FICHTNER

Consulting Engineers Limited

Chirk Wood Based Panel Production Facility

Kronospan

Fire Prevention and Mitigation Plan

ENGINEERING CONSULTING

Document approval

	Name	Signature	Position	Date
Prepared by:	Simon Render		Senior Environmental Consultant	25/11/2020
Checked by:	James Sturman		Lead Environmental Consultant	25/11/2020

Document revision record

Revision no	Date	Details of revisions	Prepared by	Checked by
1	16/03/2018	For Client	JRS	SMO
2	11/04/2018	Updated for Client comments	JRS	SMO
3	25/05/2018	Final for issue	JRS	SMO
4	25/11/2020	Updated to address Schedule 5 Request	SDR	JRS

Contents

1 Introduction

Kronospan Limited (Kronospan) has been operating a wood-based panels manufacturing facility, currently employing around 650 people, at their site in Chirk, North Wales (the Facility) since 1971.

Kronospan is the global leader in the production of wood-based panels with some 40 sites globally. Chirk is the sole UK site, primarily focussed on supplying the domestic market with a wide range of locally manufactured raw and added value products. The site has developed so that it is able to derive the benefit of vertical integration with a range of related industrial processes ranging from raw board production to producing laminate flooring for retail sale.

Natural Resources Wales (NRW) published guidance titled 'Fire Prevention & Mitigation Plan Guidance – Waste Management' in August 2017 (herein referred to as the FPMP Guidance). The guidance applies to Operators of facilities which store 'any amounts of combustible waste materials including (but not limited to 1): … wood & wood composites (planks, boards, pallets, crates, sawdust, shavings & chips'.

As set out in section 2.1.4, of the Supporting Information, the Facility receives a mix of virgin wood, and 'exempt' and 'non-exempt' waste wood for the manufacture of particle board. Therefore, it is understood that the requirements of the Guidance apply to the Facility.

The purpose of this document is mainly to detail the provisions which have been included into the design and operation of the Facility to prevent the occurrence of fires. Where applicable, details of policies and operational procedures are provided.

This document and the measures to mitigate the risk and impact of fires within the facility have been (and will continue to be) developed in accordance with the requirements of:

1. Natural Resources Wales guidance 'Fire Prevention & Mitigation Plan Guidance – Waste Management, dated August 2017;
2. Building Regulations – Approved Document B (Fire Safety); and
3. Insurer's requirements where structures or equipment fall outside published guidance or recommended practice.

2 Site Location and Description

2.1 The Site

The Kronospan site (the Site) extends to around 40 Hectares and comprises a number of large industrial process buildings housing the main manufacturing processes, storage areas for raw materials, warehouse buildings for manufactured products, together with other facilities associated with a discrete manufacturing business.

The western perimeter of the Kronospan site is formed by the Shrewsbury to Chester railway. Improved railway siding facilities have been constructed within the Kronospan site to enable an increased volume of timber to be imported by rail. The Shropshire Union Canal is located to the west of the railway line. Water is abstracted from the canal for use in the manufacturing process. The eastern perimeter of the site is formed by Holyhead Road (B5070). An earth bund, planted with trees, has been developed along the eastern perimeter of the site in order to reduce the visibility of the site operations from neighbouring properties on Holyhead Road.

A sewerage pumping station and one property, owned by Kronospan, are located to the immediate north of the site. To the immediate south of the site is the Mondelez factory and the Chirk recreational ground.

The main residential area of Chirk is located to the east of the site with residential properties lining the majority of the eastern side of Holyhead Road. Chirk town centre is located approximately 500m to the south east of the site.

The wider area beyond the urban settlement of Chirk is dominated by agricultural fields and woodland. Chirk Castle and its grounds are located to the west of the site, beyond the Llangollen Canal.

A site location plan is presented in Appendix A

2.2 Summary of Site Operations

As stated above, the facility is regulated for the manufacture of panel board. The manufacturing process is a significant consumer of virgin wood (log and wood chips) and recycled timber. Various grades of timber including roundwood, slabwood, peeled chips, sawdust, and recycled timber (RCT) is received into the Log Yard for storage prior to processing/manufacturing. The virgin wood and RCT are then processed into panel board. Approximately 1,600,000 tonnes of wood (Estimated to be 2,200,000 tonnes with OSB) is received by the Log Yard each year, or approximately 5750 tonnes (to include OSB, 7,900 tonnes) tonnes per delivery day. (Based on an average of 5.5 delivery days in a week). The Log Yard has dedicated storage areas for the different types of timber products prior to processing, namely:

- roundwood;
- sawdust;
- recycled timber (RCT); and
- wood chips.

In accordance with the FPMP guidance, those activities which are for the '*storage of … materials or wastes that are … combustible liquids or gases*' are excluded from the requirements of the FPMP. Therefore, for the purposes of this FPMP, the following processes/activities have been excluded, as they combust natural gas fuels which are excluded from the requirements of the FPMP guidance:

- K1;
- K5;
- K6;
- GT1;
- GT2;
- Engine 1;
- Engine 2;
- Engine 3;
- Engine 4; and
- Engine 5.

2.3 Site Plans & Drawings

The following plans are included in Appendix C:

- Installation boundary drawing;
- Site drainage plan;
- Traffic and access route plan;
- Evacuation point locations;
- Fire prevention plan receptors drawing; and
- Site wide provisions of water for fire-fighting.

Wind roses showing the direction of the prevailing winds for the facility for 2013 to 2017, as taken from Shawbury, are presented in Appendix B.

2.4 Receptors

In accordance with the requirements of the Fire Prevention Guidance, the receptors in relation to the Fire Prevention Plan are as per the following table:

Table 1: Sensitive Receptors

Receptor Name	Designation	Location at Point Closest to Installation Boundary		Approximate Distance from Installation Boundary (m)
		X	Y	
Maes-y-Waun	Residential	329074	338157	53
Rhosywaun	Residential	328993	338676	55
Colliery Road	Residential	329069	337877	280
Station Avenue	Residential	328876	337733	389
Llwyn-y-cil	Residential	327984	338086	431
Afon Bradley Farm	Residential	328394	339485	532
Lodge Farm	Residential	329168	339548	665
Highfield Farm	Residential	329747	338667	762
Co-operative Food	Workplace	328959	338624	2

Receptor Name	Designation	Location at Point Closest to Installation Boundary		Approximate Distance from Installation Boundary (m)
		X	Y	
Industrial Estate	Workplace	328350	338263	27
Mondelez	Workplace	328440	338122	40
Chirk Leisure and Activity Centre	Workplace	329284	338345	278
Saw Mill	Workplace	327596	338890	881
Chirk Community Hospital	Hospital	329358	338975	462
Chirk Infant School	School	329158	338426	156
Chirk Court	Care Home	329045	338274	32
Chirk Castle	Protected Habitat (SSSI)	328023	338053	443
River Dee and Bala Lake	Protected Habitat (SSSI and SAC)	329186	337366	806
Chirk Railway Station	Railway Station	328470	337816	343
Chirk Marina	Watercourse	328525	339488	513

Contact details for these receptors are maintained in its 'Off-site Emergency Plan', refer to section 5.1.10.2.

3 Fire Prevention

3.1 Biomass Storage

Biomass, including roundwood, slabwood, peeled chips, sawdust, and RCT, is received into the Log Yard via rail or roadway.

The Log Yard has dedicated storage areas for the different timber products. Some areas of the Log Yard are covered with hardstanding. All incoming timber is stored on the hardstanding, except for the logs of roundwood, which are either stored on hardstanding or areas of unmade ground.

Peeled chips, sawdust and RCT from road vehicles are off-loaded on hardstanding, and using a bucket loader the pile of offloaded material is pushed into designated storage bays to ensure that each stockpile is managed to a maximum height of 10m.

Dedicated silos for the storage of pre-processed materials have been installed with 1 x 1,500 m^3 silos for sawdust, 2 x 8,000 m^3 silos for RCT and 2 x 10,000 m^3 silos for chips. Material will be transferred to these silos via enclosed conveyor belts regularly dependent on silo levels and production demands.

Roundwood is unloaded from forestry trailers by the trailers own integrated log grab, or by the site's log grabs. The roundwood is either placed directly into storage rows from the vehicle, or progressed directly into panel board production.

