Contaminated Land
Air Quality
Environmental Audit

SMITH GRANT Environmental Consultancy LLP

Partnership No: OC 300776

PROPOSED NORTH ACCESS ROAD AND LORRY PARK, KRONOSPAN, CHIRK LL14 5NT

AIR QUALITY ASSESSMENT

For: Kronospan Limited

December 2022

R3030-R02-v5

Smith Grant LLP, Bryn Estyn Business Centre (Suite 16), Bryn Estyn Road, Wrexham LL13 9TY
tel: 01978 822367 e-mail: consult@smithgrant.co.uk web: www.smithgrant.co.uk
Members: K E Hawkins, D Wayland, A F Smith

DOCUMENT CONTROL SHEET

Report Title: Proposed North Access Road and Lorry Park, Kronospan, Chirk

Air Quality Assessment

Client: Kronospan Limited

Report Reference Number: R3030-R02

Report Status: Final

Version: v5

Report Date: December 2022

for: Smith Grant LLP

	Name	Position	Signature	Date
Drafted By	D Lloyd K Hawkins	Associate Partner		09.12.22
Reviewer	K Hawkins	Partner		09.12.22

Document Revision Record:

Version	Report Status	Date	Details of Revision
v1	Draft	01.09.22	draft, issued for client comments
v2	Revised Draft	02.09.22	revised draft, issued for client comments
v3	Revised Draft	17.09.22	revised draft; following minor edits
v4	Final	22.09.22	final; following minor edits
v5	Revised Final	09.12.22	minor change to site boundary

PROPOSED NORTH ACCCESS ROAD AND LORRY PARK, KRONOSPAN, CHIRK

AIR QUALITY ASSESSMENT

For: Kronospan Limited

Contents

Appendices

1 Introduction

1.1 General

1.1.1 This Air Quality Assessment (AQA) has been prepared on behalf of Kronospan Limited ('Kronospan') to support a planning application for the construction and operation of a northern access road, lorry park, roundwood storage areas and associated structures, 132kV electricity substation and ancillary works (hereafter referred to as the 'Proposed Development').

1.1.2 The application site is located on land to the north of the existing Kronospan facility west of the B5070 Holyhead Road in Chirk, LL14 5NT. The application boundary includes an additional area of land to the west of the main site and nearby railway line. This soley forms an area of proposed landscaping and will not subject to development or subsequent operational activities. As such is has not been considered in this AQA and the term the 'Site' in this report refers to the main area of proposed development.

1.2 Scope and Objectives of the Report

1.2.1 The following report describes the AQA undertaken by Smith Grant LLP (SGP). It has been prepared with reference to the Planning Policy Wales (PPW) [1] and follows the frameworks described in IAQM guidance in relation to planning and air quality [2] and dust [3].

1.2.2 The report describes the methods used to assess the impacts, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect impacts of the Proposed Development arising from aerial emissions, and the mitigation measures required to prevent, reduce or offset the impacts.

1.2.3 SGP is an environmental consultancy specialising in air quality assessments, particularly in association with emissions from vehicle exhaust emissions. The report author, Katrina Hawkins, Partner, is a Member of the Institute of Air Quality Management (IAQM).

[1] Welsh Government, Planning Policy Wales, Edition 11, February 2021
[2] Institute of Air Quality Management (IAQM), Land-Use Planning & Development Control: Planning for Air Quality, v1.2, 2017
[3] Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction. v1.1, 01/06/2016

2 Planning Policy, Legislative and Technical Context

2.1 Technical Context

2.1.1 The airborne pollutants of principal relevance in connection with the Proposed Development and which are considered in the following assessment are particulate matter (arising from site construction and vehicle exhaust emissions) and nitrogen oxides (arising from vehicle exhaust emissions).

2.1.2 The term 'dust' typically refers to all airborne particulate matter (PM) and is made up of condensed phase (solid or liquid) particles suspended in the atmosphere. Particulate matter ranges in sizes from a few nano-meters to around 100µm and comes from both man-made and natural sources. It can give rise to both soiling effects through dust deposition ('disamenity dust') and human health effects through suspended particulates. Dust accumulation may also affect sensitive habitats through impacts on vegetation and aquatic ecosystems.

