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Consulting Engineers Limited

Chirk Particleboard Factory

Kronospan

Site Condition Report

ENGINEERING CONSULTING

Document approval

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Contents

1 Introduction

Kronospan Limited (Kronospan) has operated a wood-based panels manufacturing facility at its site in Chirk, North Wales (the Facility) since 1970.

Kronospan is the global leader in the production of wood-based panels with 39 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.

The nature of the manufacturing processes is such that they are energy intensive, involving the drying of wood and wood residues in large volumes. This, coupled with the historic fragility of the local electricity grid, has led to the site aiming for self-sufficiency in terms of its energy needs. At the same time the objective has been to be energy efficient at the highest level by utilising what would otherwise be waste heat within the manufacturing processes, which require heat for direct drying.

The wood-based panels manufacturing process is operated in accordance with the consolidated Environmental Permit (EP) (EPR/BW999IG), which was issued in October 2022 to transfer the full regulation of the Facility to Natural Resources Wales (NRW). This has since been varied on two occasions; EPR/BW999IG/V009, which was an NRW initiated variation following the publication of the revised Best Available Techniques (BAT) Reference Documents, and EPR/BW999IG/V010, which was a variation to increase the NOx ELV from WESP 21 (emissions point A32) and re-ducting of the emission points A5 and A6 to be released from emissions point A28 (WESP 32).

The EP Variation application to which this Site Condition Report refers, is applying to make a number of changes to the Facility as permitted including the incorporation of additional land within the Installation boundary to accommodate the following:

- Additional raw material storage areas, including the installation of hardstanding to some additional storage areas within the Log Yard.
- A new site access point and new lorry parking facility.
- Additional surface water run-off lagoons/wetlands, including discharge of uncontaminated surface water run-off from the lagoons/wetlands.

1.1 The objective

This Site Condition Report summarises the existing ground conditions for the land within the installation boundary (the 'Site') and describes the setting at the time of applying for the EP variation. This report draws on the following sources of background information which are provided as Appendices:

- The Groundsure Insights Report (Appendix A);
- The following Site Investigations reports:
  - Proposed Log Yard Improvements (Appendix B);
  - Ground Investigation for Proposed North Warehouse Extension (Appendix C)
  - Ground Investigation at North Log Yard (Appendix D)
  - Kronospan – New Press – Factual Report (Appendix E)
  - New Boiler Plant Civils Works Ground Investigation (Appendix F)
  - Chipboard Decoupling – Report on Ground Investigations (Appendix G)

  - Logyard Improvement (Appendix H);
  - Factual Site Investigation Report (Appendix I)

The Site Condition Report:

- considers the existing and proposed activities to be carried out at the site;
- identifies any land contamination risk the activities pose that may be linked to previous pollution events; and
- provides a baseline for the existing ground conditions.

The report presents details on the following:

- geology;
- hydrogeology;
- hydrology and flooding;
- historical and present land use; and
- existing ground conditions.

Plans and drawings can be found in Appendix A of the Supporting Information, including but not limited to the following:

- site location plan;
- installation boundary drawing; and
- emission points drawing showing emission points to air and water.

2 Site details

2.1 Applicant

Kronospan is the UK's leading manufacturer of high-quality wood-based panels and associated products and has been operating in the UK since 1970. Kronospan is constantly seeking new ways to improve process efficiency and reduce their overall environmental impact.

The main products manufactured by Kronospan at the Chirk site are particleboard, medium density fibreboard (MDF) and laminate flooring. This application will also allow Orientated Strand Board (OSB) to be produced on Site.

The Kronospan manufacturing facility is a major local employer within Wrexham County Borough (WCB). It is estimated that the Facility also supports over 6,000 people nationwide, many in rural areas, in industries relating to the manufacturing and supply chains associated with the operations at the Site.

2.2 Site address

Kronospan Chirk

Maesgwyn Farm

Wrexham

LL14 5NT

2.3 National grid reference

SJ 287 382

2.4 Site location

The existing 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 variation to the EP which this Site Condition Report supports seeks to extend the installation boundary to the north and the total area will be around 52 hectares. Reference should be made to Figure 1 of the Supporting Information which shows the Site location and the proposed installation boundary.

The western perimeter of the 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 and the new rail sidings are now operational. 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 existing installation boundary, it is proposed that this is extended to the north cover the additional land and the proposed installation boundary will extend close to the roundabout

with the between the B5070 and the A6. 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 500 m 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.

3 Condition of land at permit issue

The Groundsure Insights Report for the whole Site is contained in Appendix A. This section draws upon the data set out in this Groundsure Insights Report.

3.1 Environmental setting

3.1.1 Geology

The solid geology within the installation boundary is summarised in Table 1. This is extracted from the 1:50,0000 scale mapping from the British Geological Survey. The Site is not covered by the 1:10:000 scale mapping.

Table 1: Site Geology

Lithology	Description
Artificial Ground	There is no evidence of artificial or made ground within the installation boundary from the available geological mapping.
Superficial Deposits	The superficial deposits underlying the southern part of the Site are Glaciofluvial deposits from the Devensian age made of sand and gravel.
	The superficial deposits underlying the northern part of the Site are Till from the Devensian age made of Diamicton.
Bedrock	The bedrock geology is identified underlying the Site is mudstone, siltstone, and sandstone form Westphalian age.