The normal and maximum quantities of biomass stored within the Log Yard are set out in Table 1. The maximum quantities are stored during the Christmas & summer periods, to ensure continuous operation of the Facility during the holiday periods. These quantities of biomass exclude materials stored within the silos.

Table 1: Maximum Stock Holdings (tL – Tonnes Lutro(Wet)

Product	Normal Max Stock Holding / tL	Holiday periods Stock Build / tL
Sawdust	2,500	7,500
RCT	11,000	33,000
Chips	6,000	10,000

3.2 Storage duration

All biomass stored on site, including roundwood, recycled timber, sawdust and boiler fuel is rotated within the guidelines set out in site works instruction KC/LOGY/WI/1000 – "Rotation of Log Yard Stock". This procedure stipulates the following maximum retention times for the stock held on site as shown in Table 2. The storage times have been determined to ensure that materials which are at risk of self-combustion are not stored for greater than 3 months.

Table 2: Maximum stock retention times

Product	Max stock holding (months)
Small Round Wood (SRW)	12
RCT (Recycled timber for Panel Board)	3
Chipped wood (External sawmill residues)	3
Sawdust	3 (80% moisture)

The age of the stockpiles is recorded in the weekly and monthly stock checks. If it is identified that there are stockpiles which are not being depleted quickly, the quantities requested from suppliers is halted to ensure that the existing stockpiles are utilised prior to the addition of additional incoming feedstock.

The RCT within the 2 storage silos will be constantly consumed by the board manufacturing process. The two silos each have a capacity of 8,000 m^3, i.e. 16,000m^3 total storage capacity. However, the quantities of feedstock stored within the silos is limited to 50% of their capacity. Therefore, the maximum quantity of RCT stored within the silos is 8,000 m^3. RCT 'typically' has a density of 0.23 m^3/tonne. Therefore, the two silos will contain approximately 1,840 tonnes of RCT, which is equivalent to 1.5 day's production. Therefore, the retention times within the silos will typically not exceed 1.5 days.

3.3 Monitoring of Incoming Residues

All incoming residues to the Facility is subject to the documented residues acceptance procedures listed in Table 3 These procedures are in place to ensure that all residues received are compliant with the requirements of the Environmental Permit and that there is sufficient capacity on site for the residues..

Table 3: Waste acceptance procedures

Procedure reference	Description
KC/LOGY/WI/0001	Moisture Testing Wood Residue Deliveries
KC/LOGY/WI/0005	Visual Inspection of Virgin Timber Deliveries
KC/LOGY/WI/0006	Quality Sampling of RCT Deliveries
KC/LOGY/DOC/0008	RCT Specification

All suppliers are provided with the relevant feedstock specification which outlines Kronospan's requirements and suppliers operate a receiving inspection procedure.

In accordance with the residue specification, suppliers are required to pre-treat the incoming biomass to remove unwanted metal contamination including batteries. Suppliers receive regular visits from a member of the Kronospan procurement team for site inspection audits to ensure that the residues pre-treatment processes implemented by suppliers are robust and in accordance with Kronospan specifications

All loads are visually inspected on arrival to ensure that there is no tramp metal present. Material is rejected if evidence of tramp metal is present in the load.

3.4 Monitoring of Residue Storage

Visual inspections of the biomass stockpiles within the Log Yard are undertaken daily by trained and competent Log Yard operatives to identify any smouldering within the stockpiles.

Temperature monitoring of the Log Yard stock is completed in accordance with KC/LOGY/WI/0851 by trained and competent Log Yard operatives with the temperature of all residues held on the Log Yard being monitored and recorded. Temperature trigger points are identified within KC/LOGY/WI/0851 at which point corrective actions are implemented which include additional monitoring through to the removal of the material.

In accordance with the documented procedures for the Facility (KC/LOGY/WI/0001) moisture monitoring is completed for all wood residue deliveries. The moisture contained within the residues

is the leading factor in the biological breakdown of the material which is the potential heat source / decomposition.

3.5 Actions to limit self-heating

The Facility has a very high consumption of biomass. Therefore, the stockpiles and biomass storage areas are regularly turned to supply the board manufacturing process. This regular processing of the stockpiles and material within the biomass silos helps to prevent the formation of hotspots. Turning of the stockpiles helps to release heat that may built up within them.

As stated in section 3.4, Kronospan has documented management procedures for the monitoring of temperature Facility (KC/LOGY/WI/0851) and moisture (KC/LOGY/WI/0001) for all biomass which is received and stored within the Log Yard. In accordance with these procedures, where increasing temperatures are identified, corrective action is taken to prevent further self-heating.

3.6 Seasonality

There will be seasonal variations on the quantities of biomass received. Stock levels are increased from October to December prior to Christmas and also for a 2-week period in August. This is to ensure that stock levels are maintained even during periods where suppliers typically shutdown. The levels of biomass received are managed contractually with the suppliers and weekly feedstock supply quotas are stated to individual suppliers. Maximum stock holdings are set and managed by weekly and monthly stock checks to ensure that these are not exceeded. Weekly stock checks and managing the incoming supply ensures that the principle of “first in, first out” is followed and ensures that the storage periods provided in Table 2 are complied with. In the event that the Facility cannot accept any additional feedstock, the weighbridge is advised and any additional deliveries of feedstock are refused access to the site, and required to return the incoming material to the biomass supplier.

During the winter months, the incoming biomass will have a higher moisture content as it will typically have been stored externally prior to processing and transfer to the Facility. Whereas, during the summer months, the biomass will have a lower moisture content. However, given the monitoring processes in place as outlined in sections 3.3 to 3.5 it is not anticipated that the changing moisture content of the biomass will result in any additional fire risk.

3.7 Arson or vandalism

Security measures are in place to prevent access by members of the public and unauthorised persons; thereby preventing the risk of arson attacks or vandalism on the Facility. The Facility is bounded by security fencing and the perimeter monitored using CCTV. Pedestrian access points employ turnstile access systems. A barrier is present at the entrance and exit to site to control vehicular access. There is a gatehouse at the Facility which is manned 24 hours per day (including security guards during night-time hours). Only authorised visitors are permitted to enter the site.

The Facility is operational and manned 24 hours, 7 days a week, with the CCTV system recording and available for real time review as required. The shift team leaders are responsible for security on the site, including delivery vehicles as they access and travel around the site.

Emergency procedures have been developed for the Facility. The procedures detail the response to a number of different emergency situations on site, including unauthorised personnel on site.

3.8 Plant and equipment failure

Operating and Maintenance Manuals (O&M Manuals) have been developed and are available on site for each of the panel board manufacturing areas. The O&M Manuals set out detailed operating and maintenance instructions for all the plant and equipment on site that requires maintenance.

Kronospan has maintenance procedures and work instructions to cover all plant and equipment. In developing the work instructions the risk of fire is considered and appropriate activities are incorporated to reduce the risk of fire in the manufacturing areas.

As part of the maintenance system Kronospan retains records of all maintenance undertaken and any corrective actions taken.

3.9 Infrastructure and site inspections

Regular site inspections are undertaken. Records of these inspections are retained on-site. Inspections are carried out on an ongoing basis, but as a minimum an inspection of the operational areas of the Facility is carried out during every operating shift with maintenance work instructions raised for any items identified which require maintenance.

These systems are checked as part of the planned maintenance regime as required in the detailed operating manuals for each piece of equipment.

3.10 Electrical faults

The risk of electrical faults associated with the Facility is minimised by ensuring that only suitably qualified electricians are allowed to undertake any maintenance activities upon electrical installation.

Electrical installations within the Facility have been designed and installed to comply with the relevant British Standards for the design and installation of electrical equipment and supplementary bonding/earthing.

Electrical equipment is periodically checked and maintained as part of the planned maintenance regime as required in the detailed operating manuals for the process equipment within the Facility. Electrical equipment is only used by trained and competent personnel. All electrical equipment is visually inspected prior to use, and any electrical equipment with damaged or exposed cables would be quarantined to prevent use until the equipment is either repaired or disposed of.

3.11 Ignition sources

No naked flames, space heaters, furnaces, incinerators or other sources of ignition are located in external areas, including the Log Yard. Therefore, there are no ignition sources within 6 meters of any combustible and flammable waste materials stored at the Facility.

3.12 Hot works

A site wide hot work procedure is operated to ensure all hot works are carried out in a controlled manner. Training in the hot work permit system is provided by the site fire prevention department.