2.1.3 Dust soiling will arise from the deposition of particulate matter in all size fractions but will mostly be associated with particulate matter of diameter greater than 30 µm. Particles below 10µm (referred to as PM_{10}) correspond to the inhalable fraction of particulate matter and have been related to various adverse health effects. PM_{10} includes both fine (those particles of diameter below 2.5 µm; referred to as $PM_{2.5}$) and coarse (diameter between 2.5-10µm; $PM_{2.5-10}$) fractions of airborne particulate matter which normally arise from different sources.

2.1.4 Vehicular transport associated with the operation of the Proposed Development will also result in emissions of oxides of nitrogen (NO_x; comprises nitrogen dioxide (NO_2) and nitric oxide (NO)) and PM. NO itself is not considered harmful to human health. However, on release to the atmosphere it usually rapidly oxidises to NO_2, which is associated with adverse effects on human health causing inflammation of the lungs at high concentrations. Long term exposure to NO_2 can affect lung function and respiratory symptoms.

2.2 Legislative Context

European Legislation

2.2.1 Action to manage and improve ambient air quality within the UK has historically been driven largely by European (EU) legislation. The majority of European air quality legislation is consolidated under Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe, which came into force on 11th June 2008 consolidating an earlier Directive and three daughter directives. The legislation sets legally binding European-wide air quality limit and interim target values (Ambient Air Directive (AAD) Limit and Target Values) for concentrations in outdoor air of major air pollutants for the protection of human health and ecosystems and prescribes how air quality should be assessed and managed by Member States.

2.2.2 Following the departure of the UK from the EU the air pollution limits established under EU requirements remain in place having been enshrined in UK law, as detailed below.

UK Legislation

2.2.3 The Air Quality (Standards) (Wales) Regulations 2010 implement EU Directives 2008/50/EC and 2004/107/EC, a fourth daughter directive, transposing the AAD values into UK legislation. In the UK responsibility for meeting the AAD Limit and Target Values is devolved to the national administrations; the Department for Environment, Food and Rural Affairs (Defra) co-ordinates assessment and air quality plans for the UK as a whole.

2.2.4 Under the Environment Act 1995 the UK Government and the devolved administrations are required to produce a national Air Quality Strategy (AQS). This was last reviewed and published in 2007[4]. The UK AQS sets out air quality objectives (AQOs) and policy options to improve air quality within the UK. The strategy sets AQOs for specific pollutants deemed to pose a risk for human health or other receptors, a number of which are derived from the EU limit and target values, although requirements for compliance varied. The UK AQS includes more exacting AQOs for some pollutants than those that were required by EU legislation.

2.2.5 Existing UK policy and legislation relating to $PM_{2.5}$ acknowledges the fact that there are no clear concentrations of particulate matter below which health effects do not occur. However, the approach is to reduce the overall exposure of the population to $PM_{2.5}$ rather than aiming at reducing concentrations at 'hot-spots'. The expectation is that the objectives and limit values for PM_{10} that drive policies to reduce PM concentrations in hot-spots will also help to reduce $PM_{2.5}$ in these locations.

2.2.6 Part IV of the Environment Act 1995 imposes a duty on local authorities in the UK to review existing and projected air quality in their area. Any location likely to exceed the UK AQOs must be declared an Air Quality Management Area (AQMA) and an Action Plan prepared and implemented, with the aim of achieving the objectives. This process is referred to as Local Air Quality Management (LAQM). The LAQM process is supported by national statutory policy[5] and technical guidance[6] provided by Defra.

2.2.7 The standards and objectives relevant to the LAQM framework are prescribed through the Air Quality (Wales) Regulations (2000) and Air Quality (Wales)(Amendments) Regulations 2002.

[4] Defra, (2007), The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007
[5] Welsh Government, Local Air Quality Management, Policy Guidance June 2017
[6] Defra, Local Air Quality Management, Technical Guidance (TG22), August 2022

2.2.8 The applicable EU limit and target values and UK AQOs relevant to the Site and Proposed Development with regards to protection of human health, referred to in this report as Air Quality Assessment Levels (AQALs), are summarised in Table 2.1 below.