3.1.2 Hydrogeology

The underlying hydrogeology within the installation boundary is summarised in Table 2.

Table 2: Site Hydrogeology

Aquifer	Description
Superficial Aquifer	The superficial aquifer underlying the northern and central areas of the Site, is a secondary undifferentiated aquifer. These are typically designated as both minor and non-aquifers in different locations due to the variable characteristics of the rock type.
	The superficial aquifer underlying the south-west and eastern areas of the Site, is a secondary A aquifer. These are generally aquifers formerly classified as minor aquifers and are permeable layers capable of supporting water suppliers at a local rather than strategic scale, and in some cases form an important source of base flow to rivers.
Bedrock Aquifer	The bedrock aquifer across the Site is identified as secondary A aquifer. These are generally aquifers formerly classified as minor aquifers and are permeable layers capable of supporting water suppliers at a local rather than strategic scale, and in some cases form an important source of base flow to rivers.

There are no Source Protection Zones within 500 m of the installation boundary.

3.1.3 Hydrology and surface waters

The hydrology and surface water conditions as set out in the Groundsure Insights Report are summarised as follows:

Table 3: Site Hydrology and Surface Waters

Item	Description
Catchment area	The Site is within the Dee Middle Ceiriog to Alwen operational catchment, and within the Dee Silurian / Ordovician WFD groundwater body.
On-site surface water features	Several minor features present within the installation boundary, but no Water Framework (WFD) surface water bodies identified. The west and northern installation boundary is bounded by the Afon Bradley which is identified as an inland river not influenced by normal tidal action.
Historical flooding	There have been no records of historical flood events across the Site since records began in 1946
Flood risk – river and coastal	The majority of the Site is not at risk of river flooding. However, very small areas along the Site adjacent to the Afon Bradley have been identified as having a high risk of flooding and area identified as being within a flood zone 3. However, these areas are restricted to very close proximity to the river. There have been no identified historical flood events and the Site does not benefit from flood defences. The Site is also not allocated as a flood storage area.
Flood risk – surface water	Areas within the installation boundary have been identified as being at risk of surface water flooding. However, these are limited to the currently developed parts of the Site. With the exception of some small areas adjacent to the Afon Bradley the northern section of the Site is not identified as being susceptible to surface water flooding.
Floor risk – ground water	The majority of the Site is identified as being either of low or moderate risk of ground water flooding.

3.1.4 Mine workings

The Site is located within a coal mining area as identified by the coal Authority and within the installation boundary there are a number of areas of identified within the BritPits database as either mining or ground workings. The surface ground workings appear to be mainly attributed to the railway and sewerage works. However, there are a few unspecified pits identified within the central part of the Site. These are all focussed around the formalin plant area.

No underground workings have been identified on Site. However, a number of tunnels have been identified in the wider area the closest of which is located approximately 245 m to the south.

3.1.5 Environmental designations

The Groundsure Insights Report provides the European and UK Environmental designations within 2 km of the Site are provided as follows:

- 3 Sites of Special Scientific Interest (SSSI); and
- 1 Special Area of Conservation (SAC).

3.1.6 Agricultural Land Classification

The northern section of the Site is currently classified as agricultural land grade 3b of moderate quality.

3.2 Pollution history

3.2.1 Site history

The Groundsure Insight Report explains that the Site was established in 1971 since then it has been operating a wood-based panels manufacturing facility having been previously a greenfield agricultural land. The historical evolution of the Site as obtained from the historical mapping is set out in Table 4.

Table 4: Site Historical Evolution

Timeline	Historical Evolution Southern	Historical Evolution Northen
1873–- 1954	Greenfield agricultural land	Greenfield agricultural land
1979	SiteiIndustrial facilities shows 1st time on the maps	
1992–- 2023	Expansion of site industrial facilities	

Source: Groundsure Insights Report – historical mapping

3.2.2 Historical pollution incidents

The Groundsure Insight Report sets out the historical substantiated pollution incidents on Site. It is noted that since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

There have been 7 recorded pollution incidents on Site, of which none have been identified as having a land or water impacts (being classified as a category 4 – no impact).

There have been a further 15 records of pollution incidents within 250 m of the Site. Of these

- 6 have been identified as having a significant impact to water and/or land;
- 4 have been identified as having a minor impact to water and/or land; and
- 5 have been identified as having no impact to water and/or land.

3.2.3 Historical pollution potential

There are no records of sites determined as ‘contaminated land’ within 500 m of the Site. However, the Site is classified as an Upper Tier COMAH Site.

Given the agricultural history of the Site, there is limited potential for historical pollution to be present in the ground underlying the Facility. A series of Site Investigations have been carried out over the years a summary of these are provided in Section 6. These will assist in informing the baseline ground conditions associated with the land.

3.2.4 Licenses and authorisations

The Groundsure Insights Report shows that there are a number of Part A(1) processes on Site. These align with the existing EP for the Site.

There is a Part A EP, held by a different operator, within 250 m of the installation boundary. In addition, there are three Part B EPs granted for facilities located within 500 m of the installation boundary. These include the Mondelez UK site, Achwood and Hallbeck Engineering on Canal Wood Industrial Estate.