Hot works can only be undertaken by trained personnel. There needs to be two persons to carry out all hot works - ‘the hot work doer’ and a ‘fire watch’. When hot work is being undertaken both persons must be present. The fire watch must have the fire precautions stipulated in the permit to

hand in case the hot work gets out of hand. The fire watch is there to prevent it escalating into a fire incident. The hot work permit issuer must have assessed the risk involved with carrying out the hot work and applied the most suitable fire precautions to prevent the hot work escalating into a fire incident.

Once the hot work has been completed, the site must be checked 30 minutes after cessation of the hot work and the fire watch would date and time this inspection and sign off the completed permit. The hot work can then be completed by signing it off in the book from which it originated.

There are areas on site which are designated as hot work permitted areas. These have been arranged so that hot work can be undertaken in these areas as a 'normal activity' without the need for a hot work permit. The hot work permit system is used for work carried out outside of these hot work permitted areas. A hot work permit will be required for all areas associated with the storage of biomass.

3.13 Industrial heaters

Industrial heaters are not provided within manufacturing areas or within the external Log Yard or the biomass storage silos.

Industrial heaters are used in the manufacturing areas. However, these are maintained according to manufacturer's recommendations and regularly inspected. If any defects or faults are identified, the defective heater is quarantined pending repair or disposal/replacement.

3.14 Hot Exhausts

Monitoring is undertaken to detect signs of fires from dusts settling on hot exhausts.

3.15 Cleaning

Regular cleaning of manufacturing areas will prevent the build-up of dust on hot surfaces. Periodic high-level cleaning will remove any build-up of dust at a higher level than can be reached from the ground. Routine cleaning of board manufacturing areas is completed daily, with regular inspections undertaken to ensure there is no build-up of dust in high risk areas, such as hot surfaces, light fittings and conveyor motors .

3.16 No smoking policy

The Facility has adopted a no smoking policy and enforces a total ban throughout the operational and office areas of the site. In addition, there are significant restrictions regarding the permitted times and smoking locations in place within the Kronospan boundary. External areas designated for smoking within the installation boundary are identified, and are located more than 6 metres from combustible materials with suitable facilities provided for staff.

3.17 Visitors and Contractors

All visitors to site must either be accompanied by Kronospan personnel or undergo the site induction which provides information on fire prevention measures employed at the Facility. Fire prevention messages are reinforced throughout the site using appropriate signage.

3.18 Heat and spark prevention

A review under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) has been completed for the Facility, and any risk areas identified on zoning drawings.

Naked sources of ignition will be controlled on site through a hot work management system. This system will cover both staff and contractors on site. The system will also include requirements for the site to train and authorise 'hot work risk assessors' for the purposes of eliminating, reducing and managing the risks associated with hot work.

As part of the hot work management system, the potential for sources of ignition to cause fires will be managed in accordance with the Hot Work procedures, refer to section 3.11.

3.19 Gas bottle and other flammable items

Site rules restrict the storage of flammable materials and gas bottles inside biomass storage areas. Regular safety inspections are undertaken throughout the Facility to ensure that flammable materials are not stored within areas which are dedicated for the storage of biomass.

3.20 Fire watch

Operational staff are briefed on the need for monitoring for the early signs of fires.

A weekly inspection of the condition of all fire detection and suppressions equipment and fire related matters is made. The results of inspections are recorded in a pro forma report, which is collated by the site representative responsible for fire.

3.21 Smoke/heat/flame detectors

All areas of significant business importance, such as substations and switch rooms, are protected with inert gas suppression systems. All electrical rooms have smoke detection installed, which are linked to the main site fire alarm system.

3.22 Leaks and spillages of oils and fuels

All vehicles used at the Facility are subject to ongoing maintenance and regular inspection to prevent the spillage of oils and fuels. Spill kit materials are available at multiple locations across the site and will be used to contain any spillage of oil or fuel, should this occur. Used spill kit materials are correctly stored and disposed of to reduce the risk of a potential fire situation.

4 Management and Storage of Combustible Materials

4.1 Incompatible/hot loads

The board manufacturing process will not result in any hot loads. Hot loads are not anticipated to be deposited at the Facility. All incoming biomass which are received at the Facility are compatible with each other and will not result in unwanted reactions with each other. Furthermore, explained in section 3.3, all incoming loads of biomass are visually inspected prior to acceptance. Therefore, if any incompatible or hot loads were identified these would be moved immediately to the quarantine area prior to transfer off-site.

The Facility will follow good practice in waste segregation and storage activities during periods of maintenance.

4.2 Waste acceptance

The Facility will receive biomass materials which are technically classified as 'waste'. On this basis waste acceptance procedures are in place for the receipt of waste biomass materials at the Facility. These form part of the operating procedures for the Log Yard as provided in Section 3.3.

Any loads of biomass which are delivered to the Facility but are not suitable for the manufacture of panel board are rejected by the Facility. In this instance, the loads are reloaded onto the vehicle and returned to the supplier.

4.3 Material Storage

4.3.1 Storage Overview

Small roundwood, wood chip, RCT, sawdust, bark and boiler fuel are stored in separate, designated areas within the log yard. Apart from the storage of roundwood, wood chip, RCT, sawdust and boiler fuel within the Log Yard, there will not be any other stockpiles of biomass stored within the Facility.

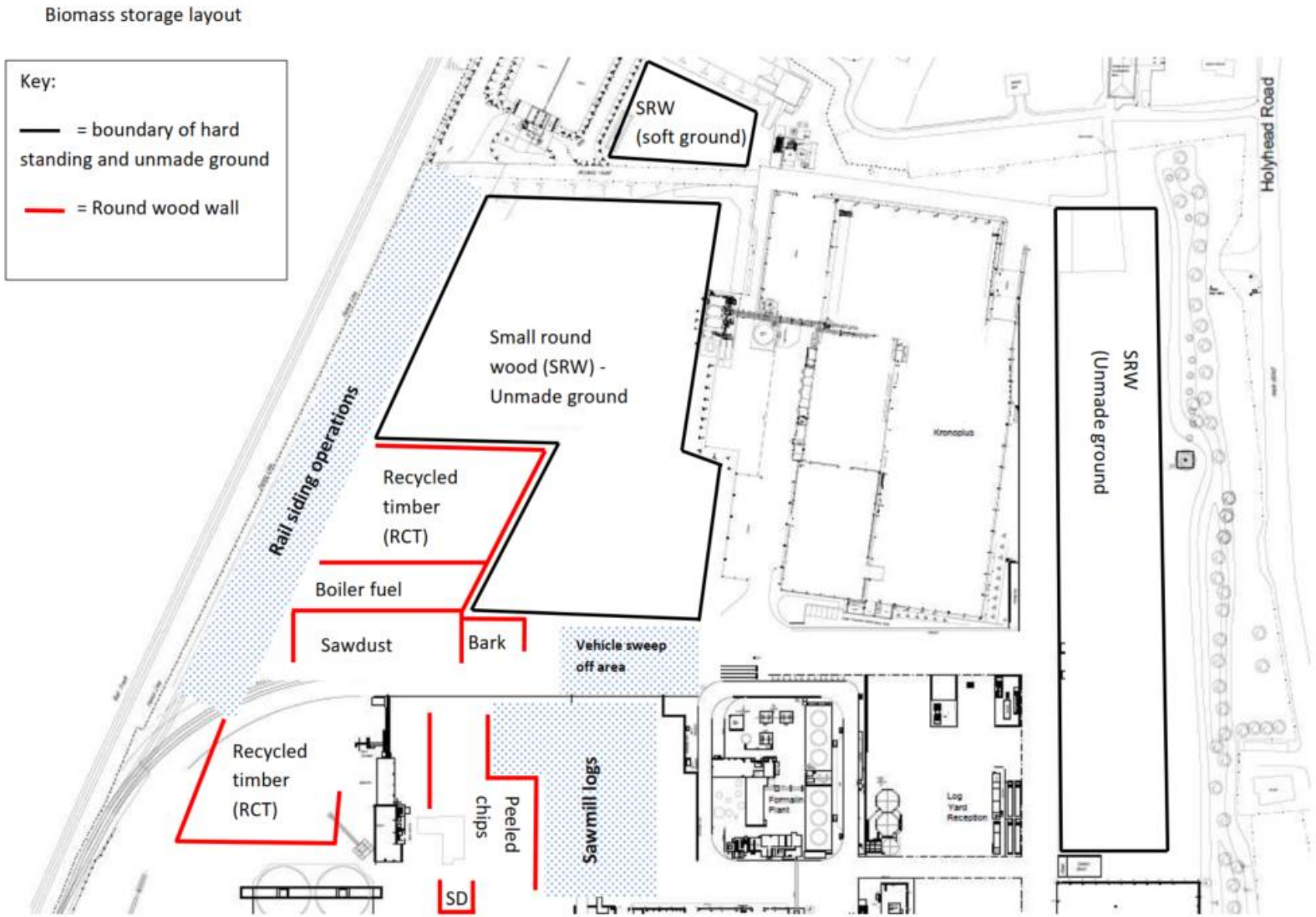
The roundwood is placed directly into storage rows from the vehicle. The logs are stacked on support logs to ensure stability of the log piles. The roundwood storage areas are located on unmade ground

The biomass storage area is located on impermeable hardstanding areas with designated storage bays for each different material. The biomass storage area is flexible, with individual materials requiring different sized stockpiles dependent on material availability, demand from the individual manufacturing areas and production schedules.

