



CAS-03463-R2W9C2 - Kronospan Low Carbon CHP Facility

Environmental Statement

Vol1: Non-Technical Summary

Prepared for



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DNS5-1-001



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1.0 INTRODUCTION

1.1 Introduction

- 1.1.1 This Environmental Statement (ES) is submitted in support of a Development of National Significance (DNS) application, under Section 62D of the Town and Country Planning Act 1990¹. The application has been made by Kronospan Limited ('the Applicant') for a Low Carbon Combined Heat and Power (CHP) Facility with the capacity to generate up to 40 megawatts (MW) of electricity and 125 MW of thermal energy for use in the existing manufacturing processes and associated infrastructure ('the Proposed Development') at the existing Kronospan Facility, Chirk, Wrexham, North Wales, LL14 5NT.
- 1.1.2 The proposed Low Carbon CHP Facility would process up to 293,000 tonnes per annum (TPA) of waste wood and forestry residues as feedstock for the existing Kronospan Facility.
- 1.1.3 This ES has been prepared in accordance with The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 [SI 2017 No. 567 (W.136)] ('the EIA Regulations') and assesses the likely significant environmental effects (based on a reasonable worst-case approach) of the Proposed Development during the construction, operation, and decommissioning phases.

1.2 The Applicant

- 1.2.1 The Applicant is Kronospan Limited. Kronospan has been operating for 55 years (manufacturing for 52 years) at its site in Chirk, Wales. It is the world's leading manufacturer of wood-based panels using advanced technology and has pioneered many of the industry's key advances. The products produced have a wide application across the flooring, furniture, and refurbishment industries.
- 1.2.2 Kronospan is the UK's leading manufacturer of high-quality wood-based panels and associated products and has been operating in the UK since 1970, and the operation in Chirk was the first outside of Austria. The primary products manufactured by Kronospan at the Chirk site are Particleboard (PB) and Medium Density Fibreboard

¹ Town and Country Planning Act 1990, Section 62D, amended by the Planning (Wales) Act 2015 Section 19



(MDF), from which several secondary products are produced such as laminate flooring, worktops and melamine faced boards.

- 1.2.3 The Kronospan manufacturing facility is a major local employer within Wrexham County Borough Council (WCBC) with the site at Chirk employing over 600 staff. It is estimated that the facility also provides indirect employment to 6,000 people in industries relating to the manufacturing and supply chains associated with the operations at the site.
- 1.2.4 Kronospan is committed to reducing carbon as part of its operations and is a critical aspect of its long-term sustainability goals.

1.3 The Proposed Development Site

- 1.3.1 The Proposed Development Site (drawing provided at **DNS3-001**) is at the south-western extent of the existing Kronospan Facility which is predominately characterised by substantial built development. The Site is currently hardstanding and is on the footprint of the existing Gas Turbines 1 and 2. The existing Gas Engines 1 – 3, existing biomass plant stack, existing SEKA WESP filter and the existing dryer exhaust stack at the WESP Chip Dryer are immediately adjacent or very close to the Site. The existing MDF cyclones are approximately 150m to the south of the Site. Existing open wood storage is predominately to the north of the Site.
- 1.3.2 Several existing components would be required to be removed entirely, removed and relocated, and removed and replaced with new; the most notable such component is the existing Gas Turbines 1 and 2 which would be decommissioned and removed (as an inherent part of the Proposed Development and attaining the core objective of decarbonisation). All such components are shown on the drawings provided at **DNS3-002** and **DNS3-003**.

1.4 The Consenting Process

- 1.4.1 The Proposed Development constitutes an energy 'generation station'. Given that the proposed Low Carbon CHP Facility has an installed generating capacity between 10 MW and 50 MW, it represents a DNS under regulation 3(1)(a) of the Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016. As such the application is submitted to



Planning and Environment Decisions Wales (PEDW) and determined directly by the Welsh Government.

1.5 Consultation

1.5.1 The Applicant has engaged with relevant stakeholders throughout the preparation of the DNS application to share information about the Proposed Development and the DNS process. A summary of the engagement is provided below:

- Inception meeting with PEDW – 04 May 2024.
- Request for formal pre-application advice issued to PEDW on 22 May 2024: Formal pre-application advice issued by PEDW on 19 June 2024.
- Request for formal pre-application advice issued to WCBC on 23 May 2024: informal meeting held with WCBC on 08 August 2024.
- Meeting held with National Trust on 24 June 2024.
- Further meeting held with National Trust on 13 August 2025.

1.5.2 Invitations were issued to Cadw, Glandŵr Cymru (Canal and River Trust in Wales), and the Clwydian Range and Dee Valley Area of Outstanding Natural Beauty Joint Committee on 06 June 2024 to provide an overview of the Proposed Development and discuss any key issues that may influence the Proposed Development and the DNS process.

1.6 EIA Assessment Team and Competence

1.6.1 As required under Regulation 17 (4a and 4b) of the EIA Regulations, the Applicant has engaged competent experts to prepare the ES. As per Regulation 17 (4b), each of the technical assessment chapters (ES Chapters 5.0 to 11.0) include a statement outlining the relevant expertise and/or qualifications of the experts that prepared the chapter.

1.6.2 The ES was compiled and coordinated by Axis, a planning and environmental consultancy based in Flintshire. Axis has worked with a team of specialist consultants who have provided expert EIA assessment; a summary is provided in **Table 1.1** below.



Table 1.1 – EIA Team: Technical Competence

ES Chapter	Company
Chapters 1.0 – 4.0, 7.0, and 12.0	Axis
Chapter 5.0	Noise & Vibration Consultants Limited
Chapter 6.0 and 9.0	Fitchner Consulting Engineers Limited
Chapter 8.0	Heritage Archaeology
Chapter 10.0 and 11.0	Savills

1.7 ES Structure

- 1.7.1 All the chapters of the Main Report are summarised in a **Non-Technical Summary (Volume 1)** (this document) to provide an overview of the Proposed Development and the possible environmental implications, in concise terms.
- 1.7.2 **Volume 2 (Main Report)** introduces the project and details the technical assessments that have been undertaken to determine the likely effects of the Proposed Development. The chapters of the Main Report are as follows:
- ES Chapter 1.0: Introduction
 - ES Chapter 2.0: EIA Methodology
 - ES Chapter 3.0: Alternatives
 - ES Chapter 4.0: Description of the Proposed Development
 - ES Chapter 5.0: Noise and Vibration
 - ES Chapter 6.0: Air Quality and Odour
 - ES Chapter 7.0: Landscape and Visual Impact Assessment
 - ES Chapter 8.0: Historic Environment
 - ES Chapter 9.0: Climate Change
 - ES Chapter 10.0: Waste
 - ES Chapter 11.0: Population and Human Health
 - ES Chapter 12.0: Mitigation Schedule and Summary of Residual Effects
- 1.7.3 A series of **Illustrative Figures (Volume 3)** are provided, which illustrate the Proposed Development and provide graphical information to support each of the technical assessments.
- 1.7.4 A series of **Technical Appendices (Volume 4)** are provided that include details of the methodology and information used in the assessment, detailed technical schedules and, where appropriate, raw data.

2.0 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

2.1 Introduction

- 2.1.1 EIA is the process of identifying, evaluating, and mitigating the likely significant environmental effects of a development. Early identification of significant effects enables appropriate mitigation to be incorporated into the design of development to avoid, prevent, reduce or offset those effects.

2.2 Overview of EIA Scoping Process

EIA Scoping Direction

- 2.2.1 In accordance with Regulation 14 of the EIA Regulations, a formal request for a Scoping Direction was submitted to PEDW on 30 May 2024 and was accompanied by a Scoping Report (**Appendix 1C**) which set out the proposed EIA scope of the Proposed Development.
- 2.2.2 A formal Scoping Direction (see **Appendix 1D**) was issued by PEDW on 31 July 2024 which confirmed that the Proposed Development would fall under Schedule 1, Part 10 of the EIA Regulations (and would therefore require EIA) and provided PEDW's opinion regarding the proposed EIA scope of the Proposed Development.
- 2.2.3 A response to the Scoping Direction setting out how each matter is addressed in the ES and details of where resolution of areas of disagreement is provided at **Appendix 1G**.

