South West Wood Products Ltd

Kings Dock, Swansea, Wales

Fire Prevention and Mitigation Plan

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Land & Mineral Management

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1.5	30/3/23	LJB	Pile Heights and Separation Distances

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LMM/061/02 Rev B	Permit Plan

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Foreword

South West Wood Products Limited (SWWP) have a Standard rules SR2011 No4 for the treatment of waste wood for recovery permit at Kings Dock, Swansea, SA1 8QT which they are seeking to vary. This document provides a bespoke Fire Prevention and Mitigation Plan (FPMP) as required by Natural Resources Wales (NRW) to accompany the environmental permit and the environmental management system (EMS) for this site.

This FPMP has been prepared taking into account the constraints of the site and its surroundings together with consideration of various fire guidance documents including those from NRW, EA, BRE and WISH. The FPMP also takes account of SWWP's experience from its other wood recycling operations which already have fire plans developed working collaboratively with various agencies including local fire and rescue services.

The FPMP deals with the practicalities of the storage requirements to maintain a viable waste wood recycling operation whilst meeting the objectives:

- minimise the likelihood of a fire happening.
- mitigate the effects of a fire on the community and the environment.
- minimise the resources of third parties required during a fire.
- Reduce clean-up and remediation costs.

1 Overview

Operator and Permit

1.1 The operator will be SWWP, who run a network of wood recycling operations, and the activities will take place under environmental permit EPR/CB3495FF issued by NRW.

Permitted Activities

1.2 The site activities are the storage and treatment of waste wood with sorting, separation, shredding and chipping for recovery for uses including as biofuel, board mill products, etc.

1.3 The permitted waste types to be accepted are non-hazardous wastes, see Appendix A.

Site Location

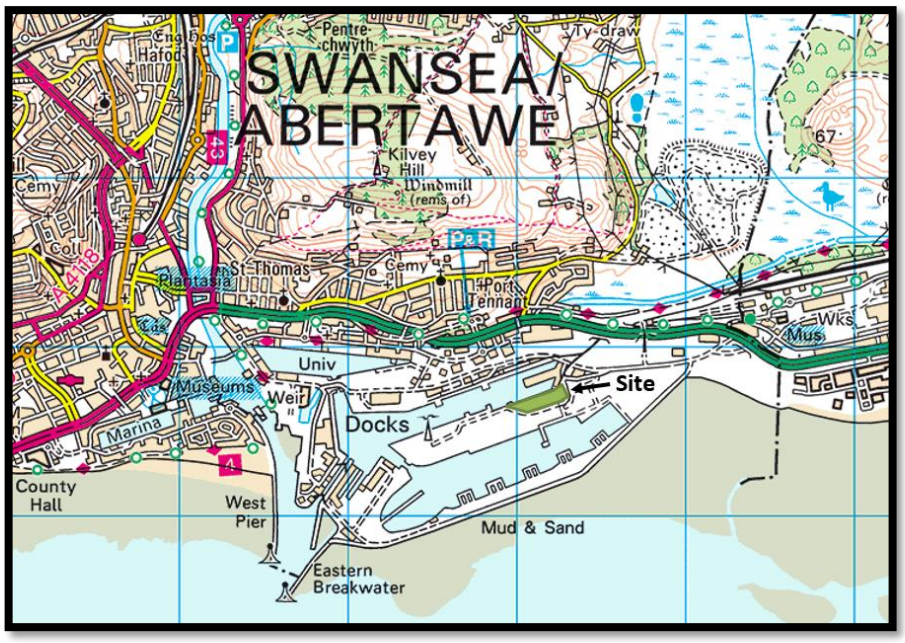
1.4 The site address is:

Kings Dock, Swansea, SA1 8QT
Grid Reference: SS 6892 1265

Site Context

1.5 Kings Dock is located wholly within the Swansea Docks complex to the south of Swansea, see Figure 1. Access to the site is from the A483 dual carriageway via the docks internal road network with controlled access through security gates. The site area is circa 2.5ha.

Figure 1: Site Location (nts)



Sensitive Receptors

Figure 2: General Location: Receptors 1km (nts)

1.6 Figure 2 presents an aerial image to give context to the site and nearby receptors, the site is at the centre of a 1km radius circle. The immediate surrounds are the docks (blue shading) themselves with various dockside operations although there are larger areas of open, unused land. More detail on the sensitive receptors is provided in Appendix B.

1.7 The immediate surrounding workplaces within the docks are the main immediate receptors and these are industrial uses and storage activities associated with the port. Further to the north, circa 300m is a band of mix of commercial and industrial uses on redeveloped former dock land

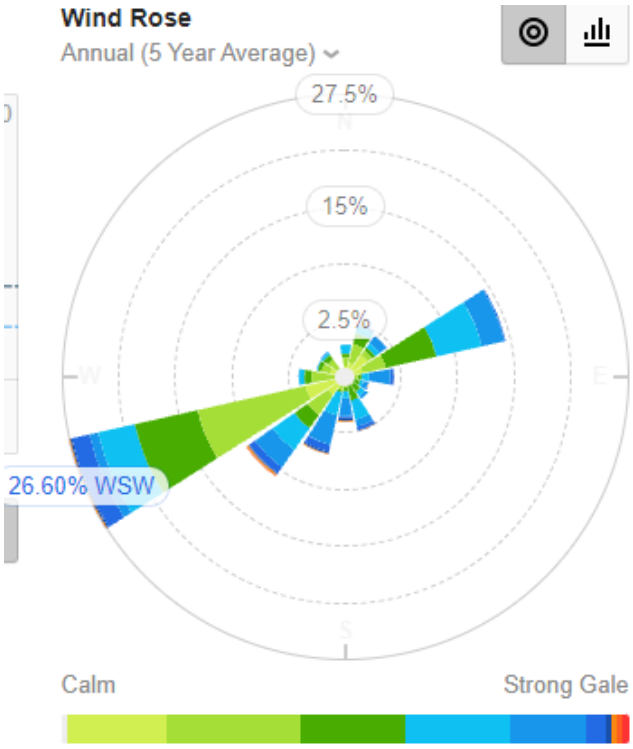
(orange shading). The nearest residential properties (red shading) are located to the north of the site adjacent to the A483, approximately 385m from the site with further residential areas over 500m from the site with the residential area of Port Tennant to the north and a waterside development properties to the north west.

1.8 In terms of infrastructure there is a network of local roads linking to the A483 dual carriage way (the main highway in the area) approximately 420m north of the site and an area of private railway sidings to the north east over 650m away. There are a number of wind turbines in the area with the closest just over 500m to the north east of the site.

1.9 In terms of environmental receptors within 1km of the site these include the waterbodies of Swansea Docks themselves, the River Tawe to the west, Swansea Bay to the south, some water bodies which are part of Crymlyn Bog to the north east and also the Tennant Canal to the north east. The only conservation designation within 1km is Crymlyn Bog, a lowland fen area which is designated as a SSSI, SAC and RAMSAR site, and lies over 500m to the north east

1.10 The wind direction, as shown in Figure 3, in the area is primarily from the west to south west.

Figure 3: Wind Rose Port Eynon Point(Mumbles Head 9.9miles west of site)



Source: https://wind.willyweather.co.uk/wl/swansea/port-eynon-point.html

Combustion Products

1.11 Table 1 outlines the potential combustion products generated from a fire incident.

Table 1: Potential Combustion Products from Fire Incident

Combustion Product	Possible pathway to receptors
Fire waters	Surface waters: however contained drainage system will ensure impacts do not extend beyond permit boundary
Burnt Material	None: immobile, so no impacts beyond site boundaries
Steam	Air: Very quickly dissipates in atmosphere, no impacts anticipated beyond site boundary
Gases	Air: Very quickly dissipates in atmosphere, no impacts anticipated beyond site boundary
Thermal Radiation	Air: Very quickly dissipates in atmosphere, no impacts anticipated beyond site boundary
Smoke	Air: Scope to be blown off site onto adjacent land/receptors. Will dissipate in atmosphere and time limited to incident with no permanent impacts. Any community receptors downwind would be notified of the need to close windows during an incident and stay indoors.
Dust/ash	Air: Scope to be blown off site onto adjacent land/receptors and cause soiling when it settles. Any community receptors downwind would be notified of the need to close windows during an incident and stay indoors. Firefighting techniques would include the spraying of smoke with water to bring down particles in the air and reduce escape off site.
Soot	

1.12 From table 1 the combustion products with the potential to impact the local community are smoke, dust/ash/soot. The impact is dependent on the duration of an event therefore minimising the duration of an incident is the priority. How the receptors are impacted is also dependant on weather conditions i.e. smoke, dust/ash and soot are all dependant on wind to mobilise off site and as the distance from the site increases the impacts will reduce. Noting the prevailing winds and the closest nearest receptors are a limited number of dockside operations it is not considered that there would be significant impacts from combustions products on these receptors.