Table 2.1: Relevant Air Quality Assessment Levels (AQALs)

Pollutant	AQAL	Averaging period	Source
NO_2	40 µg/m^3	annual mean	AAD Limit Value / AQO
	200 µg/m^3	hourly mean, not to be exceeded more than 18 times per annum	AAD Limit Value / AQO
PM_{10}	40 µg/m^3	annual mean	AAD Limit Value / AQO
	50 µg/m^3	24 hour mean, not to be exceeded more than 35 times per annum	AAD Limit Value / AQO
$PM_{2.5}$	25 µg/m^3	annual mean	AAD Limit Value / AQO[1]
	% reduction relative to average exposure indicator (AEI), dependant on initial concentration; to at least 18 µg/m^3	annual mean	AAD Target Value / AQO[1]

1: $PM_{2.5}$ – not regulated through the LAQM regime

2.2.9 For the purposes of the AQALs ambient air refers to the outdoor air and excludes workplaces where members of the pubic do not have regular access. Advice is given in Defra guidance[5] as to where the UK AQOs should apply, as summarised in Table 2.2 below. It should be noted that slightly different compliance requirements are provided for EU limit and target values:

Table 2.2: Summary of where the AQOs should apply

Averaging period	Objective should apply at
annual mean	all locations where members of the public might be regularly exposed; including facades of residential properties, schools, hospitals, care homes etc
24-hour mean and 8-hr mean	all locations where the annual mean objectives apply together with hotels and gardens of residential properties
1-hr mean	all locations where the annual mean, 24-hour and 8-hour means apply; also kerbside sites, parts of car parks, bus stations and railway stations which are not fully enclosed and any outdoor locations where members of the public might reasonably be expected to spend 1 hour or longer.
15-min mean	all locations where members of the public may be reasonably exposed for a period of 15 minutes

Note: the AQOs do not apply at building facades or other places of work where members of the public do not have regular access

2.2.10 In January 2019 Defra published the **Clean Air Strategy**[7] which outlined a comprehensive suite of actions required across all parts of Government to improve air quality and maximise public health benefits. This included national regulations to reduce emissions from domestic burning, industry and farming, alongside stronger powers and an improved framework for local government to tackle more localised issues, as well as a commitment to set a legally binding target for $PM_{2.5}$.

2.2.11 The **Environment Act 2021** establishes a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation by 31 October 2022. Target objectives are under consideration for air quality in relation to reducing $PM_{2.5}$ ambient concentrations.

2.2.12 In August 2020 the Welsh Government published a **Clean Air Plan for Wales** [8] whjch sets out the Welsh Government's plans for improving air quality over a 10-year pathway. This includes proposals for a new Clean Air Act for Wales to enhance existing legislation and introduce new powers to further tackle air pollution. A number of potential legislative proposals for inclusion in such a Clean Air Bill are set out in the recently published Welsh Government **White Paper**[9] which is currently out for consultation. Proposals include for requiring reviews of a Clean Air Plan or Strategy every 5 years, for the Welsh Government to set air pollution targets, introduction of an air quality target setting framework in Wales including for $PM_{2.5}$, consolidation of existing legislative framework such as under LAQM and Smoke Control Areas, enhancement of the existing LAQM regime and revisions to smoke control legislation. It is estimated that the drafting of the Bill would commence in 2022 with final legislation to follow.

Ecological Assessment Levels

2.2.13 Additional statutory and non-statutory ambient air quality standards (termed Critical Levels) are also provided by the UK Air Quality Strategy and Environment Agency (EA) / Institute of Air Quality Management (IAQM) guidance for the protection of vegetation and ecosystems to be applied at nature conservation sites. Applicable standards for this assessment are detailed in Table 2.3 below:

Table 2.3: Additional Non-Statutory Critical Levels for Protection of Vegetation and Ecosystems

Pollutant	Concentration (µg/m^3)	Measured as
nitrogen oxides (as NO_2)	30	annual mean
	75	daily mean

2.2.14 In addition, Critical Loads are provided for nitrogen nutrient and acidity deposition; these are dependent on the specific habitat and location.

[7] UK Government, Clean Air Strategy, published 14 January 2019, https://www.gov.uk/government/publications/clean-air-strategy-2019
[8] Welsh Government, Clean Air Plan for Wales, Healthy Air, Healthy Wales, Final, published August 2020;
[9] Welsh Government: White Paper on a Clean Air (Wales) Bill, issued 13 January 2021

Dust Standards and Control

2.2.15 Disamenity dust as such is not regulated under the above requirements and there are no UK statutory or recommended levels in relation to dust deposition.