In order to allow for this flexibility, the storage bays are constructed of log walls which can be relocated if required. The log walls provide suitable fire-resistant requirement of >120 minutes. To ensure sufficient separation distance between piles, the piles are constructed such that the logs which are used to construct the walls of the bays are orientated lengthways between piles so that there is at least the length of the logs between piles. A freeboard space at the top and sides of the walls will be physically retained in at all times in accordance with NRW guidelines.

The biomass storage layout is presented in Figure 1. Baled waste is not stored at the Facility.

Figure 1: Biomass Storage Layout



4.3.2 Pile Size

The stockpiles of woodchip, RCT, sawdust and boiler fuel will be maintained to a height of up to 8m except for periods in August and November – December where the stockpile height is increased to 10m. This volume of woodchip, RCT, sawdust and boiler fuel is required to maintain the continuous operation of the board manufacturing process at the Facility.

The biomass storage area is flexible, with individual materials requiring different sized stockpiles dependent on the availability of feedstock, demand from the different manufacturing areas and production schedules. The largest stockpile of wood chip at the Facility will typically be 70 metres long, 55 metres wide and up to 8 metres high. Small stockpiles of wood chip will typically be 20 metres long, 12 metres wide and up to 8 metres high.

4.3.3 Separation Distances

Stockpiles of wood chip, RCT, sawdust and boiler fuel within the Log Yard will be maintained with a minimum separation distance of 5m with the exception of one compound where sawdust is stored next to RCT with a separation distance of 2.8m. This equates to the length of one log length which forms the wall of the storage bay.

Roadways are maintained throughout the Log Yard to allow for manoeuvring and access of vehicles to each of the storage areas. The roadways provides further separation between the storage piles and ensures that in an emergency scenario, fire fighting vehicles have access to all sides of each stockpile. A drawing showing the traffic routes is included in Appendix C.10

The design and layout of the biomass storage area has taken into consideration the chemical storage infrastructure at the site, with the biomass stores being located more than 100 metres from the formaldehyde plant.

A clear area is maintained around the perimeter of the site, with at least 5 metres between biomass storage area and the site boundary fence to ensure emergency access to the site perimeter in the event of a fire.

4.4 Fire walls

A drawing showing the location of all fire walls within the Facility is presented in Appendix C.7.

4.4.1 K1

K1 boiler does not lie inside an ATEX classified zone. The nearest zone is approximately 50 metres away and is the Kronoplus dust filtration system area. The walls surrounding the K1 boiler are not fire walls.

4.4.2 K5

K5 boiler is not located inside an ATEX zone. The closest ATEX zone is for the SL and CL silos located on the roof, some 35 metres away from K5 Boiler. Separation from the particleboard production line is achieved by the 90 minute rated firewall which separates the K5 boiler from the particleboard forming station. The particleboard band weigher ATEX zone is approximately 40 metres away from K5 boiler on the opposite side of the fire wall.

4.4.3 K6

The K6 boiler is located approximately 25 metres away from the SL silo ATEX zone. K6 boiler is at ground level and the SL silo is located on the roof. K6 Boiler is separated from the Particleboard press band weigher by a 120 minute rated firewall.

4.4.4 GT1 and GT2

The gas turbines are located within an industrial steel framed building.

4.4.5 Engine 1 – 5

The gas engine building houses five identical gas engines situated side by side separated by a 30 minute rated fire wall. All five engines are located in a purpose made building with walls of fire rated composite panels with a 60 minute rating and concrete ceiling of 90 minute rating.

4.4.6 K7 Boiler

The K7 boiler is an external plant and is not located within a building. The K7 boiler is not surrounded by fire walls.

4.4.7 K8 Boiler

The K8 boiler is an external plant and is not located within a building. However, the walls to the Refiner buildings to north of the K8 boiler are installed as 240 minutes fire walls. Furthermore, the walls installed to the south of the K8 boiler are installed as 90 minute fire walls.

4.4.8 Log Yard

The Log Yard is an open storage area for roundwood, wood chip, RCT, sawdust and boiler fuel. There are no firewalls within the Log Yard.

4.5 Quarantine areas

Any incoming materials which are not suitable for manufacturing are rejected by the Facility. In this instance, the loads are reloaded onto the vehicle and returned to the supplier. Alternatively, there is a designated quarantine area, which is shown in Appendix C.9. The storage capacity of the quarantine area is maintained at greater than or equal to 50% of the largest stockpile with a separation distance of at least 6 metres around the quarantined waste.

4.6 Storage within buildings

All biomass feedstocks associated with the board manufacturing process will be stored externally within the Log Yard or within biomass storage silos within the Log Yard. Biomass is transferred from the storage areas to the board manufacturing process as required for manufacturing. Therefore, biomass feedstock is not stored within buildings, unless it is being processed for board manufacturing purposes.

4.7 Storage within containers

Six storage silos have been constructed to store biomass, with a total storage capacity of 39,000 m^3. The biomass silos are protected by an automatic spark detection and suppression systems, the system is subject to VdS Schadenverhütung GmbH (herein referred to as VdS) standards and are subject to a programme of ongoing inspection. VdS is a 100% subsidiary of the German Insurance Association (GDV) and is recognised in Germany as a leading independent testing institution for fire safety and security. The UK equivalent would be the Loss Prevention Council (LPC). Each silo is equipped with fire suppression nozzles, which are located inside and outside of the silos and form a manual deluge system. The external fire suppression nozzles are designed to cool down the silos after operation of the deluge system. This sire suppression system has been designed to prevent fire spreading between the silos, or to the biomass stored externally within the Log Yard.

There is a separation distance of 25 metres between the silos and the Log Yard, which is greater than the separation distance prescribed within FPMP Guidance and is deemed to provide sufficient separation to minimise the risk of a fire spreading from a silo to the Log Yard.

Kronospan has documented management procedures (KC/LOGY/WI/1000) which specifies maximum storage periods for biomass within the silos. This ensures that there is no accumulation of material within the silos. In accordance with the procedures, the silos are fully emptied every 3 months and cleaned down before being returned to service and refilled with ‘new’ biomass feedstock.

5 Fire Detection and Suppression

5.1 Active fire fighting

Initial responsibility for active fire-fighting at the Facility is with the Fire Prevention Department which manages the Occupational Fire Brigade (OFB). The OFB has 37 members, 2 of which are retained fire and rescue services personnel, and a fully equipped foam Fire Appliance. The OFB is operated under a shift system. On each shift there are up to 8 trained brigade members. Whilst OFB members have dedicated jobs within the board manufacturing process, on the activation of the site fire alarm they will report to the fire station.

5.1.1 Fire prevention standards

Where appropriate, the Facility has been designed and operated in accordance with the following fire prevention and detection standards:

- LPC Rules for automatic sprinkler installations;
- VdS standards;
- BS EN 671: Fixed fire-fighting systems;
- BS 5266: Emergency Lighting;
- BS 5446: Automatic Fire Alarm Systems;
- BS 5839: Fire Detection and Alarm systems for buildings;
- ISO 6182: Fire Protection – Automatic Sprinkler Systems;
- ISO 6183: Fire protection equipment – Carbon Dioxide systems;
- CIBSE Guide Volume E, Fire Engineering, 2003;
- BS 5306: Fire extinguishing installations and equipment on premises;
- BS 5588: Fire precautions in the design construction and use of buildings (only in as much as referred to in the Building Regulations);
- BS 9999 - Code of Practice for Fire Safety in the design, management and use of Buildings; and
- Building Regulations.

