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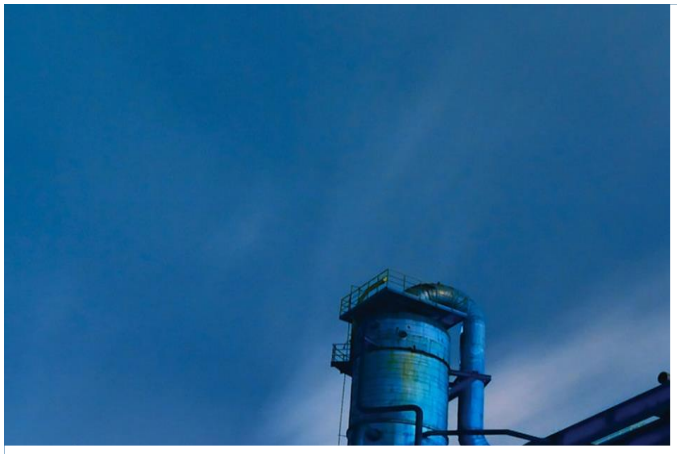

Chirk Particleboard Facility

Kronospan Ltd

Operating Techniques Baseline

ENGINEERING CONSULTING

Document approval

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Contents

1 Review of operating techniques

The Chirk Particleboard Factory (the Facility) includes the following process activities:

1. Log Yard;
2. Particleboard manufacture;
3. MDF manufacture;
4. Finishing Lines;
5. Formalin production;
6. Resin manufacture;
7. Paper impregnation;
8. Melamine facing;
9. Flooring and worktop production
10. Saw mill;
11. K7 and K8 biomass boilers; and
12. Combustion plants.

These processes are operated under the Environmental Permit (EP) (Ref: EPR/BW9999IG) and EP Variation (Ref: EPR/BW9999IG/V010) and are reviewed in more detail within sections 1.1 to 1.11.

A plan showing the layout and location of the Facility and the different processes is presented in Annex B of the EP application.

The proposed changes to the Facility will include the introduction of an additional manufacturing line – Orientated Strand Board (OSB). To accommodate the installation of the OSB line, a number of additional changes will be made to the Log Yard to improve the storage, handling, and processing of raw materials and products at the Facility. The proposed changes to the Operating Techniques referenced within the Supporting Information are identified within this application.

1.1 Log Yard

The Log Yard receives approximately 1,600,000 tonnes of wood each year.

The Log Yard is an open area which acts as an incoming goods store and primary processing area. Incoming goods include several grades of timber; including roundwood, slabwood, peeled chips, sawdust, and recycled fibre (RCF), which are all delivered by HGV's. In addition, roundwood is delivered via rail. 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.

The existing arrangements for the receipt and handling of materials for processing on-site are presented in sections 1.1.1 to 1.1.3.

The run-off from the Logyard is discharged into the site surface water drainage system.

Within the logyard, two additional storage silos, and a crane and loading facility are to be built to store additional timber required for the OSB production process, and a new flaker building.

1.1.1 Road Deliveries

RCF, chips, and sawdust are delivered to site on walking floor or curtain side trailers. The trailers are unloaded within a partially enclosed reception building, one for each separate raw material. ~~The material is either dropped from the walking floor trailers or pushed from the curtain sided trailers by a bucket loader via a vibrating infeed grid into below ground hoppers.~~

The material is unloaded directly onto a log deck on into stock holdings via an electronic crane or diesel log grab.

The RCF is transferred via an enclosed conveyor to the Grading Plant. Sawdust and chips are transferred directly from their designated reception building to storage silos (one 1,500m^3 for sawdust and two 10,000m^3 silos for chips).

RCF, chips, and sawdust are delivered by road in either curtain sided or walking floor HGV's. Logs are delivered in forestry trailers. The vehicles are directed to the Logyard reception area from the gatehouse where they are then inspected for type and the presence of contamination, including chemically treated and painted timber. Contaminated loads are rejected and returned to the supplier.

Vehicles with acceptable loads are directed to the relevant off-loading area / bay within the Log Yard by a Log Yard Marshall. A second Log Yard Marshall situated on the Log Yard raw material storage area will ensure that vehicles are off loaded in a safe and orderly manner with materials in most cases stored in 3-sided log-wall bays to allow good segregation and to prevent / minimise airborne wood dust and debris.

Walking floors discharge their load via the rear of the vehicle through an automated system to the concrete hard-standing. The vehicle then proceeds to the designated sweep-off area prior to exiting the site via the weighbridge. A bucket loader will then push the discharged material into designated storage bays ensuring that each stock pile is managed to a maximum height of 7m.

Curtain sided HGVs park at the side of the stock pile and unbuckle one side (front or rear) of their curtains. A bucket loader is then used to push the material off onto the concrete hard-standing by the side of the stock pile. Once this is completed, the curtains are moved towards the front / rear to expose the remainder of the material. The bucket loader then pushes the rest of the material towards the stock pile. After this, the curtain sider often needs to be pushed off the load it has just discharged by a bucket loader before proceeding to the designated sweep-off area.

Roundwood is unloaded from forestry trailers by the trailers own integrated log grab, or by the site's log grabs. 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 forestry vehicles then proceed to the designated sweep off area.

The designated sweep off area is an area of hard-standing that is demarcated by concrete blocks and is used by all delivery vehicles to 'clean down' prior to exiting the site via the weighbridge.

1.1.2 Deliveries by Rail

Roundwood is offloaded at the Log Yard rail-siding by an electronic crane ~~log grab~~ and transferred to log storage rows within the Log Yard by the site log grabs. The logs are stacked on support logs to ensure stability of the log piles.

1.1.3 Material Processing and Transfer for Manufacturing

Chips and sawdust are loaded into bunkers at either the Particleboard Preproduction, MDF Refiner, or OSB. From there material is conveyed off to the relevant manufacturing process, refer to sections 1.2 and 1.3.

Roundwood is transferred from the storage rows by Log Grabs and loaded onto the Chipper conveyor for processing, or transferred to the Saw mill (refer to section 1.9). The Chipper process roundwood to produce wood chips by passing the logs through a series of knives via a debarking facility that consist of a metal drum that removes the bark by shaking the log. Chipped material along with the chips and sawdust from the onsite sawmill are transferred by enclosed conveyors to the chip storage silos. Chips and sawdust from external sawmills are transferred via bucket loaders into the peeled chip and sawdust bunkers which are taken to the chip and sawdust silos by enclosed conveyors.

Roundwood is delivered to the site via rail and HGV deliveries, as set out in sections 1.1.1 and 1.1.2. The roundwood is then transferred from the log storage area for processing within the chipping and flaking facility.

RCF – Delivery, Processing and Storage

RCF is unloaded within a partially enclosed reception building or on the stock yard. It is then transferred to the grading plant via bucket loader from the Log Yard storage piles. This is then conveyed into grading plant and then into RCT storage silos before entering the CHIP Preparation building, all via enclosed conveyors.

The Grading Plant includes a magnet to remove ferrous metals, two disc-screens and a rechipper. The ferrous metals are transferred to a dedicated waste storage compound prior to transfer off-site to a suitably licensed waste management facility. The Grading Plant, separates the wood into the following fractions:

1. 0 – 2.5mm - Fine Material. The Fine material is transferred by a blow line to a 132 m^3 enclosed silo situated beside the main storage silos.
2. 2.5 – 6mm. This fraction is transferred via an enclosed conveyor to a 1,500m3 silo before transfer to the K8 boiler fuel in-feed system (also closed conveyors).
3. 6 – 200mm. Material for Particleboard Preproduction. Material for Particleboard Preproduction is stored in two 10,000 m^3 silos from where it is conveyed by an enclosed conveyor to the Particleboard Preproduction Plant (refer to section 1.2) for the removal of metals, plastics and glass before being graded for the Particleboard press.
4. >200mm - Large Material. Large Material is immediately reprocessed in the rechipper to reduce the particle size, with the output from the rechipper being separated out into the different particle sizes detailed in items (1) to (3).

1.2 Particleboard Production

Particleboard is manufactured by the application of pressure and heat on particles of wood (wood chips, shavings, sawdust and similar) and/or other lignocellulosic material in particle form (flax shives, hemp shives, bagasse fragments and similar) with the addition of an adhesive.

1.2.1 CHIP Preparation Building (Preproduction)

The CHIP Preparation building receives graded material from the storage silos on the Logyard which is then processed to remove any remaining ferrous and non-ferrous non-wood components.

The process involves graded recycled fibre being reduced in size by processing ring flakers or two hammer mills. The cleaned material is then transferred to one of four silos.

Air from within the CHIP preparation building is extracted via an air extraction system, which filters the air, in a dust filtration unit, before the clean air is discharged to atmosphere.

Material from the CHIP preparation building is passed into to a new direct heated drum dryer fuelled by wood dust from the process. The flue gases from the drier are discharged via a Particleboard WESP (WESP 21), located adjacent to the CHIP preparation building.

Following installation of the OSB plant the mothballed driers will be upgraded and reinstated and as OSB drier 1 and OSB drier 2. The emissions from these driers would be released to atmosphere via the WESP 32.

The dried wood chips will then be transferred from the dryer into a further storage silo, to one of 5 self-cleaning oscillating screens before the material is fed into a wind sifter which achieves different grades of material by varying air velocity. A turbolator bag conveyor will convey material from the wind sifter to the dry chip silos.

