Cyfoeth Naturiol Cymru
Natural Resources Wales

Natural Resources Wales permitting decisions

Kronospan Limited
Chirk Particleboard Factory

Decision Document

Contents

Glossary of acronyms and definitions used in this document

APIS – Air Pollution Information System

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. 2014

CRoW – Countryside and Rights of Way Act 2000

CWW – Common waste water and waste gas treatment

DAA – Directly associated activity

DD – Decision document

ELV – Emission limit value

EMS – Environmental Management System

EPR – Environmental Permitting (England and Wales) Regulations 2016

HRA – Habitats Regulations Assessment

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

LVOC – Large Volume Organic Chemicals

NRW – Natural Resources Wales

OPRA – Operator Performance Risk Appraisal

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

WESP – Wet Electrostatic Precipitator

WFD – Water Framework Directive

1. Our Proposed Decision

Based on the information currently available to us we are minded to issue the variation for the Chirk Particleboard Factory operated by Kronospan Limited. This would, if issued, allow Kronospan Limited to operate the installation, subject to conditions in the permit.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the permit will ensure that a high level of protection is provided for the environment and human health.

The permit contains many conditions taken from our standard environmental permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit, we have considered the application and accepted the details are sufficient and satisfactory to make the standard conditions appropriate.

This document should be read in conjunction with the application and supporting information and permit.

2. Variation

The application variation number is: EPR/BW9999IG/V010

The applicant /operator is: Kronospan Limited

The Installation is located at: Chirk Particleboard Factory

We have decided to issue the variation for the Chirk Particleboard Factory operated by Kronospan Limited.

The substantial variation is for an increase in the NOx emission limit value (ELV) on permitted emission point A32 (WESP 21) from 100mg/Nm^3 to 200mg/Nm^3. The variation also includes the re-ducting of A5 and A6 emission points to A28 (WESP 32) via the Wet Electrostatic Precipitator (WESP 32). The BAT-AEL for NOx emissions from a directly heated dryer, stated in BAT18 of the 'Best Available Techniques (BAT) conclusions for the production of wood-based panels', is a range from 30-250mg/Nm^3. We have set an ELV of 200mg/Nm^3 for emission point A32 which is below the upper limit of the range as this is protective of human health and the environment.

3. 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.

4. Key issues of the decision

The key issues arising during this determination were focused around:

- Emissions to air;
- Ensuring use of the appropriate BRef and BAT conclusions; and
- Improvement conditions for the commissioning of the wet electrostatic precipitator (WESP 32).

Receipt of application

The application was duly made on 6 March 2023. This means we considered the application was made in the correct form and provided sufficient information for NRW to begin determination.

Confidential information

No claim for commercial or industrial confidentiality was made by the operator with this application for a variation to the environmental permit.

Consultation

The consultation requirements were identified and implemented in accordance with the Environmental Permitting (England and Wales) Regulations 2016 (EPR), Industrial Emissions Directive (IED), our statutory Public Participation Statement (PPS) and Regulatory Guidance Note RGN 6 for the determination of sites of high public interest.

A copy of the Application and all other documents relevant to our determination (see below) are available for the public to view. Anyone wishing to see these documents could arrange for copies to be made.

We consulted the following bodies, which includes those with whom we have "Working Together Agreements":

- Health and Safety Executive (HSE)

- Public Health Wales (PHW)
- Wrexham County Borough Council - Planning Department (WCBC)
- Wrexham County Borough Council - Environmental Health (WCBC)

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 06/04/2023 and ended on 08/05/2023 through an advert placed on our NRW website. The advert advised of where to view a copy of the application and how to make comment.

Further details along with 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 determination.

Requests for further information

We were able to consider the application for this variation duly made on receipt following our checks of the relevant information submitted. During our determination we needed further information concerning emissions to air and two information notices were issued to Kronospan Ltd. These notices are incorporated into the status log of the permit and can be viewed on our public register. The first information notice issued on the 30 May 2023 concerned the air dispersion modelling where we needed to seek clarification on the combined emissions and emission limit values at point A28 (please see section on emission levels). The second information notice was to rectify a typographical error concerning the emission point for the proposed change in ELV for NOx. The operator responded to both notices, which provided clarification on emissions concerning A28 and A31 and provided a re-vised supporting document (V2) and air dispersion modelling report (V2) to correct the typographical error on the proposed emission point (A32).