5.1.2 Fire detection systems

All workplaces within the Facility have been designed, where practicable, with arrangements for detecting and giving warning in case of fire. Fire detection systems have been included in the design of the process plant at the Facility.

All fire detection systems are regularly checked and maintained by suitably competent persons in accordance with the manufacturer's recommendations.

Sections 5.1.2.1 to 5.1.2.16 sets out the fire detection systems installed at the Facility. The installation and management of the fire detection and suppression systems including regular maintenance is performed by trained and competent in-house personnel or a specialist external contractor. This system has been designed to meet UK Standards through the Loss Prevention Council (LPC), Regulatory Reform (Fire Safety) Order 2006, and the relevant British standards, as well as the standards set by VdS. VdS is recognised in Germany as a leading independent testing institution for fire safety and security.

5.1.2.1 K1

The fire detection systems are installed in accordance with the Loss Prevention Council (LPC) standards. The boiler operation is linked to the fire alarm system and the boiler is automatically shutdown on activation of the zone fire alarm.

The K1 boiler is fitted with temperature monitoring of the thermal oil pump bearings.

5.1.2.2 K5

The fire detection systems are installed in accordance with the Loss Prevention Council (LPC) standards.

The K5 boiler is fitted with temperature monitoring of the thermal oil pump bearings.

5.1.2.3 K6

The fire detection systems are installed in accordance with the Loss Prevention Council (LPC) standards. The boiler operation is linked to the fire alarm system and the boiler is automatically shutdown on activation of the zone fire alarm.

The K6 boiler is fitted with temperature monitoring of the thermal oil pump bearings.

5.1.2.4 GT1 and GT2

The fire detection systems are installed in accordance with the Loss Prevention Council (LPC) standards. The turbine operation is linked to the fire alarm system and the turbines automatically shutdown on activation of the Turbine Fire Protection system.

5.1.2.5 Engine 1 – 5

Engines 1-5 are installed within a Vortex gas and fire detection system. Gas detection systems are installed within the Engine building. The fire detection system is linked to the fire alarm system, which will activate if there are elevated levels of carbon monoxide.

5.1.2.6 K7 Boiler

The K7 boiler is installed with flame and temperature monitoring systems. The boiler solid fuel feeding point includes a temperature monitoring system to identify elevated temperatures within the fuel feed system. The Compressor and Thermal Oil Pump rooms for the K7 boiler includes flame and smoke detectors. This two-detector dependency ensures that a false alarm is not likely to be triggered as two independent systems are required to activate the alarm. In addition, the thermal oil sumps are protected by flame detectors.

5.1.2.7 K8 Boiler

The K8 boiler is installed with flame and temperature monitoring systems. The boiler solid fuel feeding point includes a spark and temperature monitoring system to identify elevated temperatures within the fuel feed system. The Compressor and Thermal Oil Pump rooms for the K8 boiler includes flame and smoke detectors. This two-detector dependency ensures that a false alarm is not likely to be triggered as two independent systems are required to activate the alarm. Furthermore, heat detectors are installed in the transformer compounds (2 of).

5.1.2.8 Log Yard

There are no fixed fire detection or automatic protection systems installed in the Log Yard. The Log Yard is in use 24/7. Fire detection within the Log Yard will either be as a result of temperature monitoring or visual identification from operators. The fire alarm can also be raised by mobile plant drivers through hand-held radio communications. Manual fire alarm call points are positioned around the rail siding and in close proximity on adjacent buildings. A mains fire hydrant is also positioned around the rail-sidings with fire point boxes stocked with fire hose and branches. On the raising of the sites fire alarm, the emergency services would be called and the on-site fire team attends in the Fire Appliance which is designed to carry 1,500 litres of water for immediate use on fighting/extinguishing the fire.

5.1.2.9 Particleboard production

The fire detection systems are installed in accordance with the requirements of the latest standard from the Loss Prevention Council (LPC). The particleboard production areas are fitted with thermal monitoring and smoke detection systems, and manual call points are provided throughout.

5.1.2.10 MDF manufacture

The fire detection systems are installed in accordance with the Loss Prevention Council (LPC) standards. The MDF manufacturing areas are fitted with thermal monitoring and smoke detection systems, and manual call points are provided throughout.

5.1.2.11 Finishing lines

The fire detection systems are installed in accordance with the requirements of the latest standard from the Loss Prevention Council (LPC). The Finishing line areas are fitted with thermal monitoring and smoke detection systems, and manual call points are provided throughout the area.

5.1.2.12 Paper impregnation

The fire detection systems are installed in accordance with the requirements of the latest standard from the Loss Prevention Council (LPC). The Paper impregnation areas are fitted with thermal monitoring and smoke detection systems, and manual call points are provided throughout.

5.1.2.13 Melamine facing

The fire detection systems are installed in accordance with the requirements of the latest standard from the Loss Prevention Council (LPC). The Melamine facing areas are fitted with thermal monitoring and smoke detection systems, and manual call points are provided throughout.

5.1.2.14 Flooring and Worktop production

The fire detection systems are installed in accordance with the requirements of the latest standard from the Loss Prevention Council (LPC). The Flooring and worktop production areas are fitted with thermal monitoring and smoke detection systems, and manual call points are provided throughout.

5.1.2.15 Saw mill

The fire detection systems are installed in accordance with the requirements of the latest standard from the Loss Prevention Council (LPC). The Saw mill is fitted with thermal monitoring and smoke detection systems and manual call points are provided throughout.

5.1.2.16 Orientated Strand Board (OSB) Manufacture

The fire detection systems are installed in accordance with the requirements of the latest standard from the Loss Prevention Council (LPC). The OSB manufacturing areas are fitted with thermal monitoring and smoke detection systems, and manual call points are provided throughout.

5.1.3 Fire suppression systems

Fire suppression systems have been included in the design of the Facility. The fire suppression systems associated with the storage and handling of fuels and wastes within the Facility are presented in sections 5.1.3.1 to 5.1.3.15.

5.1.3.1 K1

The K1 boiler is protected by a sprinkler system installed in the room containing the boiler. The boiler room is served by a fire pump installation containing one diesel and one electric pump set, supplied and installed by SPP Pumps. Both pumps have a nominal flow rate of 4,829 litres/min.

5.1.3.2 K5 and K6 boilers

The K5 and K6 boilers are protected by a sprinkler system installed in the room containing the boilers. The boiler rooms are served by a fire pump installation containing two diesel and three electric pump sets, supplied and installed by SPP Pumps. Both pumps have a nominal flow rate of either 2,900 litres/min or 3,813 litres/min.

5.1.3.3 GT1 and GT2

The GT1 Turbine is protected by a sprinkler system installed in the room containing the turbine. The turbine hall is served by a fire pump installation containing two diesel and three electric pump sets, supplied and installed by SPP Pumps. Both pumps have a nominal flow rate of either 2,900 litres/min or 3,813 litres/min.

GT 1 and GT2 both have a Turbine Fire Protection system fitted to them for added fire protection. The common turbine control room is equipped with an inert gas protection system.

5.1.3.4 Gas Engines 1 – 5

The Engines have been installed with a water sprinkler system. Inert gas protection systems are installed in the low voltage Control Room and high voltage switch room.

5.1.3.5 K7 Boiler

The solid biomass fuel handing systems are installed with a semi-automatic/manual deluge system. In addition, the gas burners have a deluge system. K7 Fire systems can be initiated from the area of concern, emergency break glass units are positioned around both plants. Control units are positioned in the Drier Control Room, manual activation systems can be initiated from the control

unit. Sprinkler valve stations also provide the functions to manually activate the fire water/foam deluge system.

The Compressor and Thermal Oil Pump rooms are installed with a water based deluge fire extinguishing system with a foam mixing agent with a flow rate of 12.5 mm/min. The thermal oil pumps area is protected with a foam fire-fighting system with a flow rate of 800 litrs/min.

The walking floor fuel feed system is provided with a sprinkler system with a flow rate of 5 mm/min.

