

Natural Resources Wales Permitting Decisions

Kronospan Limited

Chirk Particleboard Factory

Decision Document

DRAFT

Consultation on our Decision Document and recording our decision-making process

The variation number is: EPR/BW9999IG/V012

The operator is: Kronospan Limited

The Installation is located at: Chirk Particleboard Factory, Holyhead Road, Chirk, Wrexham, LL14 5NT.

Consultation commences on: 06/10/2026

Consultation ends on: 17/11/2026

This is a draft decision document, which accompanies a draft variation notice and draft consolidated permit.

The document is in draft at this stage because we have yet to make a final decision. Before we make this decision, we want to explain our thinking to the public and other interested parties, to give them a chance to understand that thinking and, if they wish, to make relevant representations to us. We will make our final decision only after carefully taking into account any relevant matter raised in the responses we receive. Our mind remains open at this stage: although we believe we have covered all the relevant issues and reached a reasonable conclusion, our ultimate decision could yet be affected by any further information that is relevant to the issues we have to consider. However, unless we receive information that leads us to alter the conditions in the draft Permit, or to reject the Application altogether, we will issue the Permit in its current form.

In this document we frequently say, “we have decided”. That could give the impression that our mind is already made up; but as we have explained above, we have not yet done so. The language we use enables this document to become the final decision document in due course with no more re-drafting than is absolutely necessary.

We try to explain our current position as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy and we would welcome any

feedback as to how we might improve our decision documents in future. A lot of technical terms and acronyms are inevitable in a document of this nature: we provide a glossary of acronyms near the front of the document, for ease of reference.

Preliminary information and use of terms

The application reference number is **EPR/BW9999IG/V012**. We refer to the application as “the Application” in this document in order to be consistent.

The environmental permit number is **EPR/BW9999IG**. We refer to the proposed consolidated permit as “the Permit” in this document.

The **Applicant** is Kronospan Limited. We refer to Kronospan Limited as “the Applicant” in this document. Where we are talking about what would happen after the Permit Variation is issued (if that is our final decision), we call Kronospan Limited “the Operator”.

Kronospan Limited’s Chirk Particleboard Factory is located at Holyhead Road, Chirk, Wrexham, LL14 5NT. We refer to this as “the **Installation**” in this document.

Application for a Substantial Variation of an Environmental Permit

The application number is **PAN-024285**

The permit variation number is: **EPR/BW9999IG/V012**

The Operator is: **Kronospan Limited**

The Installation is located at: **Chirk Particleboard Factory, Holyhead Road, Chirk Wrexham LL14 5NT**

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise, we have accepted the applicant's proposals.

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Glossary of acronyms and definitions used in this document

APIS – Air Pollution Information System

AQO – Air Quality Objective

BAT – Best Available Technique(s)

BAT-AEL – BAT Associated Emission Level

BRef – Best Available Technique(S) Reference Document

CIRIA C736 – Containment systems for the prevention of pollution: Secondary, tertiary, and other measures for industrial and commercial premises

CWW – Common waste water and waste gas treatment

DAA – Directly associated activity

DD – Decision document

EAL – Environmental Assessment Level

ELV – Emission limit value

EMS – Environmental Management System

EPR – Environmental Permitting (England and Wales) Regulations 2016

FPMP- Fire Prevention Management Plan

HRA – Habitats Regulations Assessment

IED – Industrial Emissions Directive (2010/75/EU)

LVOC – Large Volume Organic Chemicals

MDF – Medium Density Fibre

NRW – Natural Resources Wales

NIA - Noise Impact Assessment

OPRA – Operator Performance Risk Appraisal

OGN – Operational Guidance Note

OMP – Odour Management Plan

OSB – Oriented Strand Board

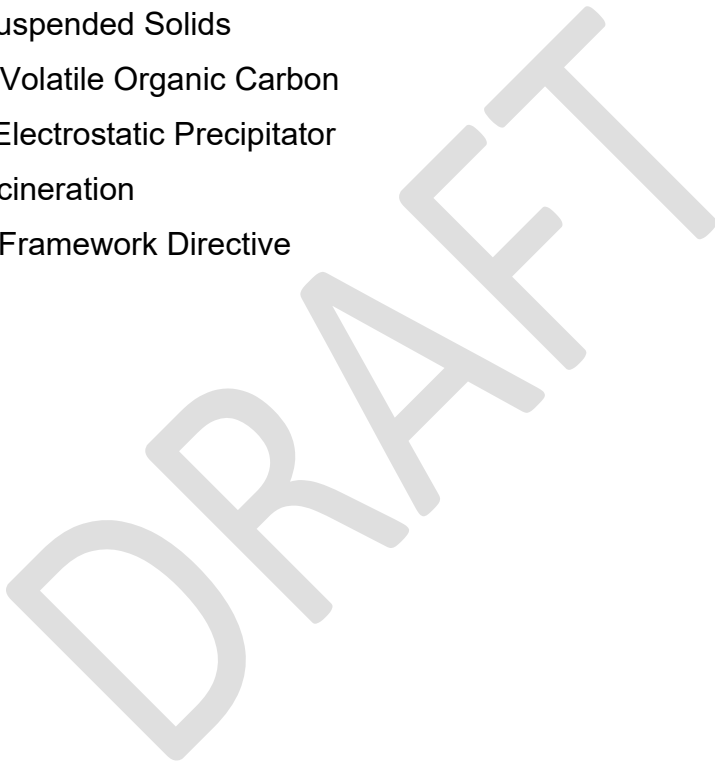
PC – Process Contribution

PEC – Predicted Environmental Concentration

PHW – Public Health Wales

PNEC – Predicted no-effect concentration

PPS – Public Participation Statement
PR – Public register
RGN – Regulatory Guidance Note
RGS – Regulatory Guidance Series
SAC – Special Area of Conservation
SGN – Sector Guidance Note
SMNR – Sustainable Management of Natural Resources
SPA – Special Protection Area
SSSI – Site of Special Scientific Interest
TGN – Technical Guidance Note
TSS – Total Suspended Solids
TVOC – Total Volatile Organic Carbon
WESP – Wet Electrostatic Precipitator
WI – Waste Incineration
WFD – Water Framework Directive



1. Executive summary

1.1. Application Summary

This is a substantial permit variation for the inclusion of an Oriented Strand Board (OSB) manufacturing line at the installation. The variation includes associated storage and chemical usage for OSB production and the addition of two waste codes for materials used in the manufacture of OSB and Particleboard.

Other changes introduced by this variation include:

- the storage and use of hydrogen peroxide for dosing in the Wet Electrostatic Precipitators (WESP) 21 and 32 for the oxidisation of Total Volatile Organic Carbon (TVOC), if necessary for odour abatement.
- the re-establishment and upgrade of two direct dryers (BAB dryers 2 and 3) for the OSB process.
- the inclusion of additional land within the installation boundary for a new north site access road, lorry park and two surface water wetlands;
- a new release point (W2) for uncontaminated surface water runoff from the additional land incorporated into the installation boundary to the north of the existing site;
- changes to the rail unloading and biomass handling and storage arrangements;
- additional raw material storage areas and hardstanding within the log yard; and
- the inclusion of two existing emission points from the Medium Density Fibre (MDF) cyclones from the MDF reject bin and fibre recirculation.

1.2. Our draft decision

Our 'draft decision' is that we are minded to issue the variation for Chirk Particleboard Factory operated by Kronospan Limited. This is a **draft** decision, and the final one is yet to be made. Please refer to section 5 in this document entitled Consultation.

In reaching the final decision we will take into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

2. Receipt of the application

The application was received on 02/01/2024. In order for us to be able to consider the application duly made, we needed more information. We requested the following further information:

- Consideration of applicable cross cutting Best Available Techniques (BAT) other than 'Production of Wood based Panels'.
- the proposal for reinstatement of BAB dryers 2 and 3 as outlined within the operating techniques baseline document.
- the Fire Prevention and Mitigation Plan (FPMP) linked to existing improvement conditions.
- Current non-technical summary regarding off site waste codes.
- Proposed changes to point source emissions to air with reference to existing emission points in the environmental permit.
- Containment and the proposed 'new chemical and fuel containment in respect of Construction Industry Research and Information Association (CIRIA 736) 'Containment systems for the prevention of pollution.

A letter requesting this information was sent to the operator on 05/09/2024. Upon receipt of this information, on 15/11/2024, we were able to consider the application duly made. This means we considered it was in the correct form and contained sufficient information for us to begin our determination, but not that it necessarily contained all the information we needed to complete that determination.

3. Confidential information

The operator made no claim for commercial confidentiality, and we have not received information in relation to the application that appears to be confidential in relation to any party.

4. Legislation

The variation (currently in draft) would be issued, under Regulations 18 and 20 of the Environmental Permitting (England and Wales) Regulations 2016 (EPR). The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an installation as described by the Industrial Emissions Directive (IED) 2010/75/EU;
- a medium combustion plant subject to Schedule 25A of EPR, implementing requirements of the Medium Combustion Plant Directive (MCPD).
- subject to aspects of the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 which also have to be addressed.

We address the legal requirements directly where relevant in the body of this document. NRW is satisfied that the decision on this application is consistent with its general purpose of pursuing the sustainable management of natural resources (SMNR) in relation to Wales and applying the principles of SMNR. In particular, NRW acknowledges that it is a principle of sustainable management to take action to prevent significant damage to ecosystems. We consider that, in issuing the variation a high level of protection will be delivered for the environment and human health through the operation of the Installation in accordance with the permit conditions.

As the EPR regulator for Part A1 installations in Wales, NRW is required to determine any duly made Part A1 permit applications. This means that we must decide either to grant, or to refuse the variation based upon an objective assessment of the proposals

against the detailed legal requirements of EPR. Our public participation statement¹ gives more information on what can, and cannot, be taken into account when making our permitting decision.

The application, and this decision document, only considers the permitting of the facility under EPR as described throughout the document. We only assess the installation and its impacts and cannot take into consideration indirect impacts which are not as a direct result of activity within the installation boundary.

Any proposed development and wider associated activities will be required to be compliant with all relevant and applicable law, for example, environmental law, health and safety law, planning law. This other legislation acts largely independently of EPR (although they may be inter-related). Such other matters are beyond both the scope of this document, and of our regulatory remit and expertise and are not relevant to our EPR permitting decision. Ensuring compliance with all other regulation and obtaining any required consents (for example planning permission) is the responsibility of those undertaking the development and is regulated by the relevant appropriate authority for each.

5. Consultation

5.1. Consultation on the Application

We carried out the initial consultation on the application in accordance with the Environment Permitting Regulations (EPR), our statutory Public Participation Statement (PPS) and our Regulatory Guidance.

A copy of the application is available on the public register for anyone to view and was placed in full on receipt. Once duly made on 15/11/2024 we advertised the application to the public by a notice. The notice was placed on our website directing people to the public register, advising of how they could arrange for copies to be made, if required, and how they can provide comments.

¹ [Natural Resources Wales / Public participation: how you can take part in our permit and licence consultations](#)

We also consulted with the following bodies:

- Health and Safety Executive
- Public Health Wales
- Wrexham County Borough Council - Planning Department
- Wrexham County Borough Council - Environmental Health

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly.

The consultation started on 04/12/2024 and ended on 20/01/2025. Further time was given to the timeline to take into account the Bank Holidays and this was further extended on request.

A summary of consultation comments and our response to the representations we received can be found in Annex 3. We have taken all relevant representations into consideration in reaching our draft decision.

5.2. Draft Permit Consultation

We are now carrying out consultation on our draft decision. This consultation will begin on 06/10/2026 and end on 17/11/2027.

The consolidated permit and decision document is in draft at this stage.

6. Further information received during determination

Further information was requested during the determination in a formal request known as a Schedule 5 Notice under EPR. This required the applicant to provide further information relating to the noise impact assessment (NIA). The NIA needed to consider all the noise resulting from the proposed variation, the existing site and the variation together. This took the form of a re-submitted NIA showing the separate components clearly and then added together to give total site noise. The Schedule 5 Notice was sent on 28/01/2025 with a deadline for response of 27/03/2025. As this request involved an existing permit improvement condition the operator requested an extension to the Schedule 5 Notice deadline to 30/04/2025.

The applicant's response to the Schedule 5 Notice was provided on 29/04/2025. The additional information supplied satisfied the requirements of the Schedule 5 Notice.

An informal information request was made via email on 02/06/2025 for the modelling files associated with the resubmission of the NIA. The noise impact assessment modelling files as requested were provided on 12/06/2025.

An additional Schedule 5 Notice (#2) was sent on the 18/07/2025 for further information on the NIA resubmission. The further information focused around 8 points relating to HGV movements, representative floor heights, representative background sound levels amongst other matters. The full Schedule 5 Notice has been placed on the public register. Also please refer to section 10 in this decision document on noise and vibration. A response to this Notice was received on the 29/09/2025 and was reviewed by NRW modelling specialists.

Another Schedule 5 Notice (#3) was sent on the 31/10/2025 for further information on a variety of matters within the application. Thirteen points relating to emission points, odour management plan, risk assessment around fugitive emissions, existing MDF cyclones of the proposed changes within the main supporting information document amongst other matters. The full Schedule 5 Notice has been placed on the public register. These points have also been discussed in the relevant sections of this decision document for each aspect e.g. assessment of odour impact, air quality or fugitive emissions and noise and vibration. On 10/12/2025 the operator requested an extension to the deadline of the Schedule 5 (#3) response until 19/12/2025 to which NRW agreed.

Schedule 5 Notice (#4) was issued on 6/11/2025 regarding noise this followed the response to Schedule 5 (#2). A meeting was held on 19/11/2025 with an NRW noise specialist and Kronospan's noise consultant Spectrum regarding the further information request. Following this meeting further modelling files were shared with NRW on 28/11/2025 and 11 files of information and data on 8/12/2025.

A response to the Schedule 5 Notice (#3) was received on 19/12/2025 with further clarification made by e-mail on 22/12/2025. The response saw a re-submission of a

number of documents including 'Supporting Information' document revision R5, 'Operating Techniques Baseline' revision R7, Odour Management Plan revision R6, risk assessment concerning odour use of hydrogen peroxide and a revised emission point plan.

An informal information request was sent by e-mail on 6/02/2026 for an updated Particulate Filtration plan and received on 6/03/2026. A follow up e-mail was sent on 19/03/2026 and clarification was received on e-mail on 8/04/2026 regarding the MDF 1 and 2 rejects fibre bin cyclones.

A copy of all the information notices and e-mails requesting further information were placed on our public register as were the responses received. These notices are also incorporated into the status log of the draft permit.

We have carefully considered the application and all other relevant information, and we are now putting our draft decision before the public and interested parties in the form of a draft permit together with this draft decision document.

7. The Installation

7.1. The permitted activities

The regulated facility is currently an installation which comprises of the following activities listed in Part 2 of Schedule 1 to the Environmental Permitting (England and Wales) Regulations 2016:

- S1.1 A(1) (a) – burning any fuel in an appliance with a rated thermal input of 50 or more megawatts
- S4.1 A(1) (a) (ii) - producing organic chemicals containing oxygen
- S4.1A(1) (a) (viii) - producing organic chemicals such as polymers
- S5.1 A(1) (b) - The incineration of non-hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 3 tonnes per hour

- 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.
- S6.6 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.

with the following Directly Associated Activities (DAAs):

- VITS Paper Impregnation Process
- Surface Water Lagoons 1 and 2
- Surface Water Lagoon 3
- Canal Water Treatment Plant
- Laminate (impregnated paper) facing
- Delivery and storage of raw materials to be used in the process
- Handling, processing, and storage of all process wastes and by-products (including fuel and materials for composting).

Together, these listed and directly associated activities comprise the Installation.

7.2 Changes to the installation

Predominantly the variation seeks to add a manufacturing line for OSB as part of the processes at the installation. The existing facility is already permitted for two S6.1A(2)(a) activities under the EPR 2016 for the manufacture of Particleboard and MDF. The manufacturing activity for OSB has been added as a separate activity reference (AR9A) in the draft environmental permit under the following legislation:

- 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.

The variation also introduces two additional resins to the process and paraffin wax for use in OSB manufacturing. The resins and paraffin wax will be sourced off-site rather than manufactured at the installation. One of the resins polymeric methylene diphenyl di-isocyanate (pDMDI) is formaldehyde-free. The use of these new resins is regulated under the installation's primary activity for the installation and falls within the scope of the Production of Wood based Panels BRef. There is an existing DAA for delivery and storage of raw materials used in the process which remains in the permit. This DAA also involves the inclusion of hydrogen peroxide used in the on-site abatement system when necessary for odour minimisation.

The direct dryers (OSB 1 & 2) are included in the following permitted activity:

- S1.1 A(1) (a) – burning any fuel in an appliance with a rated thermal input of 50 or more megawatts

An additional DAA is included for the proposed new wetlands 1 and 2 to serve the north access route, additional biomass storage area and lorry park. The operator proposed a new emission point (W2) for uncontaminated surface water from the wetlands to the Afon Bradley. Please refer to section 10.2 of this document for further information on the assessment of impact on surface and ground water.

The additional DAA added to the draft permit with this variation is:

- Surface Water Lagoons Wetland 1 and 2 – Receipt of surface water from North Access Road, additional biomass storage and lorry park, then discharged to the Afon Bradley via Penstock C.

8. Operation of the installation

8.1. Operator competence

The Environmental Permitting Regulations (EPR) requires us to identify the Operator and make sure they have control over the operation of the installation. The applicant

is the sole operator of the Installation in this instance. We are also satisfied that the Operator is the person who has control over the operation of the Installation should this permit variation be issued; and that they will be able to operate the Installation so as to comply with the conditions included in the permit, if issued. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator².

We also need to assess

- Environment Management Systems (EMS);
- Record of compliance (including relevant convictions); and
- Financial competence (including financial provision for some types of regulated facility).

Relevant Convictions

NRW's COLINS Database was checked, and relevant convictions were found in respect of Kronospan Limited during the determination of this application. When considering a permit application, the operator has to declare any [Relevant convictions for environmental permits - GOV.UK](#).

Record of Compliance

During the determination of this permit application, we acknowledge that we have used our regulatory tools in the form of legal Notices. For example, we served a Suspension Notice on the K7 co-incinerator through our regulation of the site. These tools are available to us to ensure operator permit compliance. Since October 2022 (BW999IG/V008) the operator has had a change in regulator for the entire site and has gone through NRW initiated permit variations against Best Reference Document (BRef) reviews and associated Best Available Techniques Conclusions (BATc's) that introduce tighter permit limits. These permit reviews have included the Large Volume Organic Chemical BRef (LVOC) and most recently in June of 2025 the Waste Incineration BRef review (WI). With this work it also introduces new permit conditions as well as the associated BAT emission limit values (ELV's) from the published documents.

² [RGN 1 Understanding the meaning of 'operator' \(naturalresources.wales\)](#)

Due to our compliance work the operator has also received risk-based scores from NRW for non-compliance against the conditions in the environmental permit. Using our Operational Risk Appraisal (OPRA) we attribute a complexity rating to the site which also considers an operator performance attribute giving us an overall compliance rating. Through NRW categorisation of the installations we regulate, it allows us to understand the amount of regulatory effort required. We recognise that the Operator of the site has a poor compliance rating this has been considered in the determination of this variation in line with NRW regulatory guidance note (RGN) 5: 'Operator competence'.

With a permit variation we consider and review the operators record of compliance and with that how the operator has co-operated in addressing any non-compliance. We have considered the Operators poor performance against the permit, operator co-operation, any relevant convictions along with the environmental impact assessments for the proposed changes and discussed within this document. However, we also need to consider any environmental benefits through this permit variation by way of odour abatement, a new north road access and pre-operational and improvement conditions that aim to address on-going regulatory matters around fire prevention and mitigation, odour assessment and noise providing a stronger regulatory framework for managing the risks. This decision does not bear any influence on any on-going or future enforcement actions.

Financial Provision

The operator has declared they have no current or past bankruptcy or insolvency proceeding against them. There is no known reason to consider that the operator will not be financially able to comply with the permit. The decision was taken in accordance with RGN 5 on Operator Competence³.

8.2. Environmental Management System

The operator has an existing Environmental Management System (EMS) which will be updated to incorporate the changes with this variation if issued. The EMS covers all

³ [regulatory-guidance-note-5-operator-competence.pdf \(naturalresources.wales\)](https://naturalresources.wales/regulatory-guidance-note-5-operator-competence.pdf)

activities regarding this installation and is certified to ISO 14001:2015 which meets the requirements in the NRW “How to comply with your environmental permit” guidance⁴.