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 decision document.

The facility

The regulated facility is an installation which comprises 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 600m^3 per day: 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.

together 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).

5. Legislation

The variation (currently in draft) would be issued under Regulation 20 of the Environmental Permitting Regulations.

NRW is satisfied that this decision is compatible with its general purpose of pursuing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources.

All applicable European directives have been considered in the determination of the application.

6. The site

A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary. No change has taken place with the site boundary as this does not form part of the variation. No update to the emission points on the site plan in section 7a of the permit with the re-ducting of A5 and A6 to A28. It has been decided to leave emission points A5 and A6 within the permit in the event of a controlled shut-down of relevant plant.

Site condition report

There is no change to the installation boundary as part of this variation application. Therefore, the site condition report, currently subject to improvement condition (IC36), is still valid.

7. Environmental Risk Assessment

We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment was found to be satisfactory.

Assessment of Impact on Air Quality

This section of the decision document deals primarily with the dispersion modelling of emissions to air from stack emissions and its impact on local air quality.

The Operator has assessed the Installation's potential emissions to air against the relevant air quality standards for this change, and the potential impact upon human health. These assessments predict the potential effects on local air quality from the Installation's stack emissions.

The air impact assessments, and the dispersion modelling, have been based on the Installation operating continuously at the relevant long-term or short-term emission limit values, i.e., the maximum permitted emission rate.

We are in agreement with this approach. The assumptions underpinning the model have been checked and are 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 Natural Resources Wales 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 operator's assessment of the impact of air quality is set out in the Kronospan Dispersion Modelling Assessment Report by Fichtner Consulting Engineers Limited (ref: S2376-0030-0005RSF dated 21 June 2023).

The operator submitted modelling files to show different proposed scenarios. The operation of non-normal scenarios is not affected by the proposed change by way of this variation. Changes to the proposed normal operations associated with an increase in the NOx ELV has been considered and any modification to emission parameters for A28 with the re-ducting of A5 and A6.

No air quality management areas (AQMAs) have been declared within an area likely to be affected by emissions from this installation.

Human Health Risk Assessment

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.

The maximum predicted annual (long-term) NO_2 process contribution at sensitive receptors is 14.1% of the AQS. The maximum predicted hourly (short-term) process contribution at sensitive receptors is 15.9% of the AQS.

It also predicts that the maximum increase in NO_2 concentrations, or the change in impact, at sensitive receptors due to the proposed increase in WESP 21 ELV is predicted to be 3.3% of the annual AQS and 2.1% of the hourly AQS.

With the re-ducting of A5 and A6 to A28 on review of the modelling the predictions indicate that they are less than 1% of the short and long term for both Formaldehyde and PM_{10}. TVOC was also considered in the modelling. Please refer to emission limits where we outline where we have tightened the emission limit value for Formaldehyde and TVOC as part of this variation. This is a result of the permit having been recently reviewed and updated to include the BAT conclusions from the LVOC and CWW and waste gas treatment/management systems in the chemical sector.

On review of the operator's air dispersion modelling, it is predicted that the emissions from the site as a whole under the proposal, would not result in an exceedance of the hourly and annual NO_2 AQS at sensitive 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.

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) Tightened the emission limit value (ELV) on A28 (WESP32) for Formaldehyde from 15mg/l to 5mg/l in line with the Large Volume Organic Chemicals (LVOC) BRef due to the re-ducting of A5 and A6 to A28 (WESP32). 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/m^3 for the combined emissions of A5, A6 and A31.

ii) Tightened the TVOC limit on A28 and A31 from 100mg/Nm^3 to 30mg/Nm^3, this is also in line with the LVOC BRef with the re-ducting of A5 and A6 to A28. A5 and A6 have an ELV of 30mg/Nm^3 so must be applied to A28.

iii) We have also reviewed the emission limits to ensure they reflect the BAT-AELs in the Wood Panels BAT Conclusions as well as the LVOC BRef.

iv) We have varied the NOx ELV for A32 (WESP21) as part of this application for change from 100mg/Nm^3 to 200mg/Nm^3. This is tighter than the upper limit for NOx for the Wood Panels BAT Conclusions which is 250mg/Nm^3, to remain as a protective measure. We have assessed the air quality modelling and this part of our decision should be read in conjunction with the section on air quality.