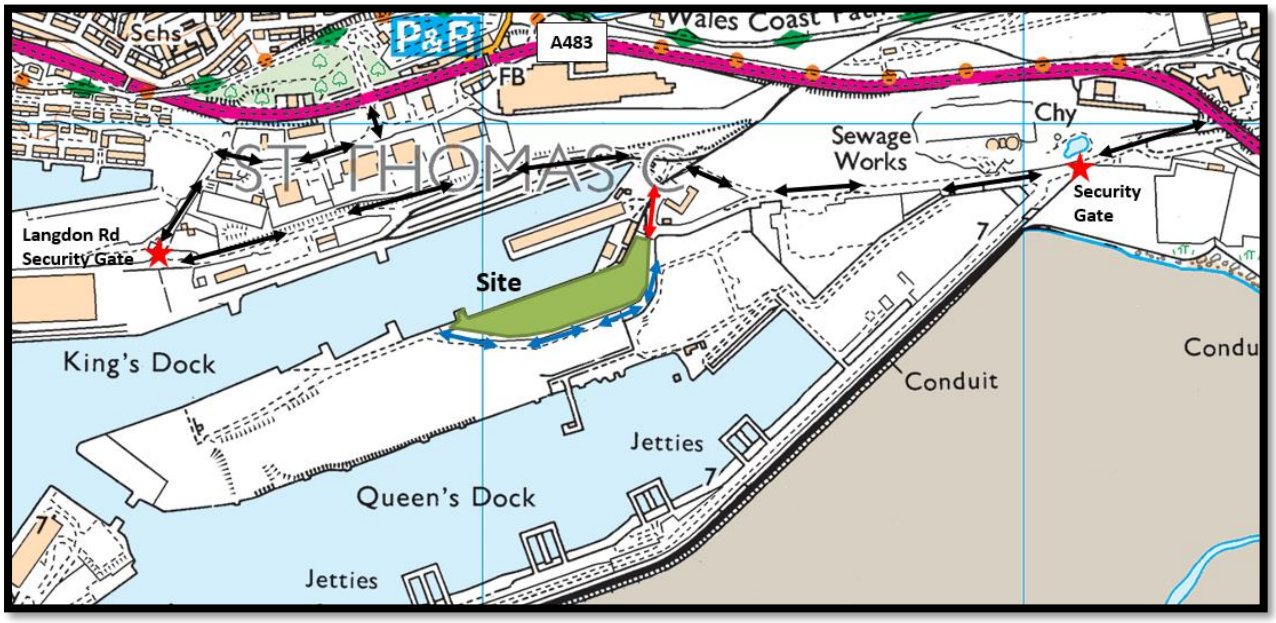
Site Layout Details

1.13 The site layout plan is attached, Drawing No LMM/061/01 Rev B. This includes details of the general site layout showing waste storage and processing areas, access points and site buildings.

Site Access and Alternative Emergency Access

1.14 The primary approach route to the site is from the A483 dual carriageway from the east along an unnamed local road into the docks. Separately access can be made from the north west along Langdon Road. Both routes pass through dock security gates which restrict access to only dockside operations. The main access point to the site is from the east (red arrow) but it can also be accessed further to the west (blue arrows) as an alternative emergency access, see Figure 4. All the roads leading to the site and the site accesses themselves are of a sufficient size to accommodate large emergency vehicles.

Figure 4: Emergency Access Routes



1.15 The main access and alternative access will be kept clear at all times from any processing or storage operations to ensure full access and unobstructed circulation of emergency vehicles. The majority of the site is an open yard area with a level surface and so the site is fully accessible to all vehicles including emergency vehicles. All storage piles are fully accessible on all sides and the distances between piles as sufficiently sized to allow access for emergency vehicles. Internally emergency access is via the main operational site haul road along the northern side of the site which allows ready access to all storage piles.

1.16 The alternative approach from the west would only be used in an extreme situation e.g. when smoke prevented access from the east (which is assessed as unlikely).

1.17 Emergency assembly points are located at either end of the site (west and east) at both the main access and alternative access point. Evacuation routes to be used in event of an incident are via the closest access point, if one access is blocked then the alternative access is to be used.

Contact Details

1.18 Site contact details together with emergency contacts and neighbouring businesses are provided in Appendix C.

Off Site Emergency Pack

1.19 An off-site emergency information pack will be held at the Dock Security Gate and a further emergency information pack will be held at the site offices located at the site entrance.

2 Waste Material, Product and Process

Permitted Activities

2.1 The site activities involve the storage and treatment of waste wood with sorting, separation, shredding and chipping for recovery for use such as biofuel and board mill products etc.

2.2 The waste types accepted at the site are non-hazardous waste woods as listed in the permit and environmental management system, see Appendix A. The waste codes include metals which are mixed metals/wood materials received from other wood recycling sites and require further processing to fully separate the wood and metal.

2.3 The site will handle a maximum of 250,000 tonnes per annum with an average weekly processing capability of 5000 tonnes although this will vary in response to demand. The maximum amount of material received to site will not exceed 2000t/day and for metals 100t/day.

Waste Acceptance

2.4 Suppliers are informed of SWWP's pre acceptance criteria to ensure any waste wood brought to site complies with the correct waste types and is free from contaminants.

2.5 All waste arriving at the site is subject to the following waste acceptance procedures operated by the site staff.

2.6 Documentation is checked on arrival to ensure an appropriate waste transfer note has been completed. The waste is also visually checked before it is permitted to be unloaded. If the initial check and documentation indicate that the material is allowed under the Permit it is directed to unload. If the material is not permitted or the inspection shows that it contains foreign bodies/un-permitted materials or if there is a suspicion of chemical contamination or battery materials, the load is refused. A record of any load refused (rejected) is made in the Site Diary.

2.7 Following the initial acceptance the material is typically directed to a processing area or storage pile. The load will be deposited on the ground and a secondary visual inspection will occur. If the load is found to contain non permitted material, a photographic record of the load is taken and the whole load will be rejected. The material will be reloaded back onto the vehicle it arrived in to be transported off site. Details of the rejected load will be kept in the Site Diary and management will be informed.

2.8 The following is recorded for each load of waste:

- The vehicle registration number;
- The haulier's Registration of Carriers registration number; and
- A Transfer Note showing the waste producer, a description and amount of the waste, the haulier of the waste and the waste's collection point.

2.9 Site records are forwarded each week to the Operator's offices at Cardiff and are available for inspection by the NRW with reasonable notice. Alternatively information can be supplied on request. Commercial information will be regarded as confidential. Within one month of the end of each quarter details of the waste movements are forwarded to the NRW on the appropriate form.

No acceptance of waste

2.10 In addition to the general waste acceptance procedures outlined above material will not be accepted onto site if at any point during the working day the following conditions preventing normal working operations arise:

- Insufficient storage capacity,
- Extreme weather conditions,
- Abnormal site conditions e.g. critical infrastructure failure, a fire incident.

2.11 Details of such events will be recorded in the Site Diary.

Waste Acceptance: Incompatible/hot loads

2.12 The visual inspection is also to assess if there are any signs of the waste 'heating' such as steam or smoke. Where the load appears to be heated, before it is accepted to be unloaded it is checked by a temperature probe and/or a hand held thermal imaging camera to establish if the temperature of the load is elevated. Where there are elevated temperatures loads will not be accepted however if for safety reasons a heated load needs immediate attention the material will be directed to the quarantine area for unloading and will be subject to the cooling procedures at the quarantine area. Full details of loads directed to the quarantine area for cooling will be recorded.

Waste Acceptance: Permitted Waste

2.13 The amount of waste accepted onto the site can be up to 2000 tonnes a day. The waste accepted onto site is sourced primarily from waste transfer stations, construction operations or waste from wood operations such as furniture manufacture and has not been subject to extensive periods of storage prior to arrival at site. Typically wood waste accepted at the site has been subject to minimal treatment, with initial pre-sorting or limited pre crushing of graded wood, but no treatment such as size reduction by chipping or shredding of the waste has taken place.

Waste Treatment: Processing

2.14 The processing operations involve the sizing of the waste to meet set specifications dependant on the product being made. The extent of the processing depends on the product specification. The processing operations involve physical sizing and this treatment does not use heat nor result in the generation of heat in the product.

2.15 The main processing machinery involved includes loading shovel, excavator, screeners, shredder, trommel and eddy current. The wood processed to specification is placed in a storage pile in accordance with the storage pile limits.

2.16 The processing equipment is operated to avoid the generation of 'waste' fines. All site operatives involved in processing operations are instructed to be vigilant for non-wood material/contaminants including the likes of batteries and instructed to halt operations and remove any non-compliant material.

Waste Storage

2.17 The waste is stored outside in loose form. No storage of mixed waste takes place. The aim is to ensure that the waste is stored in its largest size for as long as possible. Therefore processing only takes place in response to orders for processed material. Storing waste in its largest form reduces the possibility of self-heating and additionally reduces dust and debris being blown in and around the site.

2.18 The waste wood will be loose in one of two forms;

- Unprocessed waste wood in sizes from 100mm to 3000mm. There will be little or no fines in this waste.
- Processed wood chips in sizes 12mm to 100mm with little or no fines.

To be clear, as per para 2.16, whilst a limited amount of fines will be encountered in the unprocessed and processed wood, there is no separate production of fines.

2.19 The precise configuration of storage piles will vary reflecting operational needs but will conform to storage dimensions and durations in this FPMP in compliance with NRW FPMP guidance.

2.20 Typically >90% of wood on site is in unprocessed form in line with industry best practice.

2.21 The metals received to site will be in a loose form, partially processed from wood material, i.e. there will be an amount of wood adhering to the metals.