EIA Scoping Direction – Addendum

- 2.2.4 Following subsequent informal discussions with PEDW and WCBC, the Applicant issued (on 15 October 2024) a document to PEDW entitled 'EIA Scoping Direction Clarification and Update to the Proposed Development Design' (**Appendix 1E**). This document provided details of the proposed changes to the Proposed Development which arose since the initial pre-application advice was sought, as well as setting out broad areas of agreement and disagreement/clarification with the EIA Scoping Direction. A summary of the main Proposed Development design changes made at this point is provided below:



- The status of the existing K7 Biomass Plant would change from ‘remaining in operation’ to ‘remain in situ but be used as a back-up biomass plant only’ – as a result, the existing K7 Biomass Plant feedstock would be re-directed for use in the proposed Low Carbon CHP Facility.
- A detailed review of CHP Facility feedstock generated on-site was undertaken to understand the maximum wood residue feedstock that would be generated from existing and planned manufacturing operations.
- The proposed use of Refuse Derived Fuel (RDF) was removed.

2.2.5 The proposed change to the Proposed Development design also confirmed that the proposed electrical generating capacity of the proposed Low Carbon CHP Facility would increase from 30MW to 40MW.

2.2.6 An EIA Scoping Direction Addendum (see **Appendix 1F**) was issued by PEDW on 14 January 2025 and provides PEDW’s updated opinion regarding the proposed EIA scope of the Proposed Development.

2.2.7 A response to the Scoping Direction Addendum setting out how each matter is addressed in the ES and details of where resolution of areas of disagreement is provided at **Appendix 1G**.

Scope of the EIA

2.2.8 The proposed scope of the ES is set out at **Section 1.0**.

2.2.9 The following environmental topics are scoped out of the EIA process:

- Biodiversity.
 - Biodiversity Assessment Report (BAR) is included as a supporting document (**DNS4-007**).
- Water Resources and Flood Risk.
 - The Proposed Development would be within Flood Zone 1 and would not result in an increase in impermeable areas.
 - Discharges from the facility would enter the existing process water system and would be treated within the onsite water treatment facility and would be discharged from site in line with the requirements of the existing Kronospan Facility’s Environmental Permit.



- Major Accidents and Disasters.
 - The DNS application is for a type of development and technology that has been successfully deployed throughout the UK and Europe. The technology is therefore proven and well understood.
 - There are no known localised environmental vulnerabilities (such as flood risk) specific to the location of the Proposed Development in relation to the potential for major accidents and disasters.
- Geology, Hydrogeology, and Contaminated Land.
 - Phase 1 Geo-Environmental Assessment Report is included as a supporting document (**DNS4-006**).
- Lighting.
 - The Proposed Development is to be sited in the middle of the existing Kronospan Facility which is already appropriately lit with low level and low glare lighting. No new lighting is proposed.

2.3 EIA Methodology

Overview

- 2.3.1 The approach to EIA is not standardised, but there are established and recognised approaches set out by professional institutions about methods to be used for the assessment of environmental effects.
- 2.3.2 Each topic chapter within the ES follows the same broad structure for ease of reference, which is:
- Introduction
 - Planning Policy, Legislation, and Guidance
 - Consultation
 - Assessment Methodology
 - Baseline Environment
 - Initial Development Design and Impact Avoidance/Reduction Measures.
 - Assessment of Potential Effects
 - Inter-relationship of Potential Effects
 - Further Mitigation and Monitoring
 - Summary of Potential Residual Effects



- Cumulative Effects
- Enhancement Measures
- Conclusions

2.3.3 The ES differentiates between those effects that may potentially result from construction activities, effects that would result from the presence of the Proposed Development once operational, and decommissioning activities.

The ‘Finch’ Judgement

2.3.4 On 20 June 2024, the Supreme Court handed down a majority judgement on R (on the application of Finch on behalf of the Weald Action Group) v Surrey County Council and others² – hereafter referred to as the ‘Finch’ judgement. The implications of the Finch judgement have been subject to considerable public analysis by expert legal commentators. This analysis has distilled three questions to determine whether EIA is required to assess indirect upstream and/or downstream effects.

- Would the development give rise to inevitable indirect upstream or downstream effects i.e. would there be inevitable causation?
- Is it possible to undertake evidence based meaningful assessment of the effects?
- Will an assessment reasonably conclude likely significant effect(s)?

2.3.5 The ‘Finch’ judgement has been applied, where practicable to the ES. Most notably, **ES Chapter 9.0 (Climate Change)** has considered the direct and indirect greenhouse gas (GHG) emissions associated with the Proposed Development including upstream and downstream sources of GHGs where it is possible to reasonably estimate the quantities. For example, the upstream GHG emissions associated with the transportation and production of Flue Gas Treatment (FGT) reagents has been included, as has the upstream GHG emissions associated with the transportation and treatment of FGT residues.

² R (on the application of Finch on behalf of Weald Action Group) (Appellant) v Surrey County Council and others (Respondents) [2024] UKSC 20



Mitigation

- 2.3.6 It is a requirement of the EIA Regulations to describe the measures envisaged to avoid, prevent, reduce and where possible offset any significant effects on the environment. Mitigation measures can be used to reduce or avoid any adverse effect, whether that effect is deemed to be 'significant' or not.
- 2.3.7 The IEMA Impact Assessment Guidelines document 'Implementing the Mitigation Hierarchy from Concept to Construction (2024)' identifies three distinct forms of mitigation as follows:
- Primary (inherent)
 - An inherent part of the project design and should be described in the design evolution narrative and included in the project description.
 - Secondary (foreseeable)
 - Requires further activity to achieve the anticipated outcome – typically, these will be described in the ES chapters but often secured through planning conditions, requirements, and/or management plans.
 - Tertiary (inexorable)
 - Required regardless of any EIA assessment as it is imposed, for example, because of legislative requirements and/or standard sectoral practices.
- 2.3.8 Many of the Proposed Development mitigation measures have identified and committed to at the early stages of the EIA process because of decisions made during the evolution of its design.
- 2.3.9 Additionally, each ES topic chapter (Chapters 5.0 - 11.0) contains a section entitled 'Initial Development Design and Impact Avoidance/Reduction Measures' which describes topic-specific initial mitigation measures identified at the commencement of the EIA assessment process to avoid, prevent, reduce, or offset likely adverse effects from the Proposed Development.

Significance Criteria

- 2.3.10 The level of the effect of the Proposed Development is, in general, derived by considering the magnitude of the impact and the sensitivity of the receptor to a change resulting from the Proposed Development.



2.3.11 There are several factors that need to be taken into account when establishing the type and magnitude of an impact, including:

- The scale/degree of change from baseline.
- Whether it is temporary or permanent, and if temporary the likely duration (i.e. short-term, medium-term or long-term).
- Whether it is direct or indirect.
- Extent or spatial scale of the effect.
- Duration of the effect.
- Whether the effect is reversible.
- Probability/likelihood of the effect.

2.3.12 Similarly, the sensitivity of a receptor is reflective of several elements dependent on the discipline and effect being assessed, these may include:

- Designation and legal status.
- Quality.
- Rarity.
- Ability to adapt to change.

2.3.13 The level (significance) of the effect is then defined relevant to each environmental topic. Standard terms are used wherever possible to classify effects throughout the ES (major, moderate, minor and negligible), and effects are also described as being adverse, neutral or beneficial.

2.3.14 Generally, the classification of an effect is derived using the matrix (or variations of) shown in **Table 2.1**.

Table 2.2 – Significance/Level of Effect

Magnitude of Impact	Sensitivity/Importance of Receptor			
	High	Medium	Low	Negligible
High	Major	Moderate to Major	Minor to Moderate	Negligible to Minor

Magnitude of Impact	Sensitivity/Importance of Receptor			
	High	Medium	Low	Negligible
Medium	Moderate to Major	Minor to Moderate	Minor	Negligible
Low	Minor to Moderate	Minor	Negligible to Minor	Negligible
Negligible	Negligible to Minor	Negligible	Negligible	Negligible

2.4 Cumulative Effects

2.4.1 The assessment of cumulative impacts encompasses the effects of the Proposed Development in combination with:

- Development proposals approved since 01 September 2019 currently under construction.
- Development proposals approved since 01 September 2019 awaiting implementation.
- Development proposals awaiting determination within the planning process with suitable design information in the public domain.
- Development proposals which have been refused planning permission and are currently subject to appeal.
- Development proposals where a formal request for an EIA Screening or Scoping Direction have been submitted since 01 September 2021 (but have not yet reached application submission stage).
- Relevant Local Development Plan (LDP) allocations.

2.4.2 The list of other projects considered in the cumulative assessment are shown at **Figure 2.1** and **Figure 2.2**.



3.0 ALTERNATIVES

3.1 Location

3.1.1 An early site search exercise was undertaken in 2022 based on a proposed Low Carbon CHP Facility that would be able to provide all power (electrical and thermal) needs for the existing Kronospan Facility.

3.1.2 Four key parameters were considered:

- 1. Ability to physically accommodate all components of the proposed Low Carbon CHP Facility as close together as practicable.
- 2. Proximity to residential receptors and consideration of amenity.
- 3. Proximity to components of comparable size and/or type.
- 4. Approximate length of piped infrastructure for transfer of waste heat.