Through the re-ducting of A5 and A6 from the resin plant manufacture to WESP 32 (A28) the abatement will become operational for combined emissions of A5, A6 and A31. A5 and A6 emission points are served by wet scrubbers (NAIRB) which are considered ageing plant and require increased maintenance. It is expected that through the re-ducting of A5 and A6 there will be a combined emission with A31

through the operational WESP 32. It will also provide secondary abatement for emissions from A31. It is expected that improvements will be realised by way of this variation and the operation of WESP 32 (please refer to improvement conditions around commissioning of WESP 32).

It is considered that the ELVs / equivalent parameters or technical measures described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.

Biodiversity, Heritage, Landscape and Nature Conservation

There are ecologically sensitive sites located within the relevant screening distances of the installation. The screening distances are set out by our policies and guidance.

The European sites are subject to the Habitats Regulations. 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.

European Sites within 10Km of the search point:

- 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)

NB: There are no Ramsar Sites within 10Km of the search point.

Sites of Special Scientific Interest within the 2Km of the search point:

- 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 Prynela Woods, SSSI Code 31WDH

Nant-y-Belan and Prynela Woods SSI are located slightly outside 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.

Non-statutory sites within 2Km of the search point:

- 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.

There are no National Nature Reserves or Local Nature Reserves within the 2Km search point.

A full assessment of the application and its potential to affect the sites, species, and habitats. There is no change to any process emissions to water, so the habitats assessment is based on aerial emissions from the site and the proposed change. Our assessment includes predicted releases to air. The Predicted Process Contributions (PCs) from Kronospan Limited and Predicted Environmental Concentrations (PEC ambient background level of a pollutant added to the PC) can be seen in the Kronospan Dispersion Modelling Assessment. This can be viewed on our public register.

Within the air dispersion modelling a daily NOx critical level for ecological receptors of 200µg/m^3 rather than the 75µg/m^3 was used. The use of this figure has been

justified through the presentation of background concentrations of sulphur dioxide (SO_2) and Ozone (O_3), which are below the respective critical levels for these pollutants. We agree with this approach.

European Sites and Protected Species Assessment

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% (1.2% with a percentage increase from the existing PC of 0.2%) of the Cle. We therefore considered the PEC at the interest features to determine if adverse effects on site integrity can be ruled out.

We are satisfied that the maximum PEC for oxides of nitrogen is <70% (25.2%) 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 NOx PC is 2.4% of the daily mean CLe of 200 $\mu g/m^3$, 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).

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.

The conservation status of this habitat is currently 'unfavourable' due to heavy grazing. The APIS website also confirms that the largest proportion of background nitrogen deposition at the SAC is attributed to livestock with the next largest proportion coming from Europe. Emissions from industrial combustion account for 1.2 % of the total nitrogen deposition at the SAC.

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

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.

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. We also considered smothering however concentrations of particulates (PM_{10} 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.

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 NOx 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 not sensitive to airborne pollution. Therefore, there is no realistic impact pathway, so no further assessment is required.

We consulted with Natural England on our assessment of the River Dee and Bala Lake SAC (England). The conservation body in Wales are in agreement with our conclusions. We did not receive any comments on our assessment from Natural England. However, it must be noted that the border of England and Wales extends along the middle of the River Dee which identified it within the screening. 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 would not be the same as Natural England.

An OGN 200 Form 1 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 protected sites advisors, it has been established that airborne emissions from the installation will not adversely affect the integrity of any National Site Network (formerly Natura 2000) site or undermine the conservation objectives, taking into account any conditions or restriction as applicable, either alone or in-combination with other plans and projects.

SSSI Assessment

This assessment considers the likelihood of damage to any of the features listed within the SSSIs located within the relevant screening distance (2km) of the 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) (PM_{10} & $PM_{2.5}$) at Chirk Castle SSSI and Nant-y-Belan and Prynela 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 NOx and associated nutrient nitrogen deposition and acidification.