5.1.3.6 K8 Boiler

The solid biomass fuel handing systems are installed with a semi-automatic/manual deluge system. In addition, the gas burners have a deluge system. This system can be initiated from 2 positions. Either in the K8 boiler house or from the main boiler control room in the pre-production drier control room.

The Compressor and Thermal Oil Pump rooms are installed with a water based deluge fire extinguishing system with a foam mixing agent with a flow rate of 12.5mm/min. The thermal oil pumps area is protected with a foam fire fighting system with a flow rate of 800 litres/min.

5.1.3.7 Log Yard

The biomass silos within the Log Yard are protected by an automatic spark detection and suppression systems, the system is subject to VdS standards and are subject to a programme of ongoing inspection. Each of the 6 big silos is equipped with fire suppression nozzles both inside and outside of the silos which form a manual deluge system. The external fire suppression nozzles assist with cooling down the individual silo after operating the deluge system for each silo.

As well as the fire suppression system there is a manual deluge system for all the main equipment.

In addition to deluge system, eight fire hydrants are strategically located around the Log Yard. These have been located to provide provision of firewater to the full area of the Log Yard and rail unloading sidings. The hydrants are labelled with yellow "H" signs to identifying their location.

Whilst there are not any automated fire detection systems within the Log Yard, it is understood that stockpiles within the Log Yard would only begin to smoulder after a prolonged period of time. Due to the high stock rotation within the Log Yard, this does not occur. In the event that a smouldering was identified, a bucket loader will be used to remove the surrounding stockpile to prevent any spread of the fire. The smouldering area is retained in its location, as opening it up can result in full ignition of the smouldering. Small sections of the smouldering stockpile will then be removed to the designated quarantine area as shown in Appendix C.9. using a bucket loader. The on-site fire team and fire appliance/fire hydrants will smother the smouldering stockpile in fire water to extinguish the ignition risk within the stockpile.

5.1.3.8 Particleboard Production

The Particleboard Production area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.3.9 MDF Manufacture

The MDF Manufacturing area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.3.10 Finishing Lines

The Finishing Lines area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.3.11 Paper Impregnation

The Paper Impregnation area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.3.12 Melamine Facing

The Melamine Facing area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.3.13 Flooring and Worktop Production

The Flooring and Worktop Production area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.3.14 Saw Mill

The Saw Mill area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.3.15 Oriented Strand Board (OSB) Manufacture

The OSB area is covered by a water sprinkler system which has a design density as outlined in Appendix C.8

5.1.4 Provision of firewater

The facility has been designed to include dedicated fire suppression systems with suitable provisions of water for fire-fighting, which include tanks, hydrants and lagoons. A plan showing the site wide provisions of water for fire-fighting is presented in Appendix C.4. The provisions of fire water for all areas is presented in sections 5.1.4.1 to 5.1.4.9.

5.1.4.1 K1

The K1 boiler has a fire water supply tank. The fire water supply tank has a capacity of 400m^3 with a refill rate of 210 litres/min. Fire pump capacity for the fire pumps at the Kronoplus area are as follows:

- Diesel 1 pump, nominal flow rate of 3800 litres/min @ 6.8 bar; and
- Electric 1 pump, nominal flow rate of 3800 litres/min.@ 6.8 bar.

A fire in the K1 boiler room would be expected to be extinguished within 30 minutes with the engineering systems in place, the fire prevention equipment and resources at hand.

Additional fire water could be applied from the site Fire Appliance if necessary, refer to section 5.1.

5.1.4.2 K5 boiler

For the K5 boiler, the amount of available water in the fire water supply tank is 1000m^3 with a refill rate of 617 litres/ min. The fire pump capacities for the fire pumps in the middle road pump house are:

- Diesel 1 pump, nominal flow rate of 3813 litres/min @ 6.8 bar;
- Diesel 2 pump, nominal flow rate of 2900 litres/min @ 6.8 bar;
- Electric 1 pump, nominal flow rate of 2900 litres/min.@ 6.8 bar; and
- Electric 2 pump, nominal flow rate of 3813 litres/min @ 6.8 bar.

A fire in the K5 boiler room would be expected to be extinguished within 30 minutes with the engineering systems in place, the fire prevention equipment and the resources available.

Additional fire water could be applied from the site Fire Appliance if necessary, refer to section 5.1.

5.1.4.3 K6 boiler

For the K6 boiler, the amount of available water in the fire water supply tank is 1000m^3 with a refill rate of 617 litres/ min

Fire pump capacity for the fire pumps in the middle road pump house are:

- Diesel 1 pump, nominal flow rate of 3813 litres/min @ 6.8 bar;
- Diesel 2 pump, nominal flow rate of 2900 litres/min @ 6.8 bar;
- Electric 1 pump, nominal flow rate of 2900 litres/min.@ 6.8 bar; and
- Electric 2 pump, nominal flow rate of 3813 litres/min @ 6.8 bar.

A fire in the K6 boiler room would be expected to be extinguished within 30 minutes with the engineering systems in place, the fire prevention equipment and resources available.

Additional fire water could be applied from the site Fire Appliance if necessary, refer to section 5.1.

5.1.4.4 GT1 and GT2

The fire water supply for GT1 and GT2 is common and is fed from a valve located in the K8 boiler manifold room, which is outside the scope of this FPMP. The water supply to this manifold room comes from the main site pump house which has 1,000m^3 capacity of water available. Therefore, for the gas turbines the amount of available water in the fire water supply tank is 1000m^3 with a refill rate of 617 litres/ min.

The Fire pump capacities for the fire pumps in the middle road pump house are:

- Diesel 1 pump, nominal flow rate of 3813 litres/min @ 6.8 bar;
- Diesel 2 pump, nominal flow rate of 2900 litres/min @ 6.8 bar;
- Electric 1 pump, nominal flow rate of 2900 litres/min.@ 6.8 bar; and
- Electric 2 pump, nominal flow rate of 3813 litres/min @ 6.8 bar.

A fire in the gas turbine building would be expected to be extinguished within 30 minutes with the engineering systems in place, the fire prevention equipment available and resources available.

Additional fire water could be applied from the site Fire Appliance if necessary, refer to section 5.1.

5.1.4.5 Engine 1 – 5

The fire water supply is common for all five engines and is fed from a valve located in the K8 boiler manifold room, which is outside the scope of this FPMP. The water supply to this manifold room comes from the main site pump house which has 1000m^3 capacity of water available. Therefore, for the gas engines the amount of available water in the fire water supply tank is 1000m^3 with a refill rate of 617 litres/ min.

The fire pump capacities for the fire pumps in the middle road pump house are:

- Diesel 1 pump, nominal flow rate of 3813 litres/min @ 6.8 bar;
- Diesel 2 pump, nominal flow rate of 2900 litres/min @ 6.8 bar;
- Electric 1 pump, nominal flow rate of 2900 litres/min.@ 6.8 bar; and
- Electric 2 pump, nominal flow rate of 3813 litres/min @ 6.8 bar.

A fire in the gas engine building would be expected to be extinguished within 30 minutes with the engineering systems in place, the fire prevention equipment available and resources available.

Additional fire water could be applied from the site Fire Appliance if necessary, refer to section 5.1.

5.1.4.6 K7 Boiler

Fire water for the K7 boiler (and other processes within this area) will be provided by the Fire fighting pump house system. There are three fire water tanks, which will have the following capacities:

- Tank 5(a) - 800m^3;
- Tank 4 - 350m^3; and
- Tank 5(b) - 800m^3.

The fire pump capacities for the Fire fighting pump house system are as follows:

- Diesel Fire Fighting Pump, nominal flow rate of 15.66 litres/min @ 10 bar;
- Diesel Fire Fighting Pump, nominal flow rate of 15.66 litres/min @ 6.8 bar; and
- Electric pump (x6), nominal flow rate of 475 litres/min/pump.@ 10 bar

5.1.4.7 K8 Boiler

Fire water for the K8 boiler (and other processes within this area) are the same as the K7 boiler.

5.1.4.8 Log Yard

Fire water within the Log Yard will be provided by three dedicated fire water tanks within the Saw Mill despatch yard, labelled tanks 4, 5a and 5b as per site drawings In Appendix C.4 which will supply the fire hydrant system. Additionally, water abstracted directly from the Canal or water collected within the lagoons will also be available to supplement the water within the dedicated firewater tanks for firefighting purposes within the Log Yard.

