building. Wastes are permitted to be treated by sorting, separation, screening, baling, shredding, crushing and compaction. Please note, at present, crushing and shredding is not conducted at the site.

2.2.3 Similarly, any residual material produced as part of the 'Clean' MRF operations is transported via covered conveyor to the RWMRF for further processing.

2.2.4 The RWMRF building (constructed in 2013) is of portal steel frame construction, the walls of which are part interlocking, reinforced concrete blocks (600mm thick) to a height of 3m-4m and part insulated core panel which then continues up to the pitched roof (c. 8m high). The roof is constructed of insulated core panels with integrated non-openable sky lights. The front and rear of the building have large roller shutter doors which allow for vehicular access. The waste reception area is surrounded by steel and concrete support which will prevent the spread of a fire to the processing line (and vice versa).

2.2.5 The 'Clean' MRF building measures approximately 72m x 42m and 8m to the eaves of the pitched roof. It is of portal steel frame construction and the walls are part insulated core panel (20%) and part coated steel box profile sheets (805). The pitched roos is constructed of insulated core panels with integrated non-openable skylights. In addition to this, in the blue bag reception area interlocking reinforced concrete panels (5m x 1m x 150mm thick) lines the walls to a height of 6.5m.

2.2.6 As previously discussed, there are a number of buildings on the wider Nantycaws site including those associated with the wider waste management facility and those utilised for administrative purposes.

2.2.7 Access to and egress from the site is undertaken via a dedicated junction off the westbound carriage of the A48, via the main access road (an unclassified road to the south of the A48) which also serves the wider waste management operations at the site.

2.2.8 When entering the site, the waste load must stop at the weighbridge in order for the appropriate weights of the load to be obtained and to ensure the undertaking of the Duty of Care checks in accordance with the site's Environmental Permit (waste acceptance procedures are discussed further in **Document Reference CWM1005/04** and Section 4.1). All vehicles will require a Waste Transfer Note and a visual inspection will be carried out at the

weighbridge to confirm the description of the transfer note. The waste delivery would then receive further instruction from the weighbridge operator.

2.2.9 After the materials are thoroughly checked in at the weighbridge, they are sent to the appropriate location within the RWMRF or 'Clean' MRF (depending on the waste load) for unloading and storage pending treatment. The untreated mixed waste materials or comingled recyclates are stored within the appropriate building prior to treatment via the relevant process.

RWMRF Operations

2.2.10 The RWMRF process line receives mixed residual and recyclable non-hazardous, inert waste material from Household, Commercial and Industrial sources (as well as some non-hazardous bulky and clinical waste) which requires separation for onward processing. These materials are subject to a series of manual and automated sorting operations which includes a bag splitter, screens, magnetic separators, eddy current separator, elevated picking station etc. Where appropriate, materials will be removed and sorted into fractions such as steel and aluminium. Separated recyclable materials will be placed into steel storage bay beneath the picking line.

2.2.11 The residual waste materials from the sort line, as well as other permitted residual wastes (as listed within the Environmental Permit) are deposited to a residual waste storage area which is located within the RWMRF building. Further to this, suitable residual waste emanating from the adjacent 'clean' MRF operation is transferred via a covered conveyor to the RWMRF for storage pending treatment. From here the waste is separated into two fractions, a residual waste that is suitable as RDF and a residual waste for disposal only. Other waste sources identified to contain lower levels of recyclable materials are deposited directly into the RDF input storage area but are subject to a mechanical pick to extract identified large recoverable materials such as metals, wood and large inerts. These materials are removed and set aside for resale or suitable disposal. The residues from this process along with those from the sort line enter the RDF preparation route.

2.2.12 The prepared (suitable) RDF feedstock is loaded by an excavator fitted with a grab handler or loading shovel into an electrically powered bag splitter, which is situated within the RWMRF building. The bag splitter reduces the size of any large items for the primary purpose of improving the baling process and to facilitate handling. The material is then transported via conveyor to the baling plant. Within the baling plant, the material is tumbled and condensed to form a square bale. The bales of residual waste are then transferred to a storage area in order to undergo wrapping. The square bale is stabilized by being fully wrapped with multi-layers of film. The wrapped RDF bales are then stored prior to onward transfer to an appropriate facility. The resulting bales can be directly used as a fuel to produce electricity.

2.2.13 The residual waste stream at CWM Environmental is not treated to fulfil contractual or product standard requirements. Any change in the quality of the

RDF as a fuel is purely incidental as opposed to intentional. All treatment activities are conducted merely to facilitate handling and to ensure that the maximum extraction of recyclates from the waste stream is achieved.

2.2.14 Foul water drainage within the building is directed towards a sealed sump or via a network of gullies which drain ultimately to a below ground storage tank which has a capacity of 25,000 litres.

'Clean' MRF operations

2.2.15 The 'Clean' MRF receives non-hazardous Household, Commercial and Industrial waste deemed suitable for recycling. This includes dry recyclates such as paper, cardboard, plastics and metals etc. Waste inputs will predominantly be in comingled form, which is a function of the current collection strategy employed by local authorities across the south west Wales region. The co-mingled recyclate is treated via a variety of manual and automated means, including elevated pre-sort picking stations, trommel, ballistic separators, overhead band magnets, eddy current separator and materials baling press. The material is loaded into a bag splitter and is transported around the treatment process via series of conveyors.

2.2.16 Post treatment storage will be predominantly in a building (in accordance with the Environmental Permit), in dedicated bays and/or in appropriate secure containers. In the event that baled recyclate is stored externally this will be carried out in accordance with an S2 exemption which is currently held for the site.

2.2.17 A conveyor belt system is in place between the 'Clean' Materials Recycling Facility (MRF) and adjacent Residual Waste ('Dirty') Materials Recycling Facility (RWMRF), allowing for the transfer of residual waste from the Clean MRF to the RWMRF for processing.

2.2.18 All equipment and treatment processes associated with both the RWMRF and 'Clean' MRF are housed within purpose-built buildings (unless stored or treated externally as "specified waste" in accordance with the Environmental Permit or with the operators S2 Exemption), with doors that only open to allow access. All operations are carried out upon impermeable surfacing with sealed drainage.

2.3 Site Layout

RWMRF

2.3.1 The RWMRF comprises a portal steel frame construction, with part interlocking reinforced concrete panels utilised for walls. There are larger roller shutter doors at the front and rear of the building allowing for vehicular access. The building comprises a waste reception hall, loading bay, the RWMRF processing equipment, raised mezzanine area, storage areas for segregated recyclates, baled RDF and loose, processed residual waste. There is also an external yard area situated to the north of the building, with a covered storage area situated

along the northern boundary of the site. All waste storage/treatment areas are finished with impermeable surfacing with a fully engineered sealed drainage system.

2.3.2 As alluded to above, there are three work areas within the RWMRF building:

- The ground floor which is utilised for the delivery of unprocessed waste ('black bag' waste), the collection of processed waste materials and a small hand sorting area.
- Mezzanine walkway working area utilised for the processing of materials including the pre-sort and main sort lines. The majority of the material is conveyed to the end of the line where it is dropped onto the baler feed conveyor which then transport the material to the baling area
- Material is transferred to a feed hopper above the baler, where it is baled into large square bales utilising netting ready for removal to the appropriate storage area.

2.3.3 The raised mezzanine processing area consists of a number of walkways and workstations adjacent to conveyor belts for hand picking as well as guarded machines for mechanical separation. The walkways are of steel construction which are supported by steel columns and beams. An open steel box framework encloses the mezzanine.

2.3.4 As previously stated, the mixed unprocessed 'black bag' waste is stored in the waste reception hall within the northern extents of the building. The 'black bag' waste is then loaded into the feed hopper where it is treated via the process line and separated into the various waste streams. Aluminium and steel are extracted from the process line and stored in steel bays beneath the raised mezzanine level. Residual waste then continues toward along the process line and is either transferred to the baler to undergo the RDF baling process or is stored in a loose stockpile for transfer offsite.

Clean MRF

2.3.5 As previously indicated, the Clean MRF is of portal steel frame construction, with walls which are part insulated core panel and part coated steel box profile sheets. The pitched roof is constructed of insulated core panel with integrated non-openable sky lights. There are interlocking reinforced concrete panels (mearing 5m x 1m x 150mm) which line the walls to a height of 6.5m in the Clean MRF reception area.

2.3.6 There are three main work areas associated with the Clean MRF:

- Waste Reception Area – Bags of recylates are deposited in this area prior to be transferred via the use of a tele-handler into the bag splitter
- Mezzanine Area – A conveyor system links the bag splitter to the raised mezzanine area for manual and automatic processing into the various recylate components

- Recyclates are then placed onto a conveyor which transport the material to a hopper which is situated above the baling machine. Bales are then removed from the building and stored externally within an open fronted storage area to the North of the RWMRF.

2.3.7 The mezzanine area in the Clean MRF is of the same construction as that utilised (and described previously) for the RWMRF.

2.3.8 The indicative operational layout for the site is illustrated on **Drawing Reference Number CWM1005/5/FPP01** and the drainage layout is shown on **Drawing Reference Number CWM1005/5/FPP02**. The indicative operational layout includes the layout of the building, location of hazardous materials e.g. fuel, location of the fire hydrant and lagoon, location of PPE, pollution control equipment materials, drain covers, natural/unmade ground etc. Please note, although PPE is kept on site, the emergency services will be alerted in the event of the fire and will be equipped with appropriate clothing for firefighting purposes. The firewater management plan is depicted on **Drawing Reference Number CWM1005/5/FPP04**.

Access Arrangements

2.3.9 As previously discussed, access to the site is gained via an entrance point located to the north of the site, via the A48 dual carriageway and subsequent use of the track into the site. This access point will be the main access route utilised by the Fire and Rescue Services (FRS). The track is approximately 150m long and will be kept clear in the event of an emergency to allow for the ease of access for the emergency services. The road and gateway are wide enough to allow for the safe access of FRS vehicles. There are no height or weight restrictions on site, therefore both the water tender and high reach vehicle could attend if necessary.

2.3.10 Alternatively, if in an emergency, in the unlikely circumstance that the main site entrance cannot be utilised for access purposes, then entry could be obtained from the farm entrance for Ty Hen, which is also accessible from the A48 (in both directions). However, there are boulders positioned along this route which will require relocation prior to the use of this additional optional access point.

Fire Compartmentation

2.3.11 It is stated in NRW guidance that all waste storage areas should be fire compartmented away from office area. The main office areas are situated on the main wider Nantycaws site (i.e. the weighbridge office, main site office etc). All other office areas are suitably compartmented away from areas in which waste is stored.

2.4 Storage

2.4.1 **Table 1** below indicates the storage arrangements for potentially combustible materials on site. As previously indicated, all waste streams are stored in storage bays, containers or arranged appropriately in stockpiles within the main

buildings or the covered area within the external yard to the north. The waste storage areas are equipped suitable engineered controls in place which are proportional to the environmental risk posed. Please note; the figures in **Table 1** indicate typical daily volumes but may fluctuate in accordance with the Environmental Permit limit.

Table 1: Storage Arrangements for Combustible Waste Streams at Nantycaws RWMRF and 'Clean' MRF

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
RWMRF									
Mixed Household 'black bag', Commercial and Industrial Waste (Unprocessed waste)	Stockpile in steel storage bay	Within a temporary stockpile in a steel storage bay in the Waste Reception Hall (awaiting treatment)	300 m^3	1	Stockpile is 9.5m (length) x 8m (width)	4m	c. 300 m^3	48 hours (Please note, the black bag waste is usually cleared on a daily basis. 48 hours is an estimated maximum in the event of a breakdown of machinery or late deliveries).	• A separation distance of at least 6m between the 2 stockpiles will be employed • Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of debris and litter; • Stored for short durations only • If, on the rare occasion that waste is stored overnight, it is moved to the middle of the waste reception hall and spread out to prevent the possibility of a fire occurring.