3.1.3 Four potential indicative locations (Sites 1 – 4) were identified, see **Inset 3.1**.

Inset 3.1 - Potential Indicative Locations of Sites 1 - 6

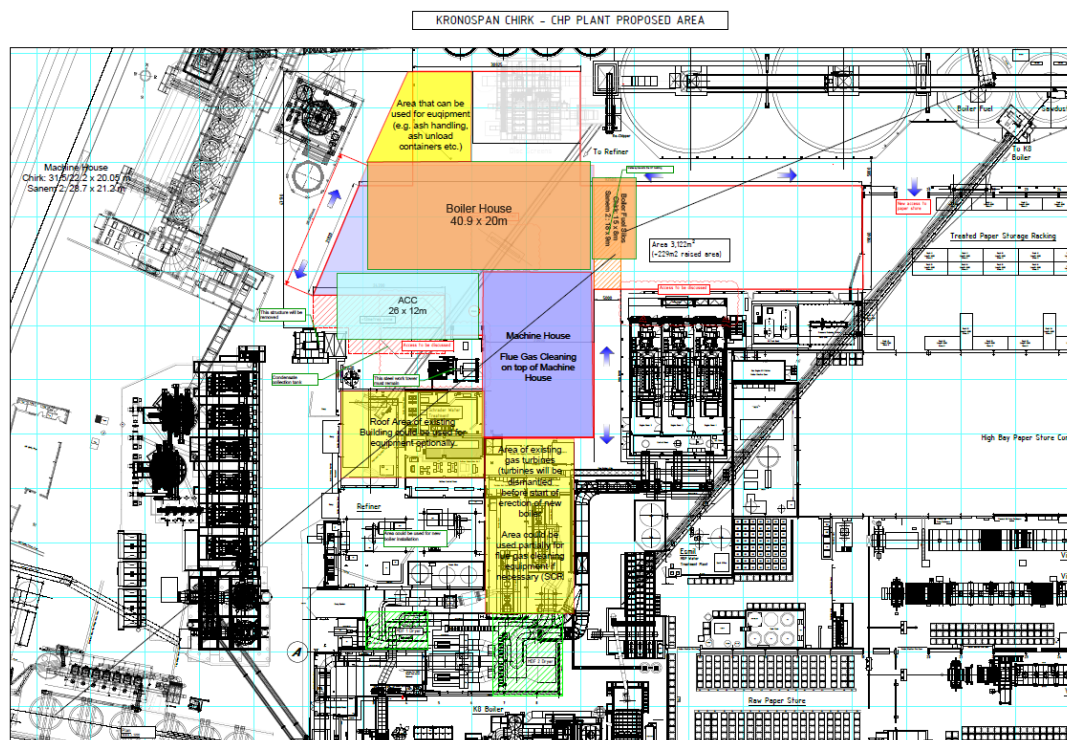


- 3.1.4 Due to the size and scale of the CHP plant required to provide all power need for the existing Kronospan Facility, Sites 1 – 4 are all on land currently used for open wood storage which is a critical aspect of day-to-day operations. Subsequently, two further indicative locations (Sites 5 and 6) were identified away from existing open wood storage with a smaller footprint; as such, Sites 5 and 6 would only be able to accommodate a smaller CHP plant that would not be capable of providing all thermal energy needs for the existing Kronospan Facility.
- 3.1.5 Following an appraisal (against the four key parameters), Site 5 was selected as the preferred location for the proposed Low Carbon CHP Facility as it is the most suitable option for Parameters 1, 3, and 4 and the joint most suitable (together with Site 6) for Parameter 2. The recycling of the land (which would be vacated by the existing Gas Turbines 1 and 2) is a more efficient and sustainable use of land than other site options.

3.2 Layout and Minimising Mass

- 3.2.1 Two core layout options were identified that were capable of achieving the core objective of generating up to 40 MW of electricity and 125 MW of thermal energy for use in the existing manufacturing processes at the existing Kronospan Facility (via a maximum feedstock throughput capacity of 293,000 tonnes per annum).
- 3.2.2 Core Layout 2 provided below at **Inset 3.2** was selected as preferred and formed the basis of the design as it was deemed to offer the most opportunity to minimise the potential for adverse environmental effects.

Inset 3.2 – Core Layout 2



3.3 Stack Height

- 3.3.1 The stack height was set at a precautionary height of 95m at the outset of the design (to inform the EIA Scoping Report (**Appendix 1C**)).
- 3.3.2 The proposed height of the stack is determined by air quality dispersion modelling (see **Appendix 6C** (Methodology) and **Appendix 6D** (Results – Human Health)). Further analysis was subsequently undertaken with the height of this stack being determined by running the air quality dispersion model for a range of stack heights and identifying the point at which there is a diminished reduction in ground level concentration (of oxides of nitrogen) with increased stack height. A stack height of 75m is the point at which increasing the height of the stack further has a diminished reduction in ground level concentration; as such, a height of 75m is concluded to be the appropriate stack height for the proposed Low Carbon CHP Facility.

3.4 Colour

- 3.4.1 To examine the potential implications (reduction in visual effects) of different cladding colours on the proposed CHP Building, a Colour Study (see **Appendix 3A**) has been



undertaken which substituted the Goosewing Grey cladding with alternate colours (Quartz Grey; Camouflage Green; Olive Green; Light Grey; and colour banding).

- 3.4.2 Goosewing Grey would provide the least contrast with existing structures at Kronospan, and thus the proposed CHP Building would look the least distinct if this colour cladding is utilised. Whilst use of Camouflage Green cladding may result in the proposed CHP Building appearing more recessive from Chirk Recreation Ground due to it being backgrounded by the hills behind, in reality this would vary depending upon light conditions and could also result in increased adverse visual effects at some times. Goosewing Grey is the proposed colour finish.

3.5 Technology

- 3.5.1 The Applicant has undertaken a high-level assessment of the potential for alternative technologies (solar; wind; nuclear; geothermal; and hydro).
- 3.5.2 Solar, wind, and hydro energy would not generate waste steam or heat that is able to subsequently be used in the existing on-site manufacturing operations. There are no watercourses with sufficient flow rate to accommodate a hydro energy proposal. Therefore, the proposed Low Carbon CHP Facility has a significant advantage.
- 3.5.3 Nuclear energy is highly efficient, would require a significantly smaller footprint than solar and wind installations, would offer strong carbon reduction benefits, and would be able to generate waste steam and heat. However, this would be the first project of its kind in the world. In addition, SMRs face considerable public concern around nuclear safety, waste management, and long-term health risks; they require robust physical security infrastructure, specialised regulatory oversight, and typically involve longer planning and construction timelines. As such, nuclear energy was discounted.
- 3.5.4 Deep geothermal systems are capable of providing steady baseload power with a minimal operational footprint. However, geothermal is still at an early stage of development and significant technical and geological challenges remain, including the need for deep drilling, often several kilometres, which carries the risk of inducing seismic activity or ground tremors, as observed in other European projects. As such, geothermal is not considered a commercially viable option and was discounted.

3.6 Feedstock

- 3.6.1 The original Proposed Development design was for the existing K7 Biomass Plant to remain in full operation. On this basis the Applicant, at that point in the project design, was considering using RDF as a feedstock for the facility (as K7 Biomass Plant would be unable to be diverted to the proposed Low Carbon CHP Facility).
- 3.6.2 As set out in **Section 2.2** above, following subsequent informal discussions with PEDW and WCBC, the Applicant changed the status of the existing K7 Biomass Plant from 'remaining in operation' to 'remain in situ but be used as a back-up biomass plant only' to enable K7 Biomass Plant feedstock to be re-directed for use in the proposed Low Carbon CHP Facility. In addition, RDF was removed as a proposed feedstock.
- 3.6.3 A summary of the changes to the configuration/sources of the feedstock required for the proposed Low Carbon CHP Facility is provided in **Table 3.1** below.