5.1.4.9 Facility Wide Firewater Provision

The provision of water for firefighting across the Facility is presented in the Table below:

Table 4: Facility wide Firewater Provision

Location and Water Source	Firewater Tank Capacity [m³]	Process Area for Fire Water Provision
Kronoplus Sprinkler Pump House Area 18	Tank 6 - 400 m³	Kronoplus, Area 18 Sprinkler System
Main Sprinkler Pump House Area 5	Tank 2 - 500 m³ Tank 3 - 500 m³	Sprinkler- and Spark suppression Systems, Main Production Areas: 3-16
Minimax Minifog System Area 7	- Tank 2 - 500 m³ Tank 3 - 500 m³	MDF 1. MDF 2 Chip Board Press Protection
Water model Fire fighting Pump House Areas 4,5,6,7,8,9,10,11,12,13,14	Tank 5(a) - 800m³ Tank 4 - 350m³ Tank 5(b) - 800m³	
Lagoon Water	No.1 – 2,022m³ No.2 – 2,022m³ No. 3 – 2500m3	Fire Engine
Canal Water, Tanks, North of Area 15	Tank 11 - 30 m³ Tank 12 - 60 m³ Tank 13 - 15 m³	Fire Engine
Canal Water, West of Area 15	Direct Suction Point	Fire Engine
Works Hydrants		Area 3,8 only

Taking the above into consideration, it is concluded that there is over 7,470 m³ of firewater provision provided at the Facility. This provides an equivalent flow of approximately 42,670 litres per minute for 3 hours. Using the rule of thumb provided in NRW guidance, this is sufficient for a 6,450 m³ stack of combustible material.

Where stack sizes on site may be greater than 6,450 m³, additional water for fire-fighting will be available to be abstracted from the adjacent canal or lagoons, (hierarchy of water control can be found in Table 5) either the on-site Fire Appliance which has a large and powerful pump within the fire engine or local fire and rescue services, who have the capabilities to access a much larger high volume pump. There is a direct suction point from the canal provided at NGR SJ 28530 39000 and SJ 28490 38900.

Table 5: Hierarchy of fire water control

Fire water supply	Location
Tank 4 - 350m³	Saw Mill Despatch yard
Tank 5(a) - 800m³	Saw Mill Despatch yard
Tank 5(b) - 800m³	Saw Mill Despatch yard
No. 3 – 2500m³	Lagoon 3 – north of site

Fire water supply	Location
No.2 – 2,022m³	Lagoon 2 – north west of site
No.1 – 2,022m³	Lagoon 1 – north west of site
Recycled fire water	Log Yard or Lagoon 3, north of site
Canal water	SJ 28530 39000 and SJ 28490 38900.

5.1.5 Fire hose reel and riser system

Buildings and built-up areas on site are covered by an extensive network of fire hose reels which provide comprehensive cover to allow firefighting capability in each area from two different zones. Where appropriate and necessary, higher level structures and difficult to access areas are provided with a mix of wet and dry riser systems to assist in fire-fighting operations. A drawing which shows the location of the fire hose reels and risers is presented in Appendix C.5.

Each department has a Fire Marshall. The Fire Marshall is responsible for checking the fire-fighting equipment is checked by the departmental fire marshal on a weekly basis and a report submitted.

5.1.6 Fire hydrant and mains

A fire hydrant network is in place throughout the Facility with fire hydrants being strategically located throughout the site. The fire extinguishing equipment is checked by the departmental Fire Marshalls on a weekly basis and a report submitted.

5.1.7 Fire extinguishers

Fire extinguishers are located at numerous places throughout the Facility, particularly on major pedestrian routes and near the exit doors from individual zones. A drawing which shows the location of the fire extinguishers is presented in Appendix C.6.

The fire extinguishing equipment is checked by the departmental Fire Marshalls on a weekly basis and a report submitted.

5.1.8 Fire Water Tanks

Fire water tanks are visually inspected by Fire Department personnel on a weekly scheduled check and test. The tank gauge is checked as well as a visual level check, all inspections and results are recorded and retained on-site.

The fire water storage tanks are fitted with an automatic refill system, should the level drop below full, a valve system opens allowing water to flow into the tank and re-fill at a pre-determined set rate depending on size of the tank and water feeding the re-fill system. All fire water storage tanks are fitted with ball-cock levellers. Each tank has its own a low level indicator installed; this is set to 55- 60% of maximum capacity and connected to the sites fire alarm system. On activation of the alarm, an immediate response is made by the fire team, the on-site Incident Commander will make an initial assessment and investigate the course of action required, if this is out of normal working hours additional personnel can be brought in should the need arise for more specialist/technical support.

All fire water tanks are subject to a 5-year inspection and maintenance programme, whereby all tanks are emptied and cleaned, with thickness tests carried out on the tanks. Due to the constant fire water and fire system schedules, fire water tanks supplies are never go stagnant, the water pipe

network has systems to prevent stones and other contaminants getting into the tanks. Furthermore, all tanks are covered to protect them from freezing.

5.1.9 Treatment of fire water

Each of the combustion plant has its own arrangements for the containment of water from firefighting. The arrangements for the containment of fire water are presented in sections 5.1.9.1 to 5.1.9.5. Any disposal of contaminated fire water would depend on the source of the fire and quantities of water. In normal circumstances, for most contaminants, off-site disposal would not be required as the site has a storage capacity of 6,244 m^3 which has been risk assessed as being suitable for containing fire water from a worst-case incident scenario. In most cases water contaminant levels will be within the limits of the consents to discharge. Therefore, they should be suitable for discharged to sewer.

Written confirmation of fire water discharge to the trade effluent system will be obtained for each separate incident based on location on site, volume of fire water generated, and contaminant levels. This would be obtained from Dwr Cymru but also with the agreement of Natural Resources Wales.

In the event that off-site disposal is required, existing contracts are in place with waste disposal contractors e.g. Enviroclear to tanker fire water away from site to a facility such as WasteCare Ltd in Bootle. Enviroclear are located approximately 10 minutes from the site and WasteCare are approximately 1 hour away, therefore allowing for unloading time, a round trip will take approximately 3 hours.

Considering a worst-case fire suppression volume of 10,000 litres per minute, the storage capacity equates to 624 minutes of capacity, or 10 hours. In the event of a fire, the levels of the lagoons would be monitored and in the event that prolonged deluge of the fire is required, suitable mobilisation time will be available to arrange tankering services.

In the event of a fire anywhere on site that generates significant amounts of fire water both Natural Resources Wales and Welsh Water are consulted and their advice / instruction followed before any decision is made on what course of action is to be taken.

In terms of on-site facilities, the Facility has the capability of moving waters from one lagoon to another and if required 2 lagoons can be isolated from the surface water discharge system which has a total storage capacity of 4,044 m^3. In the event of this scenario, it would result in the continuous discharge of surface waters via the ‘uncontaminated’ surface water lagoon(s).

5.1.9.1 K1

The run-off from a fire at the K1 boiler would be isolated in the despatch yard next to the building where K1 is situated with all attempts made to prevent the fire water from entering the storm water system by sealing the surface water drains. This water would be transferred off site to a suitably licenced waste management facility.

Any waters that get into the surface water drains will be collected in either Lagoon 1 or 2. The waters would enter the ‘filling’ lagoon which is always isolated from the watercourse. This quantity of water could be isolated from the other lagoon, thus preventing any contamination of surface water discharging from the site. If this occurred, Penstock “A” would be closed to prevent the contaminated fire water being discharged into the Afon Bradley

The lagoon water will be tested and pumped to Lagoon 3 which would be used as a holding lagoon prior to consented discharge to the trade effluent system. Any discharge arrangements will have prior agreement from both Natural Resources Wales and Welsh Water.

Alternatively, the fire water could be removed from the lagoon via a tanker and transferred off site to a suitably licenced waste management facility.

5.1.9.2 K5, K6, K7 and K8 boilers

The run-off from a fire at the K5 boiler would be isolated in the middle road. This water can be prevented from entering any of the site drainage systems. This water would be transferred off site to a suitably licenced waste management facility via road tanker.

The run off from a fire at the K6, K7 and K8 boilers would be isolated in the collection pit at the West end of the middle road. The water would fill this pit and then collect in the middle road.

Middle Road has been designed to provide tertiary containment for the Resin and Wax silos positioned along Middle Road. In this area, all drainage manholes and grids have been sealed and the ground topography designed in such a way as to allow waters to collect here from the combustion plants as well as the Pre-production area.