2.22 Appendix D has a risk assessment for the storage arrangements.

Storage Times

2.23 Unprocessed wood will typically not be stored for longer than 3 months. Stock rotation will be covered later in this plan.

2.24 Processed wood will be not stored for longer than 1 month, in line with NRW guidance, with the majority of processed wood transported from site within 2 – 5 working days as it is typically processed to order to avoid product deterioration.

2.25 Metals will not be stored longer that 3months prior to treatment and once processed will be removed from site immediately, direct to specialist metals recyclers. Hence limited storage of processed metal is required.

Storage Pile Sizes

2.26 Wood waste will be stored in piles sizes taking account of NRW FPMP guidance and the operational need and practicality of running the wood processing. The maximum pile size for the different wood sizes are detailed in table 2.

Table 2: Maximum Pile Sizes

Material	Dimensions metres (max)			Volume (m3)	Tonnage	Storage Duration (max)
	Length	Width	Height			
Unprocessed Wood	55	20	4	3960	792	3 months
Processed Wood	37	14	4	1864	372	1 month
Ferrous Metals	10	10	4	400	3200	3 months
Non Ferrous Metals	10	10	4	400	3200	3 months

*Figures allow for pile shaping

Separation Distances

2.27 Separation distances with comply with NRW guidance, Fire Prevention & Mitigation Plan Guidance – Waste Management Guidance Note 16. Separation distances are shown on drawing no. LMM/061/02 Rev B. The separation distances based on the longest pile side are:

- Unprocessed wood @ 55m = 12m separation distance
- Processed wood @ 37m = 12m separation distance
- Metals (ferrous and non ferrous) @10m = 7m separation distance

Storage Quantity

2.28 The maximum amount of wood storage provided for is approximately 6,000 tonnes. The maximum amount of metals storage provided for on site is 6,400 tonnes.

Waste Treatment: Stock Rotation

2.29 Full records are kept of all waste accepted and its storage location on site. When waste is accepted at the site it is directed to an appropriate area for unloading. The processing operations are designed to process the oldest waste wood first.

2.30 Records are kept as to when each storage pile is created and pile removal is based on the oldest pile being removed first. Storage pile details are recorded on an excel sheet covering the location, type of material, date of creation, any temperature monitoring and any associated hot spot remediation works. These records are kept at the weighbridge office, up dated and reviewed by the site manager on a daily basis.

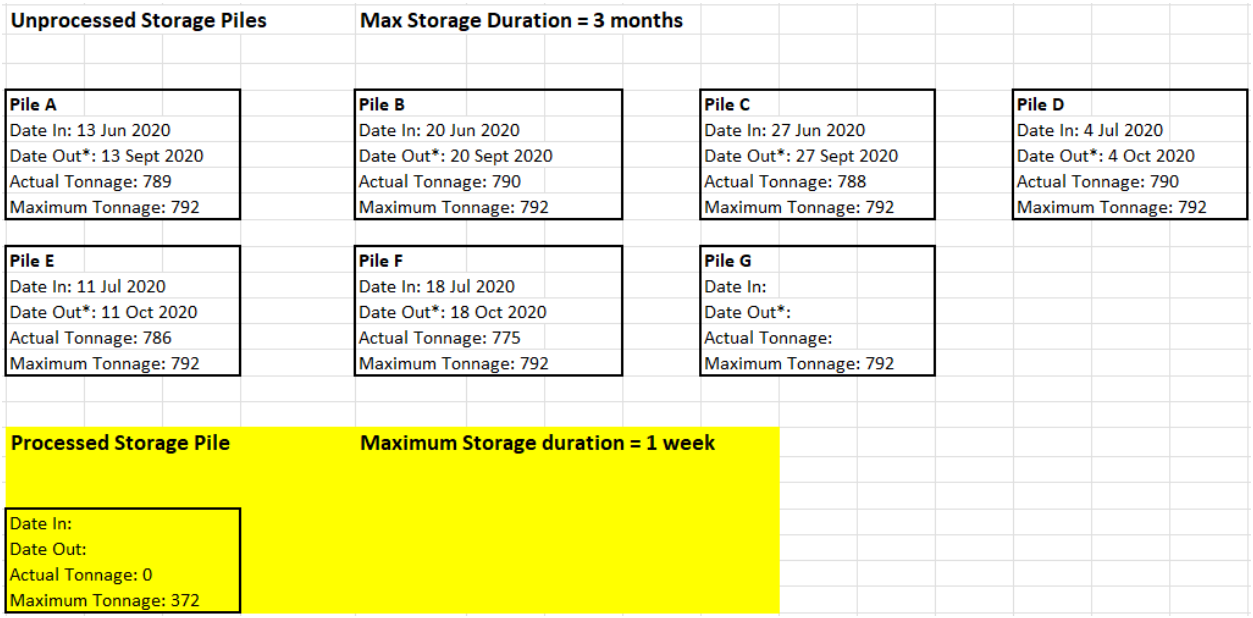
Recording of Storage Piles Durations

2.31 A schematic layout of all storage piles is maintained in the site office on a white board which identifies each pile with a unique reference number. Pile are formed in sequence and details recorded for each pile include the date that storage commenced, the 'out by' date and the maximum storage period. Tonnages are also recorded for each pile to ensure storage limits are not exceeded. At the end of each week a photograph is taken of the white board and kept as part of the site records. Figure 5 provides an illustration of the operation of the recording system.

2.32 The site manager will measure all piles when formed to confirm compliance with the relevant dimensions (size and separation distances as per this FPMP). A measuring wheel and telescopic

measuring stick will be kept on site for this purpose. If the pile exceeds the maximum size, wasted will be removed and put into the next storage pile. Once a pile is created to the correct size and recorded, as above, no waste wood will be added.

Figure 5: Storage Recording



Unprocessed Storage Piles	Max Storage Duration = 3 months		
Pile A Date In: 13 Jun 2020 Date Out*: 13 Sept 2020 Actual Tonnage: 789 Maximum Tonnage: 792	**Pile B** Date In: 20 Jun 2020 Date Out*: 20 Sept 2020 Actual Tonnage: 790 Maximum Tonnage: 792	**Pile C** Date In: 27 Jun 2020 Date Out*: 27 Sept 2020 Actual Tonnage: 788 Maximum Tonnage: 792	**Pile D** Date In: 4 Jul 2020 Date Out*: 4 Oct 2020 Actual Tonnage: 790 Maximum Tonnage: 792
Pile E Date In: 11 Jul 2020 Date Out*: 11 Oct 2020 Actual Tonnage: 786 Maximum Tonnage: 792	**Pile F** Date In: 18 Jul 2020 Date Out*: 18 Oct 2020 Actual Tonnage: 775 Maximum Tonnage: 792	**Pile G** Date In: Date Out*: Actual Tonnage: Maximum Tonnage: 792	
Processed Storage Pile	**Maximum Storage duration = 1 week**		
Date In: Date Out: Actual Tonnage: 0 Maximum Tonnage: 372			

3 Preventing Fires

3.1 To prevent fires all practical measures will be taken to remove ignition sources, the site will operate a robust acceptance/inspection regime and prevent self-ignition by controlling pile sizes, stock rotation and restricting storage times.

3.2 The following paragraphs detail measures to combat common causes of fire and ignition sources.

Plant and Equipment

3.3 The plant and equipment used at this site is detailed in table 3.

Table 3: Plant and Equipment

Plant/Equipment	Fire Prevention	Inspection
Loading Shovel	inbuilt fire detection and suppression systems or Portable Hand Held Fire Extinguisher	Daily Inspection sheet
Shredder	inbuilt fire detection and suppression systems	Daily Inspection sheet
Screener	inbuilt fire detection and suppression systems or Portable Hand Held Fire Extinguisher	Daily Inspection sheet
Tractor and water bowser	Portable Hand Held Fire Extinguisher	Daily Inspection sheet
Eddy Current Separator	inbuilt fire detection and suppression systems	Daily Inspection sheet
Compressor	Portable Hand Held Fire Extinguisher	Daily Inspection sheet
Diesel Bowser	Portable Hand Held Fire Extinguisher	Daily Inspection sheet

3.4 The processing plant has an automatic modular dry chemical fire suppression system which has two components to the suppression system. The first component is a 25lb agent cylinder fitted with an electric control head. An actuation current is provided to the electric control head by linear detection or the operator pushing the fire button on either the internal or external mounted manual actuator. Power to operate the system is drawn from the vehicle battery or provided by a 24hr self-recharging back-up battery inside the control panel. System status is constantly monitored by the control panel and communicated to the operator by visual LED

indicators and audible alarm. On activation a dry chemical is discharged through fixed high capacity fast flow nozzles in a cone shaped spray pattern. The secondary component is an automatic liquid cooling system with a 2.4 US Gallon liquid agent cylinder discharged through 2 nozzles. The Amerex liquid cooling system is designed to be used as a secondary agent to reduce the heat in the hazard area and to reduce the possibility of a re-flash of a fire on mobile and self-propelled equipment.

3.5 The frequency of servicing for all bar the tractor, compressor and diesel bowser exceeds the manufacturer's recommendations with servicing at every 250 operational hours as opposed to the recommended figure of 500 operational hours. Any defects are recorded and actioned appropriately with full records of all inspection and maintenance works kept by the operator at the site office.