Table 3.1 - Changes to the Proposed Low Carbon CHP Feedstock Configuration

Type/Source (as described in the Pre-Application Request/Scoping Report)	Initial Approach (now superseded)	Proposed (Revised) Approach
<p><u>Source A - Existing On-Site Process Residues Currently Sold Off-Site</u></p> <p>On-site process residues currently sold off-site (to be diverted to the proposed Low Carbon CHP Facility).</p>	65,000 TPA	2021-2023 Average – 76,991 TPA
<p><u>Source B – Operational Status of Existing K7 Biomass Plant</u></p> <p>Currently processes approximately 70,000 TPA of virgin and exempt biomass - sourced via unsuitable material arising from the core on-site business.</p>	<p>K7 to remain in full operational</p> <p>0 TPA</p>	<p>K7 Biomass Plant would remain in situ but be used as a back-up only. Fuel currently used in the K7 Biomass Plant would be diverted to the proposed Low Carbon CHP Facility.</p>

Type/Source (as described in the Pre-Application Request/Scoping Report)	Initial Approach (now superseded)	Proposed (Revised) Approach
		2021-2023 Average – 74,667 TPA
<p><u>Source C - Other On-Site Process Residues</u></p> <p>Extraction of smaller fractions of recycled timber or fines from the existing Particleboard (PB) process. This fraction often contains the most impurities and gives the PB no structural properties.</p>	75,000 TPA	<p>Based on the 2021 - 2023 processing data, the following wood residue would have been created from the enhanced PB manufacturing process:</p> <p>2021-2023 Average – 108,455 TPA</p>
<p><u>Source D - Importing Grade C Waste Wood to Site for Direct Use in Proposed Low Carbon CHP Facility</u></p>	153,000 TPA	0 TPA
<p><u>Source E – Importing up to 30,000 TPA of RDF and/or Forestry Residues for Direct Use in Proposed Low Carbon CHP Facility</u></p>	30,000 TPA (considered as part of the 153,000 TPA associated with Source D)	0 TPA
TOTAL	293,000 TPA	260,113 TPA (based on 2021-2023 average)

3.6.4 The feedstock 'remainder' (32,887 TPA) would be made up by:

- 50% (16,444 TPA) - **The import of forestry brash** for direct use in the proposed Low Carbon CHP Facility.

- 25% (8,222 TPA) - **The import of Grade C waste wood** for direct use in the proposed Low Carbon CHP Facility.
- 25% (8,222 TPA) - **Increased on-site production** that would generate further on-site process residues for direct use in the proposed Low Carbon CHP Facility.

3.6.5 The feedstock 'remainder' scenario set out above is considered feasible and reasonable and forms the basis of the feedstock assumptions considered as part of the ES. However, the Applicant would retain the flexibility to apply different percentages to the above depending on the actual feedstock 'remainder' in any given year and the availability/market conditions of the different types of feedstock. Increasing on-site production (to generate further on-site process residues) would likely be the Applicant's priority given this would be more sustainable, more cost effective, and could occur under their existing manufacturing conditions and existing Environmental Permit restrictions.

3.6.6 The feedstock 'remainder' scenario set out above would increase the feedstock that could be generated on-site from 88.8% (260,113 TPA) to 91.6% (268,335 TPA). Depending on market factors and material available on site, there is the potential for 100% of the feedstock to be generated on-site.

3.7 The 'Do-Nothing' Alternative

3.7.1 A do-nothing alternative would mean the net carbon benefits (see **Section 4.2** below) would not be realised.

3.7.2 Kronospan's products are all Environmental Product Declaration (EPD) certified. An EPD is a transparent, independently verified report that provides quantified information on a product's environmental impact throughout its entire lifecycle from raw material extraction to disposal; this includes environmental impacts such as carbon emissions, water usage, and waste generation. A do-nothing approach would mean that Kronospan would not be able to maximise its EPD certification (by missing opportunities to further reduce the carbon footprint of the products); this is increasingly demanded by the construction industry, and subsequently the existing Kronospan Facility could be less competitive as a result, impacting its long-term sustainability.



4.0 THE PROPOSED DEVELOPMENT

4.1 Overview

- 4.1.1 The Proposed Development (see Drawings at **DNS3-002 – DNS3-011**) is a Low Carbon CHP Facility with the capacity to generate up to 40 MW of renewable electricity and 125 MW of renewable thermal energy for use in the existing manufacturing processes at the existing Kronospan Facility.
- 4.1.2 The proposed Low Carbon CHP Facility would process up to 293,000 tonnes per annum (TPA) of waste wood and forestry residues as feedstock for the existing Kronospan Facility. Further details of the proposed biomass feedstock are provided at **Section 3.6** above.
- 4.1.3 The estimated lifespan of the proposed Low Carbon CHP Facility is 40 years.

4.2 Site Wide Energy Generating Implications

- 4.2.1 At present, Kronospan derives its energy from a range of sources as follows:
- K7 and K8 Biomass Plants (thermal oil heating).
 - Gas turbines 1 and 2 (electrical and exhaust gases used for thermal).
 - Gas engines 1 – 3 (electrical and thermal).
 - Electrical via its 33kV connection to the electrical grid (to be upgraded to a new 132kV connection direct from the existing Legacy to Oswestry 132kV overhead line as part of the implementation of planning permission P/2022/1080).
- 4.2.2 The Proposed Development would enable a significant shift in the way that Kronospan generates energy (electricity and heat) to power its existing operations. Currently, the existing Kronospan Facility consumes:
- 7.7% and 3.2% of the non-domestic gas consumption and total gas consumption (respectively) in Wales, and
 - 48.4% and 35.7% of the non-domestic gas consumption and total gas consumption (respectively) in the County of Wrexham.
- 4.2.3 The proposed Low Carbon CHP Facility would generate more heat and power than the existing K7 and K8 Biomass Plants and would enable Kronospan to significantly



reduce its reliance on the on-site gas engines that are currently used to provide additional heat and power to the existing Kronospan Facility whilst also reducing its reliance on the electrical grid. As such, the proposed energy shift would provide significant environmental decarbonisation benefits due to the reduction in the burning of fossil fuels (gas) and an increase in the use of renewable biomass material.

- 4.2.4 The proposed Low Carbon CHP Facility would have a net carbon benefit of 3,024,740 tCO₂e (tonnes of carbon dioxide equivalent) over its estimated 40-year lifespan and would provide carbon benefits throughout each carbon budget period considered.
- 4.2.5 The proposed shift in energy generation/use is summarised in **Table 4.1** below.

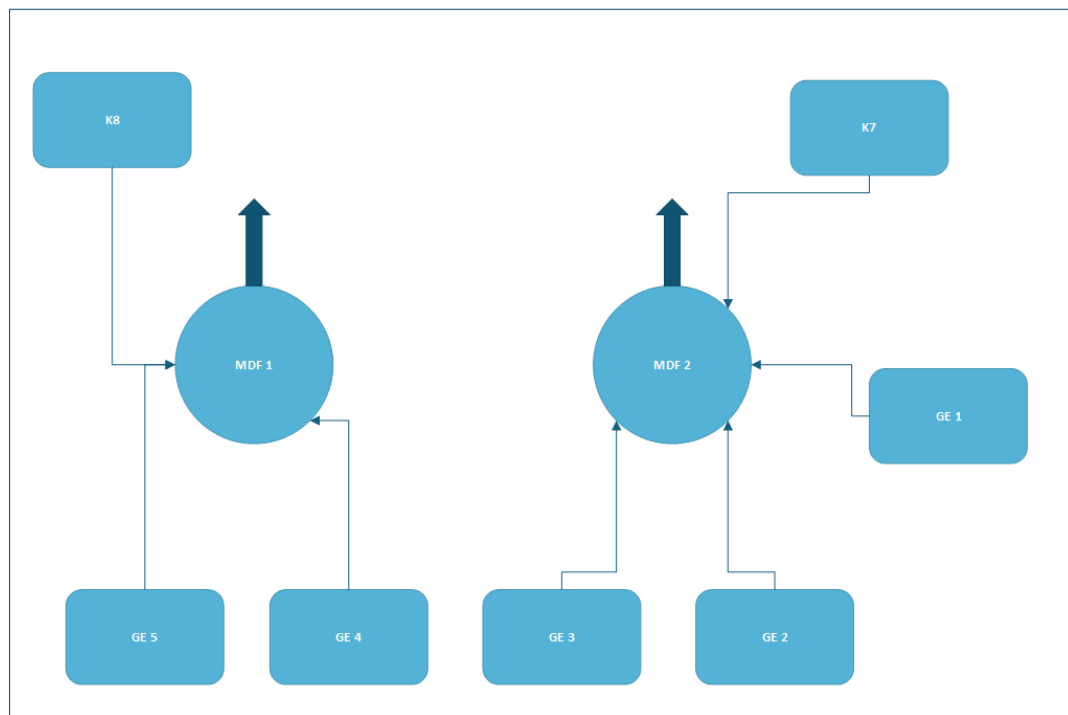
Table 4.1 - Proposed Energy Generation Shift under 'Normal' Operations

Component	Current Status	Proposed Status
K7 Biomass Plant	Provides heat for thermal oil for PB, MDF2, plastics and impregnation lines as well as process steam via the thermal oil to steam generation. Combustion gases are used in MDF2 dryer for direct drying purposes; combustion gases released through MDF2 cyclone.	K7 Biomass Plant would remain in situ but be used as a back-up (for when the proposed Low Carbon CHP Facility and the existing K8 Biomass Plant have their annual shutdowns). K7 Biomass Plant fuel would be diverted to the proposed Low Carbon CHP Facility and exhaust gases used for drying purposes in the MDF2 dryer.
K8 Biomass Plant	Provides heat for thermal oil for PB, MDF1, plastics and impregnation lines as well as process steam via the thermal oil to steam generation. Combustion gases are used in MDF1 dryer for direct drying purposes; combustion gases released through MDF1 cyclone.	K8 Biomass Plant would remain in operation (for use in MDF1 process).