We are satisfied that appropriate management systems and management structures are in place as holders of a certified EMS for this Installation, and that sufficient resources are available to the Operator to ensure compliance with all the Permit conditions. Furthermore, we are satisfied that the EMS meets the requirements of BAT 1 for the Production of Wood-based panels BAT Conclusions.

Accident management

To ensure that the Operators management system sufficiently manages the residual risk of accidents, permit condition 1.1.1a requires a written management system which addresses the pollution risks associated with, amongst other things, accidents.

With the application the Operator provided an Environmental Risk Assessment report that included accidents as a consideration, in view of the proposed variation. We have reviewed this document and include a pre-operational condition (PO7) to update the EMS and associated documents such as the accident management plan, prior to the commissioning of the new manufacturing line and associated plant and biomass storage, the direct dryers (OSB 1 and 2) and containment for chemical storage relating to the proposed change.

Fire Prevention and Mitigation

The facility will be operated in accordance with an approved Fire Prevention and Mitigation Plan (FPMP). The FPMP submitted with the variation application (V012) formed part of a number of live improvement conditions from the consolidated permit (V008) for the installation. The operator had sought clarity over the requirements of these improvement conditions (NRW IC44-48) with NRW. On NRW review an update of these conditions has been made with this permit variation to reflect current NRW FPMP guidance. It is expected that a reviewed and revised FPMP will be submitted to NRW for approval on completion of improvement conditions (NRW IC66 and IC67).

⁴ [Natural Resources Wales / Guidance to help you comply with your environmental permit](#)

The amended improvement conditions therefore form part of this determination for the proposed variation and are included in Table S1.3 of the permit, linked to condition 2.4 with a revised NRW IC reference number and deadline for completion. NRW IC44-48 have been superseded by NRW IC66 and IC67 with this decision.

8.3. Operating techniques

Installation activities and assessment of Best Available Techniques

The applicant described the proposed equipment and operating techniques for OSB and compared these against the BAT Conclusions for the production of wood-based panels, published as Commission Implementing Decision (EU) 2015/2119 in the Official Journal of the EU on 20 November 2015.

The operator submitted an Operating Techniques Baseline report (reference S2376-0290-0003RSF Fichtner final revision R7 dated 22/12/2025) which combined the information submitted as part of the consolidated environmental permit (V008) into one document. The proposed changes for this variation application were amended and highlighted in yellow for the proposed variation. Where these elements have been accepted they have been incorporated into the operating techniques table (Table S1.2) of the draft environmental permit linked to the relevant permit conditions listed under 2.3 of that document.

As this proposal is for a substantial variation, a full BAT assessment has been included and can be seen in Annex 4 of this document. The assessment identifies where each BATc has been considered and where it applies in respect of the change.

We have reviewed the techniques proposed and consider them to represent BAT at this installation. We have specified that the applicant must operate the permit in accordance with descriptions in the application. See section 12 of this document for more information on how we have incorporated the variation into the permit and how emission limit values have been set.

Efficient use of raw materials, water and energy

Having considered the information submitted in the application, we are satisfied that the applicant will ensure that raw materials, energy, and water is used as efficiently as possible. The operator holds abstraction licences for 2 boreholes and for the Llangollen Canal. Abstracted water is used within the process and for evaporative cooling water on site. The variation includes around a 5% increase in water consumption which will come from a mixture of abstracted water and towns water supply. The existing abstraction licences have the capacity within the current permissions for the proposed increase.

For the production of wood-based panels we consider BAT 8 'In order to use energy efficiently in the preparation of wet fibres for fibreboard production'. BAT is to use one or a combination of techniques. The operator uses technique a) Cleaning and softening of chips and c) Heat recovery from steam. This variation is not proposing to introduce a new wet fibre manufacturing line.

The operator is required to report energy usage under condition 4.2.2 and Schedule 4 of the permit. This will enable NRW to monitor energy efficiency at the Installation.

The throughput and storage of raw materials will increase on site with this variation. The operator has quantified and assessed all additional raw materials which is tabulated in the Fichtner Consulting Engineers Limited (Fichtner) Supporting Documentation (reference S2376-0290-0004RSF revision R5 dated 19/12/2025) 'Table 2 Raw materials' for this variation and linked to the operating techniques. This has been discussed further under the raw materials section regarding permit conditions.

Avoidance, recovery or disposal of wastes produced by the activities

There is no change to the waste minimisation techniques and storage arrangements currently used on site as a result of this variation.

Having considered the information submitted in the application, we are satisfied that the waste hierarchy referred to in Article 4 of the Waste Framework Directive will be applied to the generation of waste and that any waste generated will be treated in accordance with this Article.

We are satisfied that waste from the Installation that cannot be recovered will be disposed of offsite using a method that minimises any impact on the environment. Permit condition 1.4.1 of the permit will ensure that this position is maintained.

9. The site

9.1. Site Plan

The variation includes an area to the north of the existing installation that will consist of a new access route into the site. At the northern most boundary are wetland areas 1 and 2 with an associated release point W2, to the Afon Bradley for batch discharge of surface water run-off. A lorry park and roundwood storage areas will be located within the site increase to the north. Alongside the rail siding to the west of the site will be a flaker building and wood chip preparation building extension with additional silos for containment. The current mothballed Bab dryers 2 and 3 will be refurbished to serve the manufacture of OSB (renamed OSB dryer 1 and 2 in the draft consolidated permit). Just to the north of the dryers will be the chip bunker also located along the westerly edge of the site. The OSB manufacturing line will be housed in an existing building to the south known as the press hall or particle board production and finishing line hall. The operator has provided an updated site plan (Schedule 7a) which we consider satisfactory, showing the extent of the facility and it is also an updated emission point plan (Drawing Number 7000 /757 draft permit Schedule 7a). Furthermore, an updated Particulate Filtration Points Plan can be seen in Schedule 7b of the draft permit. The updated plans are both included in the draft permit as the operator will be required to carry on the permitted activities within the site installation boundary.

9.2. Site Condition Report

The operator proposed to add land to the facility as part of this variation and provided a description of the condition of that land in a Site Condition Report. We have reviewed

this and consider this description is satisfactory and the baseline for the new area of land for future regulation. The decision was taken in accordance with our guidance on site condition reports – guidance and templates (H5)⁵.

9.3. Site protection: potentially polluting substances and prevention measures

The operator has a duty to ensure that soil and groundwater are protected in order to meet the requirements of Articles 14 (1)(b), 14(1)(e) and 16(2) of the IED. This is delivered through condition 3.2.4.

10. Environmental Risk Assessment

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, water, sewer and generation of waste. All these factors amongst others have been considered during our determination and the relevant risks from this proposal are discussed in this and other sections of this document.

In line with our guidance, the applicant provided an environmental risk assessment with the application which identifies the sources of key risks from the variation, possible pathways and receptors. This risk assessment and further assessments provided are discussed in the various sections in further detail below.

For this particular variation, the principal emissions we have considered are those to air. All process effluent generated by the regulated activities on site is sent to sewer in accordance with existing trade effluent consents granted by Dŵr Cymru Welsh Water (DCWW). Surface water run-off from roof-tops, site roads and the log yard is managed on a batch-discharge basis through holding lagoons into the Afon Bradley via emission point W1. Surface water run off from the increase in the installation boundary to the north of the site has been discussed further in section 10.2 below 'Emissions to Water'.

⁵ [Environmental Permitting Regulations , Guidance for applicants H5, Site Condition Report, Guidance and Template \(naturalresources.wales\)](https://www.naturalresources.wales/guidance-for-applicants/H5-Site-Condition-Report-Guidance-and-Template)

The following sections of this document explain how we have approached the critical issue of assessing the likely impact of the emissions to air from the Installation on human health and the environment and what measures we are requiring to ensure an appropriately high level of protection

Assessment Methodology

The Environment Agency Guidance “Risk assessments for your Environmental Permit” is adopted and used by NRW. The guidance includes the methodology for risk assessment of point source emissions to air, to assess the risk of applications NRW receives for environmental permits. The methodology is set out in the guidance and has the following steps:

- (i) Describe emissions and receptors
- (ii) Calculate process contributions
- (iii) Screen out insignificant emissions that do not warrant further investigation
- (iv) Decide if detailed air modelling is needed
- (v) Assess emissions against relevant standards
- (vi) Summarise the effects of emissions

The methodology uses a concept of “process contribution (PC)”, which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest.

The methodology provides a simple method of calculating PC primarily for screening purposes and for estimating process contributions where environmental consequences are relatively low. It is based on using dispersion factors.

These factors assume worst case dispersion conditions with no allowance made for thermal or momentum plume rise and so the process contributions calculated are likely to be an overestimate of the actual maximum concentrations.

More accurate calculation of process contributions can be achieved by mathematical dispersion models, which consider relevant parameters of the release and surrounding conditions, including local meteorology, these techniques are expensive but normally lead to a lower prediction of PC.

The second stage of the risk assessment methodology considers the Predicted Environmental Concentration (PEC). The PEC is the PC plus the concentration of the substance already present in the environment. It should be noted that background concentration may already include PCs from the site and so double counting needs to be avoided in the risk assessment.

Use of Air Dispersion Modelling

For complex applications, it is usual for NRW to require the Applicant to submit a full air dispersion model as part of their application. Air dispersion modelling enables the process contribution (PC) to be predicted at any environmental receptor that might be impacted by the plant.

Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Standards (ES). ES are described in the Environment Agency (Gov.uk) web guide 'Air emissions risk assessment for your environmental permit'.

The Environment Agency web guide sets out the relevant ES as:

- Ambient Air Directive Limit Values
- Ambient Air Directive and 4th Daughter Directive Target Values
- UK Air Quality Strategy Objectives
- Environmental Assessment Levels

Where an Ambient Air Directive (AAD) Limit Value exists, the relevant standard is the AAD Limit Value. Where an AAD Limit Value does not exist, AAD target values, UK Air Quality Strategy (AQS) Objectives or Environmental Assessment Levels (EALs) are used. The Environment Agency web guide sets out EALs which have been derived

to provide a similar level of protection to Human Health and the Environment as the AAD limit values, AAD target and AQS objectives.

In a very small number of cases, e.g. for emissions of lead, the AQS objective is more stringent than the AAD value. AAD target values, AQS objectives and EALs do not have the same legal status as AAD limit values, and there is no explicit requirement to impose stricter conditions than BAT in order to comply with them.

However, they are a standard for harm and any significant contribution to a breach is likely to be unacceptable.

At stage one PCs are screened out as Insignificant if:

- the long-term process contribution is less than 1% of the relevant ES; and
- the short-term process contribution is less than 10% of the relevant ES.

The long term 1% process contribution insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality;
- The threshold provides a substantial safety margin to protect health and the environment.

The short term 10% process contribution insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions;
- the threshold provides a substantial safety margin to protect health and the environment.

Where an emission is screened out in this way, we would normally consider that the Applicant's proposals for the prevention and control of the emission to be BAT. That

is because if the impact of the emission is already insignificant, it follows that any further reduction in this emission will also be insignificant.

However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedances of the relevant ES are likely. This is done through detailed audit and review of the Applicant's air dispersion modelling taking background concentrations and modelling uncertainties into account.

Where an exceedance of an AAD limit value is identified, we may require the Applicant to go beyond what would normally be considered BAT for the Installation or we may refuse the application if the applicant is unable to provide suitable proposals.

Whether or not exceedances are considered likely, the application is subject to the requirement to operate in accordance with BAT. This is not the end of the risk assessment, because we also take into account local factors (for example, particularly sensitive receptors nearby such as SSSIs, SACs or SPAs). These additional factors may also lead us to include more stringent conditions than BAT.

If, as a result of reviewing the risk assessment and taking account of any additional techniques that could be applied to limit emissions, we consider that emissions would cause significant pollution, we would refuse the Application.

In the second stage of screening if both of the following requirements are met then no further assessment of the substance is required. Detailed modelling of emissions is needed that do not meet both of the following:

- the short-term PC is less than 20% of the short term [environmental standards](#) minus twice the long-term background concentration
- the long-term PEC is less than 70% of the long term [environmental standards](#)

10.1. Assessment of impact on air quality

This section of the decision document deals primarily with the detailed dispersion modelling of point source emissions to air and its impact on local air quality. The applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon human health in line with relevant guidance⁶.

This variation to the existing permit involves the recommissioning and upgrading of two previously mothballed direct dryers (BAB dryer 2 and BAB dryer 3) which will be brought into operation as OSB Dryer 1 and OSB Dryer 2. The emissions from the direct dryers will be routed to WESP 32 for abatement prior to release to atmosphere. The WESP32 currently receives emissions from the press abatement system (A31) and from the re-ducted A5 and A6 emission points, all of which operate under established emission limit values for particulate matter (PM₁₀ and PM_{2.5}), total volatile organic compounds (TVOC), and formaldehyde (CH₂O). With the introduction of the two direct dryers (OSB 1 and 2) and the additional line from the OSB press abatement, the proposal will result in a change in emissions of Oxides of Nitrogen (NO_x), particulate matter (PM₁₀ and PM_{2.5}), total volatile organic compounds (TVOCs) and formaldehyde (CH₂O). Two pre-operational conditions (PO3 and PO4) concerning OSB Dryer 1 and OSB Dryer 2 have been included in the draft permit regarding their commissioning and operating procedures being in place before use.

The air quality risk assessment and associated dispersion modelling considers both standard and non-standard operating scenarios. The operator's assessment of the impact of air quality is set out in the Kronospan Dispersion Modelling Assessment Report by Fichtner (ref: S2376-0290-0005RSF R2 dated 21/12/2023).

Air dispersion modelling software ADMS6 was used to model the predicted Process Contributions (PCs) from point source emissions for the whole site at the relevant long-term or short-term emission limit values, i.e., the maximum permitted emission rate. No air quality management areas (AQMAs) have been declared within an area likely to be affected by emissions from this installation.

⁶ [Air emissions risk assessment for your environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit)

Sources of emissions within the model are based on the installation operating continuously, 100% of the time 24 hours a day 365 days per year, at the permitted limits for both new and existing emissions. This is a conservative assumption or worst-case scenario as none of the sources modelled operate 100% of the time. NRW are in agreement with this approach to the modelling. The assumptions underpinning the model have been checked and are considered reasonably precautionary. The way in which the applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by NRW modelling specialists to establish the robustness of the applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts.

The applicant has calculated process contributions (PC) and predicted environmental concentrations (PEC) at locations within the immediate vicinity, and all identified sensitive receptor locations. The modelling results for each pollutant will be discussed separately below.

NRW regulates the installation under EPR and has a statutory role in the protection of the environment and human health from the processes and activities it regulates. Comparing the results of the air dispersion modelling against European and national air quality standards effectively makes a health risk assessment for those pollutants for which a standard has been derived.

The air quality standards (AQS) have been developed to protect human health via known intake mechanisms such as inhalation and ingestion. As part of our determination, we consulted the Local Authority, and PHW. We also consult local communities.

This part of our decision document should be read in conjunction with the Fichtner air dispersion modelling report. The assessment comprises of:

- Dispersion modelling of emissions to air from the operation of the entire installation.

- A study of the impact of emissions on nearby sensitive receptors, including human receptors and habitat / conservation sites.

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the entire installation and its impact on local air quality. The impact on conservation sites is considered in section 11 of this document.

Nitrogen Dioxide (NO₂)

The impact on air quality from NO₂ emissions has been assessed against the ES of 40 µg/m³ as a long-term annual average and a short-term hourly average of 200 µg/m³ (justified through the consideration of the background concentrations of sulphur dioxide and ozone being below the respective critical levels). The model assumes a 70% NO_x to NO₂ conversion for the long term and 35% for the short-term assessment in line with Environment Agency guidance on the use of air dispersion modelling.

For standard and non-standard operations, the long and short-term were considered. The maximum off-site long term Process Contribution (PC) under normal operating conditions is modelled at 7.01 µg/m³. At 17.5% of the 40 µg/m³ AQS, this is greater than 1% of the AQS [environmental standards](#) screening threshold and therefore cannot be screened out as insignificant. However, when existing NO₂ background concentrations are added to the annual mean PC to give the Predicted Environmental Concentration (PEC), the PEC is 44.6% and < 70% of the annual AQO/EAL or AQS. The maximum predicted annual (long-term) NO₂ process environmental contribution (PEC) at sensitive receptors is 44.2% and < 70 % of the AQS. Therefore, the annual AQS is unlikely to be exceeded at any off-site location and can be considered not significant.

The maximum off-site predicted hourly (short-term) Process Contribution (PC) under normal operating conditions is modelled at 51.32 µg/m³. At 25.6% of the 200 µg/m³ AQS, this is greater than 10% of the AQS and therefore cannot be screened out as insignificant so we need to consider the Predicted Environmental Concentration (PEC). In line with current guidance, it has been assumed that short-term background values are twice the long-term background values.

When existing NO₂ background concentrations are considered with the Predicted Environmental Concentration (PEC). The maximum predicted hourly (short-term) NO₂ process environmental contribution (PEC) at sensitive receptors is 28.9% of the AQS. Therefore, the AQS is unlikely to be exceeded at any off-site location and can be considered not significant. When considering the whole site emissions therefore we have concluded from the review of the detailed modelling that there will be no exceedance of an AQO or EAL at any receptor.

VOC: Formaldehyde (CH₂O).

The impact on air quality from formaldehyde emissions (a specific type of VOC) has been assessed against the ES of 5 µg/m³ as a long-term annual average and a maximum 30-minute average of 100 µg/m³. Again, both standard and non-standard operations were considered and a worst-case scenario in the modelling predicted.

The maximum off-site long term Process Contribution (PC) under normal operating conditions is modelled at 1.1 µg/m³. At 22 % of the 5 µg/m³ AQS, this is greater than 1% and therefore cannot be screened out as insignificant. However, when existing background concentrations are added to the annual mean PC to give the Predicted Environmental Concentration (PEC), the PEC is 42% and <70% of the annual AQO/EAL or AQS. The maximum predicted annual (long-term) CH₂O process environmental contribution (PEC) at sensitive receptors is 41.4% and < 70 % of the AQS. Therefore, the annual AQS is unlikely to be exceeded at any off-site location and can be considered not significant.

The maximum off-site predicted 30-minute (short-term) Process Contribution (PC) under normal operating conditions is modelled at 31.08 µg/m³. At 31.1% of the 100 µg/m³ AQS, this is greater than 10% of the AQS and therefore cannot be screened out as insignificant. However, when existing CH₂O background concentrations are added to the short term mean PC to give the Predicted Environmental Concentration (PEC), the PEC is 33.1% and < 70 % of the short term AQO/EAL. The maximum predicted 30-minute mean (short-term) CH₂O process environmental contribution (PEC) at sensitive receptors is 19.6% and < 70 % of the AQS. Therefore, the annual

AQS is unlikely to be exceeded at any off-site location can be considered not significant.

Other VOCs

Primarily the origin of the Total VOC in the emissions to air is from the formalin and resin plants and production lines. Gaseous compounds from the wood (particleboard, MDF and OSB) are dried during the manufacturing process. An Environmental Standard for Xylene has been used in line with the original application (EPR/BW9999IG) in 2004 for the formaldehyde and resin plant. For background VOC concentrations the monitored concentration at the AURN has been used at $1\mu\text{g}/\text{m}^3$ in the dispersion modelling and this was considered reasonable in the assessment. The Environmental Assessment Levels (EAL) for Xylene (o-, m-, p- or mixed isomers) are: $4,410\mu\text{g}/\text{m}^3$ (annual) and $66,200\mu\text{g}/\text{m}^3$ (hourly). From the modelling the maximum annual mean process contribution (PC) for TVOC is $12.89\mu\text{g}/\text{m}^3$ and found to be 0.3% of the AQAL. For maximum daily mean (short-term) the process contribution was modelled at $131.05\mu\text{g}/\text{m}^3$ and found to be 0.1% of the AQAL so it can be screened out as insignificant.

Particulate matter PM10 and PM2.5

The impact on air quality from particulate emissions has been assessed against the ES for PM₁₀ (particles of 10 microns and smaller) and PM_{2.5} (particles of 2.5 microns and smaller). For PM₁₀, the ES are a long-term annual average of $40\mu\text{g}/\text{m}^3$ and a short-term daily average of $50\mu\text{g}/\text{m}^3$. For PM_{2.5} the ES of $20\mu\text{g}/\text{m}^3$ as a long-term annual average Limit Value from the Ambient Air Directive has been used.

The Applicant's predicted impact of the Installation against these ESs is presented in the Fichtner Dispersion Modelling Assessment, the assessment assumes that all particulate emissions are present as PM₁₀ for the PM₁₀ assessment and that all particulate emissions are present as PM_{2.5} for the PM_{2.5} assessment.