There are two radioactive substances licences associated with the land within the installation boundary. However, there are four radioactive substances licences within 500 m of the Site.

3.2.5 Landfill and waste sites

The Groundsure Insights Report does not have any records of active landfill sites within 500 m of the Site. However, there is a record of a historical waste site immediately to the south of the installation boundary from the NRW records. This is attributed to the railway cuttings.

No active licenced waste sites have been identified within 500 m of the Site.

3.2.6 Groundwater abstractions

The Groundsure Insights Report shows that there are 14 ground water abstractions within 2 km of the Site. All of these are located on the Site, but only 2 are active.

3.2.7 Surface water abstractions and discharges

As shown within the Groundsure Insights Report, there are not any surface water abstractions associated with the land within the installation boundary. There have been a number of surface water abstractions associated within 2 km of the installation boundary. However, only 3 of these are currently active.

As shown within the Groundsure Report, there is one active discharge of treated of untreated effluent to controlled waters this is attributed to the Chirk pumping station. All other identified discharges identified from the Site are historical.

4 Permitted activities

4.1 Activities

The permitted activities will consist of the Schedule 1 installation activities (as defined in the Environmental Permitting Regulations) and directly associated activities listed in Table 5 for the existing Facility and Table 6 includes the additional activities being applied for.

Table 5: Scheduled and Directly Associated Activities – Existing EP

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
AR1	1.1 A(1) (a) burning any fuel in an appliance with a rated thermal input of 50 or more megawatts	Operation of natural gas-fired combustion plant comprising:1 x 2.25 MWth K1 thermal oil heater providing heat for the Kronoplus single daylight press plus space heating.1 x 14.1 MWth K5 thermal oil heater & 1 x16.5 MWth K6 thermal oil heater operated as standby plant for K7 and K8 biomass boilers.5 x 21.28 MWth gas engines providing electricity supplied to site, steam production for MDF 1& 2 process and heat to MDF dryers 1 & 2.2 x 20.5 MWth gas turbines (GTs) operated as standby plant for gas engines 1 to 5 providing back up flue gas heat to MDF dryers 1 and 2 during gas engine maintenance and back-up electricity supply to site.MDF 1 – 15MW gas fired dryer MDF 2 – 32MW gas fired dryer The MDF dryers are direct dryers used as standby for K8/GT1 and K7/GT2 respectively. BAB 2 and 3 – 2 x 35 MW gas fired direct dryers used as primary heat source for manufacturing process. Chip Dryer No. 4–- 45 MW gas and wood dust fired direct dryer used as primary heat source for drying of wood chip	From receipt of raw materials to combustion of fuel and release of exhaust gases to atmosphere. Distribution of heat, electrical power and steam to the installation. Disposal of wastes arising, including release of boiler blowdown to sewer.
AR2	4.1 A(1) (a) (ii) producing organic chemicals containing oxygen	Manufacture of formaldehyde by catalytic oxidation of methanol	From receipt of raw materials (or purchase of finished product) to intermediate storage of formaldehyde production or external sale

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
AR3	4.1A(1) (a) (viii) producing organic chemicals such as polymers	Manufacture of Ureaformaldehyde and melamineurea-formaldehyde resin	From intermediate storage of formaldehyde and receipt of other materials to intermediate storage of resin products or external sale
AR4	S5.1 A(1)(b)–- The incineration of15on-hazardouss waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 3 tonnes per hour	K7 38 MW Biomass Boiler Single co-incineration line	Combustion of virgin and exempt waste wood biomass fuels to generate heat to be used within the manufacturing process. and control of associated emissionsFrom receipt of waste to emission of exhaust gas and disposal of waste arising.The waste wood biomass combusted in K7 is limited to waste types not subject to Chapter IV and Annex VI of the Industrial Emissions Directive (2010/75/EU) Waste types as specified in Table S2.2 plus roundwood logs and virgin Wood Chip originating on site.
AR5	S5.1 A(1)(b) – The incineration of15on-hazardouss waste in a waste incineration or waste co-incineration plant with a capacity exceeding 3 tonnes per hour	K8 32MW Biomass Boiler Single co-incineration line	Combustion of wood residues to generate heat for use in the manufacturing process and control of associated emissionsFrom receipt of waste to emission of exhaust gas and disposal of waste arising.The waste wood biomass combusted in K8 is subject to Chapter IV and Annex VI of the Industrial Emissions Directive (2010/75/EU)Abnormal operation not permitted.Waste types as specified in Table S2.3