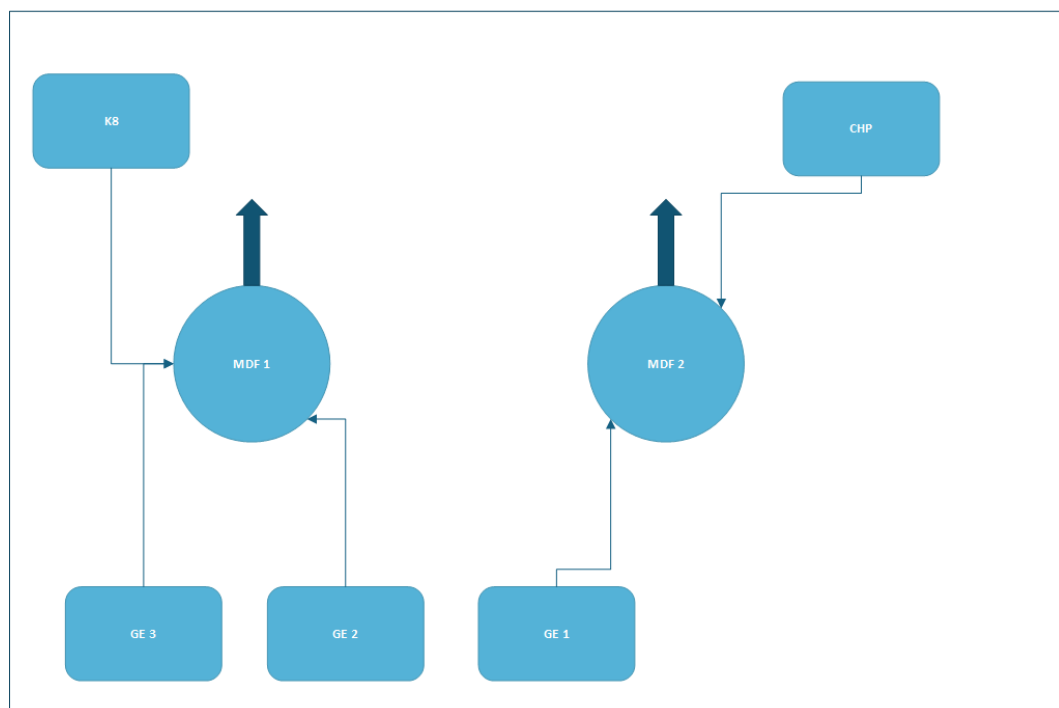
Component	Current Status	Proposed Status
Gas Turbines 1 and 2	<p>Electricity generated is used to power site operations.</p> <p>Waste heat is used for the direct drying of product from the primary manufacturing process via MDF1 dryer (Gas Turbine 1) and MDF2 dryer (Gas Turbine 2).</p>	<p>Both gas turbines would be decommissioned and removed.</p> <p>Waste heat from the proposed Low Carbon CHP Facility would replace the waste heat from Gas Turbines 1 and 2.</p>
Gas Engines 1 - 3	<p>Gas Engines 1 – 3 are installed and generate electricity used to power site operations.</p> <p>Waste steam is used for MDF2 manufacturing processes and waste heat is used for the direct drying of product from the primary manufacturing process via the MDF2 dryer.</p>	<p>Gas Engines 1 – 3 would remain in situ and will provide peak and standby generating capacity.</p> <p>The gas engines may be used in tandem with the other energy generating facilities (including the proposed Low Carbon CHP Facility) depending on comparative imported gas and electricity costs; the running of the gas engines is expected to be infrequent.</p>
Gas Engines 4 and 5	Consented but not yet installed.	Gas Engines 4 and 5 would not be installed.

4.2.6 The existing and proposed MDF1 and MDF2 operating scenarios (including operation of the OSB Facility) are presented in **Inset 4.1** and **Inset 4.2** below.

Inset 4.1 – Existing Operation Scenario



Inset 4.2 – Proposed Operation Scenario



4.3 CHP Process

Combustion

- 4.3.1 The feedstock would be fed into the combustion chamber which would be equipped with a travelling grate which would form the basis for a highly effective and efficient combustion process. The travelling grate movement turns and mixes the feedstock along the surface of the grate to ensure that all biomass is exposed to the combustion process.

Energy Recovery

- 4.3.2 The proposed boiler would be a single drum steam boiler. The hot flue gases from the furnace would be piped to the boiler where they would convert water into steam. The superheated steam would then drive the high-efficiency reaction steam turbine generator (STG) to produce electricity.
- 4.3.3 The exhaust steam from the STG would be condensed in the ACC equipped with several variable speed fans for air flow control. The condensate would be recirculated and reused in the boiler. The exhaust steam would also be used in the MDF2 refining process and/or passed through a heat exchanger to increase the temperature of the flue gases in the MDF2 dryer.
- 4.3.4 Similar to the existing K7 and K8 Biomass Plants, the combustion exhaust gases would be re-directed to the MDF facilities to the south of the proposed Low Carbon CHP Facility and used directly for MDF2 manufacturing processes (also MDF1 in the event that MDF2 is offline). Combustion gases would be used in the MDF2 dryer for direct drying purposes; the combustion gases would be released through the MDF2 cyclones.

Flue Gas Treatment

- 4.3.5 Having passed through the boiler system, the flue gases generated during the combustion process would be cleaned and directed for use in the MDF2 dryer (they would only be released into the atmosphere via the ID fan and the emergency stack in the event both MDF1 and MDF2 are offline). The following flue gas cleaning systems will be included as part of the proposed design:

- Selective Catalytic Reduction (SCR) system for nitrogen oxide (NOx) reduction.



- Bag filter for particulate reduction.
- Adsorbent injection (before filter) for acid gas reduction.

4.3.6 FGT residues comprise fine particles of ash and residue from the FGT process and are classified as hazardous waste. Based on the expected throughput of the proposed Low Carbon CHP Facility (maximum throughput of 293,000 TPA), FGT residues are expected to constitute approximately 6,672 TPA.

4.3.7 The FGT residues would be temporarily stored on site within a sealed silo. The residues would periodically be transported for off-site (licensed) disposal at Whitemoss Landfill, Skelmersdale (operated by Veolia).

Bottom Ash

4.3.8 Bottom ash is the burnt-out residue from the combustion process. Based on the expected throughput of the proposed Low Carbon CHP Facility (maximum throughput of 293,000 TPA), bottom ash residue is expected to constitute approximately 5,424 TPA.

4.3.9 The bottom ash would be stored in an ash pit positioned behind the north elevation of the proposed boiler building. The bottom ash would then be transported to the off-site (licensed) disposal at Whitemoss Landfill, Skelmersdale (operated by Veolia).

Stack

4.3.10 Under normal operations, the exhaust gases from the proposed Low Carbon CHP Facility would be used in the drying process. However, if the MDF driers are offline and the proposed Low Carbon CHP Facility was online, the (cleaned) flue gases would need to vent to atmosphere via a dedicated stack.

Heat and Power Use

4.3.11 It is proposed that electricity generated by the proposed Low Carbon CHP Facility would be used to power on-site operations.

4.3.12 As set out above, the proposed Low Carbon CHP Facility would also provide heat to the manufacturing process both in terms of superheated steam and the combustion gasses. In this regard the proposed Low Carbon CHP Facility would be highly



efficient, unlike the majority of other large-scale biomass and waste combustion facilities which do not have heat users connected and therefore only generate electricity, with the excess heat lost to the atmosphere.

4.4 Operating Hours

- 4.4.1 It is proposed that the Low Carbon CHP Facility would operate on a 24-hour basis. The feedstock would be brought to site primarily between the hours of 07.00 and 19.00 seven days a week, including Bank Holidays but excluding Christmas Day, Boxing Day and New Years Day. Deliveries outside of those hours would be infrequent and are accounted for in the various EIA topic assessments.

4.5 Access

- 4.5.1 The existing T-junction main site entrance (T-junction with the B5070) would be used as the main site entrance for the construction phase of the Proposed Development.
- 4.5.2 Once constructed, the proposed North Access Road would be used as the main access to the existing Kronospan Facility; the current access would no longer be used for the access and egress of all HGVs except in exceptional circumstances. The North Access Road would be used as the main site entrance for the operational phase of the Proposed Development.