Detailed modelling was supplied by the operator and reviewed by NRW specialists (NRW Air Quality and Noise (AQN) Team review). The air quality assessment modelled emissions using ADMS version 5.2 air dispersion modelling software to calculate Process Contributions (PCs). In NRW checks of the assessment the version of ADMS software was updated. NRW has used version 6 in our assessment, but this is not expected to result in a significant difference in predictions.

For the three SSSI sites, the highest predicted PC to ground level concentration was modelled which represents the worst-case scenario. PCs at the specific receptors were also modelled. Various operating scenarios were modelled, however, in our assessment, we gave particular consideration to normal operations as the other scenarios modelled were not affected by the variation and are therefore not relevant to our assessment.

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 (CLe) or Critical Loads (CLo) for aquatic features. More specifically, it is considered that the CLes for atmospheric

nitrogen oxides (as NO_2) and the nutrient nitrogen and acid deposition CLos 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 are no process emissions to water associated with this variation. 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 NOx emissions

A long-term critical level of 30 µg/m^3 NOx (annual) and short-term critical level of 200 µg/m^3 NOx (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 3.24 µg/m^3 and >1% (10.8%) of the long-term critical level and maximum short-term PC is 53.28 µg/m^3 and >10 % (26.6 %) of the short-term critical level.

As the maximum long-term PC is >1% (10.8%), the PEC was considered. The proposed PEC (PC plus background) for long term contribution is 16.24 µg/m^3 and <70 % (54.1%) of the long-term standard. We are satisfied that the long 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 0.731 kgN/ha/yr and is >1% (7.3%) of the minimum critical load value, therefore impacts from nitrogen deposition cannot be screened out as insignificant. The comparison with existing is 5.9% making a 1.4% increase.

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 2020 (2019-2021) 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 increase in 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. As Chirk Castle and Parkland SSSI is located to the southwest of the installation, under the prevailing wind conditions releases from the Kronospan site will be blown away from the SSSI in the opposite direction.

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 tool a reported 'No exceedance of the CL function for acidity was reported in respect of the process contribution'. The following total maximum deposition values based on unmanaged broadleafed / Coniferous Woodland 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

It is noted that there is no change to the PC at the SSSI as a result of the change to remove emission point A5 and A6 and re-duct them. PM_{10} & $PM_{2.5}$ 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. In addition, 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, under the prevailing wind conditions releases from the Kronospan site are blown away from the SSSI in the opposite direction. As such, we are satisfied that there is no likelihood of damage to the interest features from the potential deposition of wood dust.

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. Most recently the emission limit tightened the TVOC ELV following an update of best practice for this industrial process. 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 µg/m^3 NOx (annual) and short-term critical level of 200 µg/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 1.31 µg/m^3 and >1% (4.4%) of the long-term critical level and maximum short-term PC is 11.20 µg/m^3 and <10 % (5.6 %) of the short-term critical level.

As the maximum long term process contribution (PC) >1% (4.4%) the PEC was considered. The proposed PEC (PC plus background) for long term contribution is 12.61 µg/m^3 and <70 % (42%) of the long-term standard. The proposed PEC for the short-term contribution 11.2 µg/m^3 and <70% (16.9%). 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 0.26 µg/m^3 (0.9%) for the long-term and 11.2µg/m^3 (5.6%) so it is considered that the change in the ELV is not likely to result in an exceedance.

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 Prynela Woods, SSSI Code: 31WDH. The maximum nutrient nitrogen deposition PC is 0.242 kgN/ha/yr and is >1% (2.4%) 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 NO_2 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 Prynela

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 2020 (2019-2021) 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. These are the same CLos as used in our Appendix 4 assessment for variation EPR/BW9999IG/V008. Unmanaged broad leafed / 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 3.41 keq/ha/yr and S deposition 0.25 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.

Separate to the installation further reductions in NOx 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 NOx.

Smothering by deposition of Particulate Matter

PM_{10} & $PM_{2.5}$ 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 Prynela 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 APIS 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. As mentioned above a tighter TVOC ELV has been introduced by an NRW-led update to the permit (EPR/BW9999IG/V009) following the publication of best practice for this process industry, which has seen a reduction in the TVOC. 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) as there is no change to the emissions to water as part of this variation and therefore no pathway for features to be affected.