The above assessment is considered to represent a worst-case assessment in that: -

- It assumes that each item of plant (including all the dust units) emits particulates continuously at the ELVs / (manufacturer's guarantee for the dust units) whereas actual emissions can be expected to be lower, as the operational loading of each process is below 100% and each source operates below the ELV.

The maximum predicted annual PM₁₀ PEC (including dust units) at sensitive receptors is 50.0% of the AQS. The maximum predicted PEC (including dust units) at sensitive receptors is 79.5% of the AQS. The maximum predicted annual PM_{2.5} PEC (including dust units) at sensitive receptors is 79.5% of the AQS. It should be noted that the maximum PEC on the grid does exceed the AQS for daily PM₁₀ and the annual AQS for PM_{2.5}. However, it should be noted that this is not at an identified human receptor (just outside installation boundary). It is also assumed that all plant will be operating at the maximum ELV continuously which is conservative as a scenario. The proposal does not breach the AQS for particulates, and we are satisfied that the relevant ELV placed in the permit is appropriate.

Predicted Process Contributions (PCs) cannot be screened out as insignificant for any pollutant as they exceed the screening thresholds. However, when background is taken into consideration and the Predicted Environmental Concentration (PEC) is calculated, the overall impact is less than the Air Quality Objective AQO / Environmental Assessment Level (EAL) AQO/EAL at all human receptors.

Emission limits

Article 14(3) of IED states that BAT conclusions shall be the reference for permit conditions. Article 15(3) further requires that under normal operating conditions; emissions do not exceed the emission levels associated with the best available techniques laid down in the decisions on BAT conclusions.

This variation introduces the BAT ELV's associated with emissions from OSB manufacturing at emission point A28 although at tighter limits than in the BAT conclusions for NO_x and particulates. With this variation therefore the volumetric flow of emissions (or "duty") on WESP 32 (A28) was considered in the dispersion modelling. In order to identify the primary BRef and associated BAT emission limit

values at WESP 32 (A28) a percentage breakdown of the volumetric flow shows the wood panel BRef is primary and needs to be considered at this point source emission. The Large Volume Organic Chemicals (LVOC) BRef and Common Waste Water and Waste Gas Treatment (CWW) BRef were also used to set the ELV's for WESP 32 (A28) and limits associated with CWW and LVOC remain unchanged. We have reviewed the emissions limits in the existing permit to ensure they reflect primary, secondary and any cross cutting BRefs that apply to the installation.

We have decided that emission limits should be set for the parameters listed in the permit. As part of the permit variation and consolidation we have.

- i) Retained the emission limit values (ELV) on A28 (WESP32) for press abatement taking emissions from A31 and re-ducted A5 and A6 amended by variation EPR/BW9999IG/V10. Formaldehyde is unchanged at 5 mg/l in line with the Large Volume Organic Chemicals (LVOC). Furthermore, the formaldehyde limit on A31 is 5mg/l and further abated before emission point A28 through WESP32. This is also consistent with the assessed air dispersion model submitted with this application which used an ELV of 5mg/m³ for the combined emissions.
- ii) Included the BAT-AEL's from the wood panel BAT conclusions for OSB at emission point A28 from the WESP 32 abatement when direct dryers OSB dryer 1 and dryer 2 are in operation. The ELV's at emission point A28 have therefore been split for monitoring purposes.
- iii) Retained the emission limit values on A31 for MDF1, MDF 2, Particleboard, OSB, Controll for the combined press abatement system stack.
- iv) Include Oxides of Nitrogen (NO & NO₂ expressed as NO₂) at A28 with no limit for when the direct dryers OSB 1 & 2 are off as there should be nil present.
- v) The applicant has advised that an emission limit value lower than the upper BAT-AEL limit of 250mg/Nm³ for NO_x is achievable for the emissions to air from the OSB directly heated dryers at 200 mg/Nm³. This is also reflected in the dispersion modelling at the lower value. A 200 mg/Nm³ ELV has therefore been imposed by the environmental permit.

- vi) TVOC and Formaldehyde ELVs associated with OSB production A28 have been included in the permit at 400 mg/Nm³ and 20 mg/Nm³ respectively in line with the BAT-AEL's outlined in the BATc for the Wood panel BRef for emissions to air from the dryers and combined treated emissions from the dryers and the press.
- vii) For OSB production, an emission limit value lower than the upper BAT-AEL limit of 30mg/Nm³ for particulates (PM₁₀ and PM_{2.5}) is achievable for the emissions to air from combined treated emissions from the dryer and the press at 20 mg/Nm³. This is also reflected in the dispersion modelling at the lower value. A 20 mg/Nm³ ELV for particulates has therefore been imposed by the environmental permit.
- viii) Removal of Table 3.6 as the parameters have now been included in S3.3 as part of the NRW permit review for waste incineration in June 2025.
- ix) Removal of monitoring parameters on A5 and A6 as procedures are now in place with NRW IC55 in the event of WESP 32 offline. Should WESP 32 be offline this will mean the shut down of the reactions for A5 Resin VITS 3,5, Paper Impregnation Plant and Resin VITS 4 Paper Impregnation Plant. The NAIRB's have been decommissioned with the reducing of A5 and A6 to WESP32.

Emission point A28 WESP 32 OSB Dryer 1 and OSB Dryer 2

The following BAT AEL's have been introduced for OSB manufacturing as part of this variation:

Parameter	BAT AEL (mg/Nm ³)	Draft ELV (mg/Nm ³)
Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	250	200
TVOC	400	400
Formaldehyde	20	20
Particulates (PM ₁₀ PM _{2.5})	30	20

Emission point A28 at the WESP 32 press abatement (taking emissions from A31 and re-ducted emission points A5 & A6 (amended by variation BW9999IG/V010)). The following existing limits remain unchanged with addition of NOx to demonstrate OSB Dryer 1 and OSB Dryer 2 are switched off. Emission limits at A31 remain unchanged.

Parameter	Existing ELV (mg/Nm ³)	Draft ELV (mg/Nm ³) remain unchanged addition of NOx
TVOC	30	30
Formaldehyde	5	5
Particulates (PM10 PM 2.5)	15	15
Oxides of nitrogen (NO & NO ₂ expressed as NO ₂)	N/A	-

- x) W2 is for surface water only however some parameters have been added to reflect the wood panel BRef as it is typical for run off from a log yard see section 10.2.

It is considered that the ELVs described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured. We have imposed a stricter ELV than those defined as BAT in respect of NOx and particulates as it can be achieved and modelling requires it in order to protect human health and the environment.

Based upon the information in the application and the measures that will be imposed by the permit we are satisfied that the appropriate measures will be in place to protect air quality for the environment and human health.

10.2. Assessment of impact to surface and ground water

The proposal includes a direct discharge of uncontaminated surface water / rainwater run off from surfaces and roofs to the Afon Bradley. A new release point W2 will serve two proposed wetland areas (Wetland 1 and Wetland 2) or retention basins for removal

of solids by sedimentation. This is in line with BAT 25 (in order to reduce emissions to water from surface water run-off water, BAT is to use a combination of techniques) where oil separation and sedimentation is considered BAT.

For the management of surface water run-off from outdoor areas such as log yards. The collection of surface water and monitoring prior to discharge is usual for installations captured under the wood panel BRef with monitoring of parameters of total suspended solids (TSS) and Biological Oxygen Demand (BOD). Hydrocarbons namely oil and grease may also arise from traffic areas, and this instance could come from the proposed north access road and lorry park. The operator confirmed in a request for further information response to NRW on 15/11/2024 (letter dated 14/11/2015) that 2 x class 1 oil interceptors will serve the lorry park, one will be installed prior to the wetlands and the second prior to any controlled discharge via W2. In line with the wood panel BRef should variability of the composition of the surface water run off arise due to weather conditions or volumes of raw materials in the yard the monitoring frequency may increase as a precautionary measure. Although the operator has indicated that the discharge (W2) is for uncontaminated surface water, due to the storage of wood in the additional land for inclusion with this variation, NRW has set emission limit values for surface water in the permit namely Total Suspended Solids which is typical of surface water run off from a log yard as described in the BRef document for outdoor areas.

The proposed parameters and emission limit values imposed by the permit variation are outlined in Table S3.5. A BAT-AEL has been set for total suspended solids in-line with the limit for the existing discharge point W1. We are in agreement with the approach to include monitoring parameters as a precautionary measure on W2.

We have included Biological Oxygen Demand (BOD) as is usual for discharges that fall under the wood panel BRef for surface water run-off from a log yard. We have added a pre-operational condition (PO5) along with an associated improvement condition (NRW IC64) in respect of discharge point W2, as the wetlands are yet to be constructed. The operator made a commitment in the application for the emergency procedures and plans to be updated in respect of the north road once built. As the

discharge is for uncontaminated surface water run off only, with appropriate measures in place in line with BAT, no further assessment is required at this stage.

10.3. Emissions to sewer

The operator holds a Dŵr Cymru Welsh Water (DCWW) trade effluent consent with the relevant sewerage undertaker. Currently process effluent generated at the installation is discharged to sewer under the DCWW trade effluent consent. There is no proposed change to the existing consent as part of this variation.

10.4. Fugitive emissions

The applicant has identified fugitive emissions in their environmental risk assessment associated with this variation. The application details measures which will be in place for preventing and minimising the fugitive emissions. The list of potential sources and associated risks is not exhaustive due to the unconstructed status of the new chemical store and dust filter boxes for example. The application identifies preventative maintenance and leak detection on tanks and procedures linked to the certified EMS to manage such risks.

The existing installation operates under a dust management plan that forms part of the site EMS, as required by the permit. An updated version of this plan, incorporating the new manufacturing line, was submitted with the application. Although the plan is not reproduced here, it includes a risk-based assessment of dust sources, pathways, and receptors for each department within the installation. As the OSB manufacturing line has not yet been constructed, an improvement condition has been included in the draft permit requiring the operator to review and update the dust management plan. This will ensure it remains current and includes, for example, all relevant dust filter references that have yet to be added (NRW IC69).

We are satisfied that chemicals will be stored appropriately, using bunding and other containment measures to ensure effective environmental protection. These controls significantly reduce the potential for accidents and associated environmental impacts. All storage tanks will be bunded to 110% of their capacity and positioned on concrete hardstanding. Both the tanks and the associated containment areas will be subject to

routine maintenance inspections as part of the site's Environmental Management System (EMS).

In a Schedule 5 response dated 19/12/2025, the operator advised that the new tanks for chemical and reagent storage would not be fitted with pressure relief valves, as they will operate within a closed-loop system designed to recirculate the raw material and maintain it in a liquid state. The presence of moisture within the system would cause the raw material to solidify; therefore, breather valves will be installed during construction to filter out any dirt particles and moisture that could otherwise be drawn into the system. A pre-operational condition (PO2) has been included regarding new chemical and fuel storage as it is yet to be constructed. The new raw materials brought about by this variation are 2 new resins pMDI, PF, melted paraffin wax and hydrogen peroxide for odour abatement. Table 3 of the application supporting document outlines the new chemical containment for the new chemicals and reagents, this has not been replicated here.

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise fugitive emissions and to prevent pollution from fugitive emissions.

Permit condition 3.2.1 requires that emissions of substances not controlled by emission limits (i.e., fugitive emissions) shall not cause pollution. Condition 3.2.2 requires that a management plan shall be developed if pollution is subsequently identified.

10.5. Assessment of odour impact

There are sensitive receptors within the vicinity of the installation. The operator has used Horizontal Guidance Note H4 Odour Management for the drafting of the site odour management plan (OMP). Representative receptor locations were identified in line with the guidance. For this installation several receptors were located within Chirk located to the east of the site. The OMP receptors used were also consistent with those in the air quality assessments.

Potential sources of odour both from the existing installation and processes associated with the proposed variation were identified and an environmental risk assessment considering odour was also provided.

Potential sources of odour were identified by the various management departments of the site. For the OSB department the following potential odour sources were identified in the OMP:

- Board stuck in press
- Press abatement system – wet scrubbers serving OSB press
- WESP- abatement equipment for OSB Driers

This list is not exhaustive and due to the pre-operational status of the OSB manufacturing line, chemical store and OSB dryer 1 and OSB dryer 2, An associated improvement condition (NRW IC71) relating to the existing OMP, has been included in the permit. This is to ensure that all necessary considerations and steps are taken to minimise the potential for off-site odours. NRW deems a review of the OMP is needed to further consider potential odour sources and include in particular the new fuel and chemical store and effectiveness of the onsite abatement to minimise odours.

The application details measures in the risk assessment for preventing and minimising odour pollution. WESP technology is considered a BAT technique and will be utilised as abatement to minimise odour. Regular maintenance is essential to maximise the effectiveness of the abatement technology. Should a fault be identified with the WESP abatement the process will be stopped and reported in line with the environmental permit. WESP 32 has been added to permit condition 4.3.3.

In the OMP submitted with the application the applicant acknowledged that odour dispersion modelling is necessary to quantify the likelihood of impact on air quality. Improvement condition NRW IC71 therefore includes the requirement for a full odour assessment for the installation. NRW receives complaints of odour in respect of the installation and therefore this improvement condition is deemed appropriate to better understand any impact on air quality.

We have compared the measures proposed to minimise odour for the site against the relevant BAT standards and the H4 odour management guidance. We are satisfied the techniques represent appropriate measures for the installation. The revised OMP will be incorporated into the operating techniques section of the permit following the completion of NRW IC 71. As an operating technique in Table S1.2 of the permit, the odour management plan is directly linked to the conditions in the permit.

Permit condition 3.3.1 in the permit also requires that emissions from the activities are free from odour at levels likely to cause pollution outside the site. We are satisfied that this will be sufficiently protective in conjunction with the measures described by the applicant for minimising odour at the installation along with pre-operational condition PO8 and improvement condition NRW IC71.

10.6. Noise and vibration assessment

The Noise Impact Assessment (NIA) as submitted with the application presented the potential impact from the proposed variation in isolation of any existing noise impact. A Schedule 5 Notice (#1) for further information relating to noise was issued to the operator on 28/01/2025 with a deadline for a resubmission of the NIA by 27/03/2025. The Notice stated that the NIA must consider all the noise resulting from the proposed variation, the existing site, and the variation together. The assessment needed to show the components clearly and then add them together to give a new total for site noise at receptors. The impact assessment could then be based on this new value, known as the 'specific level' in BS 4142:2014 + A1 2019 'Methods for rating and assessing industrial and commercial sound'. The Notice was placed on the public register and a response following an extension request by the operator was received on 29/04/2025 Noise Impact Assessment (Spectrum Acoustics Limited (Spectrum) Report Reference CJA 4831/23241/Rev 2 dated 13/04/2025 & Noise and Vibration Consultants Limited (NVC) Report No.: R25.0405/DRK dated 22/04/2025).

On 18/07/2025 a Schedule 5 Notice (#2) for further information was issued to Kronospan Limited with a deadline of 26/08/2025. The full information request can be found on the NRW public register. The notice requested that the operator needed to provide a BS4142 assessment for total site noise. The notice made eight points in total

and made comment on confirmation of HGV movements and in particular their speed around the site, background sound levels at each assessed receptor location, predicted sound pressure levels representative of floor heights and consideration of a single sound propagation modelling software to facilitate the assessment. On 5/09/2025 the operator requested an extension for the response to the Notice to 2/10/2025 to which NRW agreed. However, further information was provided on 29/09/2025 and an updated NIA (Report No.: NVC R25.0405/R1/DRK dated September 2025). Noise modelling files were submitted on 10/10/2025.

Following a review of the re-submitted NIA from two noise consultants on behalf of Kronospan Limited another Schedule 5 (#4) Notice requesting further information was issued to the operator. A copy of the Notice issued on 6/11/25 can be found on the NRW public register and focused on seven points. In the main NRW requested calculations based on ISO 9613:2024 'Acoustics Attenuation of Sound during Propagation Outdoors Part 2 Engineering method for the prediction of sound pressure levels outdoors' rather than ISO 9613:1996 for use in the full BS4142 noise assessment. The new standard BS ISO 9613-2 2024 contains updated technical guidance and cancels and replaces the first edition ISO 9613:1996.

We received a response to the Schedule 4 (#4) notice on 8/12/2025 from one of the operator's noise consultants which included an updated NIA (NVC Report No.: R25.0405/R2/DRK date November 2025) along with the associated noise modelling files. The details of these reports have not been replicated here or our full assessments, but summarised. The documents in full are on the NRW public register.

British Standard 4142:2014+A1:2019 sets out the method for rating and assessing industrial and commercial sound by comparing the rating level from the source with the background sound level (LA90) at noise-sensitive receptors to determine the likely impact. For EPR applications, this remains the expected approach for noise impact assessment with the UK regulators 2023 Method Implementation Document for BS 4142.

BS 4142:2014+A1:2019 assesses the likelihood of significant adverse impact by subtracting the measured background noise level from the rating level:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact.
- A difference of around +5 dB is likely to be an indication of an adverse impact.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

Following the issue of the consolidated permit (V008), the operator was subject to an ongoing improvement condition (IC40) requiring the establishment of a true background sound level for the existing site. This variation application (V012) was submitted before this work was completed, which complicated the assessment of this aspect of the variation determination.

Modelling of the existing site and proposed variation was conducted by two independent consultancies using two different noise propagation models. The existing operating scenario NIA was modelled using iNoise, while the proposed operating scenario submitted was modelled using CadnaA software. This also over complicated the assessment and increased further levels of uncertainty associated with predicted impacts.

Twelve receptors were used around the site for inclusion in the sound propagation modelling (Figure 1 in the NIA). Based on NRW review of the surrounding area carried out using Ordnance Survey basemaps, the selection of the receptors was considered reasonable.

The NIA states that the Kronospan Limited site operates 24 hours a day 7 days a week as a worst-case scenario. Based on the hours of operation, the assessed impacts included receptors for both the daytime and night-time reference periods as defined in BS 4142:2014+A1:2019, which NRW again considered reasonable.

Several noise monitoring surveys were carried out around the Kronospan Limited site in the years 2021, 2022 and 2024. The applicant has indicated that these surveys

were undertaken during varying operational phases of the installation, including partial shutdowns. The 2021, 2022 and January 2024 noise surveys included noise contributions from the Kronospan site at the measurement location(s). Table 4.1 of the NVC report presents information from noise monitoring surveys undertaken prior to May 2022. NVC have classified this data as “*contextual baseline*” i.e. whilst Kronospan Limited was operating.

In Table 4.1 under the column titled “*Subjective Description of Noise Climate (2021 & 2022)*”, a number of descriptions state that “*No significant noise from Kronospan was perceptible*” and “*was barely audible*” and “*noise was barely perceptible*”. Therefore, as the existing site was audible, this does not meet the criteria for background sound level (LA90) as defined in BS 4142:2014+A1:2019.

A more recent (2024) noise survey (entitled: Kronospan Chirk, Maesgwyn Farm, Wrexham LL14 5NT Environment Agency Permit: BW9999IG Baseline environmental noise measurements during partial shutdowns in 2024 Report ref. CJA4897/23241/Rev 0, Spectrum Acoustics Ltd - 18/02/2025) was undertaken during a partial shut-down of the installation. Attended and unattended measurements were taken at four locations. The report notes that at all four measurement locations, during both day and night-time reference periods, attended observations indicated that Kronospan plant noise was audible to varying degrees at the monitoring locations.

The survey report proposes “*estimated background (LA90, T) levels*” for day and night-time periods at the four measurement locations which have subsequently been used to estimate ‘*Baseline Sound excluding Kronospan*’ at an additional eight receptor locations. These are presented in Table 4.5 of the submitted NIA and an explanation as to how they have been derived is included in paragraph 4.2.24 of the submitted NIA report. Whilst it states that these values have been derived using professional experience and judgement, they are not true, measured background sound levels (in accordance with guidance), and as such there is a degree of unquantified uncertainty associated with the estimated background values which will be reflected in the presented results. True, measured background sound levels at representative receptors, without contribution from the operational site needs to be worked on. If it is determined that this approach is unfeasible, potential surrogate measurement

locations must be investigated to obtain background measurement free from operational site contributions.

NRW modelling checks broadly agreed with the results presented in Tables 6.1 & 6.2 (proposed variation sources). Whilst some of our predictions vary slightly, this does not change the overall conclusions of the submitted assessment. When comparing the predicted specific sound level of the variation to the 'Baseline sound excluding Kronospan' we agree that there is likely to be a low impact during the daytime reference periods associated with the variation noise and a low to significant adverse impact during the night-time reference period. When comparing the predicted specific sound level of the variation noise sources to the 'Contextual Baseline Sound', the impacts are lower and show that the impact is predicted to be low during both the daytime and night-time reference periods, however, the 'Contextual Baseline Sound', includes noise contributions from the existing Kronospan site, so does not represent background sound levels as defined by published guidance.