4.6 Biodiversity Mitigation and Enhancement

- 4.6.1 The biodiversity mitigation and enhancement measures forming part of the Proposed Development (and illustrated on **Drawing DNS3-012**) comprise the following:
- New woodland planting is proposed adjacent to the north-western part of Canal Wood LWS, onto what is currently a former golf course, now agricultural grassland.
 - New woodland planting is proposed along the eastern boundary of Chirk Castle SSSI, also within the former golf course.

5.0 NOISE AND VIBRATION

- 5.1.1 **ES Chapter 5.0 (Noise and Vibration)** along with the accompanying Figures and Appendices, addresses the potential effects of noise and vibration during the construction, operation, and decommissioning of the Proposed Development.
- 5.1.2 Detailed baseline noise monitoring surveys have been undertaken during 2021 and 2022 at, or close to, the nearest sensitive receptor ('NSR') to identify the representative background noise levels around the Site. Some additional baseline survey work has been undertaken during 2024 due to a request by Natural Resources Wales (NRW) as part of wider Environmental Permit discussions to provide updates at key locations during some partial plant shut-down periods.
- 5.1.3 Baseline surveys have been measured in accordance with guidance found within BS4142: 2014+A1:2019 and include fixed sound monitoring at appropriate accessible secure positions over weekday and weekend periods, as previously carried out during suitable weather conditions.
- 5.1.4 A further baseline survey was undertaken in 2025 at the Canal Wood Local Wildlife Sire (LWS) to the west of the Proposed Development for the purpose of assessing noise impacts on ecological receptors.
- 5.1.5 No significant noise effects have been identified by the noise and vibration assessment in relation to construction or operation of the Proposed Development noise or plant vibration. **Table 5.1** below summarises the predicted effects of the construction, and operational phases of the Proposed Development.

Table 5.1 – Residual Noise and Vibration Effects

Source	Nature of Effect	Time Period	Impact Magnitude	Level of Significance
Construction noise	Temporary	Daytime	Negligible to Slight	Neutral to Minor
Road traffic noise (construction)	Temporary	Daytime	Negligible	Neutral
Road traffic noise (operation)	Permanent	Daytime Night-time	Negligible Negligible	Neutral Neutral
Industrial noise (Site operation)	Permanent	Daytime Night-time	Negligible Negligible to Slight	Neutral Neutral to Minor
Construction Vibration (plant)	Temporary	Daytime	Negligible	Neutral
Operational vibration (plant)	Permanent	Daytime Night-time	Negligible Negligible	Neutral Neutral

Source	Nature of Effect	Time Period	Impact Magnitude	Level of Significance
Construction vibration (road traffic)	Temporary	Daytime	Slight	Minor
Operational vibration (road traffic)	Permanent	Daytime Night-time	Slight Slight	Minor Minor
Cumulative Operational Noise	Permanent	Daytime Night-time	Negligible to Slight Negligible to Slight	Neutral to Minor Neutral to Minor

- 5.1.6 Noise and vibration levels have been considered and assessed during the construction and operational phases of the Proposed Development. Relevant and appropriate noise and vibration guidance and standards have been used to determine the impact. The assessment has been undertaken to inform and guide the design of the Proposed Development, such that any likely noise and vibration impact on existing and potential sensitive receptors is minimised.
- 5.1.7 To establish any likely impact from noise, an assessment of baseline sound levels has been considered by undertaking fixed position noise monitoring at Noise Sensitive Receptors (NSR) areas around the Site, over a weekday and weekend periods. The monitoring has enabled contextual background and ambient sound levels to be determined (i.e. which includes existing noise from the Kronospan Site) and to enable an estimate of background sound levels without the Kronospan Site in operation.
- 5.1.8 The noise assessment has benefited from pre-application discussions with WCBC and PEDW and responses provided in the EIA Scoping Direction (and Addendum) to enable agreement to be made on the approach to assessment methodology and noise criteria.
- 5.1.9 In accordance with appropriate standards, Best Practicable Means (BPM) would be employed to control the noise generation during the construction period. Measures may include restriction on operating hours, avoid un-necessary plant operation and revving of plant or vehicles and careful choice of piling rigs to minimise noise. Such measures are defined within the Framework Construction Environmental Management Plan (CEMP) (**DSN4-003**).

- 5.1.10 In relation to the operational phase, several further mitigation measures have been proposed to ensure that the resultant operational noise levels are within appropriate guidance and standards. The measures would be based on the employment of Best Available Techniques (BAT) to mitigate any potential peak noise sources.
- 5.1.11 The assessment shows that there would be **no significant effects** during the construction or operational phases of the Proposed Development, either in isolation or in combination with other projects both on the existing Kronospan Facility or the wider area, following the implementation of appropriate mitigation.

6.0 AIR QUALITY AND ODOUR

- 6.1.1 **ES Chapter 6.0 (Air Quality and Odour)** along with the accompanying Figures and Appendices, addresses the potential air quality and odour effects during the construction, operation, and decommissioning of the Proposed Development.
- 6.1.2 The proposed Low Carbon CHP Facility has the potential to impact upon local air quality during the construction and operational phases. The main air quality impact would be as a result of the emissions from the proposed Low Carbon CHP Facility, however, there would also be dust impacts as a result of construction phase activities, and the potential for fugitive dust and odour impacts from operational phase activities.
- 6.1.3 The construction of the proposed Low Carbon CHP Facility has been assessed to have a negligible to low risk of dust impacts. A Framework CEMP (**DNS4-003**) has been prepared by the Applicant and presents the approach and application of environmental management and mitigation for the construction of the Proposed Development. At the post-consent stage, and upon the appointment of the Principal Contractor (PC), detailed management plans will be produced by the PC and will form part of the suite of CEMP documents. With the implementation of these mitigation measures, no significant effects are expected.
- 6.1.4 The emissions from the proposed Low Carbon CHP Facility would be used within the drying process and replace the normal operation of the K7 Biomass Plant; this would mean that two of the gas engines (Gas Engines 4 and 5 which have planning permission, but have not been installed), would no longer be needed and would not be installed (**see ES Chapter 4.0 (Description of the Proposed Development)**). Detailed dispersion modelling of emissions from all sources within the existing Kronospan Facility has been undertaken using conservative assumptions. This has included the cumulative developments detailed in **ES Chapter 2.0 (EIA Methodology)** and assessed in **ES Chapter 6.0 (Air Quality and Odour)**. This has been used to establish a baseline and the impact and effect of the proposed Low Carbon CHP Facility then calculated.
- 6.1.5 The analysis has shown the magnitude of change in impact can be described as negligible and therefore the effect on human health is predicted to be 'not significant'.



- 6.1.6 A detailed ecological interpretation of air quality impacts has been carried out (**ES Appendix 6H**). This has concluded that the impacts are not predicted to result in a measurable ecological effect or constitute an operation likely to damage the special interest of the identified ecological sites. However, a series of proposals will be implemented to increase the resilience of the ecological habitats within the Chirk Castle SSSI and Canal Wood LWS to changes in air quality as a result of the Proposed Development.
- 6.1.7 The proposed Low Carbon CHP Facility also has the potential to cause impacts associated with the release of fugitive emissions of dust and odour. A qualitative analysis has been undertaken, which takes into account the control measures in place and the distance to sensitive receptors. This has concluded that the effect of the operation of the proposed Low Carbon CHP Facility on amenity due to dust and odour emissions will be 'not significant'. The existing Odour Management Plan (OMP) and Dust Management Plan (DMP) for the existing Kronospan Facility will be updated to include the proposed Low Carbon CHP Facility as part of the Environmental Permit application process.
- 6.1.8 The dispersion modelling included the cumulative developments detailed in **ES Chapter 2.0 (EIA Methodology)** and assessed in **ES Chapter 6.0 (Air Quality and Odour)** and has not identified any risk of significant cumulative effects.
- 6.1.9 In conclusion, the proposed Low Carbon CHP Facility is not predicted to give rise to significant environmental effects on air quality and odour either in isolation or in combination with other projects both on the existing Kronospan Facility or the wider area.