1.2.2 Particleboard Production

The dried wood chips are transferred via an enclosed conveyor from the dry chip silos to the blender. Resin is then piped from storage silos situated in Tank farm on the Middle Road to a small storage tank within the 'Glue room' before being added into the blender with the dry chips prior to pressing. If required for the product, wax and green dye may also be added within the blender.

The resin treated wood chips are transferred by chain conveyor to the core and surface forming stations (fitted with drench systems), and through the pre-press before entering the main Particleboard Contiroll Press.

Particleboard is produced within the press by applying high pressure and high temperature for a sufficient amount of time to compress the mat to the required thickness and to densify and fixate the particles by resin curing.

Fugitive emissions to air from the Contiroll press are extracted using local exhaust ventilation, prior to treatment in a hydrocyclone and released to atmosphere via a venturi scrubber prior to release from the WESP stack.

The board that is manufactured within the Contiroll press is further processed by being transferred to turners or coolers to cool the board prior to transfer to the Finishing Line, refer to section 1.4.

1.3 MDF Manufacture

MDF is a dry formed panel product manufactured from lignocellulosic fibres combined with a synthetic resin or other suitable binder.

The first stage of MDF production is debarking. A debarker/disc chipper with an operating capacity of approximately 100 wet tonnes per hour removes the outer bark from roundwood to produce peeled chips for the MDF process. Certain grades of MDF can be produced from unpeeled chips.

There are 2 MDF manufacturing lines on site, referred to as:

- MDF 1; and
- MDF 2.

1.3.1 MDF 1

For the manufacture of MDF, the wood fibres are treated with resins prior to drying. After leaving the wash/steam/refining system, the fine wood fibre is immediately treated with a wax/resin formulation and is passed to a Flash drier. The Flash Drier utilises heat from a number of sources (K8 boiler, gas engines; and Gas Turbine 1 will be a standby heat source).

The Flash drier is fitted with two high efficiency cyclones designed to separate dry resin treated fibres from the drier air stream. The inlets to the cyclones are fitted with water sprays that are automatically activated by spark detectors. The cyclones terminate 50m above ground level and each has an effective diameter of 2.2m.

Under normal operations the cleaned gases are used in the board manufacturing process and vented from the MDF1 cyclones.

Separated resinated fibres pass from the drier cyclones directly onto the mat forming station and onto the pre-press and a Contiroll press. Process emissions from the hot press are collected and directed to a venturi scrubber which is ducted to the existing WESP 32.

The raw board is then transferred from the board presses via automated handling and conveying systems into the Intermediate Board Store. After storage here, the board is passed onto the common MDF Finishing Line (see section 1.4)

1.3.2 MDF 2

The MDF 2 material handling and processing equipment includes four chip in-feed bunkers. A purpose designed chip wash with a bow screen separation system is installed. Pre-steam, cooker, plug screw and refiner equipment replicates the MDF 1 equipment. The fibre, similarly to MDF 1, is resin treated immediately on exiting the refiner and thereafter passes directly to a drier pipe.

The air and dried resin treated fibre are separated by four (quad set) high efficiency cyclones.

Whilst the drier is fitted with gas burners, the principal source of heat used in the drier is from the K7 and/or K8 boilers, or the Gas Engines / GT2 (if K7 or K8 are offline).

Emissions from the drier exit via the MDF 2 cyclones.

Separated resinated fibres pass from the four cyclones directly on to the mat forming station, through a metal detection zone and onto the pre-press and main Contiroll press. Process emissions from the hot press are collected and directed to a venturi scrubber which is ducted to the existing WESP.

Both of the MDF1 and MDF2 Contiroll presses are fitted with water fog systems for fire suppression. Board exiting the press passes through width and length saws onto their individual star turners for cooling, prior to moving onto the stacking equipment that handles boards in a range of lengths from 9m to 12m and stacked to a height of 2.8m. This is then stored in the Intermediate Board Store before the products pass into the common MDF finishing line.

1.3.3 MDF Press Rejects

Both MDF process have a common reject fibre bin which will recirculate the process fibre back into production. These have dump stacks in which the air flow will be released but the dust still captured. These are now being included as emission points in the EP. Releases from these sources are infrequent.

1.4 Orientated Strand Board (OSB) Manufacture

Oriented Strand Board (OSB) is a wood-based panel made of wood strands (length 75-130 mm, width 6-40 mm, thickness 0.5-0.9 mm) bonded together with resin by the application of heat and pressure. The board has a three-layer construction where the surface strands on both sides are orientated to the same direction while the core strands are oriented cross-wise to those on the surface. Other orientation configurations can also be used for special purposes, the extreme being that all the strands are oriented to the same direction.

OSB is predominately created from the use of Roundwood sourced from the UK and Eire, but is also created from hacker chips created from the sawmilling industries and externally collected recycled timber similar to that used in particleboard.

1.4.1 Pre-Production

Roundwood

Roundwood timber received via rail or road will be unloaded directly onto a log deck or into stock holding via diesel log grab or electric crane unloading facility.

The roundwood travels on the log deck to the new installed flaker building, logs pass through a rotating debarking drum and then into the rotating drum flaker to create strands for onwards processing. The bark leaves the debarking process through a dump for onsite burning or external sale in the horticultural markets.

Any fine fraction created from the flaking is transferred to the MDF process (refer to section 1.3).

Material accepted for production from the flakers is for the surface layers or core layers.

Hacker chips

Hacker chips are stored on the logyard and enter the system via a loading bunker and transferred to the chip preparation building, they pass through a screen to remove any fine fraction. This fine fraction is transferred to the Particleboard process (refer to section 1.2).

Recycled timber

Recycled timber enters the system via one of three recycled processing lines:

- Pre-crush – pre-crushed recycled timber with a nominal size of 200-300 mm is passed through a twin shaft crusher and metal separator. This is either loaded by bucket loader, or by revering up to two waling floors into a covered lading are with a mist air system.
- Pre-screening (x2) – recycled timber with a nominal size of 50-80 mm is loaded either by bucket loader or by revering up to two walking floors into a covered loading area with a rain gun for dust suppression. Material falls through a grate and enters a number of screening and metal separation processes. Oversize material enters a shredder to be reduced down to <120 mm size.

Both lines have screens to extract the finer material with higher grit contamination levels for burning in the K8 boiler.

Material from the pre-crush and pre-screening lines enters either the two 8,000 m^3 storage silos in a <120mm form or the two new 14,065 m^3 storage silos, before being stored and transferred to the chip preparation building.

The material then enters the chip preparation building and runs through the third cleaning line to remove contamination and is then blended with the hacker chip. Before being stored in one of the seven storage silos.

Material accepted for production from the chip preparation building is for the core layer.

Material from the bunker is dried in two direct heating driers with an associated WESP 32 abatement system.

Subject to a successful trial, the dosing of hydrogen peroxide in WESP 32 and WESP 21 to oxidise TVOCs if required to minimise odour complaints if they arise.

The mothballed dryers Bab Dryer No.3 and Bab Dryer No.2 which have an emission point A34 and A35 respectively, have been completely overhauled to accept OSB strands.

- A34 - Bab Dryer No.3 is now OSB 2 Dryer
  - Material for core layer
  - Virgin or recycled timber
- A35 - Bab Dryer No.2 is now OSB 1 Dryer
  - Material for surface layers
  - Virgin timber only

The dried material is screened and graded. This forms the layers of the board.

1.4.2 Production

Screening, blending and gluing

The surface and core layers continue to be separated through to the press.

The dried flakes are then screened into four fractions. Dust containing any contaminations is then transferred via a blowline to the black dust silo for burning in any of the dust burners on site.

The accepted flakes are then transferred into the surface layer or core layer bunker.

The dried flakes are transferred to sifters and then to the OSB press forming station where resin and wax is added (gluing).

OSB production can utilise a variety of resins in its production. The main resin type is pMDI, however, this can have a large price volatility and therefore there is the flexibility to use Urea or Phenol based resins too. These chemicals would be offloaded and stored in one of the new storage silos located in the new OSB blending building (between the press hall and OSB dryers).

The wax emulsion is produced in the existing resin production area. Melted paraffin arrives and is stored in heated tankers at 85°C, this is then mixed with water and emulsifiers in a mixing tank and enters a homogeniser and chilled to 25°C. This is then stored in the normal wax emulsion storage tanks.

Forming press

The OSB is then formed by passing through a press using a combination of heat and pressure to form the board.

The OSB press is situated in the existing particleboard press hall alongside the Chipboard press.

The fourth press abatement vents to atmosphere via WESP 32 with the current three press abatements.

1.5 Finishing Lines

The Particleboard, MDF and OSB manufacturing operations both have associated Finishing Lines which take the pressed board after cooling and cut and sand the product. The sanded products are then stacked, banded and transferred to the warehouse for storage.

From the warehouse the board is either sold as 'Coreboard' or is further processed on the site within the Melamine Facing department (refer to section 1.7) or the Kronoplus worktops department (refer to section 1.8).

There are 3 finishing lines:

1. MDF Finishing Line;
2. Particleboard Finishing Line; and
3. OSB Finishing Line.

All dusts generated by sanding operations on the finishing lines are filtered out by bag filtration systems.