Electrical and Exposed Cables

3.6 A schedule is maintained for the regular inspection and maintenance by a certified electrician of all electrical works on site covering all buildings and plant. Records of inspections and maintenance works are kept by the site operator. There are no electrical installations within 12m of a wood storage pile and no electrical equipment will operate near a storage pile on a temporary basis without the permission of the site manager.

Naked lights, hot works and Smoking

3.7 A designated smoking area is provided at the western end of the site away from the wood piles.

3.8 No naked lights are permitted on site

3.9 Hot works are only undertaken by trained persons using a risk assessment and permit to work system, ensuring that safe working practices are followed:

- Welding/cutting is undertaken with a hot work permit typically at the workshop where fire extinguishers are available
- No hot works are performed within 6m of waste or combustible/incompatible materials
- Site signage is used to re-enforce the permit to work policy for welding
- A post works fire watch is made one hour after works, if the site has not cooled sufficiently further regular checks are made until cooling is confirmed

Heat and Spark Prevention/Detection

3.10 All plant exhaust systems have silencers (mufflers) fitted and these are blown out at the end of the working day.

3.11 The loading shovels do not have rubber strips fitted as rubber stripping is not a robust material for the shovel edges on hard ground surfaces such as the surface at Kings Dock, as it damages easily and is so rendered ineffective in a very short period of time. However plant operatives are briefed to watch for any sparks. Should a fire start as a result of a spark this would be instantly detected by the plant operator and, as this would be only a small surface fire, it would be readily extinguished by the hand fire extinguisher held in the plant cab.

Gas Bottles and other Flammable Substances

3.12 Maintenance works are undertaken off site and any materials such as gas bottles and other substances such as oils and grease necessary for maintenance works are kept in the maintenance and stores building away from the waste storage areas.

3.13 Any refuelling necessary during the working day is done by a mobile diesel bowser with plant removed from the working area and away from any storage areas. A diesel is kept on site, as shown on drawing LMM/061/02 Rev B, located to the north of the maintenance building in full compliance with NRW separation distances.

Fire Watch

3.14 All site employees are briefed to remain vigilant across the site for signs of heating or fires throughout the working shift and to specifically check for any signs at the start and end of any breaks or shifts or if moving to new working areas. All staff will have hand held radios to provide an immediate alert on discovering a fire.

3.15 The daily site inspection includes surveillance for any signs of heating or fires. At the end of working, an hour after all machinery and plant has been turned off, a further site inspection will be undertaken by the responsible site operative to check for any signs of heating or fires.

Parking of Plant

3.16 At the end of the working day all plant is either parked in the processing area or adjacent to the maintenance building with minimum separation distances of 12m from any wood storage piles.

Automatic Fire Detection Systems

3.17 Most of the site plant and equipment has automatic fire detection and extinguishing systems as previously detailed. These are subject to regular maintenance and testing in accordance with manufacturer's specification to ensure they are fully functional at all times. When an automatic system is activated the plant will cease operation immediately and if safe to do so will be moved from the operational area or storage area as applicable. The affected plant will only return to operational use when a complete inspection confirms it is in a suitable condition to do so which includes the full operation of the automatic fire detection system.

3.18 The site has a CCTV system covering the operational area which, whilst not specifically designed for flame and heat detection, will provide an element of additional monitoring to assist the detection of fires outside working hours with automatic notification to the operator and dock security for appropriate actions.

Industrial Heaters

3.19 There will be no industrial heaters on site.

Exhausts and other Hot Machinery

3.20 All machinery, including exhausts will be constantly monitored whilst in use by the operative. All machinery will be cleaned down at the end of the day with compressed air, to remove any dust or fluff that may have accumulated on the machinery during its operation and will be moved away from combustible material. All machinery will be rechecked an hour after the finish of works to check the plant has cooled. Checks will be recorded in the site diary.

Open Burning

3.21 There is no open burning permitted on site. The Dock Authority policies prohibiting fires, so there is no possibility of any open burning within 500m of the site boundaries.

Incompatible Materials

3.22 There is no possibility of any reaction between incompatible materials as the only material stored and processed on site is either waste wood or metals.

Neighbouring Site Activities

3.23 The immediate neighbouring properties are detailed in Appendix B with the site surrounded by other dock industries with a variety of other storage operations.

Hot Loads Deposited on Site

3.24 The waste acceptance procedures outlined above are designed to ensure no hot loads are accepted to site with every load received inspected by a site operative. No loads will be deposited without a site operative being in attendance. Inspections for hot loads have been previously detailed.

Self-Heating /Self-Combustion

3.25 The actual risk is dependent on the relationship between the size of the chips/particles, the size/height of the storage pile and the length of time it stored i.e. the risk is increased with smaller particle sizes, larger pile sizes and lengthy storage periods. SWWP will manage the risk based on NRW guidance, BRE report 'Review of EA FPMP' dated August 2016, Wood Recyclers Association (WRA) 'Writing Waste Wood Fire Prevention Plans' and WISH Guidance. The majority of the wood will be stored in the largest particle size possible, i.e. stored as unprocessed wood in sizes from 100mm to 3000mm. Pile sizes and associated separation distances comply with WRA guidance and similarly storage durations will comply with NRW FPMP guidance i.e. there will be no storage on site of over three months.

3.26 Notwithstanding this the wood is kept damp by regular spraying of water in dry conditions to meet moisture requirements for processing and assisting with keeping dust down[1]. The application of water and the associated cooling effect will further minimise the potential for any heating/combustion of this material that could potentially occur by means of the sun's rays.

Monitoring

Staff Inspections

3.27 There is daily monitoring of all stock piles on site. For both unprocessed and processed material, this is done by means of visual inspections conducted at the start and end of the working day.

3.28 There is no additional monitoring for the storage of processed wood as this will not be stored on site for longer than 1 month.

[1] The application of water is primarily for processing purposes, i.e. to prevent dust generation, and moisture in the processed piles is monitored daily using hand held probes. This is for quality control to ensure that the processed product meets customer's specifications.

Signs of Heating

3.29 In addition to the automatic alerts all site staff will be trained in how to recognise visible signs of pile heating by identifying;

- Smoke
- Steam:- to understand the difference between evaporation due to the warming of the sun on dew, for example, and steam originating deeper in the stack.
- Smell
- Discolouration with charring/blackening/ darkening of the material
- Fire/ flames/glowing embers
- Anything else unusual i.e. collapses in the centre of piles, disruption of the stacks/piles, signs of unauthorised activity.
- Signs of antisocial behaviour including litter, wilful damage, graffiti, smoking materials.

3.30 If any of the above signs are spotted in a pile the operative or security staff must immediately notify site managed to assess and implement 'hot spot actions'.

Hot Spot Actions

3.31 All site staff will be trained on 'Hot Spot' actions from identification of a hot spot to its management. On identifying signs of heating, or when an automatic alert is received, an assessment will be made by the site manager of the relevant stockpile to identify the extent of the hot spot and enable an informed decision as to the remedial actions to be taken to cool the material by the most effective method in as short a time as possible and generating the minimum amount of residues.

3.32 All operations in the vicinity of a hot spot will cease and plant will be removed from the vicinity until the hot spot has been assessed and then appropriately remediated so there is no fire risk. Where deemed necessary the affected area will be isolated from the rest of the pile and/or other piles moved away.

3.33 The preference is to cool material in situ and to use techniques that will produce minimal residues where this can be done safely without increasing fire risk. The methods to cool a hot spot in situ include use of water, turning (rotating) the pile[2], smothering with inert material or spreading of the material by site operatives using a large shovel to remove material from affected area, either spreading it in the quarantine area or on adjacent ground where it does not compromise minimum separation distances – if necessary material in adjacent piles will be

[2] Pilling turning will automatically take place when two trial pits in a single pile identify signs of heating.

temporarily pushed away to create increased separation distances and allow cooling immediately adjacent to the pile.

3.34 Unprocessed material will be considered to have cooled when the material is no longer warm (a hand held thermal imagine camera will be used to assist with confirming the temperature of the cooled wood) and no longer steaming/smoking. At this point the cooling actions to cease.

3.35 If the cooling actions are not successful such that a hot spot develops into a combustion incident the fire trained site operatives will tackle the fire as detailed in the section 4. Should they be unable to safely tackle the fire, then the fire service will be called.

Hot Spot Recording and Monitoring

3.36 Full records will be kept of each hot spot incident, detailing its initial identification to final full remediation. A regular full review of all hot spot incidents will be undertaken by the Site Manager to establish the effectiveness of the fire plan and management system.

Contingency Arrangements: Storage and Emergency

3.37 The operator has his own alternative wood recycling sites at Swansea and Newport Docks which can be used to divert wood waste to in circumstances that Kings Dock cannot accept wood waste either due to site closure during a fire incident or when the site has reached its storage limits.

Seasonality

3.38 Wood recycling can have an element of seasonality with both the generation of waste wood and the demand for the wood products. Greater levels of waste wood are generated during the spring and summer months when construction levels are highest. This has a mismatch with the period of highest demand for the processed wood product, such as demand from energy plants, in autumn and winter. As a low value, high bulk commodity, with seasonal variations in arisings meeting the supply/demand challenge a high level of storage is essential. It is necessary to capture and store all waste wood to iron out the imbalance in waste arisings and the demand for the processed product.