7.0 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

- 7.1.1 **ES Chapter 7.0 (Landscape and Visual Impact Assessment)** along with the accompanying Figures and Appendices comprises the Landscape and Visual Impact Assessment (LVIA) of the Proposed Development and addresses the potential landscape and visual effects during the construction, operation, and decommissioning of the Proposed Development
- 7.1.2 The Proposed Development would be introduced at an existing brownfield location within the Kronospan Facility, at the edge of Chirk. The Kronospan Facility is a well-established industrial complex, which includes a series of large-scale industrial structures, including several prominent emissions stacks, and which is often apparent from locations within the surrounding area. The Proposed Development would include a large new building, two large silos and a new emissions stack. The proposed stack would be the tallest structure at the Kronospan Facility but would be less bulky than many of the existing stacks.
- 7.1.3 Low-level construction activities would be very well screened by a combination of existing structures, by vegetation cover in the surrounding landscape, and by landform. As such, the influence of construction upon landscape character and upon views would be limited to that resulting from the erection of taller proposed structures, and the presence of the cranes required to do this. The effects of construction would thus typically be very similar in their extent and nature to the operational effects of the Proposed Development and would form a precursor to these effects as new structures are progressively introduced into the landscape and the views available across it. Landscape and visual effects during the construction phase would not be significant.
- 7.1.4 Effects on landscape character would not be significant. The introduction of the Proposed Development would increase the influence of development at Kronospan upon the character of the landscape/townscape, but not to such a degree that this would noticeably change character from baseline. The Proposed Development would be added to the existing assemblage of structures at Kronospan, and the new structures would be amongst the largest structures present. The character of the surrounding landscape would continue to be defined by urban development within Chirk, including a large-scale industrial facility at Kronospan, set in the context of

surrounding rural land uses, long views out from the higher ground to the west, and often significant vegetation cover (especially along the Llangollen Canal corridor)

- 7.1.5 Visual effects would not be significant. The Proposed Development would always be seen in the context of existing structures at Kronospan. Whilst the proposed new structures would themselves be large in scale, their presence would only result in a limited increase in the influence of the Kronospan Facility upon views. The level of built development and vegetation cover in the surrounding area would also limit the extent to which views would change.
- 7.1.6 From most of the Llangollen Canal, views of the Proposed Development would be well screened by vegetation, with only glimpses of the new structures available. From a short section of the Canal corridor covering approximately 250m immediately north-west of the wider Kronospan Facility, views of the Proposed Development would be clearer. The proposed new structures would be visible within the existing industrial facility and separated from the Canal corridor by the intervening railway embankment. Views from this short section of the Canal are already defined by the presence of the railway and the Kronospan Facility, and the further presence of the Proposed Development would, whilst representing adverse change in view, not give rise to any notable change in the amenity experienced by Canal users, including walkers and cyclists on the towpath.
- 7.1.7 From within the Chirk Castle RPG (both within the estate managed by the National Trust, and those parts of the RPG further to the north), visibility of the existing Kronospan Facility is determined largely by the presence of woodland cover on the east-facing hillsides west of the Canal corridor. This woodland provides considerable screening including from the Castle itself and would similarly screen views of the Proposed Development. Views of the Proposed Development would be available from the Castle Terrace at the eastern edge of the formal gardens, from stretches of the permissive path that runs through the parkland, from stretches of the Castle driveway, from the eastern edge of the Estate, and from the Offa's Dyke Path National Trail in the northern part of the RPG. In all cases, the new structures would be visible in the context of the existing structures at Kronospan within expansive panoramic views, and both existing and new structures would be partially screened by a combination of landform and vegetation.

- 7.1.8 Views from Chirk would be defined by the juxtaposition of buildings within the town, and by existing screening along the B5070 and other roads. A combination of screening earthworks and dense tree cover along the eastern boundary of the Kronospan Facility would screen views from the B5070 and from properties along it. At the north-western edge of town, this screening is absent and views across the adjacent fields towards the Proposed Development would be available, set in the context of the visibility of existing structures at Kronospan, and of longer views west and north-west to the hills.
- 7.1.9 From elsewhere within the residential areas of Chirk, east of the B5070, views towards the Proposed Development would be determined by the location of property windows and by the orientation of side roads. Where visible, the proposed new structures would always be seen in the context of existing structures at Kronospan. From some locations therefore, views are likely to be relatively clear, but where clear views are available, these would already include the existing structures at Kronospan.
- 7.1.10 From the south, the Proposed Development would be added to existing views of the Kronospan Facility which are available from Chirk Recreation Ground and from some sections of Station Road. Industrial development already forms a backdrop to views north from this area, and the addition of the new structures would only result in limited change in the views from central Chirk.
- 7.1.11 None of the statutory purposes or special qualities of the Clwydian Range and Dee Valley National Landscape would be materially affected by the presence of the Proposed Development. In particular, the tranquillity of the National Landscape would not be materially affected by any change in landscape character or visual change (including at night-time from proposed lighting). Nor would the natural beauty of land within the designation boundary be affected by change resulting from the Proposed Development. The presence of large-scale industrial structures is a well-established presence in views looking out of the National Landscape from locations within the Study Area. Any additional change resulting from the Proposed Development would be limited and incremental and would not result in any appreciable change in how people experience the landscape of the designation.
- 7.1.12 Cumulative landscape and visual effects that could occur in a scenario where other consented and proposed development schemes are also present would not be



significant. The presence of other developments within the existing Kronospan Facility close to the Proposed Development, namely the consented Chip Preparation Building Extension and Storage Silos and the consented North Access Road developments would incrementally increase the influence of the Kronospan Facility upon the surrounding area. The additional presence of the Proposed Development would result in a further incremental increase of this influence, but cumulative change in landscape character and cumulative change in view would not differ appreciably from the non-cumulative change described above. Cumulative landscape and visual effects would not be significant.

8.0 HISTORIC ENVIRONMENT

- 8.1.1 **ES Chapter 8.0 (Historic Environment)** along with the accompanying Figures and Appendix addresses the potential effects on the historic environment during the construction, operation, and decommissioning of the Proposed Development.
- 8.1.2 Given the proximity of the Proposed Development Site to known historic assets and in accordance with the relevant planning policy and guidance context, a heritage impact assessment relating to the potential impacts arising from development within the buffer zone of the Pontcysyllte Aqueduct and Canal World Heritage Site (WHS), and an assessment of the potential effects on the settings of historic assets has been undertaken.
- 8.1.3 The following Study Areas were used to inform the assessment. These were determined based on the preliminary zone of theoretical visibility of the Proposed Development and relative sensitivity of receptors to harm resulting from changes to their settings:
- A 3km Study Area for designated historic assets.
 - A 1km Study Area for non-designated historic assets.
- 8.1.4 The assessment identified the following baseline conditions for the historic environment:
- The Proposed Development Site is within the existing Kronospan Facility, an industrial complex dating to the late 20th century. The Site is previously developed and any archaeology that may have been present (although none is indicated by the HER and historic mapping) would have been already impacted. The Proposed Development site does not include any recorded designated or non-designated historic assets and has negligible archaeological potential.
 - The Proposed Development is adjacent to the Pontcysyllte Aqueduct and Canal WHS (also a Scheduled Monument (SM)) and is within the buffer zone of the WHS.
 - The Proposed Development is within the setting of the Grade I listed RPG at Chirk Castle, associated with the Grade I listed building Chirk Castle, and the Grade I listed Chirk Castle, gates, gate screens and piers.

- The Proposed Development is within the setting of Offa's Dyke SM, an asset whose landscape position and prominence in places, allows for views over the wider landscape which contribute to appreciating its heritage values.
- The Proposed Development is to the north of Chirk Conservation Area and is within the setting of that asset, although modern change to views in this direction are such that this aspect of the asset's setting does not make a positive contribution to appreciating its heritage value.

8.1.5 In relation to the assets within the historic environment baseline data, the following level of effect is predicted:

- The effect predicted in relation to Offa's Dyke SM (SM7) is **none**. This is because only occasional views of the Proposed Development would be available along relatively short sections of the monument, and in those views (given the distance of separation) the Proposed Development would form a contiguous part of the pre-existing industrial character of those views. The change from baseline conditions would be imperceptible and the contribution made by setting to the heritage values of the asset would be preserved.
- The effect predicted in relation to Grade I listed Chirk Castle (LB34), Chirk Castle Historic Park and Garden (RPG1) and Grade I listed Chirk Castle gates, gate screens and piers (LB1) is **none**. This is because the topography and mature trees largely screen the Proposed Development in views from these assets. In the few available views of the Proposed Development, it would be seen in the context of the existing Kronospan Facility. There would be no increased industrialisation of views or loss of heritage value as a result.
- The effect predicted in relation to Chirk Conservation Area is **none**. Views towards the Proposed Development already include the existing industrial character of the existing Kronospan Facility. These views are already significantly altered from the historic context of the settlement and do not contribute to appreciating the heritage value of the Conservation Area. There would be no increased industrialisation of views or loss of heritage value as a result.
- A **minor (adverse)** effect is predicted in relation to the Pontcysyllte Aqueduct and Canal WHS (also a SM) (WH1). This is because in close views there would be an increase in the scale and mass of the industrial character of the existing Kronospan Facility. Although only a marginal increase, which is less perceptible

in wider views, the proximity of the Proposed Development to the monument and location within its buffer zone is such that the change to baseline conditions would result in a very slight loss of heritage value (a negligible magnitude of impact). This would result, given the sensitivity of the asset, in a **minor (adverse)** significance of effect. This is not a significant effect in EIA terminology.