The NIA presents proposed mitigation measures for a variety of sources associated with the variation. Modelled sound power levels have been derived based on the assumption that plant is designed to meet, or is limited to, a defined specification. The validity of the NIA predictions and subsequent conclusions relies on the ability of the applicant to achieve these design criteria and limits.

We re-iterate that the modelling of the existing site and the proposed variation was undertaken by two independent acoustic consultancies on behalf of the operator, each employing different noise propagation models. Following the first NRW Schedule 5 Notice requesting further information, NRW confirmed that, in accordance with recognised noise impact assessment guidance, it was acceptable for the NIA to incorporate contextual baseline sound levels and estimated baseline sound levels within the modelling. In recent years several monitoring surveys have been undertaken during different operational phases of the Kronospan site. In 2024 a survey was undertaken by Spectrum Acoustics Ltd) during a partial shut-down of the site. Due to the on-going work linked to NRW IC40 it was agreed that the use of surrogate or proxy location could be used as allowed by the BS 4142:2014+A1:2019 assessment guidance.

From our assessment we can conclude that the use of these baseline inputs inevitably introduces a degree of uncertainty, and this needs to be considered within the assessment. In addition, the application of two different propagation modelling software packages introduced a further layer of uncertainty. When combined with the reliance on contextual and estimated baseline sound data, these factors contribute to an increased overall uncertainty associated with the predicted noise impacts.

There are sensitive receptors within the vicinity of the installation, and twelve receptors were included in the propagation modelling. The modelled noise impacts for the proposed variation ranged from low to significant adverse during the daytime, and from adverse to significant adverse during the nighttime period. These outcomes must be interpreted in the context of both the contextual elements considered and the inherent uncertainties within the modelling. This has resulted in a pre-operational condition in the permit to ensure that BAT is met for noise. Please see pre-operational condition (PO6) where the operator needs to undertake a BAT review and assessment against all site noise sources and mitigation measures for approval prior to the manufacturing of OSB.

The Noise Impact Assessment (NIA) represents a worst-case scenario, assuming continuous operation of the site over a 24-hour period, seven days a week, in accordance with the requirements of BS 4142:2014+A1:2019. This approach is precautionary but introduces additional uncertainty when compared with actual operational patterns.

Contextual factors are also very relevant to the assessment and in the determination of this element of the change. The proposed variation includes the introduction of a northern access road, which will alter vehicle movement patterns by bringing traffic within the installation boundary and routing it through a new northern entrance to the site. Currently vehicles enter the site through Chirk with heavy goods vehicles regularly passing through the town. This change in site access arrangements has the potential to influence the distribution and character of noise emissions across the site and therefore forms an important part of the overall impact evaluation.

As part of the determination of this aspect of the variation, it was considered appropriate to include a pre-operational condition (PO6) in the draft permit (V012) relating to noise, due to the status of NRW IC 40 and the conclusions of our review of the noise impact assessment during this determination. These conditions will need to be met before OSB manufacturing can take place at the installation. Conditions under 3.4 Noise and Vibration also remain in the permit and are still most relevant. An updated noise and vibration management plan will need to be submitted to NRW following the BAT review required by PO6. Regarding vibration large plant is fitted with continuous vibration monitoring which shuts it down to prevent excess vibration. This is considered to be in line with BAT. Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where not practicable to minimise the effects of vibration.

11. Impact on European Sites, SSSIs and non-statutory sites

The applicant has used the relevant screening distance criteria to identify relevant protected conservation sites which could be at risk from the proposal. We are in agreement with the screening distances used for the European Sites (10Km), Sites of Special Scientific Interest (2Km) and Non-Statutory Sites (2Km) assessments.

A full assessment of the application and its potential to affect the identified sites has been carried out as part of the variation determination process. European sites, Sites of Special Scientific Interest (SSSI) and non-statutory conservation sites will be discussed separately below.

11.1. European Sites

There are ecologically sensitive sites located within the relevant screening distances of the installation. The screening distances are set out [Air emissions risk assessment for your environmental permit - GOV.UK](#).

The European sites are subject to the Conservation of Habitats and Species Regulations 2017. We have assessed the impact of the installation on all ecologically sensitive sites within the relevant screening distance according to the assessment criteria relevant to each type of designated sites.

A full assessment of the application and its potential to affect the sites species and habitats has been carried out as part of the determination process. We consider that the application will not affect the features of the designated sites.

The following European sites are located within 10 km of the installation:

- Berwyn a Mynyddoedd de Clwyd / Berwyn and South Clwyd Mountains (SAC) (UK0012926)
- Berwyn (SPA) (UK9013111)
- Johnstown Newt Sites (SAC) (UK0030173)
- River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) (SAC) (UK0030252)
- River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England) (SAC) (UK0030252)

There are no Ramsar Sites within 10Km of the search point (SJ 28487 38348 used as the search point).

A Habitat Regulations Assessment (HRA) was completed to assess the potential to affect any of the sites identified. In the air quality modelling, a number of operating scenarios were considered. On review these scenarios were believed to be reasonable for the purposes of the assessment. The assessment has assumed that all items of the plant run at peak capacity when operating, emissions from all combustion plant are at the ELV's, operation of all items of the plant occur during the worst-case weather conditions for dispersion and the predicted concentration using 5 years of data. From NRW review we consider these scenarios are all conservative assumptions for use in the model. For non-standard operations, the same conclusion can be reached at ecological receptors as for normal operation.

The Air Pollution Information System (APIS) website (www.apis.ac.uk) is used as the source of Critical Levels and Critical Loads for use in assessing the predicted impact of industrial pollutants on vegetation and ecosystems. A search of the website has confirmed that no appropriate critical levels or loads are set for the following pollutants in terrestrial ecosystems: TVOC, Formaldehyde amongst others. Soil sampling off site of the Kronospan installation is outside the regulatory scope of our permit determination and deposition standards are not set for the assessment of human health. Instead, it is the concentration per m³ of air that is assessed.

In summary, there are no appropriate ecological standards, critical levels or loads for these pollutants that we can assess against. However, environmental standards are set for all these pollutants for the protection of human health and significant effects from the project are properly considered as part of our human health risk assessment. Any controls needed in respect of airborne releases of these pollutants will be imposed if the human health assessment indicates a need for this. Also, it must be assumed that the strictest standards are set for the protection of human health and as the closest human health receptors assessed are nearer to the Kronospan installation boundary than the nearest SAC & SPA, it follows that if emissions of these pollutants pass the criteria for our human health assessment, then levels at the designated species and habitats will also be acceptable. There is no requirement for further assessment of these pollutants via our Habitats Risk Assessment process.

Berwyn a Mynyddoedd de Clwyd / Berwyn and South Clwyd Mountains (SAC)
(UK0012926)

We proceeded to the appropriate assessment phase for predicted releases of oxides of nitrogen (when assessed against the annual CLe) and nitrogen deposition at the Bogs and Wet Habitats and Upland Features of the SAC. This is due to the predicted PCs not screening out at <1% (1.5% with a percentage increase from the existing PC of 0.3%) of the Cle. We therefore considered the PEC at the interest features to determine if adverse effects on site integrity can be ruled out. The proposed PEC (PC plus background) for long term contribution is 6.95µg/m³ and <70 % of the long-term standard (23%). We are satisfied therefore that the maximum PEC for oxides of nitrogen is <70% of the annual CLe at each of the features considered and no further

assessment is needed, because an adverse effect on site integrity can be ruled out as a result of releases from the Kronospan site.

A key habitat which is widespread within the SAC is “Bogs and Wet Habitats.” The closest management unit to Kronospan is (Unit 134). Predicted PCs decrease with distance away from the unit. The maximum short term predicted NO_x PC is 3.2% of the daily mean CLe of 200 µg/m³, so screens out as insignificant as it is <10% of the short term CLe.

For nutrient nitrogen deposition, the appropriate CLo range for blanket bogs is 5–10 Kg N/ha/yr. The maximum predicted PC is approximately 0.8% of the lower end of this CLo range. This screens out as insignificant (<1% of annual CLo).

For acid deposition, the Critical Load function Tool on APIS stated that the predicted PC is 0.9% of the minimum critical load (CL) function and confirmed no exceedance of the CL function will occur. As this PC is <1% of the minimum CL function, significant effects from the project can be ruled out.

In combination assessment

Consideration of likely significant in-combination effect with the plan or project in regard to the conservation objectives was made. The core management plan for the SAC outlines the conservation status of this habitat is currently ‘unfavourable’ in terms of aerial releases of NO_x and nitrogen deposition. Although each habitat is sensitive to nutrient enrichment and acidification, the reason for unfavourable status is attributed to overgrazing (bogs & wet habitats, dry grassland, dry heath & upland) as well as burning and drainage (of bogs and wet habitats). This is supported by the fact that nutrient enrichment from industrial combustion is attributed to just 1.2% of the total source attribution, with over 35% of existing deposition attributed to Livestock. NO_x concentrations at the SAC have seen a marked decline since around 2012, which is expected to continue into the future with the move to increase use of electric vehicles and the imposition of NO_x emission limits for existing Medium Combustion Plant across the UK. The APIS website confirms that the next largest proportion of background nitrogen deposition is coming from Europe.

For the remaining protected sites identified within the relevant screening distance no impact pathway was determined so they can be ruled out from further assessment.

Berwyn (SPA)

The four designated bird species within the SPA are not directly sensitive to airborne pollution and there are no associated critical loads on APIS. Therefore, no further assessment is required. The critical levels for NO_x as an annual mean is 30 µg/m³ and 200 µg/m³ as a daily mean. The maximum long-term PC is 0.9% of the critical level and screens out as <1%. The maximum short term predicted NO_x PC is 1.5% of the daily mean CLe of 200 µg/m³, so screens out as insignificant as it is <10% of the short term CLe. Regarding disturbance (noise) as the SPA is located some distance away it is unlikely to be audible to the protected birds. Furthermore, the birds are more likely to be disturbed by human activity near their nesting and feeding sites rather than from the industrial sources some 9Km away. No impact pathway is deemed appropriate here. However, the SPA boundary overlays that of the Berwyn and South Clwyd Mountains SAC which is designated for vegetative habitat features which are sensitive to aerial pollution. Our consideration of aerial process contributions from the installation focuses of SAC habitat type.

Johnstown Newt Sites (SAC)

Air pollutants (as with the Berwyn SPA above and River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) (SAC), River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England) (SAC) that are associated with nutrient enrichment are assessed for designated habitats within a protected site, rather than the protected species living within the site. This is because it is the vegetation that is sensitive to change as a result of the presence of these pollutants.

The Johnstown Newt Sites SAC does not contain any vegetation designated habitats as the designated feature is the Great Crested Newt, and there are no Critical Loads set on APIS for this feature. The critical levels for NO_x as an annual mean is 30 µg/m³ and 200 µg/m³ as a daily mean. The maximum long-term PC is 1.2% of the critical level which is >1 % so the PEC was considered and screened out as < 70%

(36.8%). The maximum short term predicted NO_x PC is 2.5% of the daily mean CLe of 200 µg/m³, so screens out as insignificant as it is <10% of the short term CLe. We also considered smothering however concentrations of particulates (PM₁₀ and PM_{2.5}) decrease rapidly away from the source. The Johnston Newt SAC is over 6Km away from the installation search point so we can therefore consider that there is no realistic pathway to the SAC. The intervening distance is dissected by the A5 and the River Dee. The settlement of Ruabon also sits between the closest part of the SAC and the installation. As such it can be concluded that noise from the installation would not be audible to the great crested newts.

River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) (SAC), River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England) (SAC))

The vegetative interest features of the SAC within the 10Km screening distance are limited to aquatic features. Again, there is no CLe or CLo for these. It is considered that the CLe for atmospheric NO_x concentrations and nutrient nitrogen and acid deposition CLos are not applicable to river systems due to low sensitivities from airborne sources. Therefore, no further consideration of nitrogen or acid deposition is required.

Fish and invertebrate interest features are 'in-water/riverine features' and are not sensitive to airborne pollution. Therefore, there is no realistic impact pathway, so no further assessment was required. We also considered disturbance (noise) in respect of Otters. The core management plan states that Otters are sensitive to human disturbance in particular sudden changes in activity (e.g. disturbance by dogs) Also, female otters are particularly sensitive to disturbance when they have cubs. However, in terms of noise, otters habituate and grow accustomed to continuous noise (such as industrial noise). The general noise source associated with the installation has been present since the factory started operation in the early 1970s and we consider that noise impacts will not change significantly as a result of this variation. There is also the potential for noise from the installation to reduce in future through the regulatory control mechanisms afforded by the Environmental Permit.

There is no change to process emissions to water as a result of this variation. Only the introduction of a new uncontaminated surface water discharge to the Afon Bradley from the proposed Wetlands at release point W2.

We consulted with Natural England on our assessment of the River Dee and Bala Lake SAC (England) for information only as there was no impact pathway. The conservation body in Wales are in agreement with our conclusions. We received a response from Natural England who agreed with the conclusions of the HRA. However, it must be noted that the border of England and Wales extends along the middle of the River Dee. Opposite banks of the River Dee are therefore in the different SAC's (England and Wales) and designated for the same features. It is logical and there is no reason why the agreement of the conservation body in Wales the same as Natural England would not be.

An OGN 200 Form 1B was completed and consulted on with the relevant NRW teams who represent the conservation body in Wales. In light of the conclusions of an appropriate assessment and taking account of the advice received from NRW's protected sites advisors, it has been established that the project will not adversely affect the integrity of any European site, either alone or in-combination with other plans and projects. The full assessment is available to view on the public register.

11.2. Sites of Special Scientific Interest (SSSI)

This assessment considers the likelihood of damage to any of the features listed within the SSSIs located within the relevant screening distance (2km) of any new emission point(s). We have assessed the likelihood of damage from nutrient enrichment and acidification at each of the three relevant SSSIs identified. We have also additionally considered the potential for smothering of interest features due to airborne releases of Particulate Matter (PM) (PM₁₀ & PM_{2.5}) at Chirk Castle SSSI and Nant-y-Belan and Prynella Woods SSSIs, as well as the potential for disturbance to the Bat population at Chirk Castle SSSI.

The main impact pathway from the proposed variation is through emissions to air of NO_x and associated nutrient nitrogen deposition and acidification.

The following SSSIs are located within 2 km of the installation:

- Afon Dyfrdwy / River Dee, SSSI Code: 31WDW (England)
- Castell Y Waun a'i Barcdir / Chirk Castle and Parkland, SSSI Code: 31WRK
- Nant-y-Belan and Prynella Woods, SSSI Code 31WDH

Within the air dispersion modelling a daily NO_x critical level for ecological receptors of 200µg/m³ rather than the 75µg/m³ was used. The use of this figure has been justified through the presentation of background concentrations of sulphur dioxide (SO₂) and Ozone (O₃), which are below the respective critical levels for these pollutants. We agree with this approach.

Afon Dyfrdwy /River Dee SSSI (Wales) (England)

The parts of the SSSI within the 2km screening distance of the search point contain aquatic features only. There are no Critical Levels (CL_e) or Critical Loads (CL_o) for aquatic features. More specifically, it is considered that the CL_es for atmospheric nitrogen oxides (as NO₂) and the nutrient nitrogen and acid deposition CL_os are not applicable to river systems due to low sensitivities from airborne sources. As such, any further consideration of nitrogen or acid deposition is not required. There is no process emissions to water associated with this variation only uncontaminated surface water run off which is a new release point (W2) from the wetland to the north of the site. All emissions of process waters are released to sewer.

Castell Y Waun a'i Barcdir / Chirk Castle and Parkland, SSSI Code: 31WRK

Oxides of nitrogen NO_x emissions

A long-term critical level of 30 µg/m³ NO_x (annual) and short-term critical level of 200 µg/m³ NO_x (24-hourly) has been assumed for the Castell Y Waun a'i Barcdir / Chirk Castle and Parkland, SSSI Code: 31WRK. The maximum long-term process contribution (PC) is 3.18 µg/m³ and >1% (10.6%) of the long-term critical level and

maximum short-term PC is 65.76µg/m³ and >10 % (32.9%) of the short-term critical level.

As the maximum long-term PC is >1% (10.6%), the PEC was considered. The proposed PEC (PC plus background) for long term contribution is 19.48 µg/m³ and <70 % (64.9%) of the long-term standard. The proposed PEC (PC plus background) for the short-term contribution is 98.36 µg/m³ and <70% (49.2%). We are satisfied that the long-term Cle and short term Cle is not likely to be exceeded and that no further assessment is required.

Nutrient enrichment

A nutrient nitrogen critical load value of 10 kgN/ha/yr (lower critical load) has been assumed for Chirk Castle SSSI. The maximum nitrogen deposition process contribution is 0.433 kgN/ha/yr and is >1% (4.3%) of the minimum critical load value, therefore impacts from nitrogen deposition cannot be screened out as insignificant. The comparison with existing is 3.7% making a 0.6% increase as a worst-case scenario under normal operations and not likely to damage.

Nant-y-Belan and Prynella Woods SSI are located slightly outside the screening radius for an EPR installation at 2.2Km but have been included as the operator has considered it in their risk assessment so we have included it in this determination as a precautionary measure.

We consider that even though the PCs from Kronospan cannot be screened out as below the 1% significance threshold, they nevertheless represent a small percentage of the PEC at the SSSI. The background is already exceeding at 32 kgN/ha/yr (APIS Nitrogen Deposition for forest 1km 2021 (2020-2022) and appears to be decreasing with the majority contribution from other sources. The area surrounding the SSSI is predominantly rural and further investigation of the source using the APIS website (Sources ranked by total Nitrogen deposition (KgN/ha/yr) from combined UK sources - 2018 data), attributes the largest proportion of the background (41.4%) to livestock contributions, with the next largest contributory source being nitrogen deposition associated with releases carried over from Europe. The existing background

attributable to non-agricultural, non-abatable sources, (including industrial sources) is 0.65 KgN/ha/yr (total deposition) which is equivalent to 4.2%.

This is a small impact associated with the emission limit value (ELV) and would be insignificant in respect of this SSSI. The applicant's air quality modelling is conservative, and the PCs should also be considered in the context of the SSSI's proximity to Kronospan. Specifically, the prevailing wind direction in the UK is from the southwest.

Acidification

Acid deposition minimum critical load values of 0.142 keq/ha/yr (Min N), 1.864 keq/ha/yr (Max N) and 1.722 keq/ha/yr (Max S) have been assumed for Castell Y Waun a'i Barcdir / Chirk Castle and Parkland, SSSI Code: 31WRK. Using the APIS Critical Load Function tool, 'No exceedance of the CL function for acidity was reported in respect of the process contribution'. The total maximum deposition values based on unmanaged broadleaved / coniferous woodland as the most precautionary habitat at the SSSI, have been used as background. The background, min CLo figures and predicted PC were inputted into the Critical Load Function Tool on APIS to check whether the Predicted PC falls within the "safe envelope" between in and max CLo. The Critical Load Function Tool stated that the predicted PC is 5.9% of the CLo function and confirmed that no exceedance of the CL function will occur.

Smothering by deposition of Particulate Matter

PM₁₀ & PM_{2.5} Particulate Matter is deposited slowly but may travel 1000m or more. However, concentrations decrease rapidly on moving away from the source, due to dispersion and dilution. Chirk Castle SSSI is located approximately 480 metres to the southwest of the installation boundary, so there is potential for deposition of Particulate Matter on the SSSI. However, particulate emissions from the site are comprised mainly of wood dust from the process, which is biodegradable and will decompose naturally. Therefore, it is unlikely to cause smothering by deposition, furthermore the prevailing wind direction in the UK is from the southwest. As Chirk Castle and Parkland SSSI is located to the southwest of the installation, if also considering the prevailing wind conditions the SSSI is in the opposite direction. As

such, we are satisfied that there is no likelihood of damage to the interest features from the potential of smothering by deposition.

Toxic Contamination

APIS is used as the source of Critical Levels and Critical Loads for use in assessing the predicted impact of industrial pollutants on vegetation and ecosystems. A search of the website has confirmed that no critical levels or loads are set for TVOC and formaldehyde in terrestrial ecosystems. However, environmental standards are set for these pollutants for the protection of human health and are examined as part of that aspect of our determination. Any controls needed in respect of airborne releases of these pollutants will be imposed if the human health assessment indicates a need for this. In the absence of critical levels and loads, it must be assumed that the strictest standards are set for the protection of human health and if these are met, then we can conclude no likelihood of damage to the features of the SSSI for these pollutants.

Nant-y-Belan and Prynela Woods, SSSI Code: 31WDH

As mentioned above this site is just outside of the screening distance but has been included in the operator's assessment so we have also considered it in our assessment.