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Aluminium	Internal storage bay, underneath picking line	Loose (Processed)	10 m^3	1	Size of Bay = 4m (length) x 3m (wide) Stockpile size *c.* 3.4 m (length) x 3m wide	Height of Bay = 4m Height of stockpile = c. 1m	10 m^3	Hourly/Daily basis	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of debris and litter; • Stored for short durations only
Steel	Internal storage bay, underneath picking line	Loose (Processed)	5 m^3	1	Size of Bay = 4m (length) x 3m (wide) Stockpile size *c.* 1.7 m (length) x 3m wide	Height of Bay = 4m Height of stockpile = *c.* 1m	5 m^3	Hourly/Daily basis	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of debris and litter; • Stored for short durations only

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Processed residual waste	Stockpile with concrete wall on 2 sides	Loose	300 m^3	1	10m (length) x 8m (width)	4m	150m^3	48 hours (Please note, the processed residual waste is usually cleared on a daily basis. 48 hours is an estimated maximum in the event of a breakdown of machinery or late deliveries).	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of debris and litter; • Stored for short durations only • Local records maintained to record date of stockpiling

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Refuse Derived Fuel	Bales are stabilised with netting and then fully wrapped with multi-layers of film.	Bales, open stacked	200 m^3	1	10m (length) x 7m (width)	3.3m (3 bales high)	100m^3	48 hours	• Local records maintained to record date of stockpiling • Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
'Clean MRF'									
Dry Mixed Recyclate (Blue Bags)	Internal Storage Bays	Loose (Unprocessed)	720m^3	2 x storage bays	10m x 9m	4m (+1m freeboard space)	144 m^3	1 week	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed • Bays are separated utilising concrete panels of an appropriate thickness

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Dry Mixed Recyclate (Commercial)	Internal Storage Bay	Loose (Unprocessed)	400 m^3	1	12m x 10m	4m (+1m freeboard space)	20 m^3	1 week	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed
Plastic Film	Internal storage bay, underneath picking line	Loose (Processed)	40 m^3	1	12m x 3m	4m	30 m^3	1 day	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Mixed Card	Internal storage bay, underneath picking line	Loose (Processed)	125 m^3	2	12m x 3m	4m	400 m^3	4 hours	• Frequent inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed
Mixed Plastic Bottles	Internal storage bay, underneath picking line	Loose (Processed)	125 m^3	1	12m x 3m	4m	350 m^3	4 hours	• Frequent inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Steel Cans	Internal storage bay, underneath picking line	Loose (Processed)	60 m^3	1	12m x 3m	4m	40 m^3	12 hours	• Frequent inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed
Newspapers and Pams	Internal Storage Bay	Loose (Processed)	100 m^3	1	12m x 8m	4m (+1m freeboard space)	50 m^3	2 days	• Frequent inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Old Corrugated Cardboard (OCC)	External Storage Bay	Baled	150 m^3	1	10m x 5m	4m (+1m freeboard space)	75 m^3	2 days	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed
Mixed Papers	External Storage Bay	Baled	300 m^3	1	10m x 10m	4m (+1m freeboard space)	200 m^3	1 day	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Plastic Film	External Storage Bay	Baled	100 m^3	1	10m x 5m	4m (+1m freeboard space)	20 m^3	1 week	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed
Mixed Plastic Bottles	External Storage Bay	Baled	150 m^3	1	10m x 5m	4m (+1m freeboard space)	40 m^3	3 days	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Carpets/Mattress Materials	External Storage Bay	Baled	150 m^3	1	7m x 5m	4m (+1m freeboard space)	25 m^3	3 days	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed
Rigid Plastics	External Storage Bay	Baled	200 m^3	1	9m x 7m	4m (+1m freeboard space)	25 m^3	1 week	• Daily inspections carried out • Good housekeeping measures employed to prevent he generation of a significant amount of mud, debris and litter; • Stored for short durations only • First in first out principle will be employed

Combustible Materials	How is the material stored?	Form	Approximate Maximum Volume	No of Stockpiles	Stockpile/Storage Area length and width (m)	Stockpile/ Storage Area height (m)	Estimated Quantity received daily (Average)	Maximum Storage Time	Management Arrangements
Maximum On-site Storage Volume of Combustible Material		*c.* 3,435m^3							

Table 2 – Storage of Hazardous Substances

Hazardous Substance (COSHH/MSDS/Waste Type)	Quantity	Location	How is it stored and Controlled
Gas Oil	5,000 litres	Secure building adjacent to RWMRF or adjacent to site office (outside the permitted area)	Standard containers in place with drip controls on impermeable surfacing.
Engine Oil	50 litres	Secure building adjacent to RWMRF	Standard containers in place with drip controls on impermeable surfacing.
Fuel	2,500 litres	Adjacent to the site office (outside the permitted area)	Bunded tank on impermeable surfacing.

Hazardous Substance (COSHH/MSDS/Waste Type)	Quantity	Location	How is it stored and Controlled
COSHH substances	200 litres	'Clean' MRF building	Secure dedicated storage cupboard within adjacent 'clean' MRF. COSHH assessments are carried out.
No other chemicals or flammable substances known on site	N/A	N/A	COSHH assessments and emergency planning

2.5 Sensitive Receptors

2.5.1 A fire on site may have an impact upon nearby sensitive receptors or conversely, a fire at neighbouring premises/facility may affect operations at the MRF's.

2.5.2 The site handles and stores a number of combustible waste types as is listed in **Table 1**. A fire involving any of these materials is likely to involve smoke which can drift and cause both nuisance and obscure visibility, particularly if it is not adequately dispersed by prevailing weather conditions at the time. This could, in more extreme cases affect transport links i.e. the A48, where visibility for drivers could be hindered. Based upon wind direction, and known sensitive receptors, the relevant authorities e.g. emergency services, highways authority etc would be advised so that appropriate precautions could be implemented. Further to this, unburnt particulates of dust and ash can fallout and smother ground surfaces in the vicinity and cause amenity issues.

2.5.3 CWM will take advice from the Fire and Rescue Service (FRS) and provide assistance where possible in the event of an emergency to minimise impact on sensitive receptors. With the above in mind, **Table 3** includes a list of potential sensitive receptors within 1km of the site, which have been identified via a desk top assessment of the locality. The nearest residential receptor to the facility is Ty Hen which is located 260m to the North West (however this property is owned by CWM Environmental and is unoccupied). The nearest occupied residential property is Llety-dau-filwr, which is located *c.* 280m to the south east of the site. The location of the sensitive receptors is shown on **Drawing Reference Number CWM1005/5/FPP03**.

Table 3 - Identified sensitive receptors within a 1km radius of the site

Receptor Name	Receptor Type	Distance/ Direction From Site	Drawing Ref
Wider Nantycaws Site	Waste Management Facility	Adjacent - 660m N/S/E/W	1
Agricultural Land	Farmland & associated hedgerows	40m - 1km N/S/E/W	2
A48 Dual Carriageway	Highway	255m N/NE/NW	3
Ty Hen	Residential Dwelling (unoccupied)	260m NW	4
Nantycaws Fuel Station	Commercial Property	305m N	5
Unnamed Road	Road	310m N	6
Tributary of the Afon-Y-Bantwen	Surface Water	280m - 1km SE SW	7

Awelfan	Residential Dwelling	330m NW	8
Llety-dau-filwr	Residential Dwelling	280m SE	9
Bronhafod, Falcondale & Afalon	Residential Dwellings	305m-340m E/SE	10
Coedgain Farm	Residential Dwelling	420m N/NW	11
Unnamed ponds	Surface Water ponds	450-915m N/E/S/SW	12
Unnamed tributary of the Nant y Pibwr	River	465m+ NW, N	13
Gelli- Uchaf	Residential Dwelling	560m NE	14
Coedgain Manor	Residential Dwelling	610m N/NW	15
Footpath	Public Right of Way	620m - 980m NW/SW/ W	16
Hedd-fan	Residential Dwelling	615m E	17
Afon-y-Bantwen	River	660m S	18
Ffynon Las	Residential Dwelling	760m NW	19
Blaenisfael	Residential Dwelling	770m S/SW	20
Poultry Houses	Agricultural Buildings	780m-900m S/SW	21
Unnamed Properties on Unnamed Road	Residential Dwelling	815-910m N/NW	22
Coed Farm Storage Facility	Commercial Premises	860m S/SW	23
Pen-ty Farm	Residential Dwelling	905m E	24
Ysticlau	Residential Dwelling	990m S/SW	25
Brigwallt y Coed	Residential Dwelling	990m N/NW	26

2.5.4 In the event of a fire at the site, it will be necessary for a nominated member of the CWM Environmental Limited team to contact relevant receptors (i.e. those

listed in Table 1) to make them aware that there is an incident at the site. It is not considered feasible to contact every residential property individually, and therefore the nominated member of staff would contact the relevant Local Authority and (after obtainment of an agreement from them) the Local Authority would make contact with local residents/local businesses. Contact details for all relevant receptors are included in **Table 4** below.

Table 4 – Contact Details for Sensitive Receptors within 1km of the Site

Receptor Type/Name	Contact Details
Residential Properties/Commercial Premises	Carmarthenshire County Council – 01267 234567 (8:45am–6pm) or 0300 333 2222 (after 5:30pm – 8:30am weekdays, and on weekends and Bank Holidays)
Rivers/Surface Water/Groundwater	Natural Resources Wales – 0300 065 3000 (to report an incident)
Highways	South Wales Trunk Road Agency – 0300 1231213 or Dyfed Powys Police Headquarters– 0845 330 2000 or 999/101
Public Rights of Way	Carmarthenshire County Council – 01267 234567 (8:45am–6pm Monday – Friday) or 0300 333 2222 (after 5:30pm – 8:30am weekdays, and on weekends and Bank Holidays)

It is possible that CWM Environmental may have specific contact details for the nearest residential receptors which can be utilised in an emergency, or a member of staff could alert the occupants of the nearest residential properties, in person, if considered necessary.

2.5.5 There are no Sites of Special Scientific Interest (SSSI), Special Protection Areas (SPA) and/or Special Areas of Conservation (SAC) within a 1km radius of the site. Pen Ty Pastures and Wood (Gweunydd a Choed Pen-Ty) is the closest SSSI to the site at *c.* 1.04km to the south east. It represents two areas of unimproved herb-rich grassland linked by a wet semi-natural wood. This habitat complex is of botanical and entomological interest, supporting a number of uncommon species.

2.5.6 The site is located within the administrative area of Carmarthenshire County Council. It currently has no designated AQMA's (Air Quality Management Areas) within the vicinity of the site.

2.5.7 The site is not located within a Nitrate Vulnerable Zone (NVZ) for surface and ground water and has not been designated by DEFRA and Natural Resources Wales.

2.5.8 In terms of Public Rights of Way (PRoW), the closest public access route is located *c.* 620m to the west, travelling in a broadly north/south alignment which traverses land between the poultry houses and Bronhaul and Llwynmelyn towards the A48.

2.5.9 The immediate neighbouring buildings to the site are also operated by CWM Environmental and include the IVC operation to the east, composting windrows to the west and site offices, roads carpark and HWRC to the south.

2.5.10 In terms of Flood Risk, the Environment Agency (Natural Resources Wales) data has been reviewed and found that the site sits outside any recognised floodplains and associated flood zones in an area, therefore, where flooding from rivers and the sea is highly unlikely. There is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year.

2.5.11 There are no Groundwater Source Protection Zones (SPZ) located within approximately 1km of the site centre.

2.6 Meteorological Conditions

2.6.1 The spread of fire across land and spread of smoke is likely to be affected by the local weather conditions, with particular reference to wind direction at any one time.

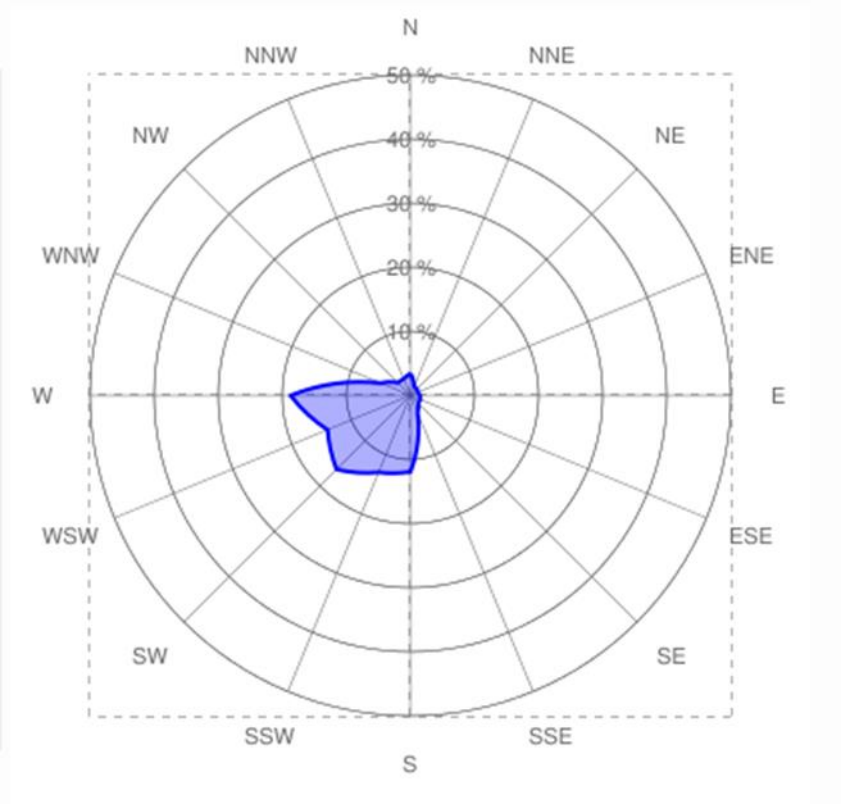
2.6.2 The closest meteorological station is located at Pembrey Sands which is situated c. 17km south-west of the site. In terms of its environmental setting, the station at Pembrey Sands is situated on the coast, whereas the RWMRF is situated in-land. However, data is only available from 3 weather stations situated across South Wales (Pembrey Sands, RAF St Athans and Cardiff Airport). Weather stations in England which may be more appropriate in terms of their inland setting have been deemed inappropriate due to their distance from the site. Therefore, the station at Pembrey Sands is considered the most appropriate for use.