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
AR6	S6.1 A(2)(a) – Producing in an industrial plant, one or more of the following wood-based panels with a production capacity exceeding 600m3 per day: oriented strand board, particleboard or fibreboard.	Manufacture of medium density fibre board with a total production capacity of 640,000 m3 /year	Receipt of raw materials through to product despatch
AR7	S6.1 A(2)(a) – Producing in an industrial plant, one or more of the following wood-based panels with a production capacity exceeding 600m3 per day: oriented strand board, particleboard or fibreboard	Manufacture of particleboard with a total production capacity of 750,000 m^3 /year	Receipt of raw materials through to product despatchWaste types as specified in Table S2.4 plus logs and wood chip
AR8	S6.6 Part B (a) Unless falling within Part A(2) of Section 6.1, manufacturing products wholly or mainly of wood at any works if the activity involves a relevant activity and the throughput of the works in any 12-month period is likely to be more than— (i) 10,000 cubic metres in the case of works at which wood is only sawed, or wood is sawed and subjected to excluded activities, or (ii) 1,000 cubic meters in any other case.	Kronoplus Laminated Flooring line and Worktop production	Receipt of MDF and particleboard through to product despatch
AR9	S6.6 Part B (a) Unless falling within Part A(2) of Section 6.1, manufacturing products wholly or mainly of wood at any works if the activity involves a relevant activity and the throughput of the works in any 12-month period is likely to be more than— (i) 10,000 cubic metres in the case of works at which wood is only sawed, or wood is sawed and subjected to excluded activities	Sawmill operations	Receipt of raw materials through to product despatch

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
Directly Associated Activity			
AR10	Unlisted Directly Associated Activity	VITS Paper Impregnation process	From resin intermediate storage and receipt of other raw materials to intermediate storage of impregnated paper products
AR11	Unlisted Directly Associated Activity	Melamine Facing	Receipt of MDF and particleboard through to product despatch
AR12	Unlisted Directly Associated Activity	Surface Water Lagoons 1 & 2	Receipt of site drainage from whole installation and effluent from formaldehyde plant, then discharged into the Afon Bradley via valve Penstock A. The effluent from the formaldehyde plant includes inputs from the process bunds, tank farm bunds and tanker loading bays. The lagoons also have 12 Kasco floating aerators per lagoon.
AR13	Unlisted Directly Associated Activity	Surface Water lagoon 3	Receipt of site drainage from Log Yard and rail sidings. During abnormal conditions (heavy rainfall, flood conditions) discharge via other surface water lagoons into the Afon Bradley. The lagoon also has floating reed beds within the lagoon

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
AR14	Unlisted Directly Associated Activity	Canal Water Treatment Plant	From receipt of abstracted canal water, to release of treated water for use as (1) boiler feed water, (2) washdown and dust suppression in preproduction Log Yard and (3) Main Fire Tanks top up. Use ranked in order of volume and importance.Treatment process includes Lamella system and sand filters for removal of heavy solids and suspended solids respectively. Storage and dosing with sodium hypochlorite. Further micro-filtration and reverse osmosis is employed specifically for boiler feed water
AR15	Unlisted Directly Associated Activity	Delivery and storage of raw materials to be used in the process	Receipt and storage of raw materials
AR16	Unlisted Directly Associated Activity	Handling, processing and storage of all process wastes and by-products (including fuel and materials for composting)	From point of arising through to despatch or disposal/use

Table 6: Scheduled and Directly Associated Activities – Additional as part of EP variation

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
AR1	Section 6.1 Part A(2) (a)	Manufacturing of oriented strand board with a total production capacity of 550,000 m^3/year (or 2,000 m^3/day)	
AR2	Directly Associated Activity	Receipt of surface water from north access route, additional biomass storage and lorry parking, then discharged into the Afon Bradley via valve Penstock C.	

4.2 On-site fuel and chemical storage facilities

As identified in the Supporting Information document, the activities undertaken at the Facility will utilise a number of fuels and chemicals. These materials will be stored in accordance with current guidance.

The delivery and transfer details, and secondary and tertiary containment systems associated with the storage of these materials are presented in Table 7.

Table 7: Chemical and fuel containment facilities

Material	Delivery details	Transfer for storage details	Storage containment details
Urea solution (40% solution) received as dry powder	Delivered using tanker	Unloading from sealed delivery vehicle into storage tanks via standard hose connection, under supervision by trained site operatives. Storage tanks and unloading located in a covered area with a dedicated concrete sump or other bunding. Hardstanding in this area will have contained drainage. Tanks to have high tank level alarms or trips.	Primary: Silo Secondary: Middle road Tertiary: None
Lime (K8)	Delivered using tanker	Pneumatic unloading from delivery vehicle into storage silo. Exhaust air to be de-dusted using fabric filters and automatic cleaning with compressed air after filling. Filter to be regularly inspected for leaks. Silos fitted with a high level alarm system to prevent overfilling.	Primary: Silo Secondary: K8 Plant Tertiary: None
Activated carbon	Delivered using tanker	Pneumatic unloading from delivery vehicle into storage silo. Exhaust air to be de-dusted using fabric filters and automatic cleaning with compressed air after	Primary: Silo Secondary: Middle road Tertiary: Contained drainage

Material	Delivery details	Transfer for storage details	Storage containment details
		filling. Filter to be regularly inspected for leaks. Silos fitted with a high level alarm system to prevent overfilling.	
Diesel	Delivered using tanker		Primary: Stock tank Secondary: Self-bunded Tertiary: Interceptor
Polymeric methylene diisocyanate (pMDI)			Primary: Silos Secondary: Adjacent OSB Tertiary: Bunded offloading system
Phenolic			Primary: Silos Secondary: Adjacent OSB Tertiary: Bunded offloading system
Melted paraffin wax			Primary: Silo Secondary: Middle road Tertiary: None
Hydrogen peroxide	Delivered via HGV in IBcs		Primary: IBCs Secondary: Middle road Tertiary: None
Water treatment chemicals	Delivered in IBC's via road vehicles		Primary: IBC Secondary: Bunding Tertiary: Hardstanding

Various maintenance materials (oils, greases, insulants, antifreezes, welding and firefighting gases etc.) will be stored in an appropriate manner. Any gas bottles on-site are kept secure in dedicated area(s).