3.39 SWWP has established with a series of contracts sourcing material from local authorities, various waste producers and manufacturing operations. SWWP has supply contracts with major power plants which include the nearby Margam power plant (Margam has a minimum supply requirement of 200,000tpa of wood) for which SWWP's Kings Docks is to be the main supply site. Whilst power station demand is highest in the winter SWWP must have capacity to supply Margam throughout the year, hence the site's storage and throughput levels. Additionally

SWWP have supply contracts with board mill producers which require a continuous supply over the year. The contract with Kronspan board manufacturer takes 200 loads per week. These are considered resilient outlets with renewable power plants an essential as part of the government energy drive. Similarly the board manufacturers have adapted manufacturing lines and are driven by policy drivers to use sustainable sources of material. It is not anticipated that there will be any lessening of demand for the wood product from these customers.

3.40 The site will form part of a larger supply network which is also used to assist in evening out imbalances in supply of arisings and demand for processed products.

3.41 The generation of metals wastes is influenced by the processing of wood however, at some times of the year when there is a higher processing of wood so there is a higher generation of metals, however there are strong markets for the cleaned metals which are not subject to seasonality issues.

Arson/Vandalism

Security

3.42 The site is remote from public areas situated in a private dock complex which has controlled security access. Members of the public are not allowed general access the dock complex. The site itself is securely enclosed by palisade fencing. The dock complex is subject to regular security patrols 24hours a day.

3.43 No members of the public are allowed on site. Gates to the site are only open during working hours when operatives are on site. The gates are located close to the weighbridge office allowing surveillance of people and vehicles entering the site. The site has a CCTV system with live streaming access and provision for motion activation to provide instant notification alerts of any unauthorised presence on site out of hours. The CCTV footage will be live streamed to the operator and can similarly be remotely viewed by dock security allowing additional assessment for the instigation of appropriate action to be taken in the event of unauthorised access or an incident.

Leaks and Spillages of Oils and Fuels

3.44 All plant and machinery is regularly maintained and inspected. Any deflects such as fluid leaks are dealt with immediately and any machine leaking oil or fuel will not be used until repairs are affected. Any leaks of oils or fuel will be immediately dealt with and contaminated materials

removed off site to an appropriate disposal facility. Spill kits are kept on site and any spillage/leak incidents will be fully recorded in the site diary.

Ignition Sources

3.45 Operations on site are designed to keep storage piles and sources of ignition separate. The FPMP deals with the management of various ignition sources under separate headings, table 4 provides a summary of ignition sources and how they are managed at Kings Dock.

Table 4: Summary of Ignition Sources and their Management

Source of Ignition	Prevention/Management
Arson/Vandalism	Site Security measures including 24hr dock security and 24 hr CCTV and secure site boundaries.
Self Combustion	Storage times do not exceed NRW guidance. Continuous monitoring for signs of self heating is provided for by means of visual monitoring by staff and the CCTV. Monitoring to ensure appropriate stock rotation and processing to order to minimise amount of storage of processed material.
Plant or equipment failure	Regular full inspection of plant and maintenance beyond manufacturer's specification.
Electrical faults	Regular electrical inspections/testing undertaken. No electrics in vicinity of storage areas.
Naked lights	None allowed on site, restricted area for smoking for staff provided away from storage areas.
Discarded smoking materials	No fires allowed on site.
Hot works	No hot works will take place within the permit boundary
Industrial heaters	None used on site.
Hot exhausts/plant engines	Hot plant subject to continual monitoring in course of working operations. Dust and dirt is removed at the end of each working day using an air compressor and then the plant is checked an hour later to ensure it has cooled down.
Open burning (on site or adjacent land)	No fires allowed on site. No burning takes places on surrounding land
Damaged or exposed electrical cables	Regular electrical inspections/testing undertaken. No electrics in vicinity of storage areas.

Reactions between incompatible materials	Single waste streams not subject to chemical reactions. Waste acceptance procedures ensure no non-permitted/incompatible material is accepted at the site.
Neighbouring sites activities	Largely surrounded by dock areas with adjacent uses posing little fire risk.
Sparks from Buckets	Site operatives to watch for sparks and initiate procedures if a spark starts a fire.
Hot loads	Monitoring for hot loads takes place as loads arrive at site with protocol to manage material.

4 Firefighting

Firefighting – General

4.1 Firefighting will be undertaken by site staff when safe to do so. On discovering a fire during the working day all members of staff are instructed in the following procedures:

1. Raise the alarm
2. Inform the TCM or on site senior staff – the TCM will immediately:
    - Assess the scale, location and intensity of the fire
    - Bring into effect the fire-fighting actions that can be immediately and safely brought into action on the affected area
    - Call the Fire Service if required
    - Inform Dock Security
    - Direct staff for fire fighting purposes (see point 5)

On hearing the alarm staff are instructed to:

3. Evacuate the site including, where safe to do so, shutting down plant and machinery and moving away from the wood piles
4. Remain on site to assist with any fire fighting only if directed by the TCM (this will only apply to suitably fire fighting trained staff)
5. Notify by mobile phone Head Office to make arrangements for divert any incoming wastes (responsibility of TCM or in his absence the designated on-site deputy)
6. Return to site only when the TCM directs it is safe to do so

4.2 Out of hours there will be no processing operations or movement of plant and machinery with plant parked away from the wood piles. Out of hours on discovering a fire the procedures are:

1. Raise the alarm
2. Contact TCM/out of hours contact
3. Assess the scale, location and intensity of the fire

4. Bring into effect the fire-fighting actions that can be immediately and safely be brought into action on the affected area

5. Call the Fire Service if required (opening site gates for FRS access)

6. Inform Dock Security

7. Inform Head Office

4.3 In the event of a fire during the working day all site processing operations will cease, no waste will be accepted to the site and all machines not used in firefighting in the affected area must be switched off and moved to a safe location. Operations at the site will not recommence until it is safe to do so without risk to the environment. Similarly in the event of a fire outside normal operating times the site will not reopen until it is safe to do so without risk to the environment.

4.4 Contingency arrangements for the diversion of waste will be activated to redirect any incoming wastes to the other facilities as discussed previously.

4.5 Should the emergency services be called out the Site Manager will be responsible for liaising with them on their arrival.

4.6 Out of hours, staff and managers will be on call to attend the site to enable plant and machinery to be used in assisting the fire service.

Fire Fighting –Strategies

4.7 The main strategy for firefighting is to separate unburnt material from a pile where a fire has started to reduce available 'fuel' and minimise the burn time. Therefore should a fire start in one part of a pile, on-site equipment (loading shovels/excavators) will be used to move material from the affected pile so reducing the potential combustible material in the pile and reducing the duration of a combustion event. Employing this technique SWWP anticipate that a fire incident at most would affect only quarter of a storage pile.

4.8 The mobile plant which will be used to assist with firefighting during an incident will have been adapted to be able to operate in heated conditions. The plant will have fire retardant hydraulics as opposed to convention rubber hydraulics to allow the plant to operate in a heated environment, with a fully enclosed cab for the drivers.

4.9 In the event of a fire in a storage pile, plant will push away the unaffected parts of the pile, either to the quarantine area or using separation distances as temporary quarantine areas where this

does not present a risk of combustion to other storage piles. In all cases of a significant fire the plant will only be operated by site staff under the supervision of the fire service with a joint dynamic risk assessment taking account of all prevailing conditions and factors.

4.10 Where feasible cleared ground would be used to spread burning/heated material to allow more rapid cooling and reduce the duration of the fire incident. Once the material was cooled it would be removed, temporarily to the quarantine area if it is not possible to move directly off site. Any 'moved' unburnt material would be returned to a normal pile formation as soon as possible.

Fire Fighting – Initial Response

4.11 The initial response on the outbreak of a fire will be to deploy a tractor and tanker, with a rain gun attachment and the mobilisation of plant to be used in firefighting (i.e. to assist moving material as appropriate).

4.12 The tanker will be continually ready full of water and with a puncture proof solution in the tyres to ensure no flat tyres. The tractor and tanker can to access all parts of the site and can be instantly mobilised to the location of a fire incident. The tanker capacity is 1,900 gallons.

4.13 There will be at least 2 tractor and tankers available at all times so when one is filling the other can be used in firefighting.

4.14 The tanker has a pressurised system allowing a high volume of water to be discharged in a short period of time over great distances, both horizontally and vertically, ensuring it can target water to any location. The rain gun mounted attachment is able to rotate over 360°, again highly accessible in allowing delivery of water to all areas of the site. A side valve allows a hose attachment with further flexibility as to fighting a fire with variable spray ability.

4.15 To fully discharge the tanker of all 1,900 gallons takes approximately 4.5 minutes, delivering water at a rate of approximately 2,000 litres per minute. The discharge of the hose can be controlled with the nozzle which has a variable flow control allowing water to be applied at a range of rates from a light spray to drenching. The rate of application of water will be assessed at the point of use to ensure the most effective use of water[3]. The preference is to apply water as a spray as opposed to drenching a fire as this can be a more effective (quicker) way to extinguish a fire removing the energy from the fire and absorbing heat quicker with the water

[3] Fire Service training will include assessment of the most effective rate of water application.

turning to steam. Not only can this put out a fire faster but produces with minimal fire water runoff.