2.6.3 Data from RenSMART Wind data archive, for a 10-year period between 2000 and 2010 at Pembrey Sands has been utilised to characterise the meteorological conditions which are likely to be experienced on site.

2.6.4 The wind rose for Pembrey Sands is illustrated in **Figure 1**, and indicates that the predominant wind direction is from the west and south west. Therefore, any receptors situated to the east and northeast of the site would be potentially most likely to be at risk should a fire occur on site. In this case, receptors that are located to the east/north east include the wider extent of the waste management site, residential properties (Bronhaford, Falcondale, Afalon), as well as the A48. Should a fire producing large amounts of smoke break out on site which could decrease the visibility for drivers travelling along the A48, the highways agency (and police if deemed necessary) will be informed as a matter of urgency. The risk to identified receptors is considered low given the distance between the site and the nearest residential receptor (c.305-340m SE).

2.6.5 There is a c. 6m separation distance between the RWMRF to the 'clean' MRF which will act (along with the management techniques employed at the site) to prevent the fire from spreading between the two MRF's.

Figure 1: Wind rose for Pembrey Sands 2000-2010 (inclusive)



2.6.6 CWM will work in conjunction with the local fire service and Natural Resources Wales to reduce the risk and potential consequences of a fire occurring on site.

3.0 FIRE PREVENTION

3.1 Introduction

3.1.1 Prevention and ultimately negating the initial fire risk is given the highest priority in terms of the control of a fire. The operator will employ the following methods to ensure fire prevention at the site:

- Sources of ignition will be strictly controlled and managed;
- Fire prevention messages will be reinforced by utilising appropriate signage;
- All visitors will follow the correct safety and fire prevention procedures;
- The external yard area away from waste storage areas is to be utilised in an emergency as a quarantine area to deal with any hot loads. The quarantine area will be large enough to manage a major incident at the site, with a clear area of at least 6m around its perimeter.
- All site users are supervised and monitored for unsafe behaviours and for compliance with site rules;
- The site employs a no smoking policy (unless in a designated smoking area);
- All loads are inspected and final checks are made at the end of each shift;
- Site security measures are in place which will deter arson;
- A regular maintenance and site inspection programme will be implemented and the operator will ensure that a good house-keeping policy is employed;
- Suitable extinguishers are provided in accordance with the risk assessment;
- A fire watch is in place at the end of each shift (for an hour) to check last loads (RWMRF only as this is considered to be higher risk). A fire watch will also be conducted throughout the day, at regular intervals;
- Plant is parked away from waste storage areas at the end of each shift. Please note, mobile plant is stored externally and therefore does not present a risk to stored combustible waste streams;
- Mobile plant is fitted with fire extinguishers;
- Fire awareness training and emergency awareness provided to all site users;
- Treatment equipment is left empty and turned off at the end of every shift;
- If waste remains in the RWMRF waste reception area overnight, waste loads will be spread out in the reception area to ensure there are no undetected hot items or other materials that could start a fire
- Self-combustion is prevented by stock rotation and control of quantities of waste stored. Stockpile sizes (including those in bays) will be managed in accordance with industry guidance and stock rotation will be undertaken locally to prevent spontaneous combustion. Stored wastes will be inspected daily, records of stockpiling will be maintained and waste acceptance procedures will be adhered to;

- Electrical installations are checked on a regular basis by a competent contractor to ensure the electrical supply to the buildings are safe; and
- An exercise plan (drill) to test how well the FPMP works and to ensure all staff are familiar with the procedures to be carried out in the event of a fire has been devised and will be carried out biannually **(Appendix FPP8**).

3.2 Waste Material Stack Sizes and Separation Distances

3.2.1 A maximum *c.* 3,435m³ of waste be will be stored at the RWMRF and Clean MRF at any one time. This includes waste once it has been accepted, pre and post treatment. The form of each waste type stored on site is described in **Table 1**.

3.2.2 Wastes will be stored within stockpiles or bays and will be managed so that maximum estimated burn time does not exceed four hours. All piles will be managed with reference to Section 8.0 of NRW Fire Prevention and Mitigation Guidance (version 2, dated August 2017). That is, cognisance will be made to the recommended standards for waste type, stack sizes, how the waste is stored (e.g. loose stack to loose stack, loose stack to building etc) and with cognisance to the corresponding recommended separation distances. However, it is noted that these standards are in direct relation to the external storage of waste only. Section 12 of NRW's FPMP Guidance (version 2 dated August 2017), which is in relation to "Waste Stored within a Building", stipulates that the operator must "*Ensure waste stack sizes and separation distances are appropriate to the risk. Table 2 (of the guidance) can be used as a starting point but not absolute guidance for internal storage*" going on to state "*separation between internally stored wastes and building walls, plant and other equipment within buildings will need to be considered*". All bay/stockpile dimensions are provided in **Table 1**.

3.2.3 Notwithstanding the above, all piles (including waste stored in bays) will be managed so that they can be readily accessed should a fire occur, from at least one side. If the pile can only be accessed from one side, then a maximum pile width of 10m will be adhered to. Maximum stack heights will not exceed 4 metres, however please note, in some instances overall bay heights extend to 5m, which allows for the appropriate freeboard space of 1m to be achieved.

3.2.4 With the above in mind, whilst cognisance has been paid to Section 8.0 of the guidance, it is not considered to be absolutely appropriate. Internal stockpile sizes have been located at more than the required appropriate separation distance as stipulated within the Guidance. It is noted that the 'black bag' unprocessed waste is stored in steel bays adjacent to the treatment equipment, however, given the use of the bay, it is considered that a separation distance is not required, given the management techniques employed at the site and the limited time in which the wastes are stored in this area. Please note, there is no defined separation distance included within the guidance which makes reference to the storage of materials in proximity to treatment equipment.

3.2.5 In addition to the above, the processed residual waste is stored in the north western corner of the RWMRF, whereby it is surrounded on 2 sides by 600mm thick concrete walls, to a height of 4m.

3.2.6 Aluminium and steel waste streams will be stored in bays beneath the RWMRF equipment and therefore the stockpile size will be limited to that of the bay.

3.2.7 With regards to the Clean MRF, incoming, unprocessed Dry Mixed Recyclate (DMR) (Blue bags) is stored within bays within the Clean MRF building. There are 2 bays of unprocessed DMR (Blue Bags), which are separated utilising concrete panelling, which is c. 160mm thick. It is noted that the outer bay wall (closest to the treatment equipment) is of steel construction, however there is a *c*. 4m separation distance between this bay and the Clean MRF treatment equipment and wastes are managed appropriately for short periods of time to prevent any incidents occurring. Commercial DMR is stored within a designated steel storage bay within the Clean MRF, at a suitable distance from all other stored wastes. Separated recyclates (plastic film, mixed card, mixed plastic bottles and news and pams) are stored within internal bays and therefore, as with the RWMRF, the stockpile size will be limited to the that of the bay. In addition to this, baled recyclates, such as old corrugated cardboard (OCC), mixed papers, plastic film, mixed plastic bottles, carpets/mattresses and rigid plastics are also stored in bays, however these are stored within the open fronted storage shed to the north of the RWMRF. Please note, all wastes will be stored in their largest form prior to processing. Storage areas for the various waste types are illustrated on **Drawing Reference Number CWM1005/5/FPP01.**

3.2.8 As indicated previously, pile sizes of stored waste will be managed in line with Natural Resources Wales Guidance limits (as demonstrated in **Table 1**). Where possible, for instance with regards to the processed separated recyclable waste streams, piles sizes will be small which will ensure a good surface area to volume ratio to allow maximum cooling. In addition, all waste will be cool before depositing into a pile and will undergo a rapid turnaround.

3.3 Baled Waste Storage

3.3.1 As previously indicated, CWM Environmental store baled waste internally within the RWMRF building, as well as within dedicated bays in the building/shed to the north of the RWMRF. It is noted that baled waste may pose a specific fire risk issue associated with the configuration of bale storage arrangements. With this in mind, CWM Environmental store the bales in a pyramid fashion, which not only stabilises the waste pile but reduces instances of continual vertical air gaps ('chimneys') and therefore reduces the likelihood of a more rapid and energetic burn (should a fire break out). In addition to this, bales will not be stored more than 3 or4 bales high (depending on height of bale, but not above 4m) to avoid potential for the collapse of a stack.

3.3.2 The storage of baled waste is further considered in **Section 3.7**.

3.4 Layout of Waste Stacks

3.4.1 The layout of waste stacks, storage methods/types and appropriate separation distances (where considered appropriate) have been determined with cognisance to NRW guidance. The storage arrangements take into account (where applicable) location of potential ignition sources, plant, other buildings, escape and evacuation routes, location of flammable/hazardous substances, permitted amounts of waste, location of the quarantine area, operational practicalities and any stock rotation requirements. The storage arrangements, are illustrated on **Drawing Reference Number CWM1005/5/FPP01**.

3.4.2 In addition to the above, a clear area is established around the perimeter of the Permitted site, with agricultural fields featured to the north, the site access road to the east and south as well as an area of hardstanding and further site access to the west, which will prevent the issue of fire spread beyond the permitted boundary.

3.5 Storage Duration

3.5.1 Maximum storage durations for each waste type are detailed in **Table 1**. No combustible waste shall be stored in excess of 1 week and is usually removed offsite within a matter of days/hours. This is considered to be in line with Natural Resources Wales Guidance (Fire Prevention and Mitigation Plans, Version 2, August 2017). The site operates on a first in first out principle and all wastes shall be treated/segregated within 24 hours of arrival on site (where possible). An example stockpile record sheet is contained within **Appendix FPP7**.

3.6 Housekeeping

3.6.1 As previously alluded to, a cleaning programme is employed which is carried out at the end of every shift and as and when required throughout the shift. In addition to this, a weekly "deep clean" schedule is in place for the RWMRF whereby all machinery and equipment is thoroughly cleaned. With regards to the Clean MRF, in addition to the daily cleaning programme, the weekly cleaning schedule involves clearing the dead areas beneath and under all machines and conveyor belts as well as vacuuming the mezzanine floor, area beneath the processing line and all other areas that can be accessed where dust could gather.

3.6.2 Site managers are responsible for ensuring that general housekeeping is to an acceptable standard at all times. An overview of the housekeeping regime employed on site is contained within **Appendix FPP6**.

3.7 Monitoring & Actions to Limit Self Heating

3.7.1 Waste will not be stored in excess of 1 week (in most cases storage times do not exceed a number of days) and therefore additional monitoring is not required.

3.7.2 Given that bales of combustible waste are not stored at the site for longer than a number of days, it is not considered appropriate to introduce a formal sampling and testing protocol to assess a representative number of bales during monitoring for signs of self-combustion schedule or to take temperature readings from the centre of baled waste pile or the centre of the bales themselves. That is, it is considered that given the short duration times and management practices implemented, the baled waste streams are highly unlikely to self-combust. Notwithstanding this, in order to demonstrate good practice, waste stores in bays and piles will be closely inspected for any indications of self-heating and/or smouldering, paying particular attention to the most inaccessible areas. If self-heating occurs the following actions will be undertaken to cool the materials:

- Wastes will be rotated as necessary.
- Wastes will be transferred and spread out within the quarantine area
- Cooled utilising an appropriate source of water

3.7.3 Particular care will be taken during hot weather conditions where external waste materials may become heated. Notwithstanding this, please note that waste stored externally will be stored under cover and therefore will not be subject to direct sunlight. Informal monitoring of wastes stored externally will be increased during summer months, if considered necessary.