2.2.16 Public concerns in relation to dust accumulation and soiling may be related to a range of factors including the nature of a site and locality and baseline levels. Controls of soiling and annoyance impacts are typically achieved through conditions within planning permissions and / or Environmental Permits requiring the implementation of a dust management plan to prevent amenity impacts.

2.3 Planning Policy

2.3.1 Planning Policy Wales[10] sets out the Welsh Government's planning policies for Wales and how these are expected to be applied. Section 6.7 of the PPW is titled Air Quality and Soundscape and provides some guidance to local authorities on taking air quality into account in planning policies and decisions.

2.3.2 Section 6.7.5 states that '*the key planning policy principle is to consider the effects which proposed developments may have on air or landscape quality and the effects which existing air or soundscape quality may have on proposed developments*.'

2.3.3 Section 6.7.6 states: *'In proposing new development, planning authorities and developers must, therefore:*

- *address any implication arising as a result of its association with, or location with, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- *not create areas of poor air quality or inappropriate soundscape; and*
- *seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.*

2.3.4 Section 6.7.7 states: *'To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer.'*

2.3.5 Section 6.7.14 further states: *'Proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur.'*

[10] Welsh Government, Planning Policy Wales, Edition 11, February 2021. Available at: https://gov.wales/planning-policy-wales

2.3.6 No further specific guidance is currently provided in the PPW or supporting Technical Advice Notes (TANs). The existing Technical Advice Note on noise (TAN 11) is currently undergoing review with a view to including air quality but at the time of preparation of this report a draft revised TAN is not available. Accordingly, in assessing the risks posed by vehicle exhaust and dust emissions to, or by, new development, reference is therefore made to non-statutory guidance issued by IAQM, Defra and the EA as detailed in sub-section 2.5 below.

2.4 Local Planning Policy and Guidance

2.4.1 The current Wrexham Unitary Development Plan[11] was adopted in 2005 and provides a framework for local decision making and the reconciliation of development and conservation interest in order that land use changes proceed coherently and with maximum community benefit. The UDP is to be replaced by the Local Development Plan (LDP) which is currently under examination.

2.4.2 General Development Policy GDP1 of the UDP states:

Policy GDP1: *'All new development should:*
f) ensure the safety and amenity of the public and safeguard the environment from the adverse effects of pollution of …air..'

2.4.3 There are no specific policies in relation to air pollution in the UDP.

2.5 National Best Practice and Guidance

2.5.1 The **IAQM Planning for Air Quality**[2] document provides specific non-statutory guidance on air quality and the planning system for new development. The guidance clarifies when an air quality assessment is required, what it should contain and how impacts should be described and assessed. The guidance sets out a recommended approach to assess the significance of the air quality impacts and provides suggestions to reducing emissions and impacts.

2.5.2 The **IAQM Guidance on the Assessment of Dust from Demolition and Construction**[3] document provides specific non-statutory guidance in relation to dust and emissions from construction and demolition.

2.5.3 The **IAQM Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites**[12] provides specific non-statutory guidance in relation to the assessment of air quality impacts of development on designated nature conservation sites.

[11] Wrexham County Borough Council, Unitary Development Plan, 1996-2011, adopted February 2005
[12] Institute of Air Quality Management (IAQM), A guide to the assessment of air quality impacts on designated nature conservation sites, version 1.1, May 2020

3 Assessment Methodology

3.1 Scope

3.1.1 In undertaking this AQA, the following activities have been undertaken:

- review of baseline air quality, including existing potential pollution sources, WCBC reports and monitoring data and Defra background data;
- review of background site sensitivity data and nature conservation sites;
- site visit to view the site, its setting and local road network;
- review of development proposals;
- review of current and post-development traffic data and Transport Assessment;
- quantitative assessment of operational phase road traffic emissions using the ADMS-Roads model;
- qualitative construction dust assessment;
- provision of recommendations for mitigation; and
- assessment of residual impacts on human and ecological receptors and significance of effects.