Oxides of nitrogen (NOx) emissions

A long-term critical level of 30 $\mu\text{g}/\text{m}^3$ NOx (annual) and short-term critical level of 200 $\mu\text{g}/\text{m}^3$ NOx (24-hourly) has been assumed for the Nant-y-Belan and Prynela Woods, SSSI Code: 31WDH. The maximum long-term process contribution (PC) is 1.88 $\mu\text{g}/\text{m}^3$ and >1% (6.3%) of the long-term critical level and maximum short-term PC is 13.84 $\mu\text{g}/\text{m}^3$ and <10 % (6.9 %) of the short-term critical level.

As the maximum long term process contribution (PC) >1% (6.3%) the PEC was considered. The proposed PEC (PC plus background) for long term contribution is 12.78 $\mu\text{g}/\text{m}^3$ and <70 % (42%) of the long-term standard. The proposed PEC for the short-term contribution 13.84 $\mu\text{g}/\text{m}^3$ and <70% (17.8%). We are satisfied that the long-

term and short-term CLEs are not likely to be exceeded and that no further assessment is required. The maximum increase in the PC is $0.35 \mu\text{g}/\text{m}^3$ (1.2%) for the long-term and $2.63 \mu\text{g}/\text{m}^3$ (1.3%) so it is considered that the change is not likely to result in an exceedance.

Separate to the installation, further reductions in NO_x in the atmosphere is expected due to the shift to electric vehicles from petrol and diesel (sale of new petrol and diesel cars are banned from 2030). Furthermore, the regulation of medium combustion plant and introduction of emission limit values on such plant will see a lowering of atmospheric NO_x.

Nitrogen Deposition

A nutrient nitrogen critical load value of 10 kgN/ha/yr (lower end of the critical load range) has been assumed for Nant-y-Belan and Prynella Woods, SSSI Code: 31WDH. The maximum predicted nutrient nitrogen deposition PC is 0.414kgN/ha/yr and is >1% (4.1%) of the minimum critical load value, therefore impacts from nitrogen deposition cannot be screened out as insignificant.

The area surrounding the SSSI is predominantly rural, (although the western section is intersected by the A483 trunk road) and there are two large intensive farms to the north of the SSSI. The trunk road and intensive farms are likely sources of nutrient nitrogen deposition from traffic related NO₂ emissions and ammonia emissions respectively.

As with Castell Y Waun a'i Barcdir / Chirk Castle and Parkland, SSSI Code: 31WRK (above) the source attribution for nitrogen deposited onto Nant-y-Belan and Prynella Woods, SSSI Code: 31WDH is mainly from livestock at 42% (See comments above). Even though the predicted PC from Kronospan cannot be screened out as below the 1% significance threshold, it nevertheless represents a very small percentage of the PEC 35kgN/ha/yr (APIS data based on 1km 2021 (2020-2022) data) at the SSSI.

Acidification

The process contribution was compared to the relevant minimum CLo for assessing the predicted impact of acid deposition. Air Pollution Information System (APIS) was used as the source of the site relevant CLoS. Unmanaged broad leaved / coniferous woodland (within the Lowland Mixed Deciduous Woodland) was the specific CLo selected. The minimum CLoS are as follows: minCLmin N = 0.357, minCLmax N = 1.879 and minCLmax S = 1.522

The following total maximum deposition values based on semi-natural, lowland mixed deciduous woodland at the SSSI, have been used as background: N deposition 0.03 keq/ha/yr and S deposition 0.028 keq/ha/yr. The background, min CLo figures and predicted PC were then inputted into the Critical Load Function Tool on APIS to check whether the Predicted PC falls within the “safe envelope” between min and max CLo. The Critical Load Function Tool stated that the predicted PC is 2.7% of the CLo function and confirmed that no exceedance of the CL function will occur.

Smothering by deposition of Particulate Matter

PM₁₀ & PM_{2.5} Particulate Matter are deposited slowly but may travel 1000m or more. However, concentrations decrease rapidly on moving away from the source, due to dispersion and dilution. Nant-Y-Belan and Prynella Woods SSSI is located approximately 2.2 kilometres to the north-east of the installation boundary, so on this basis, we consider that this mechanism of effect is unlikely to damage the interest features of the SSSI, based on distance from the source.

Toxic Contamination

A search of the APIS website has confirmed that no critical levels or loads are set for TVOC or formaldehyde in terrestrial ecosystems. There are no appropriate ecological standards, critical levels or loads for these pollutants that we can assess

against. However, environmental standards are set for all these pollutants for the protection of human health and are examined as part of that aspect of our determination. Any controls needed in respect of airborne releases of these pollutants will be imposed if the human health assessment indicates a need for this. In the absence of critical levels and loads, it must be assumed that the strictest standards are set for the protection of human health and if these are met, then we can conclude no likelihood of damage to the features of the SSSI for these pollutants.

In summary it is considered that the proposed permission is not likely to damage any of the special interest features of the Afon Dyfrdwy / River Dee, SSSI Code: 31WDW or River Dee SSSI (England).

Furthermore, the proposed permission is not likely to damage any of the special interest features of the Castell Y Waun a'i Barcdir / Chirk Castle and Parkland, SSSI Code: 31WRK and Nant-y-Belan and Prynela Woods, SSSI Code: 31WDH as we are satisfied that there will be no exceedance of the long-term critical level when the PEC is considered at either site as a result of this variation.

There is no exceedance of the short-term critical level at Nant-y-Belan and Prynela Woods, SSSI Code: 31WDH but there is at Castell Y Waun a'i Barcdir / Chirk Castle and Parkland, SSSI Code: 31WRK which is <10% at 6.9%. When considering the PEC however it is <70% for both the long- and short-term critical levels and screens out.

Background levels of nutrient nitrogen deposition at these sites already exceed the minimum CLos and Kronospan's PC is very small in comparison, even with the change associated with this variation. The percentage increase that this variation would make is 0.6 % difference to the existing 3.6% for nitrogen deposition at Chirk Castle as a worst-case scenario under normal operations. We consider that even though the PCs from Kronospan cannot be screened out as below the 1% significance threshold, they nevertheless represent a small percentage of the overall PEC at the Chirk Castle SSSI. The background here is already exceeding at 34 kgN/ha/yr (APIS Nitrogen Deposition for forest 1km 2021(2020-2022)) and appears

to be decreasing with the majority contribution from other sources. The area surrounding the SSSI is predominantly rural and further investigation of the sources using the APIS website has also been taken into consideration.

The annual trend regarding nitrogen deposition verified using the APIS mapping tool appears to be decreasing and continues to do so at Waun a'i Barcdir / Chirk Castle and Parkland SSSI since 2005. This could be a result of the move to electric vehicles and regulation of medium combustion plant. The applicant's air quality modelling is conservative, and the PCs should also be considered in the context of the SSSI's proximity to Kronospan. Specifically, the prevailing wind direction in the UK is from the southwest.

To determine if consultation is required, a SSSI Assessment was completed. The assessment concluded that the proposed permission is not likely to damage any of the flora, fauna or geological or physiological features which are of special interest. We have consulted the conservation body in Wales on our assessment of SSSI's listed above. We also consulted with Natural England on our assessment for the River Dee SSSI who responded that they agreed with our assessment from the conservation body in Wales regarding our conclusions. A copy of the assessment is available to view on the public register

11.3. Non-statutory conservation sites

The following relevant non-statutory sites are located within 2 km of the installation:

- Barracks Field (Local Wildlife Site)
- Coed-y-Camlas / Canal Wood (Local Wildlife Site)
- There are 66 Ancient woodland sites within 2Km of the search point, the closest of which is Coed-y-Camlas / Canal Wood (Restored Ancient Woodland Site), located approximately 140 metres to the west.

The impact of emissions from the facility was considered in the operator's dispersion modelling to assess the maximum impact across the local wildlife sites. For non-statutory sites, Natural Resources Wales impact assessment criteria considers whether or not an installation can cause significant pollution alone. If the process contribution from an installation is less than 100% of the relevant critical level or load

for a site, we consider that no significant pollution will be caused, provided that the Applicant is using BAT to control emissions.

Canal Wood is a Restored Ancient Woodland and Local Wildlife Site and is the closest non-statutory site to the habitats search point, lying approximately 120 metres from the search point and adjacent to the western installation boundary. The nearest plantation on ancient woodland (Reservoir Wood) is approximately 700 metres to the south-west of the search point. The nearest semi-natural ancient woodland (Mynattyn Wood) is located approximately 720 metres to the west of the search point. Barracks Field Local Wildlife Site is approximately 1.69 km to the northeast of the search point. The applicant has modelled the predicted Process Contributions (PCs) at each of the non-statutory sites. The highest PC for nutrient nitrogen deposition at Canal Wood LWS is approximately 6.4% of the lower CLo of 10 Kg/N/ha/yr, which occurs during under normal operations.

Critical Loads for Acid Deposition

We consider that the most appropriate CLoS for acid deposition at Barracks Field LWS are for neutral grassland (CLmaxS 4, CLminN 1.071, CLmaxN 5.071). These CLoS are the same as those used by the applicant for Calcareous grassland. The highest predicted PC at Barracks Field LWS is 2.3% of the CLo which occurs under normal operations. The most appropriate CLoS for acid deposition at Canal Wood LWS are for broad-leaved / coniferous unmanaged woodland (CLmaxS 1.722, CLminN, 0.142, CLmaxN 1.864), as used by the applicant. The highest predicted PC for Canal Wood according to our check modelling is approximately 9.4% of the CLo. The change in impact with the proposed variation for Barrack Fields LWC is 0.09% as a percentage of the CLo and 0.76% for Canal Wood.

As the predicted PCs for NO_x releases decline quickly with distance from the source, this assessment focuses on predicted PCs at Canal Wood where maximum predicted PCs will be seen. As such, it follows that if predicted PCs are less than 100% of the relevant Critical Level and Loads at the closest non-statutory sites, they can be

expected to be even less at those non-statutory sites which are further from the release sources.

We are satisfied that the 30 µg/m³ annual mean CLe for NO_x or the 200 µg/m³ daily mean CLe for NO_x will not be exceeded at any of the non-statutory sites under all scenarios of operation considered. Based upon the information in the application, the information available and the information provided to us in the consultation, we are satisfied that significant pollution will not be caused at the non-statutory conservation sites identified.

12. The Permit Conditions

12.1. Incorporating the variation

We have specified that the applicant must operate the permit in accordance with descriptions in the application. These descriptions have been specified in the Operating Techniques table in the permit (Table S1.2).

12.2. Emission Limits

Article 14(3) of IED states that BAT conclusions shall be the reference for permit conditions. Article 15(3) further requires that under normal operating conditions; emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions.

BAT conclusions set out specific limits that the operator must comply with. Modelling has been used to demonstrate that the operator will be able to comply with the emission limits described as BAT.

The introduction of the new manufacturing line results in the introduction of emission limit values for OSB on WESP 32 (A28). These have been considered using the primary BRef and BAT conclusions for the production of wood-based panels associated with OSB. However tighter limits have been included in the permit as a means of protection for Oxides of Nitrogen (NO_x) and particulates / dust.

NRW requested the proposed ratio or 'duty' of each emission source directed to WESP 32 (A28) with this change. A worst-case scenario was provided including the resin process when batch making occurs and this is not a continuous emission. From the assessment (Table 1 of further information response dated 14 November 2024) it was established that the main 'duty' on A28 would be from the direct dryers OSB 1 and 2. The wood panel BAT conclusions and associated BAT-AEL for OSB will therefore apply to emission point (A28) with this change and were added to the permit.

The WESP 32 also provides emissions abatement from:

- Resin VITS 2,3 and 5 impregnation lines (previously A5 re-directed through variation reference V010);
- Resin Vits 4 paper impregnation line (previously A6 re-directed through variation reference V10)
- and further or secondary abatement for emissions from MDF1, MDF2, OSB particleboard and Controll following press abatement.

The emission limits associated with the resin VITS impregnation lines at A28 remain unchanged in the permit. Emissions from the press abatement remain unchanged (A31). However, NO_x has also been added as a spot check at A28 with no limit for monitoring as there should be no emissions of NO_x when the OSB 1 and 2 dryers are off. By adding NO_x, the operator can demonstrate that the dryers are not operating as NO_x should not be present. For monitoring at A28 for OSB dryer 1 and 2 emissions the press abatement will pass through A31 which is abated before release, these limits have not changed. Furthermore, the batch process for the resin plant and impregnation will be on stop. An improvement condition NRW IC 65 has however been included to ensure representative sampling is achieved at A31 against the BAT AEL's.

Furthermore, we have introduced parameters at W2 for ensuring that the discharge is surface water only and discharged in a controlled manner. A pre-operational condition has been added as the discharge point W2 will be served by Wetland 1 and Wetland 2 as these are yet to be finalised and constructed a pre-operational condition was considered appropriate.

Please refer to the section on emission limits in this document under air quality assessment section.

12.3. Monitoring and reporting

We have decided that monitoring should be carried out for the parameters listed in Schedule 3 of the permit using the methods and to the frequencies specified in those tables. These monitoring requirements have been imposed in order to demonstrate compliance with the emissions limits in the permit.

For emissions to air, the methods for periodic monitoring are in accordance with BAT 14 requirements set out in Production of wood-based panels BAT Conclusions. Monitoring frequencies have also been considered in line with BAT requirements.

Based on the information in the application and the requirements set in the conditions of the permit we are satisfied that the monitoring techniques, personnel and equipment employed by the Operator will have either MCERTS certification or MCERTS accreditation as appropriate. Permit condition 3.6.3 requires the operator to employ MCERTs certification or accreditation for monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme, unless otherwise agreed in writing. This position has not changed as a result of this variation application.

We have specified the reporting requirements in Schedule 4 of the Permit to ensure data is reported to enable timely review by Natural Resources Wales to ensure compliance with permit conditions and to monitor the efficiency of material use and waste recovery at the installation.

12.4. Raw Materials

With this variation there will be an increase in throughputs of raw materials stored, on site and used within the manufacturing process. The types and quantities of raw materials were assessed at proposed predicted levels as a maximum along with the storage. NRW sought clarification over the predicted maximum quantities prior to 'duly

making' namely the raw materials currently used for existing production and that of the proposed OSB manufacturing line. The operator made a re-submission of Table 2 'Raw materials' in the application supporting document Fichtner Consulting Engineers Ltd (ref: R7) to give maximum quantities stored onsite. This is linked to the operating techniques within the permit under conditions 2.3 and Table S1.2 Operating techniques. The list of existing and proposed raw materials has not been replicated here but can be seen in the above referenced document in Table 2.

There are two new resins Polymeric Methylene Diphenyl Diisocyanate (pMDI), and Phenolic formaldehyde (PF) proposed with this variation for use in the manufacturing process of OSB. There is no proposal to produce or manufacture any new or additional chemicals as part of this variation. The new resins will be sourced from off-site manufacturers. It should be noted that the use of PF has been considered in the air quality assessment by way of VOCs and other VOCs. The pMDI resin is a binding agent used in wood-based panels and not classified as a VOC and has a low volatility. The variation also includes the use and storage of hydrogen peroxide. The addition of the hydrogen peroxide in the abatement systems, when necessary for odour minimisation, will lead to water and oxygen in the residual liquid of that abatement system. The operator has procedures and a management of change document linked to the site's EMS ensuring chemicals are selected and assessed in line with industry best practice, guidance and permit conditions. The resin use is yet to be finalised for OSB so a pre-operational condition (PO2) regarding the containment for new storage of raw materials has been included.

The operator has outlined a commitment for the additional containment to meet CIRIA 736 guidance 'Containment Systems for the Prevention of Pollution'. In that commitment the operator also stated that bunds will be capable of holding 110% of the capacity of the largest storage tank within the bund or 25% of the total capacity of the tanks within it, whichever is the greatest with impervious bund floors and walls. Further information and clarification concerning secondary and tertiary containment and associated appropriate measures and bunding on site was requested from the operator. Existing storage will be utilised, and further management of change is proposed for the storage of new chemicals. As the new chemical store plans are yet to be finalised, a pre-operational condition has been included to ensure the

containment system meets C736 (PO2). Furthermore, as there is a reliance on existing storage and containment with this variation, with an increase in throughput of raw materials, an associated improvement condition has also been added to the permit (NRW IC62). The improvement condition is primarily for the undertaking of a gap analysis against C736 to ensure that existing containment requirements meet current standards across the installation.

12.5. Waste Types

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. Two new waste types have been included in the permit as part of this variation: Waste Codes 15 01 03 and 17 02 01 as detailed in the following:

<u>WC Code</u>	<u>Description</u>
15	Waste from 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

The waste types are outlined in Table S2.3 'Permitted waste types and quantities for K8 Biomass Boiler' and S2.4 "Permitted waste types and quantities for Particle Board and OSB manufacturing".

The two new waste codes and associated waste types are very similar in nature to the waste streams already permitted for acceptance on site. These wastes are used for particleboard manufacture, and this will extend to OSB. The operators existing arrangements for pre-acceptance and on-site waste procedures remain relevant to these 2 additions.

Based upon the supporting information included in the variation application we are satisfied that the existing control measures in place linked to the environment

management system for the site and current permit conditions remain fit for purpose and that only permitted waste types will be brought onto site for processing.

It is recognised in the application that the operator will not be able to use these waste types as a feedstock in the onsite biomass boiler K7. It is agreed that this will not be permitted and therefore have only been included in Table S2.3 as permitted waste types and quantities for K8 Biomass Boiler.

We are satisfied that the operator can accept these wastes for the reasons outlined in the above and we made these decisions with respect to waste types in accordance with the relevant BAT conclusions and Environment Agency WM3 Waste Classification technical guidance.

12.6. Pre-operational conditions

Based on the information in the application, we consider that we need to impose pre-operational conditions. Details of the pre-operational conditions used can be found in Annex 1. The reasons for their inclusion have been outlined in this document under the relevant subject headings.

12.7. Improvement conditions

Based on the information on the application, we consider that we need to impose improvement conditions. Details of the improvement conditions used can be found at Annex 2. The reasons for their inclusion have been outlined in this document under the relevant subject headings.

13. OPRA

The OPRA score has changed as a result of this variation. The new agreed score is now (to be confirmed prior to final decision, currently 592). This will form the basis for ongoing subsistence fees.

ANNEX 1: Pre-Operational Conditions

The following pre-operational conditions included in the draft permit as part of this variation (PO2 to PO8):

Table S1.4 Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
PO2	New Chemical and fuel Storage	Prior to use, a report shall be submitted to NRW demonstrating that the new chemical store (OSB blending building) with new silos for pDMI and PF and their containment system constructed on site meets CIRIA guidance C736 'Containment systems for the prevention of pollution'. The report shall also extend to all new containment of chemicals for the manufacture of OSB and include but not be limited to: • A CIRIA guidance C736 risk assessment. • Outline where the containment measures have been linked to the site's Environment Management System (EMS) • Demonstration of the installation of 'shut off' valves on the surface water release points to the Afon Bradley • Operating procedures linked to the EMS for the opening and closing of the shut off valves in the event of an incident/accident on site • Any differences between the proposed containment measures and the as-built measures in place in the final construction. • Breather valve locations and reference plan for new tanks. Confirmation that the containment measures on site meet CIRIA guidance C736 by a suitable qualified engineer.
PO3	OSB Manufacturing line and OSB Dryer 1 & OSB Dryer 2	Prior to the commencement of OSB manufacturing, a written commissioning plan (including timelines for completion) shall be submitted to NRW for approval. The commissioning plan shall include but not be restricted to: – The timetable for the commissioning of the OSB manufacturing line and direct dryers OSB 1 and OSB 2. – The expected emissions to the environment during each of the stages of commissioning; – The mitigation measures that will be taken in respect of emissions to the environment during each stage; – The expected duration of commissioning activities; – Any additional (beyond that required by the Permit) monitoring to be undertaken; Commissioning shall be carried out in accordance with the commissioning plan as approved.

Table S1.4 Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
PO4	OSB Dryer 1 and OSB Dryer 2	Prior to operation of OSB Dryers 1 and 2, a report shall be submitted to NRW demonstrating that the necessary procedures are in place within the sites Environment Management System for the operation of the direct dryers OSB Dryer 1 and OSB Dryer 2. The report shall include but not be limited to: • procedure for OSB Dryer 1 and 2 in the event of the shut down of the WESP32 • emergency shut down of OSB Dryer 1 and OSB Dryer 2 • any operating procedures associated with OSB Dryer 1 and 2 • Energy balance schematic of both the OSB manufacturing line and associated direct dryers 1 and 2. Following completion, a copy of the report shall be submitted to NRW for approval.
PO5	Wetland 1, Wetland 2 and release point W2	Prior to discharge to the Afon Bradley at release point W2, the operator shall provide NRW with a report on the new surface water emission point and associated Wetland 1 and Wetland 2. The report shall include but not be limited to: • The engineering construction proposal for Wetland 1 and Wetland 2 and how this will meet BAT 5 regarding the lining of retention basins for surface water run-off. • A timeline for the construction and commissioning of Wetland 1 and Wetland 2. • A Maintenance plan preventing sediment accumulation of the wetlands, whilst protecting the Afon Bradley and vegetation management that could impact on basin structural integrity; • sample point location for direct discharges to water in line with Monitoring discharges to water: guidance on selecting a monitoring approach - GOV.UK and in agreement with NRW • Details and final location and operational procedure regarding Penstock C to manage flow. A copy of the report shall be submitted to NRW for written approval.