4.16 The refilling operations are swift with a similar 5 minutes refill time. Therefore once the tanker has discharged its load it will run on a cycle of refilling and discharging as needed for the fire incident in tandem with the other actions outlined below.

Firefighting – Movement of Material

4.17 As mentioned above, material will be moved ('pushed' as this is the quickest means) to a safe distance from the fire, to a location where its temporary storage does not compromise access for firefighting purposes or give a potential pollution risk. The plant on site can move material rapidly with loading shovels and excavators. For safety reasons, no burning material will be moved across the site. After a fire, burnt material may be removed to the quarantine area if appropriate.

Fire Service

4.18 Fighting a major fire would be undertaken by the local fire service because of the safety risks to the staff. The Mid and West Wales Fire and Rescue Service will be invited to train at the Kings Dock site to become familiar with the site layout. The fire service will use their own high volume pumps and hose equipment for firefighting but will be able to use SWWP personnel and equipment to help in the movement of material to assist firefighting.

Controlled Burn

4.19 SWWP do not proposed to use 'controlled burn' as a firefighting technique at Kings Dock as the FPMP provides extensive measures in its firefighting strategy to swiftly extinguish any fire. A controlled burn would only take place with prior agreement with the NRW, Fire Service and Public Health Wales.

Firefighting Equipment

4.20 Fire extinguishers and/or automatic fire suppression systems are provided on each item of mobile plant as detailed previously. The location of the firefighting equipment is shown on the accompanying plan LMM/061/02 Rev B, with the majority of the fire stores kept in the maintenance building adjacent to the site offices and access and readily accessible at all times.

4.21 Fire extinguishers are situated strategically around the site and all are checked and serviced annually by a certified third party company. Fire extinguishers are present in all mobile plant.

4.22 The on-site firefighting equipment includes:

- 2 x Tractor and Tanks
- Loading shovels
- Excavator
- Pump
- Fire Extinguishers: Water spread strategically around the site.
- Weighbridge Office – Water & CO2
- Maintenance Building – Powder and Foam
- PPE

4.23 Where appropriate the firefighting equipment will be fitted with couplings etc that allows these to be used with Fire Service equipment. All firefighting equipment is subject to a regular inspection and maintenance regime to ensure it is fully operational and ready for use at any time.

4.24 When an inspection identifies any repair or maintenance work required for the effective operation of the equipment this will be undertaken as a matter of priority. All firefighting equipment shall be inspected following its use to ensure it is fully operational and effective. Records are kept of all inspections and maintenance works.

Water Supply

Water Requirement – NRW Guidance

4.25 NRW provides a 'rough guide' of water requirements that 300m^3 of combustible material will need a water supply of 2,000 litres a minute for a minimum of 3 hours, which equates to 1,200ltrs per 1m^3 (or 1.2m^3 of water to 1m^3 of combustible material). At the Kings Dock the largest pile is 3,960 m^3 which would have a water requirement of 4,752m^3.

Dock Water

4.26 The water in the docks is fresh water and available for use in firefighting. This has been confirmed by the Docks[4] and is the main source of water to be used for any major fire incident in the dock complex. The area of open water in the docks is over 75ha and even if the full volume required in line with NRW guidance was sourced from the dock it would not result in any noticeable change to dock water levels. A water pumping point is provided at the dockside (see plan), including edge protection to the dock, which will allow direct safe pumping of dock water to fill the tankers and be used for fire fighting. Therefore there is no shortage of waters for

[4] Associated British Ports Limited who own Swansea Docks.

firefighting with the availability of dock waters alone however there are other onsite sources of water as detailed below.

Fire Hydrant

4.27 There are no fire hydrants in the immediate locality.

Mains Water

4.28 There is a mains water supply however it is not anticipated this would be used for firefighting purposes.

Onsite Water Storage

4.29 The site will have three water tanks each with a capacity of 600,000 litres (1,800,000 litres/1,200m^3)[5]. The site drainage waters[6] are pumped into these tanks and these waters are retained onsite for dust suppression purposes but in the event of a fire the water supply in these tanks would be the first source used for firefighting waters.

Wetting Agent

4.30 As noted there is no shortage of water available for firefighting purposes however the FPMP aims to minimise its use as is consistent with meeting NRW's aim of minimising the impact of a fire incident. In addition to reducing the need for firefighting waters as a result of removing material from piles, see paras 4.7 and 4.17, SWWP will use wetting agent in the water applied to a fire.

4.31 A supply of 600 litres of wetting agent (30 x 20l containers) will be maintained on site (see Appendix E for details). The wetting agent is for use during a fire incident with on-site staff able to use the wetting agent in the on-site tankers by directly pouring it into the top of the tanker as it is filled with water which in effect mixes it through the water which is applied by the tankers. It is also available for use by the Fire Service. The wetting agent will make the on-site water supplies go further and extinguish fires more efficiently. The wetting agent is stored in the maintenance building in suitable containers preventing deterioration.

[5] These tanks are typically kept full of water for dust suppression purposes supplemented by docks waters if necessary.
[6] There is no formal drainage system across the site with only surface water run off hence the provision of raised kerbing which together with the boundary bund contains site waters.

4.32 The wetting agent is able to penetrate the fibres of the wood deeper than water alone providing cooling, preventing fire spread and reigniting of burnt material. The wetting agent is used at between 0.2% and 0.5% concentration with water.

4.33 The wetting agent used is identical to that used by Mid and West Wales Fire and Rescue Service who carry this product on all their front line fire appliances. Guidance on wetting agents was supplied by Simon Pearson of Mid and West Wales Fire and Rescue Service. Simon is the lead for waste fires and sits on the national working groups. This advice has already been used along with the wetting agent at 2 other sites in Wales.

Containment of Firewater

4.34 Fire water run off will be contained by the means of a raised lip and bunding around the site boundaries with the impermeable site surfacing. The raised lip/kerbing around the site will be a minimum of 25cm high with a 'speed bump' to a similar height at the site access. With a site area of 2.5ha this represents a minimum storage capacity of 6,250,000 litres (6,250m^3)[7] which provides sufficient containment for the amount of water required under the NRW's guidance (see para 4.25 above which confirms the water supply requirement of 4,752m^3). However SWWP aims to reduce the water used and subsequent requirement for disposal of any contaminated firewaters by a variety of good firefighting techniques including:

i. The firefighting strategy, see paras 4.7 and 4.17;

ii. Use of wetting agent;

iii. Training in correct use of water when firefighting (spray not drenching);

iv. Recirculation/reuse of fire waters accumulating on site; and,

v. Absorption/evaporation losses

4.35 The use of a water/wetting agent, when added to the firefighting water, will reduce water usage and hence containment requirements. A mix of 300m^3 would equate to the equivalent use of 3,000m^3 water hence a reduction in the actual used liquid volume of 2,700m^3 i.e. a reduction of over a third of the water requirement for the proposed storage at Kings Dock.

4.36 Then there are the losses during firefighting, items (iii) and (iv). Further loss will occur under (v) as when water is administered to the fire the action of the heat will result in an amount of the

[7] NRW requires a supply of water for a 300m^3 pile of 2,000litres/minute for three hours (equivalent of 360,000litres or 360m^3).

water evaporating as steam as well as there being absorption of water into the wood. The EA has accepted FPPs that have assumed not all the water used to douse a fire will emerge as surface waters, because of evaporation and potential uptake by waste, and using the following caveat:

> *"Assuming 25% water absorbed and 50% evaporated. Assuming most water hitting the target area will be evaporated with drainage increasing during the damping down operation. These assumptions have been used in previous FPPs which have been accepted by the Environment Agency" (SLR Statement on approved FPP)."*

4.37 Whilst absorption will vary with waste types wood is considered highly absorbent. Whilst considered a conservative figure, a 25% loss through combined absorption and evaporation losses, would result in reduced fire waters requiring containment in the region of the containment requirement would be reduced by 1,188m^3[8] irrespective of other measures reducing water usage.

Quarantine Area

4.38 Quarantine provision for the site is identified on plan LMM/061/02 Rev B. The quarantine areas are bare areas of ground which are kept clear. Excluding the surrounding separation distances, the total quarantine area provision is 708m^2. The quarantine areas have 6m separation distances on all its boundaries with increased distances as appropriate to adjacent storage piles. This complies with of NRW guidance which requires a quarantine area able to accommodate 50% of the largest pile which at Kings Dock is 550m^2 (with the largest pile footprint of 1,100m^2).

4.39 The area is to be used to hold materials removed from a storage pile during an incident, also for the cooling heated materials from hot loads directed to the quarantine area or to hold burnt material after a fire. Burning material will not be moved into the quarantine area because of the unacceptable risk to staff and potential ignition to other storage areas.

4.40 When the area is used to cool heated material, initially material will be tipped onto the ground and spread over the ground. An assessment will be made of how to cool the material. Options to cool the material include simply spreading out the material or the application of water via a mister or hose/bowser.

[8] This is the figure based on a worst case scenario for a whole pile fire which would have a water requirement of 4,752m^3.

4.41 If heated material has been deposited in the quarantine area there will be on going monitoring throughout the working day of the cooling operations and material temperature. At the end of the working day a final assessment will be made and appropriate actions undertaken to ensure that no material is left outside working hours in a condition that might lead to self-combustion.