The MDF filtration system is located outside on the South Road, adjacent to the process at ground level. All filtered dusts for this unit are stored in a dust silo next to the bag filtration system and transferred via blowline to the granulate silo.

The Particleboard filtration system is located on the roof above Middle Road. The OSB filtration system is in the same area. All filtered dusts for this unit are stored in a dust silo in the Preproduction area.

1.6 Paper Impregnation

Impregnated decorative papers are laminated and bonded (thermally fused) to MDF or Particleboard.

Multiple paper impregnation lines are operated for the production of impregnated/coated paper for facing of some of the company's product range at the Melamine Facing Presses. These lines use melamine and urea resin, provided from the resin room. The papers are fed into a resin bath and pass through a dryer and over cooling rollers; they are then cut and stacked. All emissions are treated in a conventional wet scrubber, prior to discharge to atmosphere.

1.7 Melamine Facing

Finished MDF, Particleboard or OSB and impregnated paper from the Impregnation Lines are pressed together in the Melamine Facing department. Finished MDF or Particleboard has impregnated paper placed on one or both sides of the board before being pressed. Multiple presses are used to apply melamine facing to MDF or Particleboard. Curing is achieved in the laminating cyclic hot press, when the resin forms hard, permanent bonds between the paper and the panel. No adhesive is used during the bonding process; heat from the press releases sufficient resin from the board and facing material to effect bonding. Fugitive emissions are minimised by fresh air movement within the Melamine Facing press hall.

1.8 Flooring and Worktop Production

Flooring and Worktop manufacturing from the Finished HDF or Particleboard is undertaken by Kronoplus Ltd under the EP. Kronoplus processes pre-laminated board from the Melamine Facing

process (refer to section 1.7) to produce laminate flooring and raw coreboard to manufacture worktops in the Kronoplus building.

This is a relatively simple process that involves sawing and profiling of the pre-laminated board. Worktops also require additional laminating, followed by gluing of the high-pressure laminate to the Finished MDF or Particleboard. Following processing the flooring and work tops are packed and transferred to the warehouse for storage, prior to delivery to customers.

There is a dedicated dust extraction system installed in the Kronoplus facility. This extracts dust from the saws and collects it in a bag filter. The dust is then transferred, via a blow line, to the granulate silo or into a trailer for off-site disposal.

The Kronoplus facility has a gas fired thermal oil heater (K1), which provides process heat and space heating.

1.9 Saw Mill

The saw mill process starts by grading logs from log deliveries or ungraded stockpiles of logs on the log-sorting line, graded in different lengths and individual diameter ranges to maximise the recovery from the saw mill saw process.

The logs selected from our graded stock material will be placed onto a conveyor which feeds directly into a de-barker which removes all bark from the log.

The logs are then processed in the chipper canters, profilers and double arbor gang saws which produce full length timber cut to the required cross sections. The full length timbers are stored in buffer conveyors which are stock piled ready for further grading.

The full length timbers are then fed into the grading table for selection of quality and fed to the storage bins. The storage bins which hold the graded timber are then selected for processing to the saw and packaging line, this line consists of multi-head cross cut saw and automated banding station with pack press and waste removal conveyors.

The full length timbers are cut to length and packaged ready for Despatch.

All the peeled chips and sawdust created from the saw mill is graded from the saw line, collected and conveyed into the silos identified in section 1.2.

1.10 Biomass Boilers

1.10.1 K7 Biomass Boiler

The K7 biomass boiler has a design thermal fuel input capacity of 38 MW. The biomass fuel combusted within the K7 boiler is derived from a combination of sources - grate firing, wood derived fuel, wood dust, and natural gas. The K7 boiler will only combust fuels which are classified exempt biomass, and will not combust ‘waste derived’ biomass fuels. No material which would be subject to the requirements of Chapter IV (Waste Incineration) of the Industrial Emissions Directive (IED) is combusted within K7. Further detail is provided in section 3.1.4.10.

The K7 boiler is primarily used to produce hot oil for all the existing board manufacturing presses MDF1, MDF2, and Particleboard. The K7 boiler can also be switched over to supply steam to the MDF processes. The K7 boiler is only used to generate heat – it heats a thermal oil system which supplies heat to the presses and steam for the refiner process.

Emissions from the boiler are filtered using a dry electrostatic precipitator to remove dust they are then ducted to the MDF 2 process before being released to atmosphere at the MDF 2 cyclone.

1.10.2 K8 Biomass Boiler

The K8 boiler has a design thermal fuel input capacity of 32 MW. The biomass fuel combusted within the K8 boiler is a combination of virgin bark, wood residues from board manufacturing processes, and granulates. The K8 boiler has been designed to comply with the requirements of Chapter IV (Waste Incineration) of the Industrial Emissions Directive (IED).

The biomass is comprised of process wood, recycled wood fibre. The biomass is combusted in a conventional moving grate. The flue gases from the boiler are treated in a conventional flue gas treatment FGT system (SNCR, dry acid gas abatement system, lime dosing and bag filters).

In 'normal operation' the treated flue gases are ducted, to provide process heat, to the MDF drying process.

Where the flue gases are not required, such as during a maintenance shutdown period for the MDF driers, the combustion gases are released to atmosphere via a stack dedicated to the K8 boiler – this is referred to as the emergency stack. The emergency stack is 70m high.

1.11 Site Drainage

Surface water run-off and effluent is collected in site drainage systems. The surface water drainage systems are discharged through the inlet to the lagoons which is an oil interceptor in the first chamber prior to discharge to the Afon Bradley via valve Penstock A.

The drainage systems for the collection of surface water run-off from the repositioned diesel tank vehicle refilling area and the garage are designed with a Class 1 interceptor prior to discharge into the surface water drainage system.

The discharge from the on-site lagoons is regulated by the EP.

Surface water from the rail sidings is either transferred to the canal water treatment plant, or during abnormal operations discharged into the on-site lagoons.

Process effluents from the manufacturing process are collected in the site foul water drainage systems prior to discharge to sewer.

2 Further information

2.1 Raw Materials

An inventory of all raw materials held on site is maintained within the Purchasing records. This is supported by a monthly stocktake to determine the actual quantities of each material onsite at any time. All raw materials are selected and purchased in accordance with the manufacturing process specifications which are agreed with the supplier.

2.1.1 Types and Amounts of Raw Materials

For the purposes of reporting the different raw materials used at the Facility, these have been separated out into the different manufacturing processes undertaken at the Facility.

Table 1: Raw materials

Raw Material	Potential Annual Throughput (approx tonne per annum, unless stated)	Maximum quantity stored on site	Description including any hazard code where they are available
Recycled fibre	525,000	18,000 te	
Sawdust	110,000	4,500 te	
Chips	500,000	10,000 te	
Sawn roundwood	850,000	45,000 te	
Saw logs	280,000	20,000 te	
Hardener	2,100	75 tonne (CB only)	Ammonium nitrate solution
Hardener	500	28 tonne (MDF) 75 tonne (CB)	Ammonium sulphate
Wax emulsion	6,200	66 tonne (MDF) 90 tonne (CB) 100 tonne (OSB)	Wax emulsion
Release agent	100	4 tonne (MDF) 15 tonne (CB)	Chemical release agent solution
Green dye	150	8 tonne (MDF) 12 tonne (CB)	Board green eco – 1 (R10, R22, R35, R51/2/3, R63)
Anti-foam	15	4 tonne	
Water treatment chemicals	40-70	10 tonne	Coagulant, chlorine inhibiter, membrane cleaners

Raw Material	Potential Annual Throughput (approx tonne per annum, unless stated)	Maximum quantity stored on site	Description including any hazard code where they are available
Urea solution (40% solution) Received as dry powder	5,000	65 tonne	
Paper	70,000,000 m2	2,000,000 m²	Impregnated paper
Paint	29,000 ltrs	6,000 litres	Laquer (water based)
Glue (flooring)	1,000 kg	1320 kg	Hot melt glue
Ingrament	20 kg	21.5 kg	Anti-static fluid
Hardener	13,000 ltrs	2,200 kg	Prefere 5313
Glue (worktops)	117,000 ltrs	6,600 kg	Glue 4111m
PVA glue	19,000 kg	2160 kg	Racall express CAS: 9003-20-7
Moisture seal	15,600 kg	2100 kg	Swift therm moisture seal
Lime	150	20 tonne	CAS: 1305-62-0
pMDI (Polymeric methylene diphenyl diisocyanate)	20,000	500 tonne	CAS: 101-68-8 (>55-65%)
Phenolic	10,000	200 tonne	CAS: 108-95-2
Melted paraffin wax	7,500	400 tonne	CAS: 8002-74-2
Hydrogen peroxide (50%)	1,000	40 tonne	CAS: 7722-84-1

2.1.2 Raw Material and Chemical Selection and Storage

The main chemical use on site is in two chemical plants which are operated under the COMAH Regulations; these are the Formalin and Resin Plants which are regulated by NRW within the EP. The Formalin Plant stores large quantities of methanol and formalin. The formalin produced is transferred to the Resin Plant where it is processed with urea and / or melamine to produce the various resins required for the manufacture of MDF, Particleboard, OSB and Impregnation processes. All chemicals and additives used within these areas are stored ensuring at least secondary containment systems, and in most cases tertiary containment, are in place.