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 load at either site as a result of this variation. There is no exceedance of the short-term critical load 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 26.6%. Background levels of nutrient nitrogen deposition at these sites already

exceed the CLos and Kronospan's PC is very small in comparison, even with the change associated with this variation. The percent increase that this variation would make is 1.4 % difference to the existing 5.9% for nitrogen deposition. 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 2020 (2019-2021) and appears to be decreasing with the majority contribution from other sources. The area surrounding the SSSI is predominantly rural from further investigation of the source using APIS.

The annual trend verified using the APIS mapping tool appears to be decreasing and continues to do so at Waun a'i Barcdir / Chirk Castle and Parkland SSI since 2005. This could be a result of the move to electric vehicles and regulation of medium combustion plant. The increase to the ELV will result in a small percentage impact. As noted above there is a small impact associated with the increase in 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.

We have consulted on our assessment of SSSI's listed above. We also consulted with Natural England on our assessment for the River Dee SSSI. The conservation body in Wales are in agreement with our conclusions.

Non-Statutory site Assessment

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. 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.

For non-statutory habitat sites, it is predicted that the annual and daily NOx critical level would not be exceeded. The maximum annual and daily process contribution increase in impact due to the change is predicted to be 3.8% and 22.4% respectively of the critical levels. The maximum predicted daily NOx predicted is below the 200µg/m^3.

Water

There is no change to emissions to water as part of this variation application and therefore the conditions in the existing environmental permit are still valid. All process effluent generated by the regulated activities on site is sent to sewer in accordance with a trade effluent consent issued by the sewerage undertaker Dŵr Cymru Welsh Water.

Odour

There is no change to the permit as part of this application that would result in odour emissions from the site. It is considered that the conditions in the consolidated permit regarding odour are the most up to date and appropriate. It is also considered that this variation further reduces any potential for odour by way of the wet electrostatic precipitator (WESP 32) coming on-line. Two improvement conditions have been included IC54 and IC55 for this to take place which involves the commissioning of WESP 32 (see Annex 2: Improvement Conditions).

Noise

There is no change to the permit as part of this application that would result in noise emissions from the site. It is considered that the conditions in the consolidated permit regarding noise are the most up to date and appropriate.

Fugitive emissions

There is no change to the permit as part of this application that would result in fugitive emissions from the site. It is considered that the conditions in the consolidated permit regarding fugitive emissions are the most up to date and appropriate.

Monitoring

We have decided that monitoring should be carried out for the parameters listed in Schedule 3 of the permit, using the methods detailed and to the frequencies specified in those tables. The monitoring standard for Formaldehyde has now been updated by way of this variation as the 30 June 2023 has passed.

These monitoring requirements have been imposed to:
Demonstrate compliance with the emission limit values specified in the permit; and
To implement the monitoring frequencies and methods specified as BAT in the Wood Panels and LVOC BAT conclusions.

Based on the information in the application we are satisfied that the operator's techniques, personnel, and equipment have either MCERTS certification or MCERTS accreditation as appropriate. Furthermore, 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 by NRW.

Reporting

We have specified the reporting requirements in Schedule 4 of the consolidated permit. These are to meet the reporting requirements set out in the IED and ensure data is reported to enable the timely review by NRW. This in turn helps to ensure that the emissions of pollutants listed in Schedule 3 of the permit are with the set emission limit values.

The reporting form Performance 1 specified in Table S4.4 has been updated because of this variation.

8. Operating techniques

We have specified that the installation must be operated in accordance with the techniques set out in Table S1.2 of the consolidated permit. The details referred to in that table describe the techniques that will be used for the operation of the installation that have been assessed by Natural Resources Wales as BAT. They form part of the permit through condition 2.3.1 and Table S1.2.

The proposed techniques / emission levels for priorities for control are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility.

9. The permit conditions

Updating permit conditions during consolidation

We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit(s).

The operator has agreed that the new conditions are acceptable.

Use of conditions other than those from the template

Based on the information in the application, we do not consider that we need to impose conditions other than those in our permit template as part of this variation, which was developed in consultation with industry having regard to the relevant legislation.

Raw materials

The limits and controls on the use of raw materials and fuels remain unchanged in the permit.

Waste types

The operator has not applied for the acceptance of any wastes or vary this aspect of the permit.