3.2 Sources of Information

3.2.1 In undertaking the assessment reference was made to the following background information:

Table 3.1: Background Information Sources

Date and reference	Author and source	Purpose and information content
Background and topographical information		
Promap	Ordnance Survey	general mapping information including topographic, ground features, rights of way, communications etc
satellite imagery, imagery date July 2021	aerial photography	site setting
www.magic.gov.uk	multi-agency	web-based interactive map containing information on nature conservation areas
Air quality information		
2021 Air Quality Annual Status Report, September 2021 *(and earlier reports)*	Wood	update of local authority air quality monitoring and assessment: North Wales Authorities Collaborative Project
www.aqma.defra.gov.uk	Defra	details and maps of AQMAs throughout UK
www.laqm.defra.gov.uk	Defra	Local Authority air quality management support; background pollutant mapping

Note: all information websites were accessed in August 2022

3.2.2 Information has also been provided by the project transport consultant, Axis, in relation to

expected vehicle movements.

3.2.3 A site visit was undertaken by Katrina Hawkins, Partner, SGP on 29th March 2022. Access was gained to all the key relevant areas of the Site.

3.3 Assessment Methodology

3.3.1 The assessment of potential pollutant impacts considers the potential magnitude of a release (the source potential), the effectiveness of the pathway (i.e. dispersion of a pollutant towards a receptor), and the sensitivity of the receptor. The AQA therefore considers the location of the Proposed Development in relation to sensitive receptors to assess the probability of significant adverse air quality impacts occurring during normal operations. Consideration is made of the orientation and distance of receptors to the Site and the prevailing weather conditions.

3.3.2 The construction dust and vehicle exhaust emissions assessments have been undertaken with reference to the IAQM guidance on construction dust[3] and planning / air quality[2].

3.3.3 Receptors considered in this AQA comprise human receptors, that is locations where a person or property may experience adverse impacts of airborne dust or exposure to ambient pollutants or odours (i.e. residential, leisure, amenity and sensitive commercial use), and ecological receptors where this refers to any sensitive habitat that may be affected by dust soiling or increased ambient pollution (e.g. locations with an international, national or local designation and sensitive habitat features). The sensitivity of the receptors to potential impacts from aerial emissions, whether changes in pollutant concentrations or dust soiling, has been determined as detailed in the relevant guidance as described in Section 2 of this AQA.

3.3.4 Further details on the selection of receptors and the methodology of the assessments as detailed in the relevant guidance is described in **Appendix A**.

4 Site Details, Current and Proposed Development

4.1 Site Details

4.1.1 The Site comprises an area of land to the north of the existing Kronospan facility in Chirk as shown below in Figures 4.1 and 4.1.

Figure 4.1: Site Location (1:25,000 scale mapping)

4.1.2 Site details are:

Table 4.1: Site Details

Address	Kronospan, Chirk LL14 5NT
National Grid Reference	32850 339300
Local Authority	Wrexham County Borough Council (WCBC)
Site Area	10.53ha (main area)
Nature of Current Site	predominantly undeveloped fields currently in agricultural use; Site also includes parts of the local road network and wider existing Kronospan facility in the south

Proposed Development	construction and operation of northern access road, lorry park, roundwood stores, 130kV electricity substation and associated infrastructure and ancillary works
Access	new access is to be created off the B5070 Holyhead Road; includes construction of roundabout and road realignment

4.1.3 As discussed in Section 1.1 the application site also includes a separate area of land to the west of the main site and railway line as shown above in Figure 4.1. This area is to form an area of landscaping. It is included within the application boundary and hence drawings but is not considered in detail in this report and assessment.

4.2 Existing Development

4.2.1 The majority of the Site comprises open undeveloped agricultural fields. The northern part of the Site also encompasses the existing access road to Afon Bradley Farm and parts of the B5070 Holyhead Road and Old Black Park Road. The far southern part of the Site encompasses part of the access road to a sewage treatment plant, a gas governor compound and a small part of the existing Kronospan facility comprising a roadway, storage areas and hedgerows.

Figure 4.2: Site Location (1:10,000 scale mapping)