Table S1.4 Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
PO6	Noise	Prior to the manufacturing of OSB the Operator shall ensure that upon completion of IC40, implementation of noise mitigation measures and/or introduction of new noise generating plant and/or processes shall meet any applicable BAT requirements as a minimum. This shall be accompanied by a BAT review of all site noise sources and mitigation measures and the site noise management plan updated accordingly. Upon completion of the work a report should be submitted to NRW for approval that includes the following but not limited to: - any changes to plant involving upgrades, improvements, or selection to new sources of noise to minimise any existing or new site noise. - any identified mitigation measures necessary to minimise noise on completion of any improvements necessary regarding existing site sources or new. - a review of the operating techniques associated with the minimisation of noise and any actions or improvements identified resulting from the review, and their planned implementation timeline.
PO7	Environment Management System / accident management plan	The Operator shall review and update the accident management plan linked to the site environment management system (EMS) prior to commencement of OSB manufacturing, the plan shall include, but is not limited to: - OSB manufacturing line and associated plant namely OSB Dryer 1 and OSB Dryer 2 - biomass preparation and storage - new chemical, fuel store and raw material storage On completion a copy of the most up to date accident management plan should be submitted to NRW.
PO8	Odour Impact Assessment Dispersion Modelling and Odour Management Plan	Prior to operation of the OSB manufacturing line the Operator shall carry out an odour impact assessment including odour dispersion modelling in-line with BS EN 13725:2022 to determine odour emissions from the installation to obtain a baseline. - The operator shall submit a report to NRW with the proposed scope of the odour impact assessment for approval. - On completion of the odour impact assessment a copy of the report shall be submitted to NRW for review and approval. - The report shall identify any mitigation and include an associated action plan with proposed timelines for any improvements, if necessary. Following completion of the odour impact assessment, the site odour management plan shall be updated to incorporate any findings or changes if required and also submitted for NRW for approval.

ANNEX 2: Improvement Conditions

The following improvement conditions included in the draft permit as part of this variation (IC62 to IC72):

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
NRW IC62	The operator shall undertake a review of all existing containment systems for both hazardous and non-hazardous raw materials against NRW 'How to comply with your permit'. The review should contain a gap analysis against CIRIA 736 "Containment Systems for the Prevention of Pollution" requirements that includes bund capacity, impermeability and inspection regimes. On completion a report shall be submitted to NRW for approval outlining the scope and findings of the review of existing containment systems at the installation. The report shall include but not be limited to: • demonstration that all bunds achieve at least 110% containment capacity for the largest vessel or 25% of aggregate capacity whichever is greater. • Storage areas for intermediate bulk containers (IBC's) drums and bags are designed and operated to minimise the risk of release to the environment. • A gap analysis against CIRIA 736 and where applicable an improvement plan with clearly identified actions and timelines for completion. • Appropriate inspection regime and maintenance plan • Spill kit contents, locations and maintenance.	Within 18 months of variation V012 issue
NRW IC63	The Operator shall provide an updated site drainage plan following completion of the works associated with variation EPR/BW9999IG/V012. This plan shall reflect all changes to the drainage infrastructure, including (but not limited to) the interceptors located to the north of the site and any new drainage systems installed as part of the OSB manufacturing facility and its associated buildings introduced under variation EPR/BW9999IG/V012.	Within 12 months of commissioning
NRW IC64	The operator shall review and update the emergency procedures and associated plans linked to the sites Environment Management System for the north road development, once built. This shall include the operation of wetlands 1 and 2, Penstock C, associated release point W2 and the new inceptors serving this area. Following completion of the review and update copies should be submitted to NRW for approval.	Within 10 months of completion
NRW IC65	The Operator shall undertake an assessment of emission point A31 against Environment Agency web guidance 'Monitoring Stack emissions measurement locations' and provide NRW with a report for approval. The report should include but not limited to the following: • Any findings from the assessment regarding the permitted monitoring point against the guidance; • Any recommendations for improvement or actions to meet the requirements of the guidance and timescales for implementation. On completion of the assessment a report shall be provided to NRW for approval.	Within 9 months of issue of variation V012

NRW IC66	The Operator shall submit to NRW a revised and updated Fire Prevention and Mitigation Plan (FPMP) covering the entire installation for written approval. For the storage of waste materials the plan shall be written in accordance with the most recent guidance available on the Natural Resource Wales website (Natural Resources Wales / Fire prevention and mitigation plans) For non-waste wood and other non-waste combustible materials, the Operator shall justify and demonstrate that appropriate measures are in place to prevent and minimise the risk of fire. The Operator shall also ensure that the designated quarantine area is appropriately sized and located in accordance with the relevant guidance.	Within 12 months of issue of variation V012
NRW IC67	Following NRW approval of the FPMP by NRW, on completion of improvement condition reference NRW IC66, a programme of works for any improvements identified with associated timescale for implementation shall be submitted to NRW.	3 months from approval of FPMP
NRW IC68	Following the final design and construction of associated infrastructure to produce OSB, the operator shall review all release points to air from process vents on site and provide an up-to-date plan that includes all release points / passive vents from any new plant such as silos and tanks for raw material storage. This plan shall be submitted to NRW.	Within 8 months of (issue date - draft)
NRW IC69	The Operator shall review and update the dust management plan for the installation to ensure it reflects existing and any change brought about by variation BW9999IG/V012 and any associated operating techniques. The updated dust management plan shall be submitted to NRW for approval and should include all potential point sources for dust emissions across the entire site.	Within 7 months of (issue date - draft)
NRW IC70	The Operator shall investigate potential technical solutions regarding the monitoring and control of the MDF press rejects cyclones. A proposal should then be submitted to NRW for approval regarding particulate monitoring and frequency for emission points A36 and A37.	Within 6 months of issue of V012
NRW IC71	Following the operation of the new OSB manufacturing line the operator shall carry out an odour impact assessment including odour dispersion modelling in-line with BS EN 13725:2022 to determine odour emissions from the entire installation. - The operator shall submit a report to NRW with the proposed scope, in line with the requirements of the relevant standards and guidance, of the odour impact assessment for written approval. - On completion of the odour impact assessment a copy of the report shall be submitted to NRW for review and approval. - The report shall identify any mitigation and include an associated action plan with proposed timelines for any improvements, if necessary. Following completion of the odour impact assessment, the site odour management plan shall be updated to incorporate any findings or changes if required and also submitted for NRW for approval.	Within 9 months from commissioning or otherwise agreed by NRW to include entire site.
NRW IC72	The Operator shall review and update the emission point plan with the inclusion of A5 and A6 which currently states 'removed' as used for planned shutdown and emergency. The plan should also reinstate S4 as listed in Table S3.6 'Point source emissions to sewer, effluent treatment plant or other transfers off-site-emission limits and monitoring requirements'.	Within 5 months of completion

ANNEX 3: Consultation Responses

1. Advertising and consultation on the Application

The application has been advertised and consulted upon in accordance with Natural Resources Wales Public Participation Statement. Responses to this consultation and how we have taken consultation responses into account in reaching our draft decision is summarised in this Annex.

Consultation Responses from Statutory and Non-Statutory Bodies

None received.

A number of the issues raised during the consultation process are outside Natural Resources Wales remit in reaching its permitting decisions. Specifically, questions were raised which fall within the jurisdiction of the planning system, both on the development of planning policy and the grant of planning permission. Specific planning issues raised related to off-site traffic movements.

Guidance on the interaction between planning and pollution control is given in PPS23 / Planning Policy Wales. It says that the planning and pollution control systems are separate but complementary. We are only able to take into account those issues, which fall within regulatory scope of the Environmental Permitting Regulations.

Representations from Councillors and Parish / Town / Community Councils

Response Received from Representations from Councillors and Parish / Town / Community Councils	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Request for more time to consider the application and question around the transparency of files.	The application was placed on the public register on receipt and advertised in line with our public participation statement which outlines why, when and how we consult. The initial advertisement timeline was extended upon request. Data modelling files require specialist software to view. Without this software

	they are visible but appear not to open. These files were placed on the NRW public register on receipt and are used by NRW air quality and noise specialists using the appropriate modelling software. Full transparency regarding the application was made.
There are unanswered questions around the storage of OSB. Where it will be stored	Process material storage will consist of new tanks / silos. Prior to chip preparation round wood will be stored in the new north road area through this variation. OSB has an associated finishing line, sanded products are stacked, banded and transferred to a warehouse. Further information on the process can be found in the non-technical summary in the introduction to the draft environmental permit.
Traffic – Concerns with an increase in traffic and use of the railway with it being already at capacity. North access road needs to be in place prior to OSB manufacturing line.	Planning was granted for OSB in 2018 and subsequently the north access road more recently. Off-site traffic and use of the railway is outside of the remit of NRW. This permit variation includes a new site entrance and north access road with an associated increase in the installation boundary.
There have been no improvements since NRW regulation and issue of 26 improvement notices around dust, odour and noise. Questions regarding communications around proposed improvements on controlling dust odour and noise and monitoring by NRW of the site. Little improvement around dust odour and noise from the installation since NRW regulation. Numbers of complaints reduced and then worse levels. Results on NRW audits around dust and damaged filter box socks, housekeeping and oversight of operator departments.	Improvement conditions were added to the environmental permit on and since its consolidation and NRW regulation of the site as a whole in 2022. Compliance work regarding dust, odour and noise has and continues to be undertaken by NRW through incident response, planned and unplanned audits actions and recommendations made and captured in compliance assessment report forms or (CARS) and through our day-to-day regulation of the installation. The work we do is placed on the NRW public register. Operator responses to the improvement conditions are also placed on the public register which on completion form part of the environmental permit and our regulation of the site on completion of the work. How we are regulating Kronospan, Chirk - Natural Resources Wales Citizen Space - Citizen Space
A 25% increase in pollution and emissions. Namely overnight noise pollution, fine fibres and other wood dust	The production capacity for OSB can be found in section 7.1 of this document. The operator applied under EPR Section 6.1 A(2) (a) producing in an industrial

pollution, dangerous chemical releases appalling stench pollution.	plant, one or more of the following wood-based panels with a production capacity exceeding 600m³ per day OSB, particleboard or fibreboard. The manufacture of OSB with a total production capacity of 550,000m³ / year (or 2,000m³ per day). The environmental risk assessments have been based on this figure within this variation. This draft decision document outlines where we have considered the associated risks posed with this permit variation to the site and address each element in the relevant chapters above namely air quality, odour, noise. The permit conditions remain in force against which we regulate the site.
No effective environmental management plan and process systems for controlling dust odour and noise on plants present output.	The operator has in place an EMS that is certified to the British Standard ISO 14001. See section on EMS above and operator competence. The environmental permit conditions and associated odour, dust and noise management plans are directly linked to the site EMS which will be subject to independent auditing.
Request to refuse until significantly awful levels of pollution currently emitted proven to have reduced for a 6-month period before consideration of a new permit. The timeline for introduction of change namely new road and substation, covering of outside storage and new biofuel plant prior to OSB. Applicant delaying the north entrance in favour of OSB manufacturing resulting in more HGV traffic into Chirk which is not acceptable.	NRW has a duty to determine the application once duly made and in accordance with EPR. This draft decision document outlines how we have considered the application and why we have included specific conditions. It is also a record of where we have considered all relevant factors and explain our decision. This change to the process does not include the construction of the road into the site, substation or biofuel facility. It does include a new site entrance and a change to the installation boundary for vehicles through the site. This document outlines the proposed permit variation and can be found in the application summary 1.1.

Trials to suppress odour and time taken. Impacts on odour with an increase in output. Trials to suppress odour and time taken. Impacts on odour with an increase in output.	Operator trials have taken place on the abatement systems at the installation and have formed part of our regulation of the site. This variation includes the storage of hydrogen peroxide for odour abatement following the trials undertaken on site. This aspect of the variation has been discussed in this draft document.
No effective environmental management plan and process systems for controlling dust odour and noise on plants present output. Current compliance and impact of poor monitoring and management of the site. Question raised over current notifiable incidents of unauthorised emissions on the public register. Pollution procedures and processes - carry out regular maintenance and safety checks, and - set up 24-hour pollution monitoring and control.	The operator has in place an EMS that is certified to the British Standard ISO 14001. See section on EMS above and operator competence. The environmental permit conditions and associated odour, dust and noise management plans are directly linked to the site EMS which will be subject to independent auditing. Environmental risks concerning dust, odour and noise have been considered through out this determination. As this is an existing site it is important that the operator meets BAT against which we have assessed the proposed change. Where necessary pre-operational conditions and improvement conditions have been added. Pre-operational condition will need to be met before any OSB manufacturing can take place. The operator is required to notify NRW under permit condition 4.3 'Notifications' in respect of a number of scenarios. This feeds into NRW on-going regulation and site compliance work. Any incidents are scored in line with our policies and procedures and reflects in turn the level of regulatory effort through a banding system.
Point source emissions to air. It refers to omitting the emissions from several sources when monitoring the OSB driers for compliance this is fine for base line settings of that part of the process but for continued emissions from A28 all sources should be in operation and passing through A28 to ensure that	There are no CEMS on WESP 32 (A28) and emissions particularly from VITS and resin plant are intermediate as it's a batch making process. The WESP 32 is secondary abatement for emission from combined press abatement which has abatement in place (A31). A28 will have the addition of NOx to demonstrate that the driers are off for testing purposes but would need to be compliant with the

normal emissions are compliant at all times.	same ELV's for that part of the process at A31.
In the previous permit variation it was agreed that due to the poor state of the plant and not being efficient at cleaning then the waste gases from vits and resin nairb's would always exhaust from A28 can it be agreed that these sections of plant are shutdown and not in operation when WESP 32 is being maintained and when emission monitoring dictates that they are diverted as the fumes from these processes have high concentrations of gases that through there low stacks could ground on the village and be a severe nuisance to the local schools and villages. This is highlighted again in <i>Fichtner Supporting Information S2376-0290-004RSF</i>	A5 and A6 were diverted to the WESP 32 by way of permit variation BW9999IG/V010. Procedures are in place should the WESP 32 be offline then the vits and resin process are placed on stop. The NAIRB wet scrubbers have been decommissioned. With the V010 variation an associated improvement conditions were added to the permit (NRW IC54 and NRW IC55) the response to which included the procedures in place / operating techniques relating to the shut down of WESP 32.
BAT review. It states that PB surface layer only contains sawdust and MDF fibres and no RCT/RCF, how is that possible when all the material for the process goes through 1 drier, this includes RCT/RCF, sawdust and an amount of MDF and is separated through sifters. It is impossible to say there is NO RCT/RCF in the surface layer.	The 2 driers for OSB will have different feedstocks for making up the product it is understood that there is no RCF in the surface layer.
Section 2 options to use recycled water. There is technology now to condense all the plumes from MDF and WESP's 32 and 22 and reuse the water this should be considered which would dramatically reduce the burden of ground, town and canal water for all the processes	BAT is a WESP and does not specify specific technology regarding plume condensing. WESP 32 is secondary abatement at the installation. There is no change to the NRW permissions in place regarding water abstracted from the canal as part of this variation. The operator will be required to report water usage and its minimisation is driven by the legislation and associated BATC's.
Section 3 reducing emissions to air as previously mentioned in the previous paragraph will all processes requiring WESP 32 to be shut down while the plant is on maintenance especially Vit's and Resin nairb's due to their poor condition as previously agreed by	There is the same emission limits on A31 following initial abatement and these compliance limits will remain. Please refer to the above concerning NRW IC 54 and 55 which was introduced by way of EPR/BW9999IG/V010.

yourself in the permit variation EPR/BW9999IG/V010.	
Section 19 reducing emissions. It states in this section that OSB will only use PMDI resins which are formaldehyde free but in document Fichtner Supporting Information S2376-0290-0004RSF it states that all resin types will be used.	The operator has a procedure in place concerning the use of any new chemicals on site. There are no new resins produced as part of this variation and only approved manufactured products will be used. This permit variation introduces 2 new resins for use in OSB manufacture and sourced off site. These will form part of the raw material, chemical and reagents used on site in the manufacture of wood-based panels. NRW understands that availability of the raw materials are depending on market forces and product specifications. The wood-based panel BRef references pDMI as a formaldehyde free resin for use in the manufacture of OSB and will be utilised by way of this variation.
Questions regarding K7 and K8 and the types of materials accepted for use in the plant.	The environmental permit was subject to the waste incineration (WI) BRef review issued in June 2025 (EPR/BW9999IG/V011). The permit defines what materials are acceptable for use in both the K7 and K8 plant. There is also a procedure linked to the EMS for the installation regarding waste acceptance. There is no change to the ELV's on K7 and K8 as part of this variation as they are in line with the BATC's for the secondary WI BRef and where most applicable for the plant at the installation.
Point Source Emissions to air, refers to 39 dust filter boxes across the site but this is not all dust filters on site as the ones on top of the silo's that receive the material from blow lines are not listed and need adding to the register.	NRW improvement condition (NRW IC69) concerning the dust management plan has been included for existing and all changes as a result of the variation (V012). Also, NRW IC68 has been included all release points to air.
Monitoring Emissions to Air. There is no mention of the abatement systems for Vits and Resin as there are times when they will be exhausting to air through A5 and A6 then these should be including in the testing to ensure they are compliant if not going through A28 (WESP32).	Please refer to answer above concerning the re-ducting of A5 and A6. Should the abatement system be offline there are procedures in place concerning the reactions going on stop. Compliance monitoring will take place at WESP 32 and A5 and A6 are emergency use only in the event of a controlled shut-down or WESP 32 being offline.
One waste that is not mentioned and where it is disposed of or burnt is the	The NAIRB system is no longer in use at the site and has been decommissioned.

waste material from the nairb systems. This material waste route needs to be identified and categorised	This was confirmed in a Schedule 5 Notice to the operator.
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Representations from Individual Members of the Public

Response Received from	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Request for more time to consider the application. Transparency around files.	Response as above
NRW short timeline to issue OSB permit.	We have determined the permit application which was duly made on 15/11/2024. Duly made is when we have sufficient information, to begin determination. During the determination we needed to seek further information that we required for our assessments. It is unclear what short timeline this is referring to, we are now at the draft decision stage of the process.
Industrial expansion of the Kronospan land would only increase pollution.	The application to vary the permit has been assessed and the draft decision has been determined and discussed in the relevant sections of this document.
No permit granted until a full public meeting.	We will consult on the draft decision in line with our public participation statement which outlines why and when we consult. Natural Resources Wales / Public participation: how you can take part in our permit and licence consultations.
No permit granted at all until pollution free for 12 months with monitoring and inspection, where there has been zero incidents of dust odour and noise pollution in the town of Chirk.	Compliance work regarding dust, odour and noise has and continues to be undertaken by NRW through incident response, planned and unplanned audits actions and recommendations made and captured in compliance assessment report forms or (CARS) and through our day-to-day regulation of the installation. The work we do is placed on the NRW public register. Operator responses to the improvement conditions are also placed on the public register which on completion form part of the environmental permit and our regulation of the site on completion of the work. How we are regulating Kronospan, Chirk

	- Natural Resources Wales Citizen Space - Citizen Space There is an existing permit in place, and we have a duty to assess the application to vary and come to a decision once duly made. This document outlines the draft decision, and we have tried to explain the thinking behind it under the various sections based upon an objective assessment of the proposals against the detailed legal requirements of EPR.
The new road and power supply need to be built before OSB plant.	There are a number of aspects to the variation application these can be seen in section 1.1 of this document. A north access road and extension of the installation boundary have formed part of the determination.
Present pollution and reporting in respect of permit conditions and number of complaints concerning the site of odour and 25% capacity increase. Results of odour trials on the public register and suspension of application until operator demonstrates sustainable process that does not pollute.	The production capacity for OSB can be found in section 7.1 of this document. The operator applied under EPR Section 6.1 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 OSB, particleboard or fibreboard. The manufacture of OSB with a total production capacity of 550,000m³ / year (or 2,000m³ per day). The environmental risk assessments have been based on this figure within this variation. This draft decision document outlines where we have considered the associated risks posed with this permit variation to the site and address each element in the relevant chapters above namely air quality, odour, noise. The permit conditions remain in force against which we regulate the site.