4.3 Environmental risk assessment

An Environmental Risk Assessment has been carried out following the Environment Agency Horizontal Guidance Note H1. This is included within Appendix D of the Supporting Information. The assessment considers all potential sources of air, land and water pollution that could occur due to emissions from the Facility or from accidents occurring at the Facility. The risk assessment also details any mitigation measures that will be employed to reduce the frequency or impact of fugitive emissions or accidents.

The Environmental Risk Assessment identifies that the operation of the Facility will require the storage of various chemicals, which could pose a risk to the land, groundwater and/or surface water during operations. All process areas, loading/unloading areas, materials handling areas and

roadways will be covered in concrete and/or tarmac hardstanding. As such, it is regarded that there will be little risk of ground/groundwater contamination during normal operation of the Facility.

Therefore, it is concluded that the Facility will pose little risk of pollution. However, periodic soil and groundwater samples at the Site will be undertaken to fulfil the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the Industrial Emissions Directive (IED).

5 EC Guidance: Stage 1 – 3 Assessment

In accordance with European Commission Guidance concerning baseline reports under Article 22(2) of the IED, a Stage 1 – 3 assessment has been undertaken to identify hazardous substances used at the Facility.

Stages 1 – 3 of the assessment are described as follows:

1. Identify which hazardous substances are used, produced or released at the installation.
2. Identify which of these substances are classed as 'relevant hazardous substances' (defined within Article 3 of EC Regulation 1272/2008). Justify any hazardous substances which have been excluded due to their incapability to contaminate soil or groundwater.
3. For each relevant hazardous substance, identify the actual possibility for soil or groundwater contamination at the Site (including probability of release), taking into account quantities, storage and transport, risk of release.

The full stage 1 – 3 assessment of the primary raw materials and residues handled at the Facility is presented in Table 8. The substances handled at the Facility are identified in the context of their hazards and theoretical pollution risk, with justification as to whether the substance is of concern or not in the context of the Site.

Table 8: Stage 1 - 3 assessment of materials at the Facility

Chemicals handled	Stage 1: Chemical characteristics and toxicity							Stage 2: Site specific characteristics			Stage 3: Site specific risk
Substance	**Concentration / state**	**CAS No.**	**EC/List No.**	**Hazard statements (CLP)**	**Hazard substance under Stage 2?**	**Environmental fate / behaviour**	**Potential pollution risk?**	**Approx. quantity stored**	**Storage arrangements/ containment**	**Delivery, storage and use details**	**Comments/ chemical of concern?**
Raw materials											
Recycled fibre	Solid	N/A	N/A	N/A	No	Mostly insoluble, however potential for a wide range of contaminants and potential for small amounts of liquids to be present.	Yes	18,000 te	Silos	Incoming RCF delivered to the Site via trailers and is unloaded within a partially enclosed reception area and transferred to the grading plant. Once graded this is transferred via enclosed conveyor either to silo or the process where it is to be used.	All unloading and storage is undertaken above ground and on areas of impermeable hardstanding Regular preventive maintenance of the storage facilities.
Sawdust	Solid	N/A	N/A	N/A	No		No	4,500 te	Silos	Incoming sawdust is delivered to the Site via trailers and is unloaded within a partially enclosed reception area and transferred to the silos.	
Chips	Solid	N/A	N/A	N/A	No		No	10,000 te	Silos	Incoming chips are delivered to the Site via trailers and is unloaded within a partially enclosed reception area and transferred to the silos.	
Sawn roundwood	Solid	N/A	N/A	N/A	No		No	45,000 te	Stored in the Log Yard	Incoming Roundwood is delivered to the Site either via trailers or rail. This is unloaded and transferred to the storage area.	
Saw logs	Solid	N/A	N/A	N/A	No		No	20,000 te	Stored in the Log Yard		
Hardener - Ammonium nitrate	Liquid	6484-52-2 57-13-6	229-347-8 01-2119490981-27 200-315-5 01-2119463277-33	H272 H319 None	No	Biodegradable Low bioaccumulation potential. Very soluble in soil	No	75 tonne (CB only)	Bunded tank within building	Delivered by road tanker, offloaded directly into silo.	