The main focus of the production process is wood-related products; chemicals and additives to these processes are selected, stored and managed in accordance with industry good practice, guidance (e.g. MSDS) and in compliance with any conditions or requirements of our environmental

permits. Each chemical is assessed and will have an associated COSHH assessment where applicable for use in the workplace.

2.1.3 Chemicals and Reagent Storage Facilities

Chemicals and reagents will be stored in accordance with the recommendations and guidance contained within the relevant safety data sheets and site specific COSHH assessments. The primary, secondary and tertiary containment systems associated with the storage of these materials are presented in Table 2.

Table 2: Chemical and fuel containment facilities

Substance	Number of Storage Facilities	Primary Containment	Secondary Containment	Tertiary Containment
Urea	1	Silo	Middle Road	None
Lime	1	Silo	Plant	None
Diesel	1	Stock tank	Self-bunded	Interceptor
Polymeric methylene diisocyanate (pMDI)	3	Silos	Adjacent OSB	Bunded offloading system
Phenolic	1	Silo	Adjacent OSB	Bunded offloading system
Melted paraffin wax	1	Silo	Middle Road	None
Hydrogen peroxide	10	IBCs	Middle Road	Plastic portable bund sized to 110% of the IBC capacity.

The primary, secondary and tertiary containment systems associated with the storage of these materials are presented in Table 2.

2.1.4 Timber Raw Materials

The following timber raw materials are received at the Facility:

- Logs (referred to as Roundwood);
- Wood Chip; and
- Recycled Cellulose Fibre (RCF).

In addition to the above, the following materials are either used as fuels within the biomass boiler or are either residues/reject materials from the manufacturing process:

- Fines from grading of RCF;
- Dusts from dust extraction systems;
- Off-cuts from the Saw mill;
- Bark from the Saw mill
- Sawdust from the Saw mill

- Reject material from manufacturing; and
- Solid residues from skimming of surface water run-off from internal roadways.

These feedstocks and residues have been considered in the context of their classification as 'waste' within the WFD and the 'biomass' classification of the IED. A summary is provided in Table 3 and further details in the sections 2.1.4.1 to 2.1.4.9.

Table 3: Timber raw materials classification summary

Material	Classification
Roundwood (logs)	Virgin material
Wood Chip	From roundwood – virgin material From brash and root – waste – exempt biomass
RCF (grade A and B)	Waste – exempt biomass
Fines from grading of RCF	Waste – non-exempt biomass
Dusts from dust extraction systems	Depends on where collected in the manufacturing process – either exempt or non-exempt.
Off-cuts from the Saw mill	Virgin biomass
Bark from the Saw mill	Waste – exempt biomass
Sawdust from the Saw mill	Virgin biomass
Reject material from manufacturing	Waste – exempt biomass
Solid residues from skimming of surface water run-off from internal roadways	Waste – exempt biomass

2.1.4.1 Roundwood

The round wood which is received at the Facility is sourced directly from forestry. Therefore, it is classified as virgin material.

The Roundwood which is received at the Facility is either processed in a log form within the Saw mill, or is processed within Chipper & Flaker to produce chipped/flaked biomass for use within the board manufacturing process.

2.1.4.2 Wood Chip

The wood chip is sourced from virgin biomass, which could include roundwood, brash, roots, and other forms of virgin biomass.

As stated above, the processed roundwood would not be considered to be waste either as received or following the processing to produce wood chip.

Brash and root is transferred to the Facility as waste, and this classification would not change following processing into wood chip. However, as the brash and roots will not contain any halogenated compounds they are classified as 'exempt biomass' if combusted as a fuel within the biomass boilers.

If the chipped roundwood is mixed with waste chipped materials, such as brash, root, bark or the larger screened fraction of RCF, the entire stockpile of chipped material should be classified as 'non-exempt biomass' if combusted as a fuel within the biomass boilers.

2.1.4.3 RCF

RCF is recycled wood fibre that is graded A to D, in accordance with the requirements of the Wood Recyclers Associated (WRA) Grades of Waste Wood (2023), depending on the source and type of material. The RCF received at the Facility is graded A or B and the Recycled Fibre Specifications prohibit the supply of grade C or D.

The WRA Grades of Waste Wood (2023) states:

Grade A:

Typically includes *"packaging waste, scrap pallets, packing cases and cable drums. Process off-cuts from the manufacture of virgin/sawn timber and untreated board products.".*

"This is a waste as defined by the waste regulations. Does not require an IED Chapter IV installation and should not contain any treated or lowgrade material."

Grade B:

"may contain Grade A material as above plus building and demolition materials and domestic furniture made from solid wood".

"This is mostly solid wood. Some feedstock specifications contain a 5% to 10% limit on former panel products such as chipboard, MDF and plywood.

Is a waste for the requirements of Waste Management Regulations.

Will require an IED Chapter IV compliant installation for biomass.

*Any of the items listed in the WRA Waste Wood Assessment Guidance as 'Potentially Hazardous' (*2) must be segregated and tested to prove that they are non-hazardous. Otherwise they must be categorised as Grade D – Hazardous."*

For combustion purposes Grade A RCF received at the Facility is classified as exempt biomass, grade B is non-exempt biomass.

The combustion of Grade A RCF as a fuel is not subject to the waste co-incineration requirements of the IED.

The combustion of Grade B RCF as a fuel is subject to the waste co-incineration requirements of the IED.

2.1.4.4 Fines from Grading of RCF

Part of the manufacturing process is the screening of the incoming RCF to separate out the incoming material into different fractions, in particular the removal of any contamination (<1mm of glass, metal and grit, plus plastic and stone), fines and oversize material.

The fines are considered to be waste, as they have been sourced from the incoming RCF, which as explained in section 2.1.4.3 is understood to be classified as waste. Therefore, fines are classified as non-exempt biomass. The combustion of the fines as a fuel is subject to the waste co-incineration requirements of the IED.

2.1.4.5 Dusts from dust extraction systems

Dusts from extraction systems are a residue from the board manufacturing process, and would otherwise be discarded by Kronospan. Therefore, they are classified as Production residues.

The WRA Grades of Waste Wood (2023) states that pre-consumer waste wood is waste wood material created during the manufacturing process of virgin wood, not involving the application of

treatments, e.g. offcuts or trimmings from virgin/sawn timber. It is also waste wood material created during the manufacturing process of raw, untreated board products such as panel board, MDF and plywood (for clarity, this waste wood can only be used/burnt at source).

Production residues are therefore classified as pre-consumer waste wood and can be used/burnt at source.

2.1.4.6 Reject material from manufacturing

Reject material which is not suitable to be sold as product is classified as pre-consumer waste wood and can be used/burnt at source and can be used/burnt at source in line with the WRA Grades of Wood (2023) guidance.

2.1.4.7 Bark

Bark is a residue from log processing to produce biomass for processing within the Facility (saw mill and board manufacturing). This material is classified as pre-consumer waste wood and can be used/burnt at source and can be used/burnt at source in line with the WRA Grades of Wood (2023) guidance. However, if this is transported off site this is classified as a waste material.

This material is sold for offsite biomass or further processing for horticulture markets. As this does not contain any halogenated compounds it is classified as exempt biomass.

2.1.4.8 Off-cuts and Sawdust Residues from the Saw Mill

The saw mill processes virgin roundwood. In accordance with the WRA Grades of Wood (2023) this is classified as waste wood and can be used/burnt at source and can be used/burnt at source.

The sawdust generated by the Kronospan saw mill and purchased from external Saw mills are from virgin timber sources only. The WRA Grades of Wood (2023) classifies the sawdust from external saw mills as Grade A waste wood. This is a *"waste as defined by the waste regulations, but does not require an IED Chapter IV installation*". Therefore, this is classified as exempt biomass.

2.1.4.9 Skimmings from internal roadways

The drainage systems are fitted with skimmers, which screen wood chips from the drainage system. This material is not considered suitable for re-use within the manufacturing process and would otherwise be discarded. It is not feasible to determine the origin of this material. Therefore, this is a waste and it is conservatively considered to be non-exempt biomass.

2.1.4.10 Incoming timber feedstocks

Taking the information contained in section 2.1.4.1 to 2.1.4.9 into consideration, the following EWC codes are received at the Facility for manufacture into particleboard and OSB:

Table 4: Waste biomass feedstocks used within the Facility

EWC Code	Description
03	**Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard**
03 01	**Wastes from wood processing and the production of panels and furniture**
03 01 01	Waste bark and wood (specifically bark from the Saw Mill)

EWC Code	Description
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04 (specifically off-cuts and sawdust from the Saw Mill and non-particleboard reject material from manufacturing)
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 01	Waste bark and wood
15	**Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified.**
15 01	**Packaging (including separately collected municipal packaging waste)**
15 01 03	Wooden packaging
17	**Construction and demolition wastes (including excavated soil from contaminated sites.**
17 02	**Wood, glass and plastic**
17 02 01	Wood
19	**Waste from waste management facilities, off-site waste-water treatment plants and preparation of water intended for human consumption and water for industrial use**
19 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 07	Wood other than that mentioned in 19 12 06* (including fines from grading of Recycled Cellulose Fibre (RCF) generated on site)
20	**Municipal Wastes (Household Waste and Similar Commercial, Industrial and Institutional Wastes) Including Separately Collected Fractions**
20 01	**Separately collected fractions (except 15 01)**
20 01 38	Wood other than that mentioned in 20 01 37* (non-hazardous municipal wood waste)

Of the waste codes accepted at the Facility the following are to be used within the particleboard manufacturing process.