Drainage from this area is discharged to the trade effluent via the Middle Road Pit. Waters are batch discharged based on samples taken and tested to be within consent. In the event of a fire, the Middle Road Pit discharge would be inhibited (if it is being released at the time of the incident) and the middle road tertiary containment area would be used which has a storage capacity of approximately 77 m^3.

5.1.9.3 GT1 and GT2

Fire water generated from GT1 and GT2 would be directed to the Middle Road Pit.. This water can be prevented from entering any of the sites drainage systems. This water would be transferred off site to a suitably licenced waste management facility via road tanker.

5.1.9.4 Engine 1 – 5

The run off from a fire in the Engine 1-5 building would drain into the K8 area, which in turn is also collected in the middle road tertiary containment area. This water can be prevented from entering any of the sites drainage systems. This water would be transferred off site to a suitably licenced waste management facility via road tanker.

5.1.9.5 Log Yard

Run-off water from a fire with the Log Yard will be contained within the hard standing within the Log Yard and the Lagoons. In the event of a fire within the Log Yard, the discharge from the Lagoons into the Afon Bradley will be isolated to prevent the discharge of potentially contaminated fire water being discharged into the Afon Bradley. This water will be sampled and analysed. If it is suitable to be discharged to the Afon Bradley, it will be discharged into the Afon Bradley in accordance with the requirement within the EP. If the effluent is not suitable for discharge it will be transferred off site to a suitably licenced waste management facility via road tanker.

5.1.10 Contingency during the incident

Site wide emergency procedures for the facility have been developed by Kronospan. The Emergency Procedures include, but are not be limited to, the following considerations:

- Fire precaution and fire-fighting procedures;
- Emergency planning and training of staff;

- Training and instruction;
- Maintenance and testing of safety equipment;
- Communications with local stakeholders who may be affected by a fire at the site;
- Arrangements for cleaning relevant areas of the site following a fire incident; and
- Steps to be taken prior to the site recommencing operations.

All staff and contractors are trained in the emergency response procedures for the Site. Where specific responsibilities are given to specific staff, such as the OFB, training will be provided to those employees. Training records in the emergency response procedures for all staff and contractors will be retained on-site.

In the event that the Facility is not able to receive waste due to an unplanned incident forcing a full shutdown of the Facility, deliveries of incoming biomass will be diverted to the biomass suppliers or to a suitably licenced waste management facility.

If there is a significant fire, which requires a full shutdown of the Facility, the Facility will not restart operations until the relevant regulatory authorities (Fire Service, Health and Safety Executive, Natural Resources Wales, etc.), as well as the fire insurers, have advised that it is safe to do so. During a complete shutdown of the Facility, the fire detection systems will remain operational.

5.1.10.1 Minimising emissions to the local community

During an incident that may result in an off-site impact, the Meteorological Office Environmental Monitoring and Response Centre (EMARC) will be contacted by NWFRS in order to gain an insight as to plume prediction via its chemical meteorology department. (Chemet) This technology is primarily used to track the potential dispersion of a chemical release but can also applied to small scale events and smoke plumes. With this information, firefighting tactics and techniques will be adjusted in order to minimise off site impacts.

5.1.10.2 Informing the local community of a fire

The actions that Kronospan will implement to inform the local community where there is a potential risk to public health, is outlined in the documented procedures titled, 'On Site Emergency Plan', which is run in conjunction with the 'Off site Emergency Plan', required under the Control of Major Accidents Hazard Regulations, 2015 (referred to as the COMAH Regulations). As detailed in the plan this includes informing NRW of any incident, which is the responsibility of the Chairman or his nominated deputy, either of whom would assume the role of Site Main Controller during such an incident.

Kronospan has produced an information leaflet to ease any concerns that members of the community may have by living/working close to a major industrial plant. The information leaflet explains:

- how the alarm will be raised in the unlikely event of a COMAH incident which would have off site consequences;
- how Kronospan would respond to such an incident; and
- what actions the public should take in order to keep safe.

As determined by the HSE, in accordance with the COMAH Regulations, this information is distributed within the 'Public Information Zone', a predefined radius around the site. This is sent out every 5 years and is available on the HSE and Kronospan websites.

For other non-major incidents that may still produce an off-site impact, the on-site emergency plan dictates that the Environmental or Safety Controller will inform Natural Resources Wales and Wrexham County Borough Council. During such an incident, it is likely that the external emergency services would be called and the Incident Commander from North Wales Fire and Rescue Service, in conjunction with the Kronospan Site Main Controller would be responsible for decision making with regards to public information. Kronospan keep residents informed of minor incidents that may have an off-site impact by publishing it on its local website (www.chirk-kronospan.info.

5.1.10.3 Off-site impacts

Any fire which produced enough smoke to have an off-site impact will be managed by either a Kronospan Fire Team Incident Commander, or a North Wales Fire and Rescue Service Incident Commander, all of whom are fully trained in how to alert the railway network, or Wrexham County Borough Council. The layout of the site is such that any smoke release large enough to cause a prolonged hazard to either rail or road is considered to be highly unlikely.

5.1.10.4 Local Authority involvement

In accordance with the COMAH Regulations, the Facility is classified as an upper tier COMAH site and as such Off Site Emergency Plan has been produced on behalf of the Local Authority by North Wales Councils Regional Emergency Planning Service. The document has been written in conjunction with and agreed with the relevant external agencies which includes North Wales Fire & Rescue Service, Welsh Ambulance Service NHS Trust, North Wales Police, Natural Resources Wales, Wrexham Borough Council, HSE, Public Health Wales, Welsh Water and the Betsi Cadwaladr University Health Board. The COMAH Regulations require the local authority reviews, tests, and where necessary, revises (and re-issues) the plan at least once every three years. From the Off- Site Plan, each relevant external agency, including Kronospan has its own emergency plan, which set out their individual responsibilities in the event of an emergency at the Facility.

5.1.11 Actions Following a Fire

Following a fire which requires the presence of the emergency services; materials, building structures, furnishings, vehicles, equipment and raw materials could be damaged. Once the fire has been fully extinguished and the emergency services given approval to enter the Facility, an assessment will be undertaken by the management team for the Facility, insurance assessors, structural engineers and fire damage/salvage specialists to assess the extent of the damage.

Once a full inventory of the damage and equipment has been completed under the strict supervision of specialist structural engineers, any building or structure will be made safe. Severely damaged equipment or building materials would be removed from site by a licenced waste/scrap company.

Building structures that are deemed safe would be cleaned, as necessary.

Waste which is not suitable for processing at the Facility would be backloaded into HGVs and transferred off-site by licenced waste carriers to a suitably licensed waste management facility. Affected areas would be cleaned and washed before equipment and structural repairs would take place.

Incoming waste deliveries would be prevented, with incoming wastes diverted to alternative waste management facilities, until it can be concluded that it is safe to start-up the Facility.

5.1.12 Reviewing and monitoring the FPMP

The effectiveness of the emergency response procedures will be reviewed following any of the following scenarios:

- Where an emergency incident occurs on-site;
- Where there is a development of infrastructure such as the addition on new buildings;
- Upon installation of new equipment, plant, processes or materials;
- Where there is a substantial change of personnel or numbers of personnel on site;
- Any changes in legislation;
- In accordance with COMAH Regulations; or
- After testing the plan either as a live or desk top exercise and identifying any areas of improvement.

Where appropriate the procedures will be updated and staff trained in the updated procedures.

Appendices

A Site Location Plan

B Wind Rose

C Site Plans

C.1 Installation boundary drawing

C.2 Site drainage plan

C.3 Fire prevention plan receptors plan

C.4 Site wide provisions of water for fire-fighting

C.5 Site wide provisions of fire hose reel and risers

C.6 Site wide provisions of fire hydrants and mains

C.7 Fire walls

C.8 Sprinklers

C.9 Quarantine area including made and unmade ground areas

C.10 Traffic and access routes

C.11 Evacuation Points

ENGINEERING CONSULTING

FICHTNER

Consulting Engineers Limited

Kingsgate (Floor 3), Wellington Road North,
Stockport, Cheshire, SK4 1LW,
United Kingdom

t: +44 (0)161 476 0032
f: +44 (0)161 474 0618

www.fichtner.co.uk