- 8.1.6 None of the predicted effects are significant and no further mitigation beyond those included in the design of the Proposed Development are proposed.

9.0 CLIMATE CHANGE

9.1 Overview

- 9.1.1 **ES Chapter 9.0 (Climate Change)** along with the accompanying appendices, present the findings of an assessment of the resilience of the Proposed Development to the effects of climate change, and the likely significant effects of the Proposed Development on climate change, specifically the impact of GHG emissions.
- 9.1.2 The direct and indirect GHG emissions associated with the Proposed Development have been considered, including upstream and downstream sources of GHGs where it is possible to reasonably estimate the quantities. For example, the upstream GHG emissions associated with transportation and production of FGT reagents has been included, as has the upstream GHG emissions associated with the transportation and treatment of FGT residues.
- 9.1.3 The UK's legislation on climate change was established within the Climate Change Act (2008). This set out the UK Government's initial commitment to reduce GHG emissions in the UK by at least 80% of 1990 levels by 2050. The GHG emissions target was subsequently amended (Climate Change Act 2008 (2050 Target Amendment) Order 2019) to net-zero greenhouse gases by 2050. As part of the Climate Change Act (2008), the UK Government was required to set legally binding 'carbon budgets' to act as stepping stones towards 2050. To date, six carbon budgets have been legislated, with the fourth, fifth and sixth carbon budgets in line with the time frame Development. The seventh carbon budget has been recommended by the Climate Change Committee (CCC) but has not been legislated yet. These budgets are for the whole for the UK and include Wales.
- 9.1.4 However, as certain areas of environmental policy, including climate change, are devolved matters under the UK's constitutional framework, the Welsh Government and Parliament have the legal authority to create and implement their own legislation in these areas, separate from UK-wide laws. The Welsh Government's net zero target for 2050 was approved in March 2021 and align with the UK Government targets.
- 9.1.5 The Welsh Government's interim reduction targets for 2030 and 2040 are summarised below:



- 2030 Target – 63% reduction; and
- 2040 Target – 80% reduction.

9.1.6 The Welsh Government has also established a series of five-year carbon budgets, summarised below:

- Carbon Budget 1 (2016-2020) – 23% reduction;
- Carbon Budget 2 (2021-2025) – 37% reduction;
- Carbon Budget 3 (2026-2030) – 58% reduction; and
- Carbon Budget 4 (2031-2035) – 73% reduction (recommended by CCC like the Seventh Carbon Budget in the UK).

9.2 Climate Change Resilience

9.2.1 The resilience of the proposed Low Carbon CHP Facility to the effects of climate change has been considered with reference to the effects on operational equipment; vehicular access to Site; grid connection and local users; and on-site workers. The level of effect has been assessed to be negligible to slight, which is not significant. Therefore, it is considered that the proposed Low Carbon CHP Facility would be resilient to the effects of climate change.

9.3 GHG Emissions Assessment

9.3.1 The proposed Low Carbon CHP Facility would have a significant beneficial effect on climate change with respect GHG. The proposed Low Carbon CHP Facility would have a net carbon benefit of 3,024,740 tCO₂e over its estimated 40-year lifespan; it would provide carbon benefits of 1.1% and 2.3% of the budget for the period 2026 – 2030 and 2031 – 2035 respectively and is therefore consistent with existing and emerging policy requirements.

10.0 WASTE

- 10.1.1 **ES Chapter 10.0 (Waste)** along with the accompanying Appendix addresses the potential effects on waste during the construction, operation, and decommissioning of the Proposed Development.
- 10.1.2 The assessment scope does not include a detailed assessment of commercial waste sourcing or broader waste needs, which are addressed separately in the Planning Statement (**DNS4-001**). The identification, classification, and quantification of waste types are based on standard construction practices and anticipated operational activities.
- 10.1.3 The impacts associated with the by-products and associated wastes from the extraction of raw materials and the manufacture of products outside of the Materials and Waste Expansive Study Area are excluded from the scope. These stages of a products or a materials life cycle would have been subjected to environmental assessment and are therefore outside the scope of this assessment.
- 10.1.4 The Proposed Development would have a cut and fill balance and therefore no import or export of excavation material is anticipated.
- 10.1.5 The 'Development Study Area' in which demolition and construction waste arisings are likely to occur, is defined by the application boundary of the Site.
- 10.1.6 The 'Expansive Study Area' is defined by the availability of landfill sites and recycling facilities relative to the proximity of the 'Development Study Area' – this is based on a 30km radius of the Site boundary and available waste collection facilities.
- 10.1.7 The sensitivity receptor for assessment of waste effects is landfill capacity. Landfill is a finite resource, and hence – through the ongoing disposal of waste – there is a continued need to expand existing and develop new facilities. This requires the depletion of natural and other resources which, in turn, adversely impacts the environment
- 10.1.8 The Proposed Development may generate the following types of waste which is considered in the assessment:
- demolition wastes;
 - construction wastes; and

- operation wastes.

- 10.1.9 The assessment of potential environmental effects associated with the waste aspects of the Proposed Development has identified a slight effect in relation to Air Pollution Control Residue (APCR) waste on hazardous waste landfill capacity, with all other effects (including bottom ash) identified as neutral or slight, which are not considered significant. This reflects the controlled nature of the waste management processes, the implementation of initial design mitigation measures, and the Proposed Development's compliance with relevant regulatory standards.
- 10.1.10 Overall, the waste-related elements of the Proposed Development are considered to be environmentally acceptable, with no significant residual effects expected.

11.0 POPULATION AND HUMAN HEALTH

- 11.1.1 **Chapter 11.0 (Population and Human Health)** along with the accompanying Appendix addresses the potential effects on population and human health during the construction, operation, and decommissioning of the Proposed Development
- 11.1.2 Within a defined population, individuals will range in level of sensitivity due to a series of factors such as age, socio-economic deprivation and the prevalence of any pre-existing health conditions which could become exacerbated. These individuals can be considered particularly vulnerable to changes in environmental and socio-economic factors whereby they could experience disproportionate effects when compared to the general population.
- 11.1.3 For example, the elderly, young children and individuals with chronic pre-existing respiratory conditions would be more sensitive to adverse changes to air quality, with the potential for emergency admission to hospital more likely than for someone of working age who has good respiratory health. On the other hand, an individual who has been unemployed for a long period of time would benefit more from employment opportunities generated by the Proposed Development in comparison to an individual who is already employed.
- 11.1.4 Extensive baseline data has been collected to interpret local health circumstance and consequent population sensitivity (see **Appendix 11A**). This exercise identified all registered receptors within 500m of the application boundary. The search results returned the following types of receptors: industrial, office, retail, utility, development, dwelling, house in multiple occupation, residential institution and place of worship. Of relevance to the assessment of vulnerable groups is the residential institution (Chirk Court Care Home), which will have elderly residents, and Chapel Lane Methodist Church, which according to their website, holds Sunday worship at 11.00 and 18.00.
- 11.1.5 The population living in the Study Area is more elderly than the national average. Physical and mental health circumstance in the Study Area is generally comparable to or better than the Wales average. Lifestyle and behavioural risk factors show worse circumstance currently, but a fair amount of fluctuation. On this basis, the sensitivity of the population within the Study Area is considered to be “low”.

11.1.6 The assessment concludes that the Proposed Development would not result in any significant adverse effects on population and human health during its construction, operation, or decommissioning phases.

11.1.7 Key findings of the assessment include:

- Air quality: changes in pollutant concentrations (NO₂ and PM) are predicted to remain within objective thresholds set to be protective of human health, whereby the quantitative exposure response assessment determines that there would be no measurable change to population level health outcomes associated with these changes.
- Noise exposure: noise impacts from construction and operation are predicted to be negligible for most receptors, with only slight impacts at one location (R12 – Chirk Marina and canal). Receptors at this location do not permanently reside there, and overall there would be no measurable change to population level health outcomes.
- Transport: increases in traffic flow and HGV movements are minimal and fall below the relevant thresholds for health and wellbeing impacts to occur.

11.1.8 Overall, it is considered that the initial design and operational controls (e.g. DMP, OMP, Framework CEMP) are sufficient to avoid significant adverse health effects. On this basis, no further health-specific mitigation or enhancement measures would be required.