Table 5: Permitted wastes and for particleboard manufacturing

EWC Code	Description
03	**Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard**
03 01	**Wastes from wood processing and the production of panels and furniture**
03 01 01	Waste bark and wood (specifically bark from the Saw Mill)
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04 (specifically off-cuts and sawdust from the Saw Mill and non-particleboard reject material from manufacturing)
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 01	Waste bark and wood

EWC Code	Description
15	**Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified.**
15 01	**Packaging (including separately collected municipal packaging waste)**
15 01 03	Wooden packaging
17	**Construction and demolition wastes (including excavated soil from contaminated sites.**
17 02	**Wood, glass and plastic**
17 02 01	Wood
19	**Waste from waste management facilities, off-site waste-water treatment plants and preparation of water intended for human consumption and water for industrial use**
19 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 07	Wood other than that mentioned in 19 12 06* (including fines from grading of Recycled Cellulose Fibre (RCF) generated on site)
20	**Municipal Wastes (Household Waste and Similar Commercial, Industrial and Institutional Wastes) Including Separately Collected Fractions**
20 01	**Separately collected fractions (except 15 01)**
20 01 38	Wood other than that mentioned in 20 01 37* (non-hazardous municipal wood waste)

Of the waste codes accepted at the Facility the following are to be used within the K7 biomass boiler.

Table 6: Permitted wastes for K7 biomass boiler

EWC Code	Description
03	**Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard**
03 01	**Wastes from wood processing and the production of panels and furniture**
03 01 01	Waste bark and wood (specifically bark from the Saw Mill)
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04 (specifically off-cuts and sawdust from the Saw Mill and non-particleboard reject material from manufacturing)
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 01	Waste bark and wood

Of the waste codes accepted at the Facility the following are to be used within the K8 biomass boiler.

Table 7: Permitted wastes for K8 biomass boiler

EWC Code	Description
03	**Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard**
03 01	**Wastes from wood processing and the production of panels and furniture**
03 01 01	Waste bark and wood (specifically bark from the Saw Mill)
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04 (specifically off-cuts and sawdust from the Saw Mill and non-particleboard reject material from manufacturing)
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 01	Waste bark and wood
15	**Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified.**
15 01	**Packaging (including separately collected municipal packaging waste)**
15 01 03	Wooden packaging
17	**Construction and demolition wastes (including excavated soil from contaminated sites.**
17 02	**Wood, glass and plastic**
17 02 01	Wood
19	**Waste from waste management facilities, off-site waste-water treatment plants and preparation of water intended for human consumption and water for industrial use**
19 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 07	Wood other than that mentioned in 19 12 06* (including fines from grading of Recycled Cellulose Fibre (RCF) generated on site)
20	**Municipal Wastes (Household Waste and Similar Commercial, Industrial and Institutional Wastes) Including Separately Collected Fractions**
20 01	**Separately collected fractions (except 15 01)**
20 01 38	Wood other than that mentioned in 20 01 37* (non-hazardous municipal wood waste)

The biomass types and their use as fuels within K7 and K8 are detailed in Table 8.

Kronospan have controls in place to manage the movement of biomass and biomass fuels within the Facility. These procedures will ensure that only the fuels set out in Table 8 are processed at either K7 or K8 boiler, or used in board manufacture accordingly. The procedures will prevent non-exempt biomass fuels from being combusted in the K7 boiler.

RCF will not be processed within K7. Reject MDF is considered to be biomass material as although it contains formaldehyde, this is not a halogenated material and it does not contain heavy metals. Trials to confirm that concentrations of formaldehyde within the flue gas from the combustion of reject MDF are suitably low enough to confirm that reject MDF should not be regulated as 'non-exempt' biomass (in accordance with the Definitions stated in Article 3, (31)(v).

Table 8: Biomass

Biomass Type	EWC code	Used within		
		K7 Fuel	K8 Fuel	Board Manufacturing (Raw Materials)
Logs (referred to as Roundwood)	N/A	X		X
Wood Chip	N/A	X		X
Off-Specification Compost	19 05 03			X
Recycled Cellulose Fibre (RCF) Grade A "Clean" recycled wood				
Sawdust, shavings, cuttings, wood, Particleboard and veneer other than those mentioned in 03 01 04	03 01 05		X	X
Waste bark and wood	03 03 01	X	X	X
Wooden packaging	15 01 03		X	X
Wood from construction and demolition wastes	17 02 01		X	X
Wood other than that mentioned in 19 12 06	19 12 07		X	X
Recycled Cellulose Fibre (RCF) Grade B "Industrial" recycled wood				
Waste bark and wood	03 03 01		X	X
Wooden packaging	15 01 03		X	X
Wood from construction and demolition wastes	17 02 01		X	X
Wood other than that mentioned in 19 12 06	19 12 07		X	X
Wood other than that mentioned in 20 01 37	20 01 38		X	X
On-Site Process Wastes				
Fines from grading of RCF	19 12 07		X	X
Dusts from dust extraction systems	03 01 05		X	X
Off-cuts from the Saw Mill	03 01 05	X	X	X
Bark from the Saw Mill	03 01 01	X	X	
Sawdust from the Saw mill	03 01 05	X	X	X
Reject material from manufacturing	03 01 05	X*	X	X
Solid residues from skimming of surface water	20 03 03		X	

Biomass Type	EWC code	Used within		
		K7 Fuel	K8 Fuel	Board Manufacturing (Raw Materials)
run-off from internal roadways				
*non-particleboard only.				

2.1.4.11 Residue Biomass Handling

The biomass feedstocks, which are classified as waste when received at the Facility, are handled in accordance with Indicative BAT requirements of the waste treatment Sector Guidance Note, including:

- Maintaining a high standard of housekeeping in all areas and provide and maintaining suitable equipment to clean up spilled materials.
- Loading and unloading of vehicles in designated areas provided with impermeable hard standing.
- Fire-fighting measures are designed by consultation with the Local Fire Officers, with particular attention paid to the fuel reception and storage buildings.
- Delivery and reception of wood residues and RCF are controlled by a management system which will identify all risks associated with the reception of waste and shall comply with all legislative requirements, including statutory documentation.
- Design of equipment, buildings and handling procedures ensures there is insignificant dispersal of dust.
- Inspection procedures are employed to ensure that wood residues which prevents the plant from operating in compliance with the EP are segregated and placed in a designated storage area pending removal.

2.2 Water Use

Kronospan hold abstraction licences to extract water from the Llangollen Canal (Ref: 24/67/5/0081) and two boreholes (Ref: WA/067/0005/015/V001 and WA/067/006/006/R002). The abstracted water is used to supply process water and/or evaporative cooling water to the Facility.

2.2.1 Overview

Process water is sourced from the following sources:

- Mains towns water;
- Llangollen Canal;
- Borehole 1; and
- Borehole 2.

The quantities of water consumed by the Facility for the previous ten years is presented in Table 9.

Table 9: Annual water consumption by water source

Year	Main towns water (m^3)	Canal (m^3)	Borehole 1 (m^3)	Borehole 2 (m^3)	Total consumption (m^3)
2014	209,960	351,545	76,685	58,224	696,414
2015	75,385	414,071	91,490	54,255	635,201
2016	96,856	441,938	118,247	56,067	713,108
2017	130,093	433,873	144,053	40,465	748,484
2018	194,634	396,835	97,144	558	689,171
2019	194,652	417,551	98,024	0	710,227
2020	183,537	288,549	89,570	0	561,656
2021	212,707	370,366	104,287	0	687,360
2022	143,804	352,289	82,306	0	578,399

As can be seen, the total water consumption of the Facility has been between approximately 650,000-750,000 m^3. It is noted, that the water abstracted from Borehole 2 has stopped since 2019; however, the water from main towns water has increased.

It is estimated that the water consumption for the Facility will increase by approximately 5% through the operation of OSB this will be sourced from the existing water supplies.

2.2.2 Canal Water

Up to 1,600m^3 of water per day can be abstracted from the Shropshire Union Canal, which is located to the west of the Facility. The canal water is abstracted in accordance with an abstraction licence [24/67/5/0081]. The abstracted water is passed through a screen located by Penstock A. The abstracted water is then pumped to the canal water treatment plant, located at the north of the site. Within the canal water treatment plant the abstracted water is passed through a "Lamella" system to drop out heavy solids and sand filters to remove suspended solids within the abstracted water. It is then dosed with sodium hypochlorite to kill any bacteria within the water.

It is held at the canal water treatment plant in a 60m^3 holding tank. On demand the water is pumped to the main plant where it is used in the following areas (ranked by volume / importance):

1. Boiler Feed Water Plant. At this point the canal water is further filtered by means of micro filtration and reverse osmosis.
2. Wash Down & Dust suppression at pre-production, Logyard.
3. Main Fire Tanks top-up.

2.2.3 Borehole 1

Up to 553m^3 per day of water can be abstracted from Borehole 1, which is located within the Formalin Plant. The borehole water is abstracted in accordance with an abstraction licence [WA/067/0005/015/V001].