4.42 Once the material has been cooled sufficiently a further assessment will be made as to the suitability of the cooled material for processing. If it is no longer fit for purpose it will be disposed of at an appropriately permitted site, currently the nearest disposal facility is the Docksway Landfill. If the material is suitable for use it will be returned to an appropriate storage area.

4.43 Full records will be maintained of materials brought to the quarantine area including the cooling treatment, monitoring and final removal either as product or for off-site disposal.

Combustion Products

4.44 Table 1 outlines the potential combustion products from fire incident. All staff FPMP training will include how to apply water to a fire to effectively fight the fire and minimise the generation of combustion products.

Disposal of Fire Residues

4.45 Burnt material will not be suitable for use as a wood product and will be removed from site to an appropriately permitted disposal site.

4.46 The used fire waters will be contained within the site as previously detailed. After a fire incident absorbent matting will be used to remove any contaminated materials on the surface of the waters such as oils or floating debris. The used matting will be disposed to an appropriate facility. The quality of the used fire waters will then be assessed as to its possible reuse, treatment or disposal such that it does not pose any environmental risk. If testing confirms their suitability for reuse (dust suppression) they will be retained on site, if not they will be removed for treatment/disposal off site at an appropriate facility (such as GD Environmental at Newport). If the latter the intention would be to do this within 2 days using a registered competent contractor.

4.47 Currently the nearest disposal facility able to accept the burnt materials, used equipment (matting) etc is the Docksway Landfill.

Reporting

4.48 All fire incidents will be fully recorded, including investigation of the cause of the incident and any actions implemented. Full details will be provided to the NRW.

Finances

4.49 The FPMP will minimise the residues and potential damage to site infrastructure and ensures there is sufficient resources on site to manage an incident but notwithstanding this the company has sufficient financial resources available to cope with a major incident on site, the finances can be accessed immediately if required by the company director.

Post Incident

4.50 After an incident and prior to the recommencement of operations including the acceptance of waste, the TCM will ensure that all the fire fighting equipment is fully operational and effective (as per para 3.3) and all site infrastructure is fully functioning.

Review

4.51 The contents of the FPMP will be kept under regular review by management. Notwithstanding the regular review the FPMP will also be reviewed, and amended as appropriate, in response to changes in operational activities, new legislative requirements and any relevant site incidents.

Training

4.52 All staff are fully trained in fire procedures which includes up-date training and routine fire drills. Fire training forms part of the site induction training before staff can commence working on site. All nominated 'firefighting' operatives will have specific practical training at the site using the firefighting equipment and following procedures of the FPMP.

4.53 Refresher training and a full mock site incident exercise will take place at least once a year. Management will review the need to increase the frequency of fire training and exercises in response to staff turnover, changed site practises and any incidents or near misses. Full records are kept of all training events.

Communication

4.54 An up-to-date FPMP will be kept in the site office available for inspection by all members of staff. An 'off site' copy of the FPMP will also be kept at the Langdon Road Swansea Docks Security entrance so in an emergency situation NRW and the local fire service can readily access the document to assist in dealing with an incident.

4.55 Visitors to the site will be made aware of the fire prevention and fighting procedures to ensure they understand their responsibilities.

4.56 In terms of communication during an incident when a fire incident occurs the Site Manager will immediately contact the docks security and give consideration to directly notifying any human receptor locations which are downwind of the prevailing wind at the time of the incident. When the Fire Service is involved with an incident their advice will be sought on who to contact and how the communication will be undertaken.

Appendices

Appendix A – Permitted Waste Types

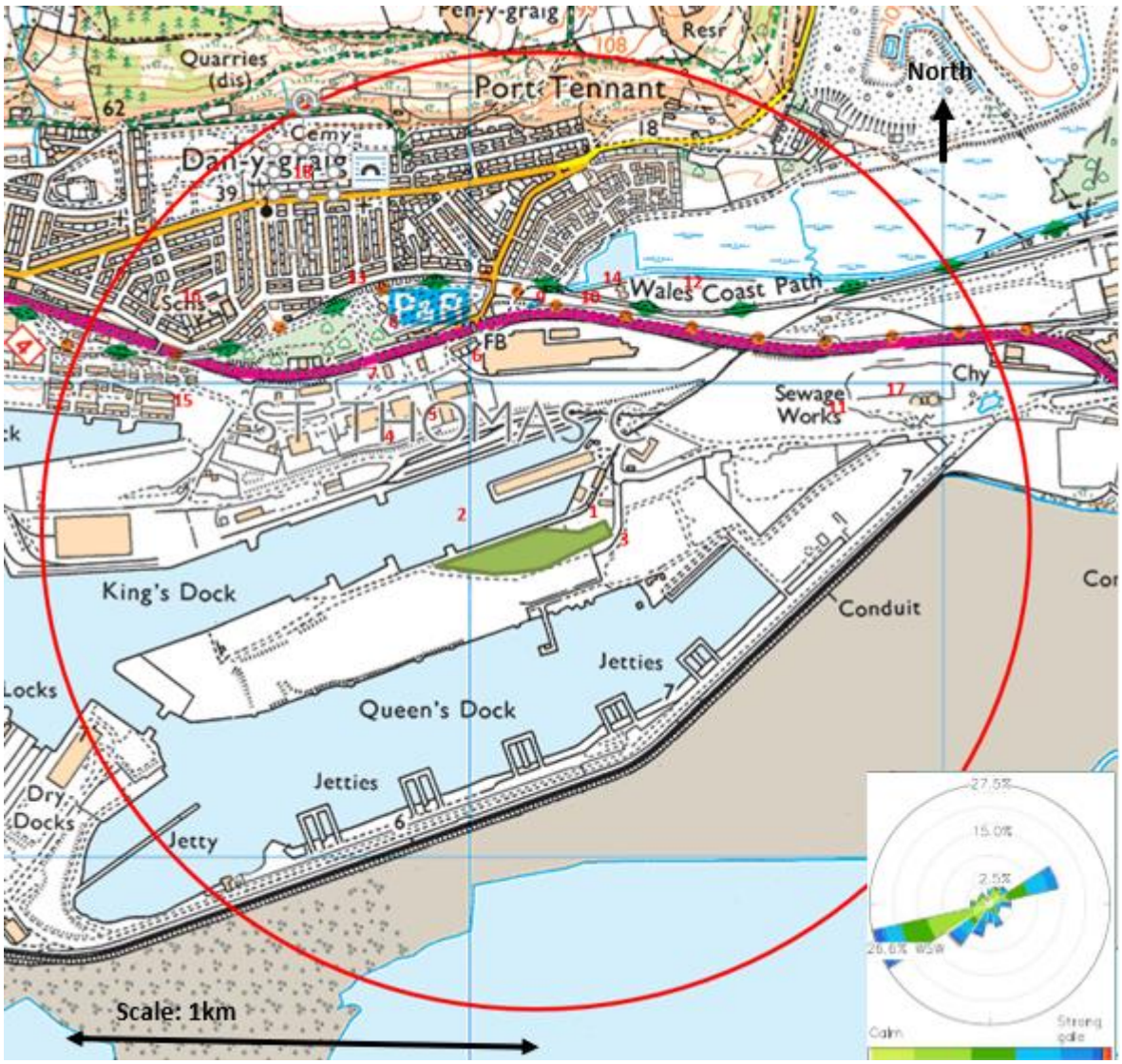
EWC Code	Description
02 01 03	Wood and bark
02 01 07	Wood and bark
03 01 01	Wood bark and cork
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04
03 03 01	waste bark and wood
15 01 03	wooden packaging
17 02 01	Wood
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03 (consisting of wood only)
19 05 01	Non-composted fraction of municipal and similar wastes (consisting of wood only)
19 12 02	Ferrous metal
19 12 03	Non - ferrous metal
19 12 07	wood other than that mentioned in 19 12 06
20 01 38	Municipal wood waste
20 02 01	wood and bark only

Appendix B – Sensitive Receptors

Sensitive Receptors

	Potential Receptor	Receptor Type	From Boundary of Permit	
			Distance (m)	Direction
1	Dockside Activities including storage and industrial operations	Industrial/Workplace	10- 1000m	North, South, East & West
2	Swansea Docks	Surface waters/Infrastructure	10m+	North, South & West
3	Internal dock roads	Private Infrastructure	10m+	North, South, East & West
4	Commercial and Retail Park	Infrastructure & Workplace	275m	North
5	Local Roads	Infrastructure	285m+	North
6	Bevans Road	Residential	385m	North
7	A483 Dual Carriageway	Infrastructure	430m	North
8	Park & Ride	Infrastructure	480m	North
9	Crymlyn Bog (SSSI, SAC & RAMSAR)	Surface Waters & Conservation site	495m	North East
10	Wales Coastal Path	Infrastructure	50mm	North
11	Wind turbines	Infrastructure	500m	East
12	Ashlands Playing Field	Recreation	505m	North
13	Port Tennant Estate	Residential	520m	North
14	Tennant Canal	Surface waters	595m	North east
15	Dockside Development	Residential	610m	North west
16	Dan y Graig Primary School	Community Infrastructure	675m	North west
17	Swansea Bay Waste Water Treatment Works	Infrastructure	725m	East
18	Dan y Graig Cemetery	Community Infrastructure	895m	North