ANNEX 4: BAT Assessment

DRAFT

Decision Checklist regarding Relevant BAT Conclusions for the Production of wood-panels

BAT Conclusions for the production of wood-based panels were published as Commission Implementing Decision (EU) 2015/2119 in the Official Journal of the EU on 20 November 2015. There are 28 BAT Conclusions. This checklist provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the permit. For full definitions and acronyms please refer to the published BAT Conclusions Document.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
General BAT conclusions		
Environmental Management System		
1.	Implement and adhere to an Environmental Management System (EMS) that incorporates all of the following features: i) Commitment of the management, including senior management; ii) Definition of an environmental policy that includes the continuous improvement of the installation by the management; iii) Planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;	Currently compliant Kronospan Limited have an established Environment Management System (EMS) in place for the installation which is certified to the ISO 14001 standard. The operator in making this application for a variation to the existing environmental permit has stated that the current EMS incorporates all the features as set out in the BREF. A commitment was made by the operator in this application that the EMS will be updated to incorporate the proposed changes in operations brought about by the variation application.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	iv) Implementation of procedures paying particular attention to: (a) Structure and responsibility; (b) Recruitment, training, awareness and competence; (c) Communication; (d) Employee involvement; (e) Documentation; (f) Effective process control; (g) Maintenance programmes; (h) Emergency preparedness and response; (i) Safeguarding compliance with environmental legislation v) Checking performance and taking corrective action, paying particular attention to: (a) monitoring and measurement (see also the reference report on Monitoring); (b) corrective and preventive action; (c) maintenance of records; (d) independent (where practicable) internal and external auditing in order to determine whether or not the EMS conforms to the planned arrangements and has been properly implemented and maintained; vi) Review of the EMS and its continuing suitability, adequacy, and effectiveness by senior management; vii) Following the development of cleaner technologies; viii) consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life;	

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	ix) application of sectoral benchmarking on a regular basis; x) waste management plan xi) quality control plan for recovered wood used as raw material for panels and used as a fuel; xii) noise management plan; xiii) odour management plan; xiv) dust management plan.	
Good Housekeeping		
2.	In order to minimise the environmental impact of the production process, BAT is to apply good housekeeping principles using all of the techniques given below: (a) Careful selection and control of chemicals and additives;	(a) Currently Compliant – Changes made to chemicals / additives are assessed through the Chemical Purchasing Procedure (KC/PURC/PRO/0003). Significant changes are also assessed through the site's Management of Change Procedure (KC/EHS/PRO/008). Chemicals and additives at the Site are selected, stored and managed in accordance with industry good practice, guidance (e.g. MSDS) and in compliance with any conditions or requirements of the Environmental Permit (EP). Each chemical is assessed and will have an associated COSHH assessment where applicable for use in the workplace. This includes the additional chemicals being proposed as part of this EP variation application.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(b) Application of a programme for the quality control of recovered wood used as a raw material and / or as fuel ⁽¹⁾, in particular to control pollutants such as, Pb, Cd, Cr, Cu, Hg, Zn, Chlorine, fluorine and PAH; (c) Careful handling and storage of raw materials and waste;	(b) Currently Compliant - All recycled timber is currently purchased for Particleboard production and undergoes quality control upon arrival at Site. The following documents within the EMS detail the control measures in place for recycled timber receipt: • KC/LOGY/PRO/0003 – Procedure for Recycled Timber Control • KC/LOGY/WI/0001 – Moisture Content of Timber Raw Materials • KC/LOGY/WI/0006 – Visual Inspection of Recycled Wood • KC/PURC/DOC/0008 – RCT Suppliers Specification • KC/PURC/DOC/0021 – Pre-Crushed RCT Specification The OSB process uses roundwood and hacker chips and recycled timber similar to that used for Particleboard. No additional quality control measures for recovered wood are required to supplement those currently implemented at the Site. (c) Currently Compliant – Raw Materials Storage The wood related products produced on site rely on adequate stocks of raw materials. These include: recycled wood fibre (RCF), virgin chips, sawdust, bark and roundwood. These materials are currently stored on the Log yard facility in the open air. Details of the storage and handling of raw materials was outlined in an ‘Operating Techniques’ document that was provided with the permit variation application. Aspects of this document are proposed to be included in the environmental permit. Within the Log Yard, two additional storage silos, and a crane and loading facility will be installed to store additional timber required for the OSB production process, and a new flaker building. Raw Materials – Chemicals for the existing operations, resins are produced on-site rather than being tankered in. A mixture of storage tanks and IBCs are used to store chemicals. Again, details of the storage and handling of chemicals was provided within the proposed operating document. There is minimal handling for personnel safety and where appropriate material is offloaded directly between silo and vehicle.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(d) Regular maintenance and cleaning of equipment, transport routes and raw material storage areas; (e) Review options for the reuse of process water and the use of secondary water sources.	The EP variation application includes additional storage tanks and IBCs, and additional chemicals to be installed at the Site. Some of the storage tanks and IBCs are the same as existing ones. The only new resins to be used on Site is PMDI and Phenolic. However, Kronospan will go through a Management of Change process to review the material storage and handling procedures and arrangements before it is used to ensure the effects on safety are understood and allowed for. Waste - All waste onsite is segregated and stored in designated areas. Individual departments have their own local waste storage facilities that are audited during weekly departmental environment audits. These are emptied into the main Site amenities. All areas are regularly inspected to ensure that they are kept tidy and that wastes are being disposed of in the appropriate storage areas. This ensures that the waste hierarchy can be applied effectively. Any spillages are cleared up immediately. (d) Currently Compliant Good housekeeping practices are employed to reduce the risk of fire across the Site and provide a safe and healthy workplace. Cleaning schedules are in place in all production areas through two processes to ensure equipment is operated safely, these include the Operational Protection Scheme (OPS) checks performed by all Operators and routine shutdown maintenance programmes. Operator OPS checks are completed during each shift and reviewed by their relevant Management Teams to ensure that housekeeping standards are maintained. Some cleaning activities require plant shutdown to be performed safely and are therefore carried out on a periodic basis. These two avenues ensure that housekeeping is maintained on a continual basis. Transportation routes are kept clean by use of a road sweeper. It is the responsibility of the EHS Manager to ensure a suitable frequency is maintained within the contract and that the external service provided is to a satisfactory

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
		level. This is usually a minimum of 3 days per week during winter and may be increased to 5 days per week during summer months. During periods of dry, warm weather the site employs a water bowser to dampen the site transport routes down to prevent the generation of dust from vehicle movements. This is performed by employees within the Site Services Team that are under the supervision of the EHS Manager. The existing maintenance and cleaning regime will be extended to cover the additional process being proposed as part of this EP variation application. (e) Currently Compliant – The main sources of water around site are: Town's water, borehole water, canal water and surface water drainage. <u>Borehole and canal water</u> Borehole water is abstracted from a number of points around site and can be used as process water or as a make-up water for cooling towers used on the Formalin and Resin plants. Borehole water and treated canal water is used as a process water or boiler feed water. Prior to use it is deoxygenated in a hot well and then chemically treated in the boiler to prevent corrosion. Blow down waters from the boiler are discharged to the sites foul water drainage system via discharge consents. Surface water drainage - Surface waters from the existing site drain into one of three holding lagoons on site. Two new wetlands will take surface water from the additional land to be included in the Installation boundary. Waters stored in Lagoon 3, which is mainly rainwater, is used as firewater in the Log Yard rail siding area. In the event of fire, the lagoon waters can be used as a secondary source of water for the onsite or off-site fire services.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
		The new wetlands included for within this EP variation application will take surface water from the additional land to be included in the Installation boundary. In the event of fire, the wetland waters can be used as a secondary source of water for the onsite or off-site fire services. <u>Process water (reuse)</u> Process water can be cleaned and reused in various parts of the process, including MDF and resin. Kronospan is investigating the use of harvested rainwater within the manufacturing process.
3.	In order to reduce emissions to air, BAT is to operate the waste gas treatment systems with a high availability and at optimal capacity during normal operating conditions. Special procedures can be defined for other than normal operating conditions, in particular: (j) During start-up and shut-down operations; (ii) During other special circumstances which could affect the proper functioning of the systems (e.g. regular and	(i) Currently Compliant – Plant start-up and shut down operations are controlled by individual plant areas following plant specific procedures. Proactive maintenance is carried out following a plant maintenance shutdown plan. Operational and maintenance staff liaise to ensure that there is no adverse effect on the environment, people or plant. To ensure no environmental impact the process shutdown / start-up will take into account management of any abatement system in place, waste water discharge and waste collection and disposal. This EP variation application is seeking to use the existing WESP 32 for waste gas treatment for the OSB driers. During start up and shut of the WESP 32 emissions can still emit to atmosphere via the WESP 32 but there would be no abatement. However, the WESP 32 has a high level of availability and is operated continually. Currently proactive maintenance is carried out once a quarter on the WESP 32. This is scheduled for when the plant requiring the WESP 32 for abatement are shut-down. This will continue to occur.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	extraordinary maintenance work and cleaning operations of the combustion plant and / or of the waste gas treatment system).	(ii) Currently Compliant <u>Extraordinary maintenance</u> Reactive or extraordinary maintenance is carried out in a controlled way to ensure that all abatement systems and potential wastes generated (to air, water or solid) are managed in compliance with Kronospan's environmental permits, management systems, and all relevant legislation, regulation and guidance.
Noise		
4.	In order to prevent or, where that is not practicable, to reduce noise and vibration, BAT is to use one or a combination of the techniques given below (prevention / point source reduction / site level reduction): (a) Strategic planning of the plant layout in order to accommodate the noisiest operations e.g. so that on-site buildings act as insulation (generally applicable in new plants – layout of a site may limit applicability on existing plants);	(a) Currently Compliant When installing new plant, noise is taken into consideration and plant is designed in order to minimise noise off-site. Noise surveys are carried out as part of planning applications prior to installation to assess the impact of any new plant to the surrounding areas. With regard the changes proposed as part of this EP variation application all pre-production will occur in the same area as currently – i.e. away from Chirk along the western boundary of the Facility. Along this boundary there is natural screening for receptors to the west, and the buildings screen the receptors to the east. The new pre-production processes being applied for are located in this same area. The OSB plant is located within the building. This EP variation application also includes for the additional land to the north. Whilst this does not contain any plant, layout configurations have been considered including a new bund along the eastern boundary to minimise any noise impacts within Chirk. This layout allows HGVs to access via the north of the site rather than through the village of Chirk minimising noise.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(b) Applying a noise reduction programme which includes noise source mapping, determination of off-site receptors, modelling of noise propagation and evaluation of the most cost-effective measures and their implementation; (c) Performing regular noise surveys with monitoring of noise levels outside the site boundaries;	(b) Currently Compliant Various noise surveys have been carried out over the years, in 2012 an extensive survey was carried out by RSK to identify noise sources on-site and sensitive receptors off-site. This report was issued to the regulator for consideration and as a result the most significant sources that contributed to off-site noise were examined with a view to noise reduction measures. The hierarchy of control was applied. In some cases hardware was required in the form of silencers, acoustic booths / panelling, or lagging. These improvements were documented by the regulator in the environmental permit. Following completion of the high-priority sources, additional work was agreed to further reduce the site impact. The Site is currently undergoing major plant improvements, part of which is to reduce the noise impact both on and off-site. Individual projects, as part of the planning application process, require a noise assessment. In most cases, and where possible, a standard of 75 dbA at 1 meter from the exterior of any building is applied. When the plant improvement programme has been completed, a full on and off-site survey will be carried out to assess the improvement and establish a new noise reduction programme. This programme will be extended to include the new processes being applied for as part of this EP variation application. (c) Currently Compliant Qualitative noise monitoring is carried out at least once a month at various locations within the local area. These points take into account sensitive receptors as identified during previous noise surveys, being located where noise from the plant has the potential to cause a nuisance (e.g. areas with a large residential population, or sensitive receptors (e.g. schools), or where previous complaints have been received. Currently there are twelve locations that are assessed each month, however additional areas may be included following any complaints or to ensure that any issues found have been resolved effectively. Monitoring takes place at random

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(d) Enclosing noise equipment in housing or by encapsulation and by soundproofing buildings; (e) Decoupling individual equipment to pre-empt and limit propagation of vibrations and resonance noise; (f) Point source insulation using silencer, damping, attenuators on noise sources, e.g. fans, acoustic vents, mufflers, and acoustic enclosures of filters;	times throughout the day as well as at night / early morning / weekends. Noise levels are also measured during surveys carried out by third parties. Procedure KC/EHS/PRO/017 describes the monitoring process and outcomes in more detail. This does not change as a result of this EP variation application and will continue to be carried out. (d) Currently Compliant - For plant and equipment outside of buildings, the aim is to reduce noise levels to as low as reasonably practicable. This will be carried out by careful selection of plant and equipment for example a band conveyor may be chosen as opposed to a bucket conveyor. Plant that is identified by a noise survey as having a high noise impact, may be enclosed via acoustic booths or panelling as part of the noise reduction programme. The changes being proposed as part of this EP variation application have been subjected to a detailed noise assessment which is contained within Annex E of the EP application. This also sets out the mitigation measures being applied. This demonstrates that noise equipment will be housed in sound proofed buildings with acoustic doors. Supplementary information in S5 response #1 (28/01/2025) and #2 (02/06/2025). (e) Currently Compliant - Monthly condition monitoring is carried out on large plant assets (e.g. ID fans) to inform planned preventative maintenance work and minimise noise emitted from motors, fans or blowers. Large plant assets are also fitted with continuous vibration monitoring that causes plant shutdown should vibrational set points be exceeded. Details of the plant fitted with continuous vibration monitoring is contained in the Noise Register which forms part of the Noise Management Plan. The Noise Management Plan has been updated to allow for the changes. (f) Currently Compliant -The new processes which form this EP variation application include silencers where appropriate. Full details of the point

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(g) Keeping gates and doors closed at all times when not in use. Minimising the fall height when unloading roundwood; (h) Reducing noise from traffic by limiting the speed of internal traffic and for trucks entering the site; (i) Limiting outdoor activities during the night; (j) Regular maintenance of all equipment; (k) Using noise protection walls, natural barriers or embankments to screen noise sources.	source insulation of the new equipment being proposed as part of this EP variation application is contained within the NIA for the proposed change. Supplementary information in S5 response #1 (28/01/2025) and #2 (02/06/2025). (g) Currently Compliant - Most factory doors are self-closing to reduce noise impact. Where this is not the case, employees are reminded to ensure that doors are closed from 7pm until 7am as a minimum. In some cases this has been in agreement with the environmental regulator. Any complaints arising from local residents due to noise from open doorways are responded to immediately and any remedial action taken. At all times and as part of routine operations, the fall height when unloading roundwood is minimised from both the rail off-loading facility and road deliveries. These measures will not change as a result of the proposed EP variation and any new buildings will also have self-closing doors. (h) Currently Compliant - The on-site speed limit is set at 10 mph, or 5 mph in some designated areas. Speed limiters are installed on certain vehicles, all vehicles entering the site must obey local signage. A speed gun is used occasionally in various areas of the site as a check on compliance and near miss reporting is used as a tool to identify any vehicles that may be exceeding the speed limits. Any issues with external hauliers would be dealt with by the Despatch / Timber Buying Departments contacting the specific haulier with complaints. No change to measures with proposed variation. (i) Currently Compliant - Outdoor activities that may have an impact off-site are prohibited between the hours of 7pm and 7am. This is mainly the use of the main site skips which are located on the eastern boundary of the site, parallel with the main road through the local neighbourhood. These measures will not change as a result of the proposed variation. (j) Currently Compliant - Equipment onsite is maintained following a proactive maintenance schedule the frequency of maintenance of plant is set out within the department aspect register which forms part of the EMS.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
		The preventative maintenance schedule will be updated to allow for the changes to the operations proposed as part of this proposed variation. (k) Currently Compliant - Along the length of the eastern boundary of the site with Holyhead Road is a large tree-lined embankment which acts as a screen to reflect the noise on-site. This will be extended to the north to screen the new area of land to be used as the lorry park and log storage area.
Emissions to Soil and Groundwater		
5.	In order to prevent emissions to soil and groundwater, BAT is to use the techniques given below: (i) Load and unload resins and other auxiliary materials only in designated areas that are protected against leakage run-off; (ii) Whilst awaiting disposal, collect all material and store in designated areas protected against leakage run-off;	(i) Currently Compliant - All resins used for production are produced on-site and therefore very little loading / unloading takes place. The resins are piped directly from the reactors into storage silos before being transferred to the relevant production department. The only occasion for requiring road tanker deliveries would be in the event of insufficient production from the internal Resin Department. In this instance, all resin storage silos are fully bunded to prevent spillages to ground and are within a fully concreted tank farm area that also has tertiary containment (Middle Road). The Middle Road drains are concreted and sleeping policemen provide a barrier to prevent any spillage going to drain. Other auxiliary materials that are delivered via tanker (e.g. methanol, caustic or acids) are also received into fully bunded storage silos or tank farms, either within the Resin or Formalin Department or on the Middle Road; again all have tertiary containment in addition to bunding. The new chemicals proposed as part of this EP variation application will be unloaded in the same way. (ii) Currently Compliant

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(iii) Equip all pump sumps or other intermediary storage facilities from which spillages may occur with alarms activated by high levels of liquid; (iv) Establish and implement a programme for the testing and inspection of tanks and pipelines carrying resins, additives and resin mixes;	Bulk liquid wastes 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 compound of concrete construction that is bunded to prevent spillage to ground. No change as part of the proposed variation. (iii) Currently Compliant - The majority of sump pumps are level-activated with the sump being within secondary containment, in some cases where tertiary containment is in place the sump pumps may be manually operated. Tertiary containment in all cases would prevent spillages from entering either surface water or foul sewer systems. In some instances, sump pumps will have a high-level trip, but these tend to be for critical sumps where overflow may result in release to drain or flooding of a plant area / roadway. All new pump sumps and storage facilities proposed as part of this EP variation application will be fitted with the same equipment. (iv) Currently Compliant Storage tanks that store hazardous materials are inspected in accordance with a written scheme of inspection, by Allianz Risk Services. Normal inspection period is 5 years. Storage tanks that store hazardous materials are situated in bunds, which are inspected. Storage tanks that store non-hazardous materials are situated within spill containment areas. Bunds and spill containment areas are monitored weekly, as part of environmental audit, for any signs of spillage or leakage. Pipelines that convey hazardous materials are inspected in accordance with a written scheme of inspection, by Allianz Risk Services. Thorough inspection period is 5 years.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(v) Carry out inspections for leaks on all flanges and valves on pipes used to transport materials other than water and wood; maintain a log of these inspections; (vi) Provide a containment system to collect any leaks from flanges and valves on pipes used to transport materials other than water and wood, except when the construction flanges or valves is technically tight; (vii) Provide an adequate supply of containment booms and suitable absorbent material; (viii) Avoid underground piping for transporting substances other than water or wood; (ix) Collect and safely dispose of all water from fire-fighting;	Pipelines that convey non-hazardous materials are primarily situated within spill containment areas. Bunds and spill containment areas are monitored weekly, as part of environmental audit, for any signs of spillage or leakage. The operator outlined that the written scheme of inspections will be updated to include for the additional tanks and pipelines proposed as part of the variation application. (v) Currently Compliant - Flanges and valves are inspected as part of the respective pipelines described above. (vi) Currently Compliant - All areas with pipework, flanges, valves and storage vessels for material other than wood and water are on hardstanding with appropriate bunds and arrangements in place to prevent any leaks to soil or groundwater. This is also the case for all new flanges and valves proposed as part of this EP variation application. (vii) Currently Compliant - Emergency spill kits are available across site in designated areas that were assessed as being those with the greatest risk of spill. Careful consideration has been given in each area to the type of spill that might occur (i.e. oil or chemical) and each spill kit will contain the most suitable materials in the form of booms, mats, pillows etc. Additional absorbent material is available in the company stores and wood chip / shavings can also be used if the spill is in the vicinity of the Log yard / Sawmill. Spill kits are checked and replenished if necessary, every two weeks or after use. All materials used to manage a spill would be disposed of in a suitable manner. Additional spill kits will be provided to the new process area as part of this proposed variation. (viii) Currently Compliant – All additional piping associated with the proposed variation will be above ground.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(x) Construct impermeable bottoms in retention basins for surface water run-off water from outdoor wood storage areas.	(ix) Currently Compliant - Fire-fighting water is contained within the plant / plant bund before being appropriately disposed of. If water breaches this and enters the surface water drainage system, it would be contained by isolating one of the surface water lagoons and ensuring swift closure of Penstock A as a further precautionary measure. This would prevent water from entering the local watercourse and allow for suitable disposal procedures to be implemented. All foul sewer drains have close-fitting manhole covers except for the Middle Road Pit. The Middle Road Pit has a sump pump which in the event of a fire within the Preproduction area, would be isolated to prevent any discharge to sewer. Fire-fighting water on the new land would go through an oil interceptor prior to flows entering the new wetland area. This will be subject to regular inspection and maintenance. The outlet from the wetland areas will be controlled via a penstock valve and will include a facility to shut-off discharge from the wetland in the event that this is contaminated, this could then be removed as part of remediation works. (x) Currently Compliant - The new wetland area will take surface water run-off from the new land to be incorporated into the Installation boundary. This will include outdoor storage areas for roundwood. As this will not include any recovered wood storage areas the wetlands will not have impermeable bottoms. Reference should be made to PO5.
Energy Management and Energy Efficiency		
6.	In order to reduce energy consumption, BAT is to adopt an energy management plan, which includes all of the techniques given below: (i) Use a system to track energy usage and costs; (ii) Carry out energy efficiency audits of major operations;	Currently Compliant All of the adjacent techniques (i) to (v) are used to reduce energy consumption. 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 given to operators of