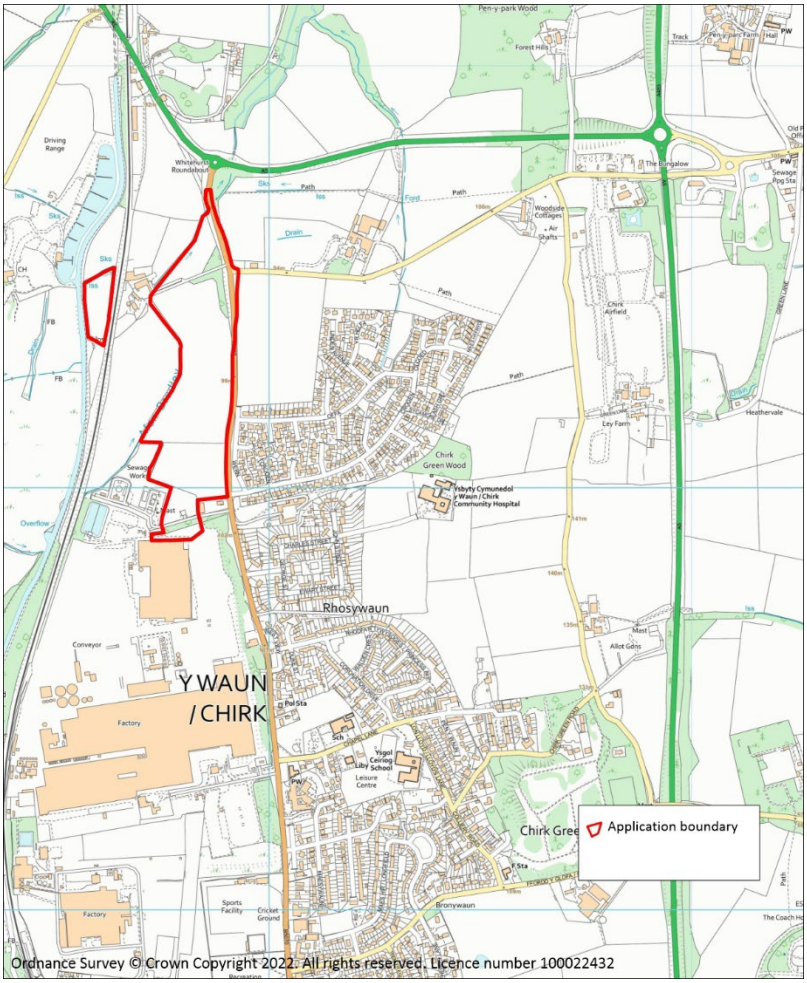


Figure 4.3: Existing Aerial Imagery

4.3 Proposed Development

4.3.1 The Proposed Development is for the construction and operation of a northern access road, lorry park, roundwood storage areas and associated structures, 132kV electricity substation and ancillary works.

4.3.2 A detailed description of the Proposed Development is contained in the **Environmental Statement (ES) Chapter 4.0 (Description of the Proposed Development)** which has been submitted as part of the planning application documentation. Those elements of relevance to this AQA are:

- general earthworks: cut and fill to achieve required development platform across the Site; requiring import of about 11,200 m^3 of fill over a period of about 6 months; creation of eastern earth bund typically 2m to 4m high and up to 7m high near the proposed new roundabout;
- construction of northern access road: to include construction of new roundabout off the B5070 to replace the existing B5070 / Old Black Park Road / Afon Bradley Farm access road junction; realignment of the B5070 and creation of new access road to Afon Bradley Farm;
- construction of lorry park: spaces for 92 HGVs; provision of two entrances and three exits;
- weighbridge car park: spaces for 32 cars, of which 25 would be reserved for staff use and 8 for visitors;

- construction of roundwood storage areas: two open roundwood storage areas to provide temporary storage for imported logs;
- wider construction: to include construction of facilities block, 132kV substation including underground cable runs and parking for 5 vehicles; and
- site landscape scheme: planting of new native woodland planting, new native hedgerow planting, new specimen tree planting, new species-rich grassland and new wetland vegetation; this would include hedgerows and vegetation planting around the new roundabout and north access road and tree planting along the new bund on the eastern boundary.

4.3.3 The general layout[13] of the Proposed Development is provided in **Planning Drawing 1**.

4.3.4 Once the new lorry park is constructed the existing lorry park at the Kronospan facility would no longer be used for HGV parking. It will continue to be used as a lorry drop (including outbound standing trailers) and possibly as an extension to the existing car parking area.

4.3.5 At present it is anticipated that construction work could commence in Quarter 3 2023 with works being complete in Quarter 4 2026.

[13] Kronospan Limited, General Layout, Plan ref: 7000_156, rev O, 15.08.22

5 Site Setting and Baseline Conditions

5.1 General Site Setting

5.1.1 The Site is located to the immediate west of B5070 to the north of Chirk. The surrounding land use is mixed industrial / residential / agricultural with the existing Kronospan facility lying to the immediate south; the residential development of Chirk to the southeast; Aforn Bradley Farm to the northwest and open undeveloped fields to the north.