2.2.4 Borehole 2

Up to 648m^3 per day of water can be abstracted from Borehole 2, which is located within the Lorry Park. The borehole water is abstracted in accordance with an abstraction licence [WA/067/0006/006/R002].

2.2.5 Lagoon 3 Surface Water Run-off

Up to 2,022m^3 of surface water run-off from the Log Yard can be retained within Lagoon 3. Lagoon 3 has been designed and constructed with a concrete base and stone sides. The lagoon has been designed as an impermeable structure, and is used to contain surface water run-off from within the lagoon.

The water contained in the lagoon is used to provide water for fire-fighting for the Log Yard rail siding.

2.2.6 Mains Water

Mains water is supplied to the site by Dwyr Cymru. The mains water is used to supplement the supply of abstracted water and surface water run-off when sufficient water is not available.

Mains water is used to supply all domestic uses of water.

2.3 Emissions

2.3.1 Point Source Emissions to Air

There are a number of different operating scenarios associated with the release of emissions to air from the Facility. Under 'Normal Operations' emissions from the Facility are as follows:

1. MDF 1 cyclone - K8 biomass plant and two gas engines.
2. MDF 2 cyclone - K7 biomass plant and three gas engines.
3. WESP32 including emissions from the OSB driers 1 and 2, the Resin 3,4 and 5 paper impregnation plant (previously from emission points A5 and A6), and ducting emissions from the emissions from MDF Presses 1 and 2, Board Press and OSB Press.
4. Particleboard WESP 21 – direct heat from the Chip Drier.
5. K7 boiler – MDF cyclone 2.
6. K8 boiler – MDF cyclone 1.
7. 39 dust filter boxes across the Facility.

In the event that MDF 2 cyclone is offline, K7 exhausts from MDF 1 cyclone. In the event that MDF 1 cyclone is offline, K8 exhausts from MDF 2 cyclone. In the event that MDF 1 and 2 cyclones are offline for short periods, emissions from K7 and K8 biomass plants vent to atmosphere via their dedicated stacks and there would be no emissions from the MDF 1 or MDF 2 cyclones.

The emission limits for emissions to air from the Facility are presented in Table 10 to Table 13.

Table 10: Chemical manufacturing plant emission limits

Emission point ref	Source	Parameter	Limit (mg/Nm^3)
A1	Emissions Control System – Formaldehyde Plant	Formaldehyde	5
		Total volatile organic compounds	30
A5	NAIRB Wet Scrubber – Resin VITS 3,5, Paper Impregnation Plant	Formaldehyde	5
		Total volatile organic compounds	30
		Particulate matter	20
A6	NAIRB Wet Scrubber – Resin VITS 4 Paper Impregnation Plant	Formaldehyde	5
		Total volatile organic compounds	30
		Particulate matter	20
Notes: *Reference period average value of three consecutive measurements of at least 30 minutes each.* *Reference conditions – dry, 273K, 101.3kPa, no correction for oxygen.* *A5 and A6 are only to be used to facilitate a controlled shut-down on the relevant plant, normally these would vent to atmosphere via A28 – WESP 32.*			

Table 11: Gas fired combustion plant emission limits

Emission point ref	Source	Parameter	Limit (mg/Nm^3)
A16	K1 Kronoplus (press and space heating)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200
		Carbon monoxide	No limit set
A17	K5 Rawboard thermal oil to ContriRoll presses (standby gas heater)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200
		Carbon monoxide	No limit set
A18	K6 Rawboard thermal oil to ContriRoll presses (standby gas heater)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200
		Carbon monoxide	No limit set
A19	GT1 heat to MDF 1 dryer (standby)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	390
		Carbon monoxide	No limit set
A20	GT2 heat to MDF 2 dryer (standby)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	390
		Carbon monoxide	No limit set
A21[(1)]	Engine 1 providing electricity supply to site, steam production for MDF 1&2 processes and heat to MDF dryers 1&2.	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	280
		Carbon monoxide	No limit set
A22[(1)]	Engine 2 providing electricity supply to site, steam production	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	280

Emission point ref	Source	Parameter	Limit (mg/Nm^3)
	for MDF 1&2 processes and heat to MDF dryers 1&2.	Carbon monoxide	No limit set
A23(1)	Engine 3 providing electricity supply to site, steam production for MDF 1&2 processes and heat to MDF dryers 1&2.	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	280
		Carbon monoxide	No limit set
A24(1)	Engine 4 providing electricity supply to site, steam production for MDF 1&2 processes and heat to MDF dryers 1&2.	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	280
		Carbon monoxide	No limit set
A25(1)	Engine 5 providing electricity supply to site, steam production for MDF 1&2 processes and heat to MDF dryers 1&2.	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	280
		Carbon monoxide	No limit set
Notes: *Reference period average value of three consecutive measurements of at least 30 minutes each.* *Reference conditions – dry, 273K, 101.3kPa, 3% oxygen content.* *(1 Emergency release point.*			

Table 12: Biomass boiler emission limits

Emission point ref	Source	Parameter	Limit (mg/Nm^3)	
A26	K7 Biomass Boiler chimney	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	250	Periodic (1)
		Carbon monoxide	150	Periodic (1)
		Particulate matter	50	Periodic (1)
		Sulphur dioxide	200	Periodic (1)
A27	K8 Biomass Boiler chimney	Particulate matter	15	Daily average
			45	Half-hourly average
		Total organic carbon	15	Daily average
			30	Half-hourly average
		Hydrogen chloride	15	Daily average
			90	Half-hourly average
		Hydrogen fluoride	3	Periodic (2)
		Carbon monoxide	75	Daily average
			150	Half-hourly average
		Sulphur dioxide	75	Daily average
			300	Half-hourly average
			300	Daily average

Emission point ref	Source	Parameter	Limit (mg/Nm³)	
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	600	Half-hourly average
		Ammonia	No limit	Daily average
			No limit	Half-hourly average
		Cadmium and thallium and their compounds	0.05	Periodic [3]
		Mercury and its compounds	0.05	Periodic [3]
		Other Metals [5]	0.5	Periodic [3]
		Dioxins and furans (I-TEQ)	0.1 ng/Nm³	Periodic [4]

Notes:

K7 - Biomass Boiler chimney (waste biomass heat and steam production for MDF and Particleboard) (duct work prior to transfer point of the flue gases to MDF Dryer 2)

K8 – Biomass Boiler chimney (waste biomass heat and steam production for MDF and Particleboard (ductwork prior to transfer point of flue gases to MDF Dryer 1)

Reference conditions – dry, 273K, 101.3kPa, 6% oxygen content.

[1] Period average value of three consecutive measurements of at least 30 minutes each.

[2] Periodic average minimum 1-hour period.

[3] Periodic over minimum 30-minutes, maximum 8-hour period.

[4] Periodic over minimum 6-hours, maximum 8-hour period.

[5] Other metals consist of antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium and their compounds (total)

Table 13: Board manufacturing emission limits

Emission point ref	Source	Parameter	Limit (mg/Nm³)
A28 [6]	WESP 32 Unit stack – press abatement and the Resin 3,4 and 5 paper impregnation plant previously from emission points A5 and A6	Particulate matter	15
		Total volatile organic compounds	30
		Formaldehyde	5
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	-
A28 [7]	WESP 32 Unit stack – only emissions from OSB 1 and 2. Press abatement diverted to short stack and Resin 3,4 and 5 paper impregnation plant offline.	Particulate matter	200
		Total volatile organic compounds	20
		Formaldehyde	200
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	10
A29 [7]	MDF 2 Dryer (open cyclones x 4)	Particulate matter	20
		Total volatile organic compounds	120

Emission point ref	Source	Parameter	Limit (mg/Nm³)
		Formaldehyde	15
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	100
		Carbon monoxide	200
		Hydrogen chloride (1)	30
		Hydrogen fluoride (1)	1
		Mercury (1)	No limit set
		Metals (1)	No limit set
		Polychlorinated dibenzo-dioxins and -furans (1)	No limit set
		Ammonia (2)	No limit set
A30 (7)	MDF 1 Dryer (open cyclones x 2)	Particulate matter	20
		Total volatile organic compounds	120
		Formaldehyde	15
		Carbon monoxide	200
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	100
		Hydrogen chloride (1)	No limit set
		Hydrogen fluoride (1)	No limit set
		Mercury (1)	No limit set
		Metals (1)	No limit set
		Polychlorinated dibenzo-dioxins and -furans (1)	No limit set
		Ammonia	No limit set
A31 (6)	MDF 1, MDF 2 and Particleboard Contrioll / combined press abatement stack system	Particulate matter	15
		Total volatile organic compounds	30
		Formaldehyde	5
A32 (7)	WESP 21 Unit Stack (Chip Dryer 4 and exhaust from Particleboard)	Particulate matter	20
		Total volatile organic compounds	200
		Formaldehyde	10
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200
		Carbon monoxide	No limit set
		Hydrogen chloride (1)	No limit set
		Hydrogen fluoride (1)	No limit set
		Metals (1)	No limit set
		Polychlorinated dibenzo-dioxins and -furans (1)	No limit set

Emission point ref	Source	Parameter	Limit (mg/Nm³)
A33 (7)	Dryer 4 WESP 21 Particleboard Emergency Stack	Emergency operation only	No limit set
A34 (7)	OSB 1 Dryer WESP 32 Emergency Stack	Emergency operation only	No limit set
A35 (7)	OSB 2 Dryer WESP 32 Emergency Stack	Emergency operation only	No limit set
B01 – B39 (6)	All particulate filtration plant (bag filters and MDF recycle cyclones)	Particulate matter	5

Notes:

Reference period average value of three consecutive measurements of at least 30 minutes each.