Chemicals handled	Stage 1: Chemical characteristics and toxicity							Stage 2: Site specific characteristics			Stage 3: Site specific risk
Substance	**Concentration / state**	**CAS No.**	**EC/List No.**	**Hazard statements (CLP)**	**Hazard substance under Stage 2?**	**Environmental fate / behaviour**	**Potential pollution risk?**	**Approx. quantity stored**	**Storage arrangements/ containment**	**Delivery, storage and use details**	**Comments/ chemical of concern?**
Hardener - Ammonium sulphate	Solid	7783-20-2	231-984-1 01-2119455044-46-xxxx	None	No	Soluble in water. Low bioaccumulation potential, Not classified as PBT or vPvB.	No	35 tonne (MDF)	FIBCs stored within building	Offloaded by FLT into building.	
Wax emulsion - ProA15, Hydrowax	Liquid	Mixture / NA	Mixture / NA	None	No		No	66 tonne (MDF)	Bunded Tank with tertiary containment	Delivered by road tanker, offloaded directly into silo.	
Wax emulsion - SBZ Waxem E-70 Wax	Liquid	Mixture / NA	Mixture / NA	None	No	Soluble in water. Solidifies at ambient temperature. The product is predicted to have moderate mobility in soil. Not classified as PBT or vPvB	No	75 tonne (CB)	Bunded Tank with tertiary containment	Delivered by road tanker, offloaded directly into silo.	
								100 tonne (OSB)			
Release agent - Buccolan 5826	Liquid	Mixture / NA	Mixture / NA	H315 H319	Yes		No	2 tonne (MDF) 26 tonne (CB)	Stored in IBCs within building	Offloaded by FLT into building.	
Green dye	Liquid	Mixture / NA	Mixture / NA	H226 H314 H412	Yes		Yes	6 tonne (MDF)	Stored in IBCs within building	Offloaded by FLT into building.	The area is hard standing with no drains. All drains on site lead to a penstock on site which is closed under normal operation and waters are testing prior to release to lagoons.
Anti-foam Glanapon 5943 / Bucolan 5826	Still waiting for SDS	Mixture / NA	Mixture / NA	H315 H319	Yes		No	4 tonne	Stored in IBCs within building	Offloaded by FLT into building.	
NALCO 68534/Zetag	Solid	Mixture / NA	Mixture / NA	None	No	This product has no known ecotoxicological effects. This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.	No	3 Tonnes	Stored in IBCs within Formalin plant	Offloaded by FLT	

Chemicals handled	Stage 1: Chemical characteristics and toxicity							Stage 2: Site specific characteristics			Stage 3: Site specific risk
Substance	**Concentration / state**	**CAS No.**	**EC/List No.**	**Hazard statements (CLP)**	**Hazard substance under Stage 2?**	**Environmental fate / behaviour**	**Potential pollution risk?**	**Approx. quantity stored**	**Storage arrangements/ containment**	**Delivery, storage and use details**	**Comments/ chemical of concern?**
Sodium Chloride	Solid	7647-14-5	231-598-3	None	No	Shall not be classified as hazardous to the aquatic environment	No	11 Tonnes 25 Kg Bags. 49/pallet 9 pallets	Stored within FIBCs within building	Offloaded by FLT directly into building	
Sodium Hypochlorite 14/15%	Liquid	7681-52-9	231-668-3	H290 H314 H410	Yes	Forms corrosive mixtures with water even if diluted. Harmful effect due to pH shift. Discharge into the environment must be avoided	Yes	500 l 20 x 25l	Stored in IBCs within Formalin plant bunded area	Offloaded by FLT within bunded area.	The area is hard standing with no drains. All drains on site lead to a penstock on site which is closed under normal operation and waters are testing prior to release to lagoons.
Vitec 5100	Liquid	Mixture / NA	Mixture / NA	None	No	Not classified as haz to acquatic environment, Accumulation in oranisms not expected, no PBT/vPvB	No	400 litres 20 x 20l			
Paper							No	2,000,000 m²			
Paint 91205CB4”X” lacquer paint	Liquid	Mixture / NA	Mixture / NA	None	No	Toxicity: Based on available data, the classification criteria are not met. The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.	No	4,000 litres			
Glue (flooring) Prefere 4111M	Liquid	Mixture / NA	Mixture / NA	H317 H332 H341 H350	Yes	Contains less than 5% formaldehyde.	No	10000l			
Hardener - Prefere 5313	Liquid	Mixture / NA	Mixture / NA	H302 H314 H317 H334	Yes	This product does not contain any substances classified as PBT or vPvB. No further info	No	2,200 kg			
Glue (worktops) 12870 PVA postforming glue	Liquid	Mixture / NA	Mixture / NA	None	No	This product does not contain any substances classified as PBT or vPvB. No further info	No	2000 kg			
Lime	100% solid	1305-62-0	215-137-3	H315, H318, H335	Yes	Water soluble and highly corrosive. Potential for mobility in soil and water systems.	No	20 tonne	Enclosed silo(s)	Delivered in tankers, unloaded into storage silo by flexible hose, feed into flue gas treatment systems.	Any spillages easily swept up, site containment and handling procedures are good. Chemical dosing rates and flows within the FGT process are subject to control