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(iii) Use a systematic approach to continuously upgrade equipment in order to increase energy efficiency; (iv) Upgrade controls of energy usage; (v) Apply in-house energy management training for operators.	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 site's 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). This energy consumption review will be expanded to include the new processes proposed as part of this EP variation application.
7.	In order to increase energy efficiency, BAT is to optimise the operation of the combustion plant by monitoring and controlling key combustion parameters (e.g. O ₂ , CO, NO _x) and applying one or a combination of the techniques given below: (a) Dewater wood sludge before it is used as a fuel; (b) Recover heat from hot waste gases in wet abatement systems using a heat exchanger; (c) Recirculate hot waste gases from different processes to the combustion plant or to preheat hot gases for the dryer.	Currently Compliant Points (a) and (c) are used. This variation is not proposing any new combustion plant. OSB Dryers 1 and 2 are refurbished existing dryers previously known as Bab 1 and 2.
8.	In order to use energy efficiently in the preparation of wet fibres for fibreboard production, BAT is to use one or a combination of the techniques given below: (a) Cleaning and softening of chips (Mechanical cleaning and washing of raw chips); (b) Vacuum evaporation (recovering hot water for steam generation);	Currently Compliant Points (a) and (b) are used. This variation is not proposing a new process using wet fibres.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(c) Heat recovery from steam during refining (Heat exchangers to produce hot water for steam generation and chip washing).	
Odour		
9.	In order to prevent or, where that is not practicable, to reduce odour from the Installation, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: (i) A protocol containing actions and timelines; (ii) A protocol for conducting odour monitoring; (iii) A protocol for response to identified odour events;	(i) Currently Compliant - The site's Odour Management Plan (OMP) sets out how the company manages reduction of odour from the installation. The plan is reviewed and updated on an annual basis. The OMP forms part of the site EMS as required by BAT 1. This includes the elements as listed. The OMP has been updated to allow for the changes proposed as part of the variation application. (ii) Currently Compliant - As dictated in the OMP, off-site odour monitoring is carried out concurrently with noise monitoring on at least a monthly basis at various sensitive receptors in the town of Chirk. On-site monitoring of any potential odour sources takes place during weekly department environmental audits, recorded on individual checklist sheets. (iii) Currently Compliant Odour events are treated as an environmental incident and would be responded to using the generic incident investigation procedure (KC/EHS/PRO/010). Appropriate initial action would be taken to prevent any off-site impact, followed by further investigative work to determine the root cause of any abnormal odour emissions and put actions in place to prevent reoccurrence. Should an off-site odour complaint be received, the standard complaints procedure (KC/EHS/PRO/016) that is used for all external complaints will be followed.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(iv) An odour prevention and reduction programme designed to identify the source(s); to measure / estimate odour exposure; to characterise the contributions of the sources; and to implement prevention and /or reduction measures.	(iv) Currently Compliant - The OMP identifies the main potential sources of odour on-site as well as the prevention and mitigation measures, as demonstrated in the table in section 1.
10.	In order to prevent and reduce odour, BAT is to treat waste gas from the dryer and the press according to BAT 17 and 19.	Currently Compliant - See BAT 17 and 19.
Management of Waste and Residues		
11.	In order to prevent or, where that is not practicable, to reduce the quantity of waste being sent for disposal, BAT is to adopt and implement a waste management plan as part of the environmental management system (see BAT 1) that, in order of priority, ensures that waste is prevented, prepared for reuse, recycled or otherwise recovered.	Currently Compliant - The residues from the new processes being proposed as part of this EP variation application will be used within the installation. These will be stored in silos before either being re-used in the process or burnt as fuel in the biomass boilers onsite. For instance, fines from the additional flaking will be used in the MDF process, and process residues from sanding or cutting of OSB will be used in either the OSB driers, K7 or K8. K7 will only take clean residues.
12.	In order to reduce the quantity of solid waste being sent for disposal, BAT is to use one or a combination of the techniques given below: (a) Reuse internally collected wood residues, such as trimmings and rejected panels, as a raw material;	(a) Currently Compliant All wood residues collected from the process, are wherever possible, reused as a raw material. (b) Currently Compliant The biomass plants use only wastes from the process as a fuel. Further information on this was supplied with the consolidated permit variation.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(b) Use internally collected wood residues, such as wood fines and dust collected in a dust abatement system and wood sludge from waste water filtration, as fuel (in appropriately equipped on-site combustion plants) or as a raw material; (c) Use ring collection systems with one central filtration unit to optimise the collection of residues, e.g. bag filter, cyclofilter, or high efficiency cyclones.	(c) Currently Compliant Bag filters and cyclones are used throughout the site for various parts of the process, and all residues are collected and stored in silos before being either re-used in the process or burnt as a fuel in the two biomass boilers on site. Material is transported between the bag filter, cyclones and relevant silos by blow lines. Storage silos also have their own bag filters and / or cyclones to prevent emissions to atmosphere. All bag filters and cyclones are detailed as abatement systems and potential release points within the environmental permit. They are also contained within the environmental management system aspects registers (area specific) that documents relevant control measures to reduce any potential impact to the environment. For example, the particleboard and MDF sander dust which is burnt as a fuel in the biomass boilers. The dust fraction is suitable for K8 only. The additional residues produced associated with this EP variation application will be re-used in the process or burnt as fuel in the biomass boilers as detailed in response to BAT 11. Bag filters will be used on all dust filtration systems to optimise the collection of residues.
13.	In order to ensure the safe management and reuse of bottom ash and slag from biomass-firing, BAT is to use all of the techniques given below: (a) Continuously review options for off-site and on-site reuse of bottom ash and slag;	(a) Currently Compliant Boiler ash - is currently sent to a hazardous waste landfill site with a Waste Acceptance Criteria WAC derogation. Disposal is reviewed at least annually for further options. At present, the boiler ash carries a mirror hazardous EWC code due to the lead content and consequentially options are limited. Options explored to this day include breeze-block manufacturing (a former disposal route), cement production and road construction but none provide a viable and reliable route at this time. There are currently no reuse options available on-site. Supplementary information in S5 response #1 (21/01/19).

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(b) An efficient combustion process which lowers the residual carbon content; (c) Safe handling and transport of bottom ash and slag in closed conveyors and containers, or by humidification; (d) Safe storage of bottom ash and slag in a designated impermeable area with leachate collection.	(b) Currently Compliant The proposed variation does not pose any change to the biomass-firing process. (c) Currently Compliant Boiler ash is transported within the plant inside a conveying system. The bottom ash from the two biomass boilers is wetted within the boiler before being discharged. This allows for easier transportation and handling, as well as reducing the risk of fire. The ash is then transferred to a central location on-site for storage prior to disposal off-site. (d) Currently Compliant Boiler ash is stored in a designated area that consists of a concrete floor and three-sided bund walls. Any leachate collects in one corner of the bund which can then be pumped out for removal to an approved disposal site. The operator has indicated that the proposed permit variation application does not seek any change to the biomass-firing process.
Monitoring		
14.	BAT is to monitor emissions to air and water and to monitor process flue-gases in accordance with EN standards with at least the frequency given below. If EN standards are not available, BAT is to use ISO, national, or other international standards that ensure the provision of data of an equivalent scientific quality.	Currently Compliant The new sources proposed as part of this variation application will comply with the BAT requirements. For emissions from the new press abatement system periodic measurements will be taken quarterly (combined with the other presses) to the following standards: Dust – EN13284-1. TVOC – EN 12619 Formaldehyde – EN 17638 For emissions from OSB periodic measurements will be taken quarterly to the following standards:

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
		Dust – EN13284-1. TVOC – EN 12619 Formaldehyde – EN 17638 We have imposed emission limits and monitoring requirements for relevant pollutants in Tables S3.4 and S3.5 of the Permit.
15.	In order to ensure the stability and efficiency of techniques used to prevent and reduce emissions, BAT is to monitor appropriate surrogate parameters. <u>Description</u> The surrogate parameters monitored may include: waste gas airflow, waste gas temperature, visual appearance of emissions, water flow and water temperature for scrubbers, voltage drop for electrostatic precipitators, fan speed and pressure drop across bag filters. The selection of surrogate parameters depends on the techniques implemented for the prevention and reduction of emissions.	Currently Compliant There are various abatement systems on-site whereby the emissions to atmosphere are monitored at a frequency agreed in the environmental permit. All abatement systems, in some way, have other techniques which are used to monitor the efficiency of the system. Three examples are given below: 1. The WESP 21 & WESP 32 (wet electrostatic precipitators) – in-line with manufacturers guidelines, a number of parameters are monitored by the operating team. 2. Dust Filtration Systems – differential pressure measurements, some of which are direct readings and some remote, can indicate either a split or blocked bag(s) or blocked blow line. 3. Press abatement system for Particleboard and MDF processes (wet venturi scrubber) – providing adequate water flow to the scrubber in relation to the process gas flow which will ensure optimum abatement system performance. The above measures will continue to be applied for the proposed variation.
16.	BAT is to monitor key process parameters relevant for emissions to water from the production process, including waste water flow, pH, and temperature.	Currently Compliant All emitted water streams are monitored for flow rate, pH and temperature.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
Emissions to Air		
Channelled Emissions		
17.	In order to prevent or reduce emissions to air from the dryer, BAT is to achieve and manage a balanced operation of the drying process and to use one or a combination of the techniques given below: (a) Dust abatement of inlet hot gas to a directly heated dryer in combination with one or a combination of the other techniques listed below (dust); (b) Bag filter (dust); (c) Cyclone (dust); (d) UTWS dryer and combustion with heat exchanger and thermal treatment of discharged dryer waste gas (dust, VOCs); (e) Wet electrostatic precipitator (dust, VOCs); (f) Wet scrubber (dust, VOCs); (g) Bioscrubber (dust, VOCs); (h) Chemical Degradation or capture of formaldehyde with chemicals in combination with a wet scrubbing system (formaldehyde).	Currently Compliant The Particleboard process on-site uses directly heated dryers. Dust and VOC emissions are reduced from this process via a wet electrostatic precipitator (e). The MDF process indirectly heated fibre dryers use a cyclone abatement technique (c). Supplementary information in S5 response #1 (21/01/19). We have imposed the appropriate BAT-AELs for emissions from the dryer and for combined treated emissions from the dryer and the press in Table S3.4 of the Permit. There are no changes to the existing driers as part of this EP variation application. However, new OSB driers are proposed (upgraded previously BAB 2 & 3). These are directly heated driers and comply with the BAT requirement as they vent to atmosphere via a cyclone and WESP. The emission limits proposed for the OSB driers (Table S3.4 of the permit) (expressed at 273K, 101.3kPa, 18% reference oxygen content) noting that the limits proposed are more stringent than the upper end of the BAT-AEL range. We have imposed emission limits and monitoring requirements for relevant pollutants in Table S3.4 of the Permit.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
18.	In order to prevent or reduce NO_x emissions to air from directly heated dryers, BAT is to use technique (a) or technique (a) in combination with technique (b): (a) Efficient operation of the combustion process using air- and fuel-stage combustion, while applying pulverised combustion, fluidised bed boilers or moving grate firing; (b) Selective non-catalytic reduction (SNCR) by injection and reaction with urea or liquid ammonia.	Currently Compliant With regard to the directly heated dryers on site, Kronospan adopt technique (a), applying pulverised combustion. We have imposed the appropriate BAT-AELs for NO_x control from the directly heated dryers in Table S3.4 of the Permit. There are no changes to the existing driers as part of this EP variation application. The OSB driers (upgraded previously BAB 2 & 3) proposed as part of this EP variation application will also include combustion control systems to ensure an efficient operation. SNCR is not proposed on any of the driers.
19.	In order to prevent or reduce emissions to air from the press, BAT is to use in-duct quenching of collected press waste gas and an appropriate combination of the techniques given below: (a) Select resins with a low formaldehyde content (VOCs); (b) Controlled operation of the press with balanced press temperature, applied pressure and press speed (VOCs); (c) Wet scrubbing of collected press waste gases using Venturi scrubbers or hydrocyclones, etc. (dust, VOCs); (d) Wet electrostatic precipitator (dust, VOCs); (e) Bioscrubber (dust, VOCs); (f) Post-combustion as the last treatment step after application of a wet scrubber (dust, VOCs).	Currently Compliant - Waste gases from all presses are controlled by the application of techniques (a), (b) and (c). Resins selected for use in both Particleboard and MDF have formaldehyde contents that are as low as possible without compromising product quality. There are individual wet scrubbers (c) for all individual press lines, but the waste gas from each line is combined into one duct which is directed to the Wet Electrostatic Precipitator WESP 32 duct for emission to atmosphere. No changes to the existing presses are proposed as part of this EP variation application. However, a new press for the OSB line is being proposed. This will include in duct quenching, control of the press, and waste gases collected will go through a scrubber and a WESP. The OSB process will use PMDI which does not contain formaldehyde. (V012) introduces 2 new resins for use in OSB pDMDI and PF which is considered a low VOC option. We have imposed the appropriate BAT-AELs for emissions to air from the press in Table S3.4 of the Permit.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
20.	In order to reduce dust emissions to air from upstream and downstream wood processing, conveying of wood materials and mat forming, BAT is to use either a bag filter or a cyclofilter. (Due to safety concerns, a bag filter or a cyclofilter may not be applicable when recovered wood is used as a raw material. In that case a wet abatement technique (e.g. scrubber) may be used.	Currently Compliant - Dust emissions from wood processing activities on site are reduced by either or a combination of bag filtration systems, dust cyclones and wet scrubbers. The emissions from the additional processes being proposed as part of this EP variation application will also be treated using the same methods. We have imposed the appropriate BAT-AELs for emissions to air for channelled dust emissions to air from upstream and downstream wood processing, conveying of wood materials and mat forming in Table S3.4 of the Permit, with the requirement for continuous process monitoring of all bag filter plant in Table S3.8 of the Permit.
21.	In order to reduce emissions of volatile organic compounds to air from the drying ovens for the impregnation of paper, BAT is to use one or a combination of the techniques given below: (a) Select and use resins with a low formaldehyde content; (b) Controlled operation of ovens with balanced temperature and speed; (c) Thermal oxidation of waste gas in a regenerative thermal oxidiser or a catalytic thermal oxidiser; (d) Post-combustion or incineration of waste gas in a combustion plant; (e) Wet scrubbing of waste gas followed by treatment in a biofilter.	There are no additional drying ovens proposed as part of the permit variation application.
Diffuse Emissions		
22.	In order to prevent or, where that is not practicable, to reduce diffuse emissions to air from the press, BAT is to optimise the efficiency of the off-gas collection and to channel the off-gases	Currently Compliant Diffuse emissions from the MDF and Chipboard press have been improved by the installation of new press abatement systems in 2013; one for each of the

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	for treatment (see BAT 19). (Effective collection and treatment of waste gases (see BAT 19) both at the press exit and along the press line for continuous presses. For existing multi-opening presses, the applicability of enclosing the press may be restricted due to safety reasons).	MDF presses and the Particleboard press. The system has been designed to reduce diffuse emissions into the press halls allowing off gases from the presses to be treated by the abatement system (Venturi Scrubbers). The emissions from the additional processes being proposed as part of this EP variation application will also be treated using the same methods.
23.	In order to reduce diffuse dust emissions to air from the transport, handling and storage of wood materials, BAT is to set up and implement a dust management plan, as part of the environmental management system (see BAT 1) and to apply one or a combination of the techniques given below: (a) Regularly clean transport routes, storage areas and vehicles; (b) Unload sawdust using covered drive-through unloading areas; (c) Store sawdust dust-prone material in silos, containers, roofed piles, etc. or enclose bulk storage areas; (d) Suppress dust emissions by water sprinkling.	Currently Compliant - Roadway debris is cleared regularly by a road sweeper or by use of the site's bucket loaders, or bobcat. A water bowser is used to ensure that roadways and storage areas are watered in dry weather in order to reduce diffuse emissions from vehicular movements. Currently, sawdust unloading is carried out on the Log yard and dust-prone materials are also stored in the open air. However, as part of the on-going project work as previously described in BAT 2 section c, unloading of materials will be in a designated, purpose-built area that will reduce potential dust emissions during off-loading. In addition, materials (other than roundwood) in the Log yard will be stored in silos that are currently under construction. (b) & (c) The operator has indicated no change to the unloading arrangements for sawdust proposed by way of this variation. (d) Water suppression systems are utilised across site at various locations, details of these are provided in the Dust Management Plan The dust management plan has been updated to incorporate the proposed changes as part of the permit variation application.
Emissions to Water		
24.	In order to reduce the pollution load of the collected waste water, BAT is to use both of the techniques given below:	Currently Compliant

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
	(a) Collect, and treat separately, surface water run-off water and process waste water; (b) Store any wood except roundwood and slabs on a hard-surfaced area.	Surface water run-off is collected via the surface water drainage system and stored in holding lagoons prior to any discharge. Water stored in these lagoons passes through an oil skimmer and three settlement chambers before being held in a lagoon (that also acts as sedimentation settlement) where it is tested for the defined parameters within the NRW permit. In the lagoons the waters are subjected to aeration and biological treatment. All process waste water is either collected from source in bulk containment before being sent off-site for disposal or leaves site through consented foul sewer discharges after passing through a screening device. The majority of the Log yard lay-down areas are concreted. All residues, sawdust and recycled material are always stored on these concreted areas and only roundwood is stored on any areas that are currently not concreted. During future site improvements, residues will be housed in silos and the entire Log yard will be concreted.
25.	In order to reduce emissions to water from surface run-off water, BAT is to use a combination of the techniques given below: (a) Mechanical separation of coarse materials by screens and sieves as preliminary treatment; (b) Oil-water separation; (c) Removal of solids by sedimentation in retention basins or settlement tanks.	Currently Compliant The surface run-off water from the new area to be included in the Installation boundary will go through an oil interceptor before going to the wetlands for retention. Water from the wetlands will be released to the Afon Bradley via a Penstock valve to control the flow rate. See PO 5 and BAT 5.
26.	In order to prevent or reduce the generation of process waste water from wood fibre production, BAT is to maximise process water recycling. (Recycle process water from chip washing, cooking and / or refining in closed or open loops by treating it at the refiner plant level by mechanical removal of solids, in the most appropriate manner, or by evaporation).	Currently Compliant Wastewater from wood fibre production is minimised by efficient use of heat exchangers to pre-heat the wash water. Cleaning systems allow the water to be re-used within the process.

No	Summary of BAT Conclusion requirement	Status One of the following: Not Applicable, Currently Compliant, Not Compliant
		Supplementary information in S5 response #1 (21/01/19). This variation proposal does not change anything existing for wood fibre production.
27.	In order to reduce emissions to water from wood fibre production, BAT is to use a combination of the techniques given below: (a) Mechanical separation of coarse materials by screens and sieves; (b) Physico-chemical separation, e.g. using sand filters, dissolved air flotation, coagulation and flocculation; (c) Biological treatment.	Currently Compliant Techniques (a) and (b) are used to reduce emissions to water from wood fibre production. Additional treatment using micro filtration and reverse osmosis allows water to be reused in the site's processes. No change with proposed variation application.
28.	In order to prevent or reduce the generation of waste water from wet air abatement systems that will need treatment prior to discharge, BAT is to use one or a combination of the techniques given below: (a) Sedimentation, decanting, screw and belt presses to remove collected solids in wet abatement systems; (b) Dissolved Air Flotation. Coagulation and flocculation followed by removal of flocules by flotation aided by dissolved air.	Currently Compliant Technique (a) in the form of decanters are used.