Receptors Location Plan



Appendix C – Contact Information

Kings Dock, Swansea		
Site Phone Number	07759702592	
Emergency Services	999	
Police HQ Incident Room	101	
Local Police	Tel: 101	
Doctor	SA1 Medical Centre Beacon Centre for Health, Swansea SA1 8QY Tel 01792 481444	
A&E	Morriston Hospital, Heol Maes Eglwys, Cwmrhydyceirw, Morriston SA6 6NL Tel 01792 702222	
NHS Direct	0845 4647	
Natural Resources Wales	24hour hot line – 0300 807060 Local Office – 0300 065 3000	
Electricity Emergency	Western Power 0800 052 0400	
Water Services & Emergencies	Welsh Water 0800 052 0130	
Local Authority	Swansea Council 01792 636000 and 01792 636595 (out of hours)	
Company Contacts Out of Hours		
Operator	Tom Dunn Martin Chubb Rita Vassallo	07717 291464 07739324593 07736958177
Neighbour Contacts		
Associated British Ports	0870 609 6699	
Premier Cement Ltd	01792 645302	
Trinity House Lighthouse Service	01792 657000	

Appendix D – Storage Details

Material: Unprocessed Wood

Pile	Dimensions (m)			Volume (m3)	Shaped	Tonnage
	Length	Width	Height			
A	55	20	4	4400	3960	792
B	55	20	4	4400	3960	792
C	55	20	4	4400	3960	792
D	55	20	4	4400	3960	792
E	55	20	4	4400	3960	792
F	55	20	4	4400	3960	792
G	55	20	4	4400	3960	792
Totals				30800	27720	5544

Separation Distance: 12m
Maximum Storage Duration: <3 months
Quarantine area at equivalent to 50% of largest pile would be 550m2.

Description of Material		BRE Risk Matrix	FPMP Objective		Control Measures	Residual Risk
Pre-sorted and/or unprocessed waste wood		Low/Medium	Reduce likelihood of Fire		Waste acceptance procedures to ensure no 'foreign bodies' or excessive chemical contamination or heated material	Very Low
Particle Size	150-3000mm				Controlled storage durations and rotation measures	
Fines	None				Pile Height <4m as per NRW guidance	
			Duration of fire incident <4 hours		Procedures to remove non burning, combustible material in affected pile	
					Provision of dedicated Fire fighting equipment as detailed in FPMP	
					Staff training in fire procedures and use of equipment	
					Joint training exercise with local Fire Service to confirm procedures	
			Minimise spread of Fire inside and outside the site		Separation distances as per NRW guidance	
					Rapid fire fighting procedures to prevent fires becoming well established with resultant radiation combustion risk	

The BRE report notes for material >150mm critical temperatures for self combustion are 'relatively high'
So high as to preclude self-combustion, unless a foreign object, heat source or localised hotspot is introduced into the waste mass.
Storage times well below BRE calculated self ignition times for this product size

Material Type: Processed Wood

Pile	Dimensions (m)			Volume (m3)	Shaped	Tonnage
	Length	Width	Height			
1	37	14	4	2072	1864.8	372.96
Totals				2072	1864.8	372.96

Separation Distance: 12m
Maximum Storage Duration: <1 month

Description of Material		BRE Risk Matrix	FPMP Objective	Control Measures	Residual Risk
Processed with fines removed		Low/Medium	Reduce likelihood of Fire	Pile Height <4m as per NRW guidance	Low
Particle Size	10-70mm			Controlled storage durations	
Fines	None			No fines	
			Duration of fire incident <4 hours	Procedures to remove non burning, combustible material in affected pile	
				Provision of dedicated Fire fighting equipment as detailed in FPMP	
				Staff training in fire procedures and use of equipment	
				Joint training exercise with local Fire Service to confirm procedures	
			Minimise spread of Fire inside and outside the site	Separation distances as per NRW guidance	
				Rapid fire fighting procedures to prevent fires becoming well established with resultant radiation combustion risk	

*Based on sample 4 of BRE

Waste Type: Metals

Pile	Dimensions (m)			Volume (m3)	Tonnage
	Length	Width	Height		
i	10	10	4	400	3200
ii	10	10	4	400	3200

Totals	800	6400

Separation Distance:
7m
Maximum Storage Duration: <3 months

Description of Material		Control Measures	Residual Risk
Ferrous & Non Ferrous		As per NRW guidance	Very Low
Particle Size	10-300mm		
Fines	None		
No combustion issues associated with oils or fuel residues or contamination unlike other scrap e.g. scrap vehicles or machinery			

*No additional risk control measures required

Appendix E – Wetting Agent

FREEFOR SF 3F

SF **Wetting and Foaming Agent**
Fluorine Free
Solvent Free

PHYSICAL DATA

	FREEFOR SF SF1	SF2	SF3
Appearance /colour		Light red liquid	
Concentration for wetting application	0.1-0.3%	0.2-0.5%	0.3-1%
Concentration for foaming application	0.3-0.5%	0.5-1%	1-3%
Specific Gravity at 20°C (Kg/dm3)	1.07	1.03	1.01
Viscosity at 20°C (cStokes)	15	3	2
Freezing point	-10°C	-8°C	-5°C
Ph at 20°C		7	
Sediments after ageing		0 %	
Surface tension (mN/m)		25	

FOAM QUALITY

Low Expansion	8
Drainage Time 25% / 50%	2 min. / 4 min.
Medium Expension	100
High Expansion	800

From Expansion values depend on the equipment

PERFORMANCE & WARRANTY

FREEFOR SF meets international requirements
EN 1568-1 & 2: Pass
EN 1568-3: Class IIIC

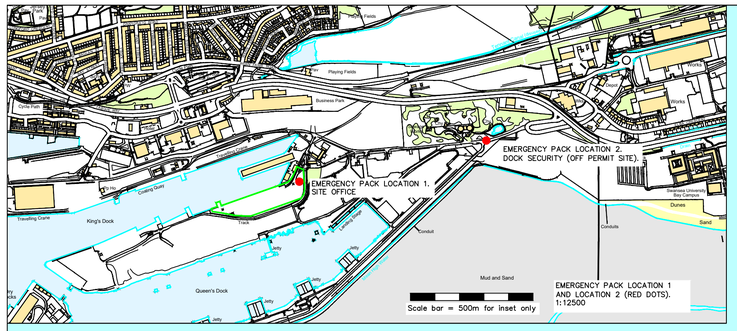
FREEFOR SF can be used for all structural fires with tap water, sea water and brackish water.

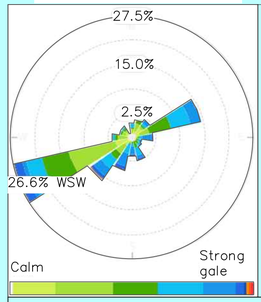
FREEFOR SF has a 10 years warranty in its original packaging and at storage temperatures -30°C / +60°C.

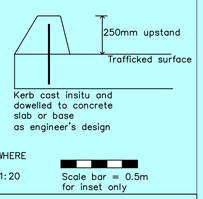
Tel. +44 (0) 1536 202919 • Fax +44 (0) 1536 263841 • sales@3fff.co.uk
Unit B, 18 Brunel Road, Earlstree Industrial Estate,
Corby, Northants, NN17 4JW, United Kingdom

www.3fff.co.uk

Drawing LMM/061/02 Rev B – Permit Plan Layout







KEY

- Main vehicle route
- Permit boundary
- Lighting tower
- CCTV
- Raised kerb
- Edge protection
- Alternative vehicle route
- Raised kerb crossing

Warehouse

Trinity House Depot

Fire assembly point

Quarantine 466m² area

6m gap

Site office -- location 1 of emergency pack

Weighbridge

Cabin

Parking

Smoking area

Kerb crossing point

CCTV on existing tower

Raised kerb

Diesel tank

Quarantine 242m² area

Maintenance building & stores with PPE, compressor, pollution prevention materials, wetting agent, pumps

Metals, Pile 1 non-ferrous 10 x 10m

Plant parking

Kerb ties-in to bund

Surface water flow direction

12m gap

7m gap

Raised kerb

Pile G 55 x 20m

Pile F 55 x 20m

Pile E 55 x 20m

Pile D 55 x 20m

Pile C 55 x 20m

Pile B 55 x 20m

Pile A 50 x 20m (max)

Pile 1 Processing storage 14 x 37m (max.)

Processing area. Shredder, eddy separator and screen operated here

Edge protection to dock

Water pumping point to access dock water

Water tank

Smoking area

CCTV on existing tower

Fire assembly point

Kerb crossing point

Kerb ties-in to bund

Existing bund c.2m height

SCALE BAR = 70M

Notes:
1. This drawing should only be used for its original intended purpose.
2. Critical dimensions, levels, clearances etc. should be checked on site before construction work commences.
3. Dimensions in metres unless otherwise stated.

Revision	Comment	Date
B	General layout revised	30 Mar 2023
A	Minor detail added	31 Jan 2023

South West Wood Products Ltd
Unit A4 Pacific Road, Compass Business Park, Cardiff CF24 5HL

Project
KINGS DOCK
SWANSEA

Drawing Title
PERMIT PLAN
EXTENT UPDATED APRIL 2022

Drawn Date: 10/04/22
Surveyed Date:

Scale: 1:500 MAINSHEET (AT A1)

Drawing Number: LMM/061/02
Rev: B