A31, A33, A34 and A35 are only to be used to facilitate controlled shut-down of the plant

(1) Relevant if relevant if contaminated recovered wood is used as fuel

(2) Relevant when MDF 1 is offline

(5) Metals consist of antimony, arsenic, cadmium, cobalt, chromium, copper, manganese, nickel, lead, thallium and vanadium and their compounds (total)

(6) Reference conditions – dry, 273K, 101.3kPa, no correction for oxygen content.

(7) Reference conditions – dry, 273K, 101.3kPa, 18% oxygen content.

2.3.2 Fugitive Emissions to Air

The Facility is operated in accordance with a Dust Management Plan (DMP). The DMP identifies the main potential sources of dust on-site as well as the prevention and measures to mitigate emissions of dusts from the Facility. The DMP is reviewed and updated on a periodic basis.

A number of the process areas/processing equipment is fitted with dedicated dust extraction and filtration systems with the collected dusts being stored within silos to either be used as feedstock to the manufacturing process or combusted as fuel within the K7 and K8 boilers or driers.

The developments within the Log Yard, have been designed to significantly reduce the quantities of dust which will be generated from the unloading and handling of incoming feedstocks to the Particleboard, MDF and OSB manufacturing process. This includes the unloading and screening for RCF; the grading plant; and the wood chip storage silos.

On an as required basis, a water bowser and or road sweeper are used to clean internal site roads to minimize the generation of airborne dusts from vehicles or site and driving vehicles travelling around the site.

2.3.3 Dust, Noise and Odour

In addition to the DMP, the Facility is operated in accordance with an Odour Management Plan (OMP) and Noise Management Plan (NMP). These identify the main potential sources of odour and noise on-site as well as the prevention and measures to mitigate emissions of odour and noise from the Facility. The OMP and NMP are reviewed and updated on an annual basis, as a minimum.

On-site olfactory (sniff) monitoring is undertaken at strategic locations around the installation boundary on a regular basis. The Departmental Managers also undertake inspections of the site on a daily basis, to monitor compliance with air quality and dust control procedures. During these inspections, the Departmental Managers look out for any adverse or unusual odours, although this monitoring is not formally recorded.

Odour events are treated as an environmental incident and are responded to in accordance with the incident investigation procedures in accordance with the documented environmental management systems. Where odours are identified appropriate initial actions are taken to prevent any off-site impact, followed by further investigative work to determine the root cause of any abnormal odour emissions and corrective actions to be implemented to prevent reoccurrence. Should an off-site odour complaint be received, the documented complaints procedure are followed.

2.3.4 Other Emissions

The Facility is also operated in accordance with an Emissions Management Plan (EMP) which EMP demonstrates that the control of emissions of substances not controlled by emission limits has been taken into account in the design and operation of the Facility. As the other plans, this forms part of the Facility EMS and is reviewed and updated to ensure its efficiency on at least an annual basis.

2.3.5 Emissions to Surface Water

Emissions to water are-regulated within the EP. In accordance with the EP, emissions to waters are managed on a batch-discharge basis through holding lagoons. Discharge only occurs if waters meet the permitted discharge consents. These are detailed in Table 14.

Table 14: Emission Limit Values to water (other than sewer) (mg/l unless otherwise stated)

Emission point	Parameter						
	pH	Chemical Oxygen Demand	Total Suspended Solids	Total Suspended Solids	Ammonia	Oil and Grease	Formaldehyde
Reference period	Daily	3 times a week	Daily	Average of annual samples	Daily	Daily	Daily
W1 - Discharge from surface water lagoons via Penstock A to Afon Bradley	6-9	9.5	100	40	5	15	2
W2 – Discharge from wetlands providing surface water attenuation for north access via Penstock C to Afon Bradley	6-9	9.5	100	40	5	15	2

2.3.6 Emissions to Sewer

All process effluent generated by the Facility is discharged to sewer in accordance with the existing Trade Effluent Consents which were granted by Dwyr Cymru (Welsh Water). The Trade Effluent Consents allow for the discharge of the following effluents:

- Trade Effluent Consent, dated 6th January 2010 – Washdown waste from the PAL process after passing through a screening device having apertures no greater than 6mm in two dimensions.
- Trade Effluent Consent, dated 6th January 2010 – K7 boiler blowdown, MDF refiner chip wash water and surface washdown water after passing through a screening device having apertures no greater than 6mm in two dimensions.
- Trade Effluent Consent, dated 14th August 2012 – Washdown waste from the PAL process after passing through a screening device having apertures no greater than 6mm in two dimensions.

Table 15: Emission limits on emissions to sewer, effluent treatment plant or other transfers off-site

Emission point ref	Source	Parameter	Limit (mg/Nm^3)
E1	Formaldehyde Plant Effluent Tank Outlet	Formaldehyde	250
		pH	150
		Oil and grease	50
		Discharge volume	No limit set
Note: *Reference instantaneous (spot sample) prior to each discharge*			

2.3.7 Contaminated Water

In order to minimise contamination risk of process or surface water, all hazardous liquid chemicals stored on-site are kept inside bunded areas with a capacity of whichever is the greater of 110% of stored capacity or 25% of the total capacity of the storage containers. Spillage and leakage would be contained in chemical unloading and storage areas. The potential for accidents, and associated environmental impacts, is therefore limited.

Adequate quantities of spillage absorbent materials are available onsite, at easily accessible location(s), where liquids are stored, in accordance with existing procedures and systems. A site drainage plan, including the locations of foul and surface water drains and interceptors is available on-site.

Storage and handling of hazardous liquids takes place within areas of hard-standing with suitable secondary, and in some cases tertiary, containment. All facilities for the bulk storage of chemicals are located in areas which have capacity to contain 110% of the contents of the storage facility. Storage facilities that store hazardous materials are situated in bunds, which are inspected. Storage facilities that store hazardous materials are inspected in accordance with a written scheme of inspection, by the facilities insurers. Normal full mechanical integrity inspection period is 5 years. Storage tanks that store non-hazardous materials are situated within spill containment areas. Bunds and spill containment areas are monitored weekly, as part of Departmental Environmental Audits, for any signs of spillage or leakage.

Any spillage, no matter how minor, is reported to the Environment, Health & Safety (EHS) Department in accordance with existing procedures and recorded and reported as required by the site's management systems. Where appropriate the relevant authorities (NRW and/or Health and Safety Executive) will be informed.

The effectiveness of the current Site Emergency Plans are subject to Management Review and are be reviewed following any major spillages and revised as appropriate.

2.4 Monitoring Methods

2.4.1 Emissions Monitoring

2.4.1.1 Monitoring Emissions to Air

All periodic and continuous monitoring is undertaken in accordance with the Environment Agency Technical Guidance Notes M1 and M2. The methods and standards used for emissions monitoring are in accordance with the relevant Environment Agency guidance notes, the IED and BREF guidance notes.

All periodic monitoring are undertaken by MCERTS accredited stack monitoring organisations.

Log Yard

There is not any monitoring of process emissions to air from the Log Yard.

Board manufacture

Periodic monitoring from the MDF drier 1 cyclones; MDF drier 2 and cyclones; Particleboard Preproduction WESP; WESP 32; press abatement systems (x4)

Finishing Lines

There is not any monitoring of process emissions to air from the Finishing Line.

Melamine facing

There is not any monitoring of process emissions to air from Melamine facing processes.

Saw Mill

There is not any monitoring of process emissions to air from the Saw mill.

K7 Biomass boiler

Emissions from the K7 Biomass boiler are ducted to the MDF drying process and eventually discharge via the MDF 2 cyclone. Annual monitoring of emissions from the K7 boiler into the MDF drier is undertaken.

K8 Biomass

Emissions from the K8 Biomass are ducted to the MDF drying process and eventually discharge via the MDF 1 cyclone.

The following parameters at the duct are monitored and recorded continuously using an MCERTS accredited CEMS system:

- Water vapour content;
- Temperature;
- Pressure;

- Oxygen;
- Carbon monoxide;
- Hydrogen chloride;
- Sulphur dioxide;
- Nitrogen oxides;
- Ammonia;
- VOCs; and
- Particulates.

The continuously monitored emission concentrations are checked by an independent testing company at frequencies agreed with the regulator.

The following parameters are monitored by means of spot sampling at frequencies agreed with the regulator:

- Hydrogen fluoride;
- Heavy metals;
- Organic compounds; and
- Dioxins and furans.

In particular, the CEMS equipment is certified to the MCERTS standard and has certified ranges which are no greater than 1.5 times the relevant daily average emission limit.

Calibration of the monitoring equipment is carried out at regular intervals as recommended by the manufacturer and by the requirements of BS EN14181. Regular servicing and maintenance is carried out.

2.4.1.2 Monitoring Emissions to Land

There are not any emissions to land within the Installation boundary.