3.7.4 Bales can be monitored utilising the thermal imaging camera as appropriate.

3.8 Seasonality

3.8.1 Given the types of waste stream accepted at the site (Household, Commercial and Industrial waste) it is unlikely that there will be any seasonal variation in the demand for the incoming or outgoing waste.

3.9 Arson or Vandalism

3.9.1 All reasonable precautions are taken to prevent unauthorised access to the site. Security fencing surrounds the site and the entrance gates and buildings are securely locked outside operational hours. The integrity of the security fencing and locks will be regularly inspected. Any damage identified will be repaired as soon as practically possible.

3.9.2 Further to the above, the premises are protected by CCTV coverage (which is remotely monitored), security lighting and an intruder alarm which is linked to a monitoring centre.

3.9.3 The emergency services will be contacted immediately should a break in occur.

3.9.4 There is no history of arson/vandalism on site therefore the risk of fire caused by this means is considered low.

3.10 Visitors & Contractors

3.10.1 Visitors and contractors will not be permitted to enter the site unless fully inducted and/or accompanied by a suitably trained member of staff. Staff will ensure that all visitors and contractors are aware of the correct safety and fire prevention procedures that should be adhered to in the event of an emergency. They will also be made aware of the assembly point which should be utilised should a fire break out.

3.11 Plant and Equipment

3.11.1 The following equipment are used on site:

- Bag Splitter
- Trommel Screens
- Conveyor System
- Baler
- Screener

3.11.2 The bag splitters utilised in both the RWMRF and Clean MRF are set at a maximum speed of 12 reps per minute and therefore has a very low risk of ignition through friction, sparks and blunt blades.

3.11.3 Trommel screens do not pose a high ignition risk however they can aerate waste resulting smoulder turning into a full fire. Staff will be trained to pull the emergency stop button if a fire is detected in the trommel area to prevent it spreading further. This will also allow for effective firefighting.

3.11.4 Conveyors and similar mechanical handling systems have the potential to carry a fire throughout the plant. Further to this they may act as a source of ignition themselves as a result of friction. The fire alarm and detection systems are connected to the plant control system so that if a fire is detected the plant stops, preventing burning waste being transported throughout the buildings. Weekly cleaning and maintenance is carried out to ensure conveyors are in the correct position to minimise the risk of friction which could pose an ignition risk. As discussed previously, cleaning/maintenance checklist is in place to demonstrate that the relevant checks have been carried out.

3.11.5 The baler and screener will be utilised by suitably trained staff to ensure the risk of a fire break out is minimised. A thermal imaging camera is utilised to identify over heating of bearings or motors on the equipment.

3.11.6 With regards to the baler utilised as part of the Clean MRF operations, it has been noted previously that on the rare occasion that small aerosol cans/lighters pass through the processing lines to the baler, which can then potentially explode and catch fire. To avoid this, two suitably trained members of staff stand either side of the baler when it is in use, armed with extinguishers and are prepared to deal with any incidents that arise immediately.

3.11.7 Mobile plant can pose ignition risks to waste stored near them. Plant operators are made aware of the risk and are trained to clear the waste from around the exhaust at the end of every shift (see **Appendix FPP4** for "End of Shift Check List"). Some mobile plant has manufacturer installed fire extinguishers which maintained along with the other additional fire extinguishers located across the site.

3.11.8 Mobile plant is also used in all areas of the site and is parked external to the MRF buildings overnight (in line with CWM Environmental's insurance policy agreement). Options for external overnight storage of the mobile plant include in the yard area in front of the Clean MRF, on the yard between the Clean MRF and RWMRF or on the western side of the RWMRF. In all cases, the mobile plant will not be stored within close proximity of any waste storage piles, hazardous substances or potential sources of ignition.

3.11.9 All plant and equipment undergo daily visual inspection and subsequent completion of a weekly inspection checklist. If a problem is found the Site Manager will be notified and use of the plant/equipment will be suspended until the problem has been addressed. Any minor maintenance is carried out by site personnel, however major maintenance, planned maintenance and regular servicing is carried out by a competent person every 500 hours. Records will be kept of any problems encountered and the remedial action taken.

3.12 Infrastructure and Site Inspections

3.12.1 Daily visual inspections are carried out to ensure that the integrity of on-site buildings and drainage systems are maintained. Should a problem be identified, remedial action will be taken as soon as is practically possible.

3.13 Electrical Faults

3.13.1 All plant and equipment will be maintained in order to prevent the advent of electrical faults and will be operated in accordance with manufacturers and company guidelines and procedures. Any major electrical installations will be implemented in accordance with Building Regulations and registered with Development Control.

3.13.2 As part of a fire safety risk assessment conducted at the site (contained in **Appendix FPP1**), it was identified that there was a risk of fire within the electrical control panels/switch gear in the RWMRF/Clean MRF. Therefore, as a result of this, in order to minimise the risk, an automatic fire suppression system has been installed within the electrical control panels, which will automatically extinguish a fire upon detection.

3.13.3 Further to this, Portable Appliance Testing (PAT) is carried out on a regular basis to ensure electrical equipment is in a safe condition. The electrical installation is also inspected on a regular basis (usually every 5 years) by a competent contractor to ensure that the electrical supply to the building is deemed to be safe.

3.13.4 The electrical plant room located between the RWMRF and the adjacent Clean MRF is enclosed and constructed to appropriate fire resistance standards. Points where cables leave and enter the mains rooms via ducts, tunnels etc are appropriately sealed to prevent the spread of a fire. The electrical room is fitted with automatic fire detection and manual call points.

3.13.5 Any fuse boxes and site wide electrical systems will have regular and planned inspections which will be fully certified by a qualified electrician. The maintenance programme will be implemented to reduce the ignition risk posed by potential electrical faults. This will include the assessment of on-site electrics for faulty or damaged wiring etc.

3.14 Ignition Sources

3.14.1 Sources of ignition will be kept at a suitable separation distance away from any combustible or flammable waste. Please note, industrial heaters and heating pipes are not utilised on site.

3.14.2 Hot works including welding and cutting will be carried out on site by trained staff and away from combustible and flammable materials. Contractors on site undertaking such activities will undergo induction training and will require a permit to work. This permit ensures that contractors follow a safe working practice when carrying out any hot works. This will include knowledge of the nearest fire extinguisher. Issuing the permit will ensure that there is an additional person there on fire watch, that the area is clear of waste and that other combustible material and flammable liquids (where possible), doused with water or covered with a sheet made of non -combustible material. It may also be necessary to ensure that the work area is doused well with water immediately and checked an hour after completion, as sparks from hot work can smoulder for a significant time period after work is completed.

3.14.3 Further to this, the site operates a no smoking policy, unless it is in the designated smoking area.

3.14.4 All potential sources of ignition and their control measures are summarised in **Table 5** below.

Table 5- Potential Sources of Ignition

Ignition Source	Where/ Comments	Controls to reduce risk
Arson or Vandalism	No history of arson at the site. The location of the site does not lend itself to an arson attack.	• Gated access, • Perimeter fencing • Alarmed buildings. • CCTV has been installed
Plant or Equipment Failure	Mobile plant work in all areas of the site. Equipment within RWMRF/Clean MRF	• Regular supervision and site inspections by trained staff • Maintenance procedure for plant and equipment will be adhered to.

Ignition Source	Where/ Comments	Controls to reduce risk
Naked Flames	None on site unless in designated area	• Smoking only permitted in designated smoking area
Hot Works (e.g. welding or cutting)	On site within the permitted area	• Contractor inductions • Fire extinguishers stored within buildings which will be used immediately should a fire occur • Hot works will be carried out at least 6m away from combustible material • Good housekeeping measures reduce litter on site which could be set alight by sparks (**Appendix FPP6**)
Hot exhausts and surfaces	Mobile plant exhausts can become hot Equipment may become hot when in constant use	• All mobile plant and equipment is maintained to manufacturer's standards • Operatives are trained to operate the plant and carry out daily checks. • Mobile plant is stored externally and away from waste streams overnight
Damaged or exposed electrical cables	A number of cables will be present on site to provide power for machinery	• Regular inspections and maintenance is completed on a regular basis. • Remedial action is taken immediately • Accidents (and Incident) Record sheet will be kept and completed. Near misses are also recorded.
Neighbouring site activities	Immediate neighbouring site uses include the wider Nantycaws waste management facility and agricultural fields	• Neighbouring site activities do not undertake open burning
Electrical equipment faults	The facility is powered by electricity. Ancillary equipment such as lighting and general office equipment are also on site	• All electrical equipment/heating will be regularly tested. • If a fault is detected this will be remediated before the end of the operational day.
Discarded smoking materials	No smoking permitted on site unless in designated area	• Smoking only permitted in designated smoking area
Industrial heaters	Industrial heaters are not utilised on site.	N/A
Open burning	Open Burning is not permitted on site	N/A
Sparks from loading buckets	Loading shovel bucket scraping along the floor	• Operatives trained to minimise scraping action. • Rubber strips used (if considered practicable)

Ignition Source	Where/ Comments	Controls to reduce risk
Batteries stored on site	Potential for sparks/heating	• In the event that batteries are identified within a waste stream, they will be removed and isolated prior to removal from site.
Tramp Metal in processing equipment	Potential to cause localised 'hot spots'	• The processing equipment is fitted with magnets therefore metal is extracted and separated via this method.

3.15 Heat and Spark Prevention

3.15.1 Plant operators will be fully trained and competent in their use to minimise the risk of generating sparks. Welding/cutting operations will be carried out by technically competent staff and at a safe distance from combustible materials.

3.15.2 Mobile plant will be operated by trained and experienced staff to reduce the likelihood of scraping and consequent sparks being generated during use. Where appropriate, mobile plant will be fitted with rubber strips.

3.16 Gas Bottles & Other Flammable Items

3.16.1 Empty gas bottles/cylinders which are extracted from the RWMRF waste stream are removed from site and sent to the HWRC (situated on the wider Nantycaws site) immediately. Gas bottles are also not routinely stored at the Clean MRF, however if they are identified within the waste stream they are removed and stored in the non-permitted waste quarantine area pending removal offsite.

3.16.2 Oils are stored in a separate locked building adjacent to the RWMRF and fuel is stored in a bunded tank adjacent to the site offices and workshop. All other hazardous substances such as paints, cleaning materials etc are locked in a dedicated COSHH (Control of Substances Hazardous to Health) storage cupboard within the 'clean' MRF. The locations of these items are illustrated upon **Drawing Reference Number CWM1005/5/FPP01**.

3.16.3 As part of the housekeeping, operatives will ensure that flammable materials such as oils, fuels, paint etc are stored correctly and put into the designated place after use.

3.17 Fire Detection

3.17.1 In order to detect a fire as quickly as possible, site staff will carry out daily visual inspections throughout the day.

3.17.2 The fire detection and alarm system at the site was installed and is maintained to the relevant standard, by a competent person to UKAS accreditation approved standard. Both buildings also have break call points installed.

3.17.3 The smoke beams on the main operational floor of both the RWMRF and Clean MRF are deactivated during trading hours to reduce the frequency of false alarms due to high levels of dust in the environment. Notwithstanding this, during operational hours these areas are occupied by plant operators who are trained to visually inspect for fires and to raise the alarm as necessary. The system is programmed with a timer arrangement to be active only during non-operational hours. All other areas of the buildings with a detection system are always active. The alarms are also audible in the welfare facilities located between both the RWMRF and 'clean' MRF buildings.

3.17.4 The fire alarm system is connected to an external contractor where during the hours of 7am and 6.30pm it is the responsibility of site staff to contact the Fire and Rescue Service. However, outside normal operating hours, the external contractor will contact the emergency services in the event of a fire, who will then send out the Fire and Rescue Service (FRS).

3.17.5 The risk of a fire starting outside operational hours is considered unlikely due to the management techniques employed at the site (i.e. site inspection, short storage times, suitable storage arrangements, end of shift checks etc). Therefore, if a fire were to occur, outside of operational hours it is likely that it would be attributed to other external factors.

3.17.6 In addition to the above, all ignition sources will be kept at least 6m away (if not more where possible) from combustible waste. A visual inspection and site clean-up will also be performed at the end of every shift to ensure that no dust and litter has accumulated on or near to hot surfaces, further reducing the risk of a fire out of hours. All electrical equipment will be maintained in good working order, and it is therefore considered unlikely that this will trigger a fire outside operational hours. The wastes are regularly inspected and stored for short duration periods, limiting the potential for self-heating.