Chemicals handled	Stage 1: Chemical characteristics and toxicity							Stage 2: Site specific characteristics			Stage 3: Site specific risk
Substance	**Concentration / state**	**CAS No.**	**EC/List No.**	**Hazard statements (CLP)**	**Hazard substance under Stage 2?**	**Environmental fate / behaviour**	**Potential pollution risk?**	**Approx. quantity stored**	**Storage arrangements/ containment**	**Delivery, storage and use details**	**Comments/ chemical of concern?**
											systems. Storage silos will be located above concrete hardstanding, and fitted with high-level alarms for unloading operations. Drainage in these areas will be contained.
pMDI (Polymeric methylene diphenyl diisocyanate)	Liquid	9016–87–9	N/A	H315 H317 H319 H332 H334 H335 H351 H373	Yes	Not acutely harmful to aquatic organisms Assessment biodegradation and elimination (H2O): Hydrolyzes to form water-insoluble compounds. Experience shows this product to be inert and non-degradable. Not PBT and vPvB	No	8 tonne (current)	Dedicated storage tank within bund and tertiary containment	Delivery by road tanker direct to storage silos	
Phenolic	??	108-95-2	203-632-7	H301 + H311 + H331 H314 H341 H373 H411	Yes	Does not bioaccumulate. No components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher	Yes	200 tonne	Dedicated storage tank within bund and tertiary containment	Delivery by road tanker direct to storage silos	Storage areas designed to contain tertiary containment. All pipework to be contained with building which has no drains.
Melted paraffin wax	Liquid	8002-74-2	EEC No. 232-315-6	None	No	Insoluble in water, Spillage unlikely to penetrate soil Is not likely mobile in the environment due its low water solubility.	No	400 tonne	Bunded tank with tertiary containment	Delivery by road tanker direct to storage tanks	
Hydrogen peroxide	Liquid	7722-84-1	231-765-0	H271 H302 H314 H333 H402	Yes	Not components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. No other data	Yes	40 tonne	Stored in IBCs within bunded area	Offloaded by FLT into storage area	The area is hard standing with no drains. All drains on site lead to a penstock on site which is closed under normal operation and waters are testing prior to release to lagoons.
Fuel Oil	Liquid	68334-30-5	269-822-7	H226, H304, H373, H315, H332,	Yes	Insoluble, high toxic effects, volatile	Yes	40,000 litres (split between 2 tanks)	Enclosed tanks with bunding/sumps	Delivery to the Facility in dedicated road tankers, unloaded into storage tanks via flexible hose, direct feed into burners.	Periodic inspections of tank undertaken (preventative maintenance), refuelling undertaken on areas of hardstanding with contained

Chemicals handled	Stage 1: Chemical characteristics and toxicity							Stage 2: Site specific characteristics			Stage 3: Site specific risk
Substance	**Concentration / state**	**CAS No.**	**EC/List No.**	**Hazard statements (CLP)**	**Hazard substance under Stage 2?**	**Environmental fate / behaviour**	**Potential pollution risk?**	**Approx. quantity stored**	**Storage arrangements/ containment**	**Delivery, storage and use details**	**Comments/ chemical of concern?**
				H351, H411, H350							drainage, overfill protection on tank.
Residues											
APCr (contains heavy metals, POPs)	Solid	90989-48-3	292-705-7	N/A	Yes	Presence of persistent organic pollutants (e.g. dioxins), volatiles.	Yes		Silos	Ash from flue gas treatment on K8 biomass plant. Direct feed from flue gas treatment system into storage facilities, then loaded into tanker (all enclosed) for transfer to hazardous landfill disposal or for recovery.	Any leaks during loading/ unloading operations will be contained by concrete hardstanding, with measures to prevent overfilling in place. APCr storage and unloading will be in areas with contained drainage to the process drainage network.
Incinerator Bottom Ash (IBA)	Solid	91082-83-6	293-798-7	N/A	No	Limited solubility, potential for the presence of heavy metals	Yes		IBA bunker	IBA will be transferred via conveyor to the IBA bunker. IBA will subsequently be transferred off-site via road haulage vehicles for processing into secondary aggregate.	Inert and non-hazardous. Storage of IBA prior to transfer will be within an IBA bunker. Transfer of IBA to road haulage vehicles is undertaken within an enclosed IBA area with hardstanding.

6 Previous Contamination and Site Investigations

6.1 Site investigations

As stated within Article 22 (2) of the IED:

> *"Where the activity involves the use, production or release of relevant hazardous substances [RHS] and having regard to the possibility of soil and groundwater contamination at the site of the installation, the operator shall prepare and submit to the competent authority a baseline report before starting operation of an installation or before a permit for an installation is updated for the first time after 7 January 2013".*

Furthermore, the EA guidance note '*H5: Site Condition Report – Guidance and Templates*' states that "*where a facility involves the use, production or release of RHS*", a baseline report must be submitted as part of the application.

There are a number of site investigation reports available which have been undertaken for the Site. Most of these reports provide information on the geotechnical properties associated with localised areas of the Site. However, there are four reports available which also include analysis of contamination within soils and groundwater. The reports which are available are as follows:

1. Proposed Log Yard Improvements – Interpretative report, dated March 2007, provided in Appendix B.

   Geotechnics undertook an intrusive investigation at the site for a proposed new press between 29 January to 6 February 2007. The ground investigation comprised the installation of five boreholes, in situ and laboratory testing and reporting.

2. Ground Investigation for Proposed Warehouse Extension, dated May 2007, provided in Appendix C.

   The site investigation was undertaken between 14th and 19th February 2007. Seven window sample boreholes were undertaken to depths between 4 m and 7 m. Window samples were taken using the Dynamin Probe apparatus. Selected soil samples were sent to a third party accredited laboratory for analysis and determine the potential for contamination.