2.5 Energy Efficiency

2.5.1 General

Kronospan is a member of the Wood Panel Industries Federation and is a signatory to the 'Underlying Climate Change Agreement for the Wood Panels Sector' agreement, dated 7 February 2014 (Ref: WPIF/T00001 v2). In accordance with the agreement, on a monthly basis Kronospan is required to report the energy consumption for the Facility.

2.5.2 Basic Energy Requirements

The energy consumption from all major energy consumers is collated and analysed daily. This data is used to make decisions on when to renew or upgrade equipment.

2.5.3 Operating and Maintenance (O&M) Procedures

O&M manuals have been developed for the different manufacturing process equipment. The O&M manuals identify the requirements for the following:

- Good maintenance and housekeeping techniques and regimes across the Facility;

- Plant condition monitoring is carried out on a regular basis. This ensures, amongst other things, that equipment is operating efficiently; is not damaged; and that there is nothing which is reducing the efficient operation of equipment; and
- Staff are trained in energy awareness and are encouraged to identify opportunities for energy efficiency improvements.

2.5.3.1 Energy Efficiency Measures

The following techniques are utilised to reduce energy consumption:

1. There is a system to track energy usage and costs;
2. Undertaking of energy efficiency audits of major operations;
3. Employing a systematic approach to continuously upgrade equipment in order to increase energy efficiency;
4. Upgrading controls of energy usage;
5. In-house energy management training is provided to operators.

In addition, the energy consumption from all major energy consumers is collated and analysed daily. This data is used to make decisions on when to renew or upgrade equipment.

Energy management training is provided to all operators of energy intensive plant with a focus on saving energy whenever possible. For example, shutting down plant during periods of downtime.

Every four years a third-party energy auditor assesses the sites energy producing and consuming plant. The auditor analyses trends in the consumption data and outlines improvement opportunities. This audit provides compliance with the Energy Saving Opportunities Scheme (ESOS).

2.5.4 Further Energy Efficiency Requirements

The following measures have been incorporated into the design of the Facility to minimise the consumption of energy from the manufacture of board:

- Heat from boilers and combustion plant is recovered within the driers prior to release to atmosphere;
- All residues generated from the manufacturing process are combusted as fuels within the biomass boilers (K7 and K8 boilers (K7 only combusting exempt biomass)) to provide sources of heat for the manufacturing process; and
- The boilers have been installed with combustion control systems to optimise the combustion of fuels within the boilers.

2.6 Waste Recovery and Disposal

2.6.1 Introduction

The main residue streams arising from the Facility are:

1. Bulk Liquid Wastes
2. Bottom Ash (K7 & K8)
3. Air Pollution Control residues (APCr) (K8)
4. Solid wastes
5. Small waste streams

As described below, the waste recovery and disposal

compound of concrete construction that is bunded to prevent spillage to ground. techniques are in accordance with the indicative BAT requirements. The main wastes to be generated from the operation of the Facility are summarised in Table 17.

2.6.1.1 Bulk Liquid Wastes

Bulk liquid wastes including waste oil; oil and water; resin and water; hardener and water; wax and water; green dye and water; wood and water; lacquer and water; are either collected directly from source via a road tanker for disposal or stored in intermediate bulk containers (IBCs or drums) before removal from site. All waste IBCs are held in a designated waste

2.6.1.2 Bottom Ash

Bottom ash from the K7 and K8 boilers is collected in skips at source. These are then transferred to a designated storage bunker on East Road prior to off-site transfer to a hazardous landfill.

2.6.1.3 Air Pollution Control residue (APCr)

APCr is predominantly composed of calcium as hydroxide, carbonate, sulphate and chloride/hydroxide complexes. Silicon, Aluminium, Iron, Magnesium and Fluorine are also typically present in addition to traces of dioxins and heavy metals (Zinc, Lead, Manganese, Copper, Chromium, Cadmium, Mercury, and Arsenic). APCr is hazardous.

APC is transferred off-site to a licenced hazardous waste management facility for treatment (neutralisation/stabilisation) prior to disposal in a hazardous landfill.

2.6.1.4 Solid Waste

The solid wastes consist of general waste from offices and canteen areas, impregnated paper, clean PAL fines, cardboard, metal, paper, plastic.

Each department has localised waste storage facilities (either bins / small tipper skips). These are transferred to the centralised main skips on East Road prior to transfer offsite for disposal.

2.6.1.5 Small waste streams

Batteries (alkaline & lead acids), bulbs (sodium / flo tubes), oil filters, asbestos, boiler ash leachate, toluene, lab wastes / chemicals, toner, oily absorbents, aerosols, fridges / WEEE, paint. All these are segregated and stored in small quantities at various locations on site, see Table 16.

Table 16: Localised waste storage facilities

Waste	Storage Type	Location
Batteries	205ltr plastic drums – separate for acid / alkali	Stores
Fluorescent tubes	Plastic tube holders	Stores
Sodium bulbs	205ltr metal drum	Stores
Oil filters	205ltr metal drums	Garage

Waste	Storage Type	Location
Asbestos	No permanent storage on site – enclosed skips used when required	Located near removal site, as required
Boiler ash leachate	No storage – tanker used only as required	Boiler ash bunker on East Road
Toluene	25ltr plastic drums	Flammables cabinet by the Process Lab
Toner	2015ltr plastic drums	By the IT Office
Oily absorbents	35 yard enclosed skip	By the Garage
Aerosols	205ltr metal drum	Garage
Fridges / WEEE	Palletised / in WEEE boxes	By IT & Stores

Table 17: Key waste streams

Source/ Material	Properties of Waste	Storage location/ volume stored	Annual quantity of waste produced (estimate)	Disposal Route and Transport Method	Frequency
Bulk Liquid Wastes	Waste oil; oil & water; resin & water; hardener & water; wax & water; green dye & water; wood & water; lacquer & water.	Bunded waste compound	6,500 tonnes	Transferred off-site for disposal in IBC's or road tankers. Transport occurs by road vehicles.	3 monthly
K7 and K8 boiler – Bottom ash	Residual ash from the combustion of biomass. This ash is, classified as hazardous.	Ash storage area.	4,500 tonnes	Disposed of in a licensed site for hazardous waste. Transport occurs by road vehicle.	2 monthly
K8 boiler - APC	Ash from boiler and dry flue gas treatment, may contain some	APC is discharged into big bags before going off site for disposal (24 bags at a time)	400 tonnes	Recycled or disposed of in a licensed site for hazardous waste. Transport occurs by road vehicle.	Monthly

Source/ Material	Properties of Waste	Storage location/ volume stored	Annual quantity of waste produced (estimate)	Disposal Route and Transport Method	Frequency
	unreacted lime				
Solid Wastes	General waste	Stored in 40yd skips on East Road	1,200 tonnes	Transferred off-site for disposal. Transport occurs by road vehicles.	As required
	Impregnated paper	Stored in a 40yd skip in the paper impregnation department	800 tonnes		
	Clean PAL fines	Stored on the Log Yard	35,000 tonnes		
	Paper	stored in a paper bank (non-confidential) or in the Farmhouse / secure building (confidential)	6 tonnes		
	Cardboard	stored in a 40yd skip on East Road)	300 tonnes		
	Metal	Stored in 40yd skips on East Road	2,000 tonnes		
	Wood dust	Collected at source (Kronoplus) in a sealed trailer) – note that under normal circumstances this would not leave site, only due to breakdowns / blockages / biomass capacity.	4,500 tonnes		
Small waste streams		Refer to Table 16.	15 tonnes	Transferred off-site for disposal.	As required

Source/ Material	Properties of Waste	Storage location/ volume stored	Annual quantity of waste produced (estimate)	Disposal Route and Transport Method	Frequency
				Transport occurs by road vehicles.	

2.7 Management

Kronospan is an experienced operator of large-scale industrial processes. Kronospan's commitment to its socio-environmental responsibilities is demonstrated by operating its existing facilities to the highest environmental, health and safety and professional standards. This is reflected in the combustion plant by using the most up-to-date international and national regulations, standards and guidance that govern the good design construction, and operation of such combustion plants.

2.7.1 Management Systems

Kronospan operates the Facility in accordance with a documented Environmental Management System (EMS) which has been accredited to ISO:14001. The management system defines the management structure for the Facility, as well as setting out the roles and responsibilities for all staff.

2.7.2 Operations and Maintenance

The Facility has documented operations and maintenance systems which cover all aspects of the process whose failure could impact on the environment. These include all of the combustion plant at the Facility.

The maintenance system will include auditing of performance against the requirements arising from the above and reporting the result of audits to senior management.

2.7.3 Competence, Training and Awareness

The Facility has documented management systems for ensuring that all staff are competent and aware of their roles. The skills and competencies necessary for key posts is documented and records of training needs and training received for these posts are maintained. Key posts include contractors and those purchasing equipment and materials.

2.8 Closure

At the end of the economic life of the Facility, the site and buildings may be converted to other uses or form part of an appropriate landscape restoration plan. The responsibility for this may well rest with other parties if the facility is sold. However, Kronospan recognise the need to ensure that the design, the operation and the maintenance procedures facilitate decommissioning in a safe manner without risk of pollution, contamination or excessive disturbance to noise, dust, odour, ground and water courses.

A site closure plan is in place for the Facility and has been agreed with NRW.

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