3.18 Fire Fighting Equipment

3.18.1 Extinguishers are also present throughout the operational areas as shown on see **Drawing Reference Number CWM10005/5/FPP01**. There is also an automatic extinguishing system (Fire Trace) fitted to each electrical cabinet. All employees and maintenance workers are made aware of the location of the firefighting equipment, staff are also informed/trained to identify types of extinguisher and how to utilise them if required to do so.

3.18.2 In terms of firefighting equipment, there are *c.* 23 fire extinguishers located within the RWMRF building, and *c*. 18 within the Clean MRF. They are generally located within close proximity to the treatment equipment and adjacent to entrance/exit points. Protective clothing and spill kits and pollution control equipment are also stored within the RWMRF/Clean MRF and site office. This is illustrated on **Drawing Reference Number CWM1005/5/FPP01**.

3.18.3 There are two 50 litres foam extinguishers on trolleys located within the RWMRF and Clean MRF which are intended for use on larger fires. An operating policy

is in place which indicates as to where and in what circumstance these extinguishers can be utilised and who is to use them.

3.19 Leaks and Spillages

3.19.1 All working plant and equipment are maintained in good working order thus reducing the potential for the leaking and trailing of fuels and combustible liquids. If a site vehicle is found to be trailing liquid then the vehicle shall be moved and will be repaired as a matter of urgency.

3.19.2 The site undergoes frequent inspections and therefore any trailing/pooling of combustible fluid will be identified and subsequently remediated immediately. Spill kits are available on site and will be used for this purpose.

3.20 Fire Watch and Shut Down Procedures

3.20.1 The site is inspected daily and records are made in the site diary. The Site Manager, and other members of staff as appropriate, will conduct a fire watch at regular intervals throughout the day to ensure that there are no signs of a fire incident occurring at the site.

3.20.2 The RWMRF is considered to represent a higher risk of fire than the Clean MRF, therefore the operator carries out a formal close-down check at the RWMRF which is completed and documented daily. This close-down includes;

- Over-run of conveyors, screens etc. to ensure that they are as clear of waste as practical
- Shut off and lock off of electrical power to the plant
- Shut off other electrical items such as heaters
- Clearing of waste which as accumulated under equipment
- Ensuring that any flammable materials such as fuels have been returned to a secure location
- A fire watch is carried out an hour after end of operations
- Spread out any waste loads waiting to be processed/in receptions area (where necessary) to ensure there are no undetected hot items or materials that could start a fire
- Ensure that mobile plant have been moved to a safe location away from any waste piles
- Ensure that security systems have been activate (timer is installed to ensure that the detection system automatically turns on at 7pm) and that the gates etc. are secure.

3.20.3 The RWMRF process line operates until around 5:30pm/6pm after which the formal shut down process is followed. At the Clean MRF, the process lines run until around 6:45pm. The lines are then run clear, however it is considered that the is less risk of fire at the Clean MRF due to the types of waste being processed.

3.20.4 Hot exhausts can ignite wastes trapped near them. Operators of heavy plant will be made aware of this risk and will be instructed to ensure that wastes and other debris are cleared from around exhausts at the end of each shift.

3.20.5 Good housekeeping measures employed on site include short storage duration periods, regular inspection of wastes and containment systems and site clean ups/tidying/litter picking at the end of every working day to ensure no on-site litter and to minimise the accumulation of dusts.

3.20.6 As previously mentioned, the site has a cleaning programme in place which is carried out at the end every shift and as and when required throughout the shift. On a weekly basis, a "deep clean" is carried out whereby all machinery and equipment are cleaned. The site operatives clear the dead areas between and under the machines and conveyor bels and vacuum the whole of the mezzanine floor, areas below the processing line and all areas that can be accessed where dust could gather. A dust/debris assessment will be undertaken at regular intervals to ensure ongoing maintenance and to minimise the build-up of potentially combustible materials.

3.20.7 The process lines have motors which are cleaned several times during the working day (as necessary).

3.20.8 Before locking the site at the end of the operational day the operational areas will be visually inspected to ensure there are no potential risk that may result in the development of a fire (see **Appendix FPP4**). Particular attention will be paid to ensure that exhausts of mobile plant have cooled.

3.21 Summary of Risk

3.21.1 The risk of a fire being triggered by various factors outside operational hours is summarised in **Table 6** below, the risks are considered Very Low to Low.

Risk Assessment of a Fire Occurring Outside of Operational Hours

Common Causes of Fires	Risk	Justification
Arson/Vandalism	Low	• Wider site is surrounded by security fencing. • All gates and buildings are securely locked outside operational hours. • No previous history of vandalism/arson. • Site is not situated near a residential area, therefore opportunistic vandalism/arson unlikely. • All gates and locks are regularly inspected • Premises protected by CCTV, security lighting and an intruder alarm which is linked to a monitoring centre.
Plant or Equipment Failure	Low	• Regular supervision and site inspections. All equipment is covered

		with a maintenance schedule and inspected by trained staff
Naked Flames/Smoking	Low	• Naked flames are not permitted on site • Smoking is not permitted on site unless it is in the designated smoking area. • Risk further reduced when site is unmanned
Hot works (welding, cutting)	Low	• Hot works are not carried out in site unless a permit to work has been issued.
Self-heating of waste that has been stockpiled for too long	Low	• Wastes stockpiled for short durations • Wastes inspected daily for indications of self-heating • Thermal imaging camera utilised to detect elevated temperatures in stored waste piles (see **Appendix FPP5**) • If self-heating waste is encountered this shall be moved to the quarantine area and will be thoroughly cooled before leaving the site unmanned
Storage of incompatible materials	Low	• Waste acceptance checks in place to identify incompatible materials as early as possible • If incompatible waste is found on site this will be removed from the site or temporarily stored within quarantine • Wastes are visually inspected daily
Incidents relating to welding and cutting	Very Low	• No welding/cutting will take place outside operational hours
Neighbouring site activities	Low	• Neighbouring site activities (beyond Nantycaws waste management site) include the use of the land for agriculture, residential properties/farm holdings and road network. • The MRF buildings themselves will potentially act as a physical barrier to the spread of fire • There is *c.* 6m separation distance between the RWMRF and the adjacent 'clean' MRF.
Ignition of flammable vapours	Low	• Flammable vapours stored on site include fuels which will be stored in secure bunded containers as appropriate • Sources of ignition will be maintained at a separation distance of at least 6m away from flammable materials
Electrical faults/heating faults/ equipment failure	Low	• All electrical equipment/heating will be regularly tested. • If a fault is detected this will be remediated before the end of the operational day. • Electrical equipment turned off and not in use outside operating hours • Electrical control panels fitted with automatic fire detection system

Explosions where dusty materials have built up in a confined space	Low	• A clean up/litter picking exercise will be performed at the end of every shift to ensure no dust/ litter is present near hot exhausts. • A weekly deep clean schedule is in place where all machinery and equipment are cleaned.

3.22 Communication, Training and Drills

3.22.1 Many fires are averted by the swift action of well-trained site staff. All staff and contractors receive site specific inductions on their first day working with CWM Environmental Limited which includes information with regards to the following:

- What to do upon discovery of a fire;
- Course of action required upon hearing a fire alarm and;
- Location of fire exits, fire extinguishers and fire assembly points.

3.22.2 In additional to the site induction, staff also receive a toolbox talk on the emergency evacuation procedures which reiterates the correct action to take in the event of an emergency. The toolbox talk is refreshed annually, unless there are significant changes which have generated a review of the toolbox talk which could be communicated accordingly.

3.22.3 Key personnel are the chosen fire marshals and have specific fire awareness training (including basic fire extinguisher training), as well as fire warden training that provide information on the various roles which must be carried out during an emergency evacuation which includes checking all areas are clear of staff, visitors and contractors.

3.22.4 Evacuation drills are carried out (where possible) every 6 months.

3.22.5 The sites emergency evacuation plan and duties of key personnel is included with Section 7.0 of Nantycaws Fire Strategy Plan which is included within **Appendix FPP2**.

3.23 Monitoring, Reporting and Records Keeping

3.23.1 If a fire is detected on site, the Site Manager should be summoned to assess the situation and call for the Emergency services if thought necessary.

3.23.2 A list of named emergency contacts and corresponding contact details for Nantycaws RWMRF/Clean MRF is provided within **Appendix FPP3** of this document.

3.23.3 In the event of a fire, a representative of CWM will notify NRW by telephone immediately, but first having due regard for the incident at hand and any remediation actions required to ensure the safety of site personnel and the immediate environment.

3.23.4 Details of any fires at Nantycaws RWMRF/Clean MRF will be confirmed to the NRW in writing by first class post or fax or e-mail, on the next working day after identification of the incident. This confirmation will include: the time and duration of the incident, the receiving environmental medium or media where there has been any emission as a result of the fire, an initial estimate of the quantity and composition of any emission, the measures taken to prevent or minimise any further emission and a preliminary assessment of the cause of the fire.

3.23.5 Any incident notified to NRW will be investigated, and a report of the investigation sent to the NRW. The report will detail, as a minimum, the circumstances of the fire, an assessment of any harm to the environment and the steps taken to bring the fire to an end. The report will also set out proposals for remediation (if appropriate) and for preventing a repetition of the incident.

- A fire log is maintained on site which will record the following:
- Weekly alarm checks
- Fire door checks (where appropriate)
- Extinguisher checks

3.23.6 Statutory annual inspections and testing (e.g. PAT Testing, emergency lighting as required under the Fire Order).

3.23.7 Any remedial actions are logged within the facility management and tracked for completion. Site inspections are carried out on a regular basis by Site Management and independent audits.

3.23.8 An Incident and Accident Report will be completed by the Site Operations Manager. All relevant details of the accident, incident or dangerous occurrence in relation to the fire will be recorded, together with any additional statement, photographs, logs or records that may assist in the full investigation of the fire.

3.23.9 After an Environmental Incident and Emergency has been made safe, an investigation will be conducted, if necessary, by the Site Manager and other Personnel as appropriate.

3.24 Maintenance

3.24.1 All plant and equipment will be correctly maintained and operated in accordance with company guidelines. Daily maintenance checks will be carried out in order to identify potential defects and leaks from mobile plant and equipment before and after use. Similarly, storage areas, drainage systems and security fencing are inspected daily. Any defects or issues detected are recorded, along with remedial actions taken within the Operation and Maintenance Daily Check Sheet (**Appendix FPP3**). Hard/electronic copies of the records are maintained within the site office.

4.0 REDUCING THE IMPACT OF FIRE

4.1 Waste Acceptance

Incompatible/Hot Loads

4.1.1 Hot loads or loads with hazardous materials in them such as gas cylinders or containers of flammable liquids have the potential to cause fire at the site.

4.1.2 Upon entrance to the site the waste load is directed towards the weighbridge in order for the appropriate weights of the waste load to be obtained and to ensure the undertaking of the Duty of Care checks in accordance with the site's Environmental Permit.

4.1.3 If it is the first time the waste producer has visited the site, then they are required to produce documented proof that they are a registered waste carrier as well as undergoing a site induction and an introduction to site health and safety. All vehicles entering the site must produce a valid Waste Transfer Note before entry is permitted. When possible, a visual inspection will be carried out at the weighbridge to confirm the description on the Transfer Note. Once satisfied, the driver will be directed to the appropriate area for unloading and storage, pending treatment. A second round of checks is carried out at the unloading stage to reconfirm the waste description as designated by the waste transfer note. If necessary, waste vehicles are further weighed once more when exiting the site if obtaining of a tare weight is needed.

4.1.4 If the Waste Transfer Note and description do not match and/or the material shows signs of combustion the waste is to be turned away and a non-conformance report will be completed.

4.1.5 In the unlikely event that wastes are delivered that are not considered acceptable under the site's Environmental Permit, they will either be rejected or held on site for further investigation/liaison with Natural Resources Wales.

Permitted Wastes

4.1.6 There is likely to be some variation in the daily quantity of waste received on site. Details of waste quantities are contained within **Table 1**.

4.1.7 The majority of the waste received at the RWMRF is 'black bag' waste from local authority collections. Similarly, the majority of waste accepted at the Clean MRF is comingled or source segregated recyclate as collected by local authorities within the area. The waste is not stored at any other sites prior to being deposited at this site, however due to the nature of the local authority collection in the area the waste could be up to 2 weeks old (in the case of the 'black bag' waste), or 1 week old in terms of the recyclate.