3. Ground Investigation at North Log Yard, Chirk – Factual Report, dated February 2010, provided in Appendix D.

   Geotechnics undertook an intrusive site investigation at the site of the existing North Log Yard on 21 December 2009. The object of the site investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works. The investigation comprised trial pits, laboratory testing and reporting.

4. Kronospan – New Press – Factual Report, dated April 2012, provided in Appendix E.

   Geotechnics undertook an intrusive site investigation at the site for a proposed new press between 22 February and 2 March 2012. The object of the site investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works. The investigation comprised boreholes, in situ and laboratory testing and reporting.

5. New Boiler Plant Civils Work Ground Investigation, dated September 2013, provided in Appendix F.

   Ian Farmer Associated (1998) Limited undertook a site investigation to determine ground and groundwater conditions at the Site. The site investigation was undertaken between 8 August and 19 August 2013. The ground investigation comprised the installation of four boreholes.

6. Chipboard Decoupling - Report on Ground Investigation, dated January 2015, provided in Appendix G.

   Site works comprised one cable percussion borehole and four concrete cores, and WAC testing of soils from depths of 0.5 to 1.2 m.

7. Logyard Improvement Kronospan, Chirk, LL14 5NT - Report on Ground Investigation, dated March 2016, provided in Appendix H.

   The site work was carried out between 19 and 24 October 2015 and during a second visit on 3 and 4 November 2015. Five boreholes, designated BH01 to BH05 with BH02A, were sunk by light cable percussion. Soil samples were collected for analysis for chemical contamination. Perforated standpipes, surrounded by pea shingle and protected by a stopcock cover were installed in boreholes BH01, BH02A and BH05 to allow sapling of groundwater.

8. Factual Site Investigation Report (Reference A5487/23/S) dated 22 October 2023. The report is provided in Appendix I.

   Earth Environmental and Geotechnical Ltd undertook the work to examine ground conditions across the new part of the land being applied for as part of this EP variation. The report presents full factual records of the site work carried out to examine the ground conditions encountered in the exploratory holes. The fieldwork was carried out between the 14 August 2023 and the 29 September 2023 and comprised boreholes skunking, cable percussive installation into boreholes, trial pits excavation (including soakaway trial), dynamic cone penetrometer tests, thermal conductivity tests, resistivity tests and pavement cores.

6.2 Baseline reference data

The baseline reference data has been derived from soil and groundwater analysis presented in the ground investigation report to date. The following is intended to provide a summary of the baseline concentrations at the Site – the full baseline data which should be referenced that sets out the ground conditions at the Site at the time of applying for the permit application is provided within Appendices B to I.

A summary of the samples analysed is presented in Appendix J. The data has been presented for both the existing part of the Site and the additional land this includes monitoring of soil, groundwater and gas.

7 Ongoing Management

Any additional data obtained on the ground conditions at the Site, either prior to commencement of construction, or through the construction phase, will be collated within this Site Condition Report. This Site Condition Report will be updated following completion of any additional site investigations, groundwater monitoring or ground gas monitoring, and will be maintained throughout the lifetime of the Facility.

During the lifetime of the EP, the Site Condition Report will be updated to take into account the following:

- any changes to the permitted activities or the Installation Boundary;
- any measures taken to protect the underlying land and groundwater;
- any pollution incidents that may have had an impact on land and associated remediation; and
- any soil, gas or groundwater monitoring (where undertaken).

At the end of the operational life of the Facility, the Site Condition Report will be updated to include for decommissioning and site closure. It will be demonstrated that all sources of pollution risk have been removed and whether decommissioning has had any impact on the land. Any required remedial works will be documented and incorporated into the report. A statement of site condition will be made to confirm that:

- the permitted activities have stopped;
- decommissioning is complete, and the pollution risk has been removed; and
- the land is in a satisfactory condition.

8 Conclusions

This report has identified the historical and current condition of land, the activities currently permitted and those proposed at the Facility, and detail on the reagents and residues to be involved with the operations undertaken at the Facility.

There have been a number of Ground Investigations carried out for various pieces of land within the installation boundary these are all provided within Appendices B to I. These conclude that monitored concentrations were well below the relevant thresholds.

During the Operational phase of the Facility, any records which demonstrate how the land and groundwater have been protected will be maintained. This information will include inspection records of site infrastructure, pollution/incident reports, records of any ground investigations undertaken, and any monitoring records of soil, gas and/or water during the life of the EP. Where it is identified that pollution has occurred, records will be maintained to demonstrate any pollution incidents that may have affected the land or groundwater. These records will be retained to be used at Permit Surrender.

Appendices

A Ground Sure Insights Report

B Proposed Log Yard Improvements, March 2007

C Ground Investigation for Proposed Warehouse Extension, May 2007

D Ground Investigation at North Log Yard, February 2010

E Kronospan – New Press – Factual Report, April 2012

F New Boiler Plant Civils Work Ground Investigation, September 2013

G Chipboard Decoupling – Report on Ground Investigation, January 2015

H Logyard Improvement, March 2016

I Factual Site Investigation Report, October 2023

J Summary of Baseline Monitoring Results

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