5.1.2 Site boundaries and immediate environs are summarised below.

Table 5.1: Site Boundaries and Immediate Environs

	Boundary	Neighbouring land
north	fencing / hedgerows	open undeveloped fields
east	fencing / hedgerows	B5070 Holyhead Road beyond which lies open fields and isolated properties Lodge Farm Cottage and Parkgate Cottage
south-east	fencing / hedgerows	B5070 Holyhead Road beyond which lies residential development of Chirk; property Bryn Hyfryd lies to immediate southeast of Site boundary
south	no defined boundary on the ground	wider existing Kronospan facility
south-west	fencing / hedgerows	sewage treatment plant
west	fencing / hedgerows	Afron Bradley
north-west	fencing / hedgerows	Afon Bradley Farm and open undeveloped fields

5.1.3 The nearest residential properties to the proposed new roundabout and access are two isolated properties, Lodge Farm Cottage and Parkgate Cottage, that lie on Old Black Park Road within 45m of the junction with the B5070.

5.1.4 The proposed lorry park extends southwards from the proposed access, extending to within 75m of properties on Offa and Wern on the edge of Chirk.

5.1.5 The proposed roundwood storage areas extend southwards and south-westwards from the lorry park, abutting the boundary to the Bryn Hyfryd property and lying about 50m from the wider development of Chirk to the east beyond the B5070.

5.1.6 To the north-west the Site boundary wraps around the edge of Afon Bradley Farm, a farm holding under the control of Kronospan comprising a residential dwelling and outbuildings. About 130m beyond the farm lies Chirk marina located off the Llangollen Canal.

5.2 Nature Conservation Sites

5.2.1 No international, national or local statutory designated nature conservation sites have been identified within 500m of the Site.

5.2.2 One local designated site has been identified within with 4500m of the Site. This is Coed Y Camlas / Canal Wood Local Wildlife Site (LWS; ref: W232) which is located 225m to the west / southwest beyond the Llangollen Canal.

5.3 Topography

5.3.1 The ground falls gently from about 102m above ordnance datum (aod) in the southeast corner to the Afon Bradley watercourse at 85m in the northwest.

5.4 Air Quality Review

5.4.1 Reference has been made to the reports prepared by the North Wales Authorities (cover the six local authorities that encompass the North Wales region, including WCBC) in fulfilment of the Local Air Quality Management (LAQM) reporting requirements. This includes, but is not limited to, the 2021 Air Quality Annual Status Report which details the results of air quality monitoring in the region up until the end of 2020.

5.4.2 None of the North Wales authorities, including WCBC, have declared any AQMAs within their administrative areas.

5.4.3 A stretch of the A483 dual carriageway to the north of the Site is subject to speed limit measures to reduce NO_2 concentrations. This has been established by the Welsh Government and falls outside the LAQM regime. The speed limit zone encompasses junctions 5 and junction 6 and is at least 10km north of the Site.

5.5 Background Air Quality Data

5.5.1 Defra publishes predicted background pollutant concentration maps for 1km x 1km grid squares across the UK. These are updated on a regular basis due to updates in background data such as vehicle emissions factors. The current maps were issued in 2020 and the predicted data is based on 2018 ambient monitoring and meteorological data. The maps incorporate revised information on the age and distribution of vehicles and emission factors and take account of existing local sources of emissions. Predicted data is provided by Defra for each year from 2018 to 2030.

5.5.2 Predicted NO_2, NO_x, PM_{10} and $PM_{2.5}$ data for the grid square in which the Site and nearest sensitive receptors are located for 2022 are detailed in Table 5.3 below.

Table 5.3: Predicted Background Air Quality Data – Nitrogen Oxides and Particulate Matter (2022)

Grid Square	Location	Annual Mean Concentration (µg/m^3)			
		NO_2	NO_x	PM_{10}	$PM_{2.5}$
328500 339500	Site (central & north), residential development of Chirk	7.39	9.50	11.11	7.68
328500 338500	Site (south), residential development of Chirk	9.81	12.96	10.22	6.97
	objective (annual mean)	**40**	**30 (v)**	**40**	**25**

(v) – established for the protection of