4.1.8 Any waste deposited in the waste reception areas which are subsequently identified as unsuitable for processing at the facility will be clearly marked as in quarantine whilst awaiting removal from the area for transfer off-site.

4.1.9 Records will be made of any waste removed offsite including the following details:

- Waste type and quantity
- Date and time waste was received and transferred off site
- Waste origin and destination of transfer
- Reasons for unsuitability

4.2 Waste Treatment

4.2.1 Where practicable, all waste will be treated within 24hrs of arrival on site. As discussed previously, treatment operations include manual and/or mechanical sorting, separation, screening, bailing, compaction and bulking up of permitted wastes.

4.2.2 A number of these activities e.g. bailing etc. have the potential to generate heat and they will therefore be closely inspected. Good housekeeping measures in the form of regular inspections and clean-ups will be employed to ensure correct separation distances are in place (where necessary) and to minimise the accumulation of dusts and litter (see **Appendix FPP6**).

4.3 Waste Storage – Separation Distances

4.3.1 There are three principle methods by which a fire can spread from one waste stockpile to another:

- Windblown burning fragments
- Heat radiation between stockpiles
- Collapse or partial collapse of a burning stockpile which is on fire resulting in burning materials travelling to another stockpile.

4.3.2 Therefore, the calculation of an appropriate separation distance is essential when reducing fire risk in relation to the storage of potentially combustible waste.

4.3.3 The mixed 'black bag' wastes (pre-processing) and processed loose residual waste (within the RWMRF) awaiting baling will be stored within the waste reception hall of the RWMRF, either in a steel bay ('black bag' waste) or a loose stockpile (with concrete wall on 2 sides, in the case of processed residual waste). These piles are stored *c.* 24.5m apart, which is considered to be in excess of the separation distance recommended within NRW's Fire Prevention and Mitigation Plan Guidance. During the treatment process, recyclates (steel and aluminium) will be extracted from the waste stream and stored in bays as necessary. Storage arrangements for the RWMRF are summarised below:

- Mixed 'black bag' waste (stockpile)
- Processed residual waste (stockpile)
- Baled RDF (stockpile)
- Aluminium (bay)
- Steel (bay)

Similarly, with regards to the Clean MRF, storage arrangements can be summarised as follows:

- Dry Mixed Recyclate (DMR) ('Blue Bags) – (bay)
- DMR Commercial – (bay)
- Loose Plastic Film – (bay)
- Loose Mixed Card – (bay)
- Loosed Mixed Plastic Bottles – (bay)
- News and Pams – (bay)
- Baled Old Corrugated Cardboard – (bay)
- Baled Mixed Papers – (bay)
- Baled Plastic Film – (bay)
- Baled Mixed plastic bottles– (bay)
- Baled carpets/mattress – (bay)
- Baled Rigid Plastics (bay)

4.3.4 Please note, separation distances are not applicable for wastes stored in bays, however it is noted that if a bay can only be accessed from one site, its width must not exceed 10m. The storage of waste in bays is further considered in section 4.4.

4.3.5 All internal areas undergo frequent litter picking and clean ups at the end of every shift, so a fire dispersing via dust/litter is highly unlikely. It is also considered that every reasonable precaution is made to prevent a fire occurring out of operational hours.

4.4 Fire Walls

4.4.1 With regards to the Clean MRF, incoming wastes (blue bags) are stored in storage bays within the reception area of the main building, pending treatment via the process line. The bays beneath the picking lines which are present within both the RWMRF and Clean MRF are utilised to store recyclable materials that have been extracted from the waste stream via the treatment process. In addition to this, storage bays located within the storage shed, to the north of the RWMRF building are utilised to stored baled recyclate pending removal offsite. The bays walls will provide an initial physical barrier should a fire occur within the bays.

4.4.2 The bays beneath the picking lines in both MRF's, as well as the internal bay utilised for the storage of newspapers and pams (in the clean MRF), storage of 'black bag' unprocessed waste (in the RWMRF) and storage of Commercial Dry Mixed Recylcate (DMR) (in the clean MRF) are constructed of steel and waste will be removed from each bay daily/within a matter of hours of sorting. The bays utilised to store the 'blue bag' DMR are comprised of the concrete (along the back wall of the building) and steel on the outer walls. The two bays are separated utilising a concrete panel of suitable thickness (*c.* 160mm) in order to prevent the spread of a fire between the piles. The bays utilised to store baled recyclate (in the shed to the north of the RWMRF) from the Clean MRF process

are constructed utilising concrete lego blocks. The amount of waste stored in each bay will be limited to that detailed in **Table 1**. The bays will be cleaned frequently to ensure that the build-up of dust is prevented. With this in mind, it can be considered that the risk of fire outbreak within the bays will be minimalised.

4.4.3 Sufficient freeboard space will be retained in accordance with the latest available guidance. The freeboard space allowed will be 1m of the bay height. This level will be denoted on the bays prior to combustible waste being stored within them.

4.4.4 The requirements for the use of storage bays outlined in the Fire Prevention Plan and Mitigation Guidance is considered below.

Bay Construction

4.4.5 All bay walls have been appropriately designed and constructed and will be maintained and managed to ensure integrity.

4.4.6 The internal bays located beneath the picking lines within the Clean MRF and the RWMRF are constructed of steel over an impermeable concrete pavement. In addition to this, the 'black bag' waste which is awaiting processing is stored within a steel bay, within the RWMRF. This waste is stored for short periods of time and is stored in this location to allow for operational ease. It can be considered as a transient waste pile. If 'black bag' waste is stored overnight it will be removed from the steel storage bay and spread out within the central area of the RWMRF waste reception hall to allow for cooling, fire prevention and for an appropriate separation distance between the waste and treatment equipment/other waste stockpiles to be maintained. In addition to this, commercial DMR is stored within a steel storage bay within the Clean MRF. Again, this waste is appropriately managed, is checked daily and is stored for short periods of time. There is no other waste stored within close proximity of the storage bay and therefore any heating of the steel bay (in the event of a fire) will not be transferred to surrounding materials. The storage of wastes within the steel bays will restrict the fire to a confined space and reduce the risk of any environmental pollution. The steel is considered to represent a physical barrier to the spread of fire and can be considered to be a fire-resistant material. Frequent checks and clean ups of the bays will ensure that the steel bays will not contain any residues that may potentially sustain a fire. However, heat may be transmitted via heating of the steel causing the waste in direct contact with the steel wall to combust. To alleviate this concern, wastes stored in steel bays will undergo frequent inspection and an appropriate separation distance will be maintained between waste piles. The area in front of the bay will be kept clear at all times allowing for an appropriate means of access for site plant. All bays will be inspected throughout the day to ensure that there is no evidence of a smouldering material. The wastes stored in steel bays is only stored for short periods of time and will be managed effectively to prevent the spread of a fire.

4.4.7 The storage bays located within the shed to the north of the RWMRF (which are utilised for the storage of baled recyclate) are constructed of impermeable concrete, with the use of concrete blocks (Legioblock) to form the structure of the bay itself. The interlocking blocks prevent fire outbreak and propagation. Concrete is non-combustible and has a slow rate of heat transfer which makes it a highly effective thermal barrier to the spread of fire. This will restrict the fire to a confined space. Concrete bays walls will be constructed to a minimum thickness of 600mm (blocks have the dimensions of 600mm x 600mm x 1800mm) which is of a sufficient thickness to prevent significant heat/fire transfer between materials and will have a fire resistance period of at least 120 minutes (as required by NRW Guidance). Indeed, Legioblock stipulate that the blocks utilised are "*A1 fire-resistant classified according to REI 240 standards and complies with the NEN 6069:2011, DIN EN 13501-2:2016-12 / EN 13501-2:2016 standards, being fire-resistant for at least 4 hours..* ". A certificate detailing their fire resistance is included within **Appendix FPP9**.

4.4.8 The concrete wall stabilises the stored materials, which will prevent the horizontal spread of the fire. Please note, it is considered that a concrete block of 160mm thickness would provide the required fire resistivity and therefore the use of a 600mm thick block is more than sufficient.

4.4.9 In addition to the above, CWM Environmental also propose to utilise precast concrete panels as the walls of the bays for the storage of the unprocessed Dry Mixed Recyclate (DMR) ('blue bags') within the Clean MRF building. The concrete panels will be a minimum of 160mm thickness which, (as previously stated) will provided the appropriate level of fire resistivity required by NRW i.e. contain a fire for at least 120 minutes. This is in line with the values presented in Figure 3.2 of the British Standard Structural Use of Concrete Part 1 (BS 8110-1:1997).

4.4.10 The amount of waste stored in each bay will be limited to that detailed in **Table 1.** The bays will be cleaned frequently to ensure that the build-up of dust is prevented and first in, first out principles will be employed. With this in mind, it can be considered that the risk of fire outbreak within the bays will be minimalised. In addition, any bay joints will adequately sealed with fire resistant material.

4.4.11 The use of bay walls will restrict the fire to a confined space and reduce the risk of any environmental pollution. Restricting the fire to a confined space will also make firefighting easier.

4.4.12 The installation method which was utilised to construct the bays is in line with the manufacturers recommended installation process.

Stock Rotation Control

4.4.13 Stock in bays is cleared within a week which will act as an adequate method of stock control. However, if necessary, a record of all wastes can be maintained utilising the Stockpile Storage Duration Sheet contained within **Appendix FPP7**.

This will ensure that the oldest waste is removed off site first, ensuring that the first in, first out policy is implemented.

Protection from Wind

Internal Bays

4.4.14 The waste will be stored within enclosed bays, which will not be overfilled. Maximum height restrictions will be applied and waste will be monitored to ensure that it does not overspill the bay. Roller shutter doors are only opened for access and egress to the building. Therefore, given that the waste is stored inside, it is considered that the waste is protected from the wind as far as is reasonably practicable.

External Bays

4.4.15 Bays will not be overfilled and freeboard space of 1m of the bay will be clearly marked on the walls and retained at all times. Therefore, the bay wall itself will provide wind protection. Given the types of waste stored externally and the way in which they are stored (baled), it is considered that litter netting is not appropriate for use at the site. Therefore, it is considered that the waste is protected from the wind as far as is reasonably practicable.

4.4.16 In addition to this, the storage bays are located within a single story detached shed, which is enclosed on 3 sides, and open fronted (facing the back of the RWMRF). The structure of the shed itself will also offer protection from the wind.

Temperature and Moisture Checks

4.4.17 Given the relatively short storage duration times (in line with **Table 1**) and the condition of the material upon receipt, temperature and moisture checks are not considered necessary. A daily visual inspection will be carried out and site operatives will identify any potential sign of self-heating of waste stored externally or baled wastes via touch and visual cues.

4.4.18 Notwithstanding the above, a thermal imaging camera can be utilised to monitor heat levels within materials on site, particularly of baled wastes.

Segregation of Materials

4.4.19 The manual and automatic treatment methods will segregate the various materials into the different waste streams. The height of the stored waste will not exceed the bay wall height and it will be ensured that stored waste does not spill out from the bay. Daily site inspections will ensure the ongoing segregation of materials.

Prevention of Fire Spread (Flame Height and Radiation)

4.4.20 As previously stipulated, materials will not be stored above the maximum height of the bay walls which will act as an adequate control over potential for flame height.

4.4.21 Effective firefighting strategies will be employed to prevent the production of brands/lighted material and if necessary, to prevent them moving outside the bay wall. The bays are enclosed on 3 sides, which will help to reduce the possibility of fire spread via lighted material.

4.4.22 Operatives will be trained to ensure that bays will not be overfilled, with the application of a freeboard space (if considered necessary) at the top and sides of bay walls which will be retained at all times (in accordance with latest available guidance). This will be inspected daily and ultimately work to prevent the bridging of waste/fire across or around bay walls.

4.4.23 The construction of the bay walls (situated within the shed to the north of the RWMRF) using non-combustible material (concrete) further reduces the potential for fire spread, given that concrete has a slow rate of heat transfer which will prevent instances of radiative heat. It is considered that the temperature risk on the non-exposed side of the concrete wall will be so low that fire propagation through heat transfer will not occur.

4.4.24 While it is understood that steel will conduct heat, the steel bays utilised on site are only utilised for the storage of waste for limited periods of time. In addition to this, given the management techniques employed at the site, it is considered that the use of steel bays in these instances is considered appropriate to the risk.