Improvement conditions

Based on the information on the application, we consider that we need to impose improvement conditions. Two improvement conditions have been added to the permit as part of this change which involve the commissioning of the Wet Electrostatic Precipitator (WESP 32) and bringing it into operation. Details of the improvement conditions included can be found at Annex 2.

Incorporating the application

We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.

These descriptions are specified in the Operating Techniques table in the permit.

Environment management system

The operator has an Environmental Management System (EMS) in place certified to ISO14001 standard. There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.

OPRA

The OPRA score at permit issue is 592.

ANNEX 1: Pre-Operational Conditions

We have not set any pre-operational conditions as part of this variation.

ANNEX 2: Improvement Conditions

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
NRW IC54	The operator will develop a written commissioning plan for WESP 32 and submit it to NRW for approval. The plan shall include but is not restricted to: • A timetable for completion of the re-ducting of A5 and A6 and commissioning of WESP 32. • Technical steps (including any contingency plans) involved with commissioning of WESP 32 for abatement of resin plant, paper impregnation plant and press abatement emissions. • 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.	Prior to commissioning of WESP 32
NRW IC55	The operator shall submit to NRW a written report on the commissioning of WESP 32 and shall report in accordance with the approved commissioning plan. • The environmental performance of WESP 32 and a review against the conditions in the permit. • Any operating techniques or procedures developed and adopted during the commissioning of WESP 32 for achieving and demonstrating compliance; and • Any operating techniques and procedures, relating to the shutdown of WESP32 and the implications for press abatement, resin and paper impregnation plants. All relevant documents to be updated where necessary. • In the event that A5 and A6 have to be re-commissioned, quarterly monitoring would be required to start on resumption of use of these emission points. The report shall also outline any improvements and / or modifications identified as part of the commissioning and any timetable for their implementation.	2 months after commissioning of WESP 32

ANNEX 3: Consultation Reponses

A) Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with Natural Resources Wales Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our draft decision is summarised in this Annex. Copies of all consultation responses have been placed on Natural Resources Wales public register.

1) Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from Environmental Public Health Service Wales	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
It is noted that the applicant has considered 2021 WHO guidance value for $PM_{2.5}$ but not for other pollutants. We would emphasise that the regulator is satisfied with the air quality assessment methodology and conclusions, in addition to the management system in place avoid any adverse impacts on the locale. Consideration of cumulative effects – We support this approach for all stages of the proposed variation including continuous assessment of any cumulative impacts to air, noise and traffic arising from existing or planned developments in the nearby area. Additionally, the regulator should be satisfied with the current any further control measures in place to avoid negative impacts on the locale.	The NRW Air Quality and Noise Team (AQNT) has reviewed the air quality impact assessment undertaken by the operator's consultant and submitted by Kronospan Ltd. On conclusions it was considered that the presented predictions within the report were reasonable and could be used in the permit variation determination. This variation is for a proposed change to an emission limit value and the re-ducting of two others (please refer to the air quality impact assessment above). As a result of this change there is no change regarding noise and traffic arising from existing or planned developments. Through our determination we consider in making this change that the environmental permit remains protective. Please refer to the section

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Natural Resources Wales
Cambria House
29 Newport Road
Cardiff
CF24 0TP

0300 065 3000 (Mon-Fri, 8am - 6pm)

enquiries@naturalresourceswales.gov.uk
www.naturalresourceswales.gov.uk

An overall view was also given: This application is to accommodate an increase in emissions – although the increase is small, it is still an increase and not something that we are comfortable from a public health perspective. We emphasise that there is no safe level of exposure for many air pollutants. We would stress the need to ensure that emissions from the site are well managed and regulated with the site being operated in line with current sector guidance and best available techniques (BAT) so that the locale is not adversely impacted.	on emission limits in the above which outlines where we have tightened emission limit values for TVOC and Formaldehyde and the NOx limit applied to A32 remains below the upper range of the relevant BAT-AEL as a continued precautionary measure. A number of improvements have been identified through this proposed change e.g., the installation of an operational wet scrubber for secondary abatement (IC54 & IC55).

2) Advertising and Consultation on the Draft Decision

This section reports on the outcome of the public consultation on the draft decision which took place between16 August 2023 closing at midnight on 14 September 2023. The consultation period lasts for 20 working days and was extended slightly due to the August bank holiday on the 28 August 2023. During this time no responses were received by NRW on the draft decision.

[End]

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