4.4.25 Fire extinguishers are located within close proximity of the bays which can be utilised should a fire break out.

Freeboard Space

4.4.26 Sufficient freeboard space will be retained in accordance with the latest available guidance. The freeboard space allowed will be 1m, this level will be denoted on the bays prior to combustible waste being stored within them.

Prevention of Spread of Brands of Lighted Material

4.4.27 Each bay is enclosed on three sides, which will protect the waste (particularly in reference to the bays situated within the external storage shed) from wind. All other storage bays are located internally which will afford additional protection from the wind. Site operatives will be trained to ensure bays will not be overfilled, with the application of sufficient freeboard space on all three walls. The bays will be inspected daily with the aim of identifying and preventing the bridging of waste across bay walls. Please note,

Frequency and Method of Turning Piles

4.4.28 Combustible wastes stored in bays will not be stored on site for a period in excess of 1 week. Where required, stockpiles will be turned using appropriate mobile plant.

Waste Movement and Isolation During Incident

4.4.29 All bays will be accessible from their front edge in front of which a 6m buffer will be maintained free of obstruction. In the event of an emergency the contents of any bay can be removed efficiently to prevent the spread of fire at the site. This will allow the isolation of wastes during an incident.

Quarantine Area

4.4.30 The use of the quarantine area is described in Section 4.5.

4.5 Quarantine Area

4.5.1 A dedicated emergency or quarantine area which is large enough to cope with a major incident (with a clear area of at least 6m around the perimeter) is available at the site. The quarantine area will be large enough to hold at least 50% of the volume of the largest waste stack located the site. The location of the quarantine area is shown on **Drawing Reference Number CWM1005/5/FPP01** and extends over an area of *c.* 80m^2. It is situated at the rear of the RWMRF building, in the external yard area.

4.5.2 The quarantine area will be used to store any hot/smouldering/burning waste and to douse burning material or clear unburnt material to protect it and prevent the spread of fire. This area will be clearly denoted on the ground (however there will be no infrastructure associate with it as such) and all staff will be made aware of its location to ensure that this area is kept clear of any obstruction.

4.5.3 Mobile plant such as excavators or wheeled loading shovels will be used to move and deposit waste within the quarantine area. Once the quarantined waste has been cooled/extinguished they will be removed from site and taken to a licensed waste disposal facility.

4.5.4 The quarantine area will be used to temporarily store hot/smouldering/burning waste and will be kept separate from the waste quarantine area used for unsuitable materials, for instance infested waste etc.

4.6 Internal Storage and Suppression Systems

4.6.1 In the event of an internal fire the on-site extinguishers will be utilised to tackled a fire, until the Fire and Rescue Service arrive at the site.

4.6.2 All firefighting equipment at the facility will be clearly marked and tested at appropriate intervals to confirm their suitability and functionality. Site personnel will be made aware of the locations of all firefighting equipment and will be trained in their correct use.

4.6.3 All extinguishers located at the site will be portable in order to allow for utilisation at various locations across the site. A site plan detailing the location of onsite fire extinguishers will be made available and kept in the site offices.

4.6.4 A fire hydrant is located adjacent to the site offices and there are several lagoons on site which could be utilised in the event of an emergency. However, in terms of this Fire Prevention and Mitigation Plan, it is the lagoon situated to the south of the composting pad that is the source that will be prioritised for use for firefighting purposes.

4.6.5 Staff will carry out frequent inspections of the site both internally and externally in order to detect any sources of heat or fire within bays, stockpiles and buildings. As previously indicated, staff may use a thermal imaging camera to detect sources of heat. The structure of the RWMRF building consists of concrete (to a height of 3-4m) and steel through which, it is unlikely that an external fire will penetrate and spread to the internal areas or conversely it is unlikely that a fire within the RWMRF will extend beyond the building walls. Therefore, in the event of a fire in the neighbouring buildings e.g. the 'clean' MRF, it is considered highly unlikely that this will spread to the RWMRF building (or vice versa) given the physical barrier of the building itself.

4.6.6 As previously indicated, the buildings are equipped with fire extinguishers which can be utilised by appropriately trained site staff until such time that the Fire and Rescue Service arrives. Frequent inspections of waste piles throughout the day will also allow for any signs of combustion to be identified and for fire extinguishers to be utilised as appropriate. However, given the short storage duration times, as well as the management techniques employed by site staff, the risk of self-combustion is considered to be very low.

4.6.7 Further to this, given the site security measures that are employed it is unlikely that a fire will break out when the site itself is unmanned. The premises are protected by CCTV, security lighting and security fencing. It is therefore unlikely that a fire will break out through arson when the site itself is unmanned. Given this, fire extinguishers and daily inspections are considered to be adequate mechanisms for identifying and suppressing a fire. In the event of a fire, it is likely that the Fire and Rescue service will be able to tackle a fire in the buildings on site from the building entrance (via the roller shutter doors) without having to enter the building itself, and therefore the need for fire suppression sprinklers to make the building safe for the fire service to enter to tackle the fire is not necessary.

4.6.8 Mobile plant will be parked within externally, away from combustible waste streams (see **Drawing Reference Number CWM1005/5/01** for storage arrangements for mobile plant). Notwithstanding this, site operatives will ensure the hot surfaces, such as exhausts, are cooled (in ambient external conditions) and free from litter before locking the facility.

4.6.9 In addition to the above, the waste acceptance checks and daily inspections will ensure that any incompatible materials are detected as early as possible and are then temporarily moved to the quarantine area pending offsite disposal.

4.6.10 The site also operates a no smoking policy and any welding/ cutting work which is likely to generate sparks will be carried out by trained and experienced staff.

4.6.11 As previously mentioned all electrical equipment and mobile plant will be regularly inspected for faults by site operatives and therefore a fire is unlikely to be triggered by this means. All mobile plant used internally will be fitted (where appropriate) with rubber strips to prevent sparks.

4.6.12 Flammable materials such as petrol/oils will be securely contained and regularly inspected. The flammable materials will be stored 6m away from potential ignition sources.

4.6.13 The risk of an explosions internally is also considered very low. At the end of every shift the internal workshop areas will be cleared of dusts and litter as detailed in **Appendix FPP6**.

4.7 External Suppression Systems

4.7.1 External waste fires will be fought using a combination of fire extinguishers as well as water from fire water hydrant situated to the south of the buildings, or utilising water from the composting lagoon situated to the west of the RWMRF. The supply of water is further discussed in Section 4.10.

4.8 Active Fire Fighting

Initial Response

4.8.1 In the event that a fire occurs at the facility, the following actions will be undertaken:-

- Person(s) discovering a fire will raise the alarm;
- Report the incident to the Site Manager (emergency contact details contained within **Appendix FPP3**);
- All site personnel and visitors will be accounted for and evacuated to a safe location;
- If the fire can be controlled without endangering operatives, appropriate actions will be undertaken using available firefighting equipment e.g. water supply, extinguishers, inert material (if available). Fires will be tackled by a minimum of two facility operatives;
- If the site personnel cannot deal immediately with a fire, then contact with the emergency services should be made. The operator will state the nature of the incident;
- Follow all instructions given by the emergency services;
- Ensure site access is clear for the emergency services but prevent access to the facility from anyone else (i.e. divert incoming waste deliveries) until the emergency is over; and
- NRW will be informed forthwith of any fires that occur at the facility

4.8.2 If necessary, heavy plant may be utilised in fighting any potential fires that break out on site. Plant operatives are trained and competent in tackling fires and are aware that any action must only be carried out without the risk to their own health and safety and that of others. The actions that site operatives are permitted to take include:

- Spreading out waste in order for the fire to be more easily tackled
- Removal of wastes which are not alight to prevent the spread of fire
- Remove waste which is alight to a different location where firefighting may be easier e.g. quarantine area. However, consideration will be given to weather conditions, given that the quarantine area is located externally
- By pushing soils or other inert material i.e. fines over the fire to starve it of oxygen.

4.8.3 All plant operatives will be trained and competent in using the mobile plant to fight any fire that may arise and all heavy plant used will be suitable to the task.

4.8.4 An Exercise Plan (**Appendix FPP8)** will be carried out biannually which will test how well fire response procedures are conducted.

4.9 Access for Emergency Services

4.9.1 Site access for emergency vehicles will be via the unnamed private road from the A48 to the north east of the MRF buildings. This access point for Fire and Rescue Services (FRS) vehicles to the site will be unobstructed at all times. Further to this, the following procedures will be employed should a fire break out on site:

- A fire marshall will control vehicular movements during an emergency to ensure access is kept clear for the FRS and other essential vehicles and equipment
- In terms of the other waste management operations that are conducted at Nantycaws, traffic already on site would be kept in location until the emergency services arrive. The HWRC site personnel will advise members of the public to stay on site until further notice. Once the emergency services have arrived on site, and if safe to do so, then members of the public can be directed off site.
- Vehicles waiting for the weighbridge will be diverted to ensure a clear pathway for the emergency services.
- Access to hydrants and extinguishers is kept free of debris and obstacles at all times

Upon Arrival of the Fire Service

4.9.2 The Site Manager will ensure that the entrance to the site is clear to allow for the safe access of the Fire Service. The Site Manager will appraise the fire service with the details of the fire including the location and composition of the waste involved.

Contingency during the event

4.9.3 In the event of a fire all incoming waste delivery vehicles will be diverted from the site. The site would cease operation until NRW/Fire Services advise it is safe to recommence. Emergency contact details, procedures and sites plans will be

readily available and will be stored in numerous location in case the site office is inaccessible in the event of a fire.

4.10 Water Supplies

4.10.1 NRW's Fire Prevention and Mitigation Plan Guidance (v2, dated August 2017) requires that the operator demonstrates that they have sufficient water supplies available on site to manage a worst-case scenario incident (e.g.one (the largest stack) or more stacks on site are on fire). The guidance stipulates that a 300m^3 pile of combustible material will normally require a water supply of at least 2,000 litres a minute for a minimum of three hours. This represents a total of 360,000 litres of water or 360m^3/tonnes of water.

4.10.2 Given the preventative management techniques and monitoring practices conducted at the site, the operator has not installed a dedicated water deluge or sprinkler system within either of the MRF buildings. However, there is a water hydrant located adjacent to the weighbridge office, as shown on **Drawing Reference Number CWM1005/5/FPP04**. A pressure test was carried out on July 14th, 2015 by Welsh Water which gave a pressure reading of 4.4bar. An additional pressure test was conducted on the 4th of August 2015 which gave a reading of 4.8bar. This demonstrates that there is a variance in pressure from the water supply situated on site, however broadly speaking the supply can be expected to reach between 4.0 and 5.0 bar at any given time. Similarly, a flow test was conducted on the 4th of August 2015. This confirmed a flow rate of 170 litres per minute, which equates to 10,200 litres per hour.

4.10.3 The largest waste pile stored on site is *c.* 400m^3 of Commercial Dry Mixed Recyclate (DMR), located within the Clean MRF, which will require a supply of *c.* 2,667 litres of water per minute (based on the requirement for 2,000 litres a minute for a 300m^3 stockpile, an additional 100m^3 of waste would require an additional 667 litres of water (2,000 litres/3), which cannot be met by use of the water hydrant alone.

4.10.4 An additional source of water supply on the site is the compost lagoon which is situated at the end of the compost windrows *c*. 86m from the rear entrance of the RWMRF. The lagoon comprises an engineered clay and is 50m long, 25m wide and approximately 0.4m deep. This equates to a storage volume of around 500,000 litres. Therefore, by pumping the water from the compost lagoon to the buildings as well utilising the onsite fire hydrant, a total water supply of 530,600 litres (over 3 hours) can be provided should a fire occur on site.

4.10.5 As previously alluded to, NRW's Fire Prevention and Mitigation Plan Guidance requires that the operator demonstrates that they have sufficient water supplies available on site to manage a worst-case scenario incident (e.g. one (the largest stack) or more stacks on site are on fire)). As stipulated in section 4.10.3, this would require a water supply of *c*. 2,667 litres of water per minute or *c*. 480,000 litres of water over a 3-hour period (2667 litres x 60 minutes x 3 hours). This demand can be met via the use of the water from the composting lagoon alone,

however it is likely that the operator will also make use of the onsite fire hydrant where necessary.

4.10.6 Notwithstanding the fact that the required water supply is available at the site, given the short storage durations, condition of material upon receipt, management, fire prevention and mitigation techniques as well as the storage arrangements employed on site, the likelihood of a large fire at the site, whereby the aforementioned amount of water is required is considered to be highly unlikely. Further to this, it is likely that if a fire were to occur on site during working hours, site operatives would be able to action a response prior to the fire immediately. It is also considered that all reasonable precautions are taken to prevent fire occurring outside operational hours.

4.10.7 In addition to the above, inert materials could be utilised to smother a fire should it be considered appropriate/necessary. As well as this, there are a number of fire extinguishers situated around the site which can be used in the event of a small and contained fire.

4.11 Firewater Containment & Managing Run-Off

4.11.1 Due to the wastes to be processed at the facility any fire waters generated at the site following an incident has the potential to be contaminated. To avoid the discharge of potentially polluted waters the waters will be retained on-site pending testing (if required by the waste water disposal company) and removal offsite via an appropriate means. This will be achieved via the deployment of sandbags at building access/egress points which will be placed strategically in order to contain firewater. For example, if the fire were to be in one of the buildings, the sandbags will be placed across the nearest (initially and others thereafter, if appropriate) roller shutter doors/access doors to prevent firewater from escaping into the environment. The placement of the sandbags will take into account the falls within the building, as it may not be essential to provide sandbags to all access/egress points. There is a foul water drainage system in place within the RWMRF, which would be blocked via the use of clay mats to prevent the firewater from entering and flooding the below ground storage tank. There is no formal drainage system in place within the Clean MRF.

4.11.2 In addition to the above, should a fire break out within the external yard area, trained site staff will be instructed by the site manager to block certain surface water drains utilising impermeable drain covers, such as drain mats, which will then allow for the isolation of the surface water systems. The sandbags would then be placed strategically to ensure that the firewater is contained to one area of the site i.e. it may be possible to contain the firewater within the storage bay that is alight (for example).

4.11.3 The drain covers (and other pollution control equipment e.g. sandbags, drainage mats) will be kept in the site offices or in the case of sandbags within a number of shelters near the doors around the RWMRF/Clean MRF, (as shown on **CWM1005/5/FPP04)** and all staff are made aware of their location. Given the

implementation of drain covers as a suitable pollution control technique, the utilisation of drain closure valves is not considered necessary.

4.11.4 The FRS service will be directed towards the compost lagoon upon arrival. The compost lagoon area can be accessed by the fire service via a gate situated on its northern boundary.

4.11.5 The amount of firewater runoff generated will depend on a number of variables including the size of site and fire, nature and absorptive capacity of the materials, type of fire response system, rainfall, water lost to evaporation during cooling etc. Therefore, it is difficult to accurately quantify the amount of firewater that the site can contain given the number of variables which can affect the figure.

4.11.6 As previously indicated, in order to tackle a fire within the largest pile on site (Commercial Dry Mixed Recyclate) a water supply of 2,667 litres per minute over a period of 3 hours, which equates to a total water supply of 480,000 litres (2,667 litres per minute x 60 (hour) x 3 hours = *c.* 480,000 litres, which equates to 480m^3 of water). It can be considered that (as a worst-case scenario) all of this water will become firewater runoff and therefore the site will need to be prepared to contain this volume of water. As mentioned previously, the site will look to contain this water via the use of strategically placed sandbags. The RWMRF covers an area of *c.* 3457m^2 and the Clean MRF covers an area of *c.* 2818m^2. Given this, in order to contain the 480m^3 (amount of water required to put out a fire within a 400m^3 waste pile) of firewater runoff from the Clean MRF, the sandbags would need to be at least 17.5 cm high at access/egress points (480m^3 of water/ 2818m^2 area of building = *c.* 17.5 cm). In addition to this, the largest waste pile stored within the RWMRF is *c.* 300m^3. This would require a water supply of *c.* 360,000 litres (360m^3) over 3 hours. Therefore, in order to contain 360m^3 of firewater runoff within the RWMRF, the sandbags would need to be *c.* 11cm high (360m^3 of water/area of building 3457m^2) = 11cm. Each sandbag is 20cm high and therefore the sandbags would be required to be placed at one bag high to meet the requirements of the guidance and can be considered to be more than adequate in this instance.

4.11.7 As previously discussed, temporary bunding of sufficient strength and structural integrity e.g. sandbags will be implemented to contain firewater across the site access/egress points or in the external yard as appropriate. This will ultimately prevent the discharge of water off site. This will require the application of *c.* 301 sandbags at a height of 20cm around the access/egress points to the RWMRF and 180 sandbags around access/egress points to the Clean MRF. Please note, given that the RWMRF is the larger of the two the two buildings on site, with most access/egress points, it an be considered that the amount of sandbags required to contain firewater within this building represents a worst case scenario, as it is highly unlikely that a fire will break out in both buildings simultaneously or spread between the buildings. Therefore, as a precautionary approach *c.* 310 sandbags will be stored on site,

which is more than sufficient to contain firewater within either buildings, should an incident occur.

4.11.8 If a fire occurs in the external yard area, it is likely that this would be within one of the storage bays, which are a maximum of 10m in width (the baled mixed papers storage bay). In order to contain firewater within one of the storage bay, it is considered that there will be more than enough sandbags stored on site to build a "wall" across the front of the bay, in order to contain the firewater within said bay.

4.11.9 As previously stipulated, *c*. 310 sandbags will be stored on site for use within in an emergency. It is considered that, as the RWMRF is the larger building with more access/egress points, storing enough sandbags to contain firewater within this building can be considered a worst case scenario. The storage of 310 sandbags on site is based on figures provided within the Environment Agency Guidance "*Sandbags and how to use them properly for flood protection*, dated March 2009" which stipulates that "*You'll need at least 6 sandbags to keep out 20cm depth of water for a standard door opening*". It can be considered that a standard door opening is c. 91.4cm in width. Therefore, for every 91.4cm width, 6 sandbags are required.

4.11.10 Based on the above, there are 8 roller shutter doors located around the RWMRF which vary in width, which are identified on **Drawing Reference Number CWM1005/5/FPP04**. The number of sandbags per roller shutter door can be calculated as :

- There are 4 roller shutter doors along the northern perimeter of the RWMRF building, each of which is 500cm in width. Therefore, 500cm/91.4cm = 5.47 x 6 sandbags per door = 32.82 (33 sandbags per door). Given that there are 4 doors at this size, 132 sandbags will be required to contain firewater along the 4 roller shutter doors to the north of the building.

- There is 1 roller shutter door along the south eastern perimeter of the building, which is 449.5cm in width. Therefore, 449.5cm/91.4cm = 4.91 x 6 sandbags = 29.46 (30 sandbags).

- There is 1 roller shutter door on the western perimeter of the building, which is 499.2 cm in width. Therefore, 499.2cm/91.4cm = 5.46 x 6 sandbags= 32.76 (33 sandbags)

- Lastly, there are 2 roller shutter doors along the north western perimeter of the building, each of which is 450cm in width. Therefore, 450cm/91.4cm= 4.92 x 6 sandbags = 29.52 per door. Given that there are 2 doors at this size, 60 sandbags will be required.

4.11.11 In addition to the above, there are also 7 fire exits situated at various locations around the RWMRF, each of which is *c*. 1m in width. Therefore, 100cm/91.4cm = 1.09 x 6 sandbags = 6.54 x 7 doors = 45.78 (46 sandbags).

4.11.12 Based on the above, it can be noted that 301 sandbags will be required to contain firewater within the RWMRF building. It is considered that each sandbag is at a height of 20cm, so they will only need to be placed at 1 high. Given that, *c*. 180 sandbags will be required to retain firewater within the Clean MRF, the storage of 310 on site is considered to be more than adequate.

4.11.13 The sandbags (pre-filled) will be stored in dedicated shelters (out of direct sunlight and exposure to the elements), at various locations across the site in anticipation of application. The operator will store 310 sandbags on site (it is noted that 301 are required but 310 is considered appropriate in case of damage) for use during in an emergency. During operational hours, a minimum of 2 members of staff will deploy the sandbags in the event of a fire. The sandbags will be checked on an annual basis (if not utilised throughout the year) for degradation and replaced if required.

4.11.14 Once the fire has been extinguished, the fire water will be pumped into an onsite tanker, prior to removal offsite for disposal to a suitably licensed facility. The majority of the wastes stored at the site are considered to be non-hazardous, therefore any fire water generated is unlikely to contain components that will be considered hazardous in nature.

4.11.15 Drain mats (and any other additional pollution control measures) will only be removed once all firewater has been removed from the site.

4.12 Contingency in the event of an Incident

During an Incident

4.12.1 If a major fire incident occurs at the site all waste receipt and processing will cease until the incident has been dealt with by the Fire and Rescue Service. Once it is safe to do so, operations will then recommence.

4.12.2 In the event of closure or breakdown of the site, all incoming waste (both from the operator's alternative sites across South Wales and Local Authority collections) will be diverted to a number of alternative licensed waste treatment/disposal sites for onward processing until normal operations resume. There are multiple outlets (e.g. Derwen at Neath Abbey, Potters Pembrokeshire, Site Serv Bridgend etc) for which arrangements are in place for diversion of waste from the site, therefore should one fail waste can be directed towards a different outlet.

4.12.3 Similarly, if the site is required to close for an extensive period of time, stored waste will be transported to an alternative site/on ward processors (if safe to do so).

4.12.4 All CWM Environmental vehicle drivers will be made aware of the location of alternative waste disposal sites. Should a fire should break out leading to the temporary suspension of waste acceptance at the RWMRF/Clean MRF, an appropriate representative of CWM Environmental will contact the relevant local

authority to arrange and discuss the diversion of waste to an appropriately permitted site.

4.12.5 Copies of the sites emergency procedures, Fire Prevention and Mitigation plan, contact details and site plans will be kept in both the site office and within the MRF's which can be utilised as necessary. It is highly unlikely that both locations would be alight simultaneously.

4.12.6 As discussed previously, in the event of an emergency, the site manager will contact those who may be affected by the fire to notify them of the incident utilising the contact details included within **Table 4**. This will either be conducted via the use of telephone or if possible a member of staff may be able to visiting the closest residential premises, if considered necessary.

After an Incident

4.12.7 With the exception of fire damaged materials, all outgoing processed wastes will be transferred to their originally intended destinations. Fire damaged waste that cannot be salvaged such as melted plastics will be transferred directly to a permitted waste disposal site. If decontamination procedures are necessary, the site will be washed down as relevant and any subsequent runoff will be managed appropriately. The site manager will conduct a thorough site inspection and contact Natural Resources Wales prior to the site becoming operational once more.

4.13 Potential Emissions to Air, Land or Water

4.13.1 Advice will be sought in an emergency from the FRS for the minimisation of potential emissions by using the mobile plant, water and general equipment on site if safe to do so. The preventative actions will depend upon site conditions, weather conditions, available equipment, safety concerns and the size and nature of the fire. Consultation between Site Management and the FRS will be conducted on an ongoing basis.

5.0 TRAINING AND INSTRUCTION

5.1 Competency, Training and Induction

5.1.1 The operator will ensure that all staff, visitors, contractors and drivers utilising the site are aware of the correct safety and fire prevention procedures to follow when working on the site. Staff will be made aware of the Fire Prevention and Mitigation Plan and the location of where it is kept e.g. MRF offices and site offices.

5.1.2 Site personnel will be made aware of the location of all firefighting equipment and will be trained in their correct use. They will also be made aware of the regulations with regards to fire risk.

5.1.3 Fire drills will be carried out at regular intervals to ensure that staff react in an appropriate manner should a fire break out and to ensure that the procedures detailed within the Fire Prevention and Mitigation Plan are adequate.

5.1.4 Frequent training with regards to fire safety will be delivered to all staff, particularly those with specific duties (fire marshals). Records will be kept of all staff training and training needs with be monitored. If necessary additional training such a refresher courses, toolbox talks and on site exercises/drills will be conducted at regular intervals.

5.1.5 In summary, the following will be implemented at the site:

- Site Management and Supervisors are trained to provide and follow emergency procedures
- Coaching and support is provided by competent coaches and by external fire engineers or Primary Authority contacts for technical or bespoke management solutions
- All site users are inducted with basic fire guidance and evacuation instructions
- Staff involved with fire-fighting are trained to use the equipment and advised to follow instructions from management/the Fire and Rescue Service (if necessary).

5.2 Review of the Fire Prevention and Mitigation Plan (FPMP)

5.2.1 It is essential to ensure that the FPMP is kept up to date and therefore this FPMP is treated as a live working document that can be reviewed regularly to reflect any changes at the site. Circumstances that will necessitate the review of this FPMP include:

- A fire incident at the site
- Additional combustible waste streams accepted at the site
- Increased waste volumes accepted
- Development of site infrastructure (new buildings) and
- Installation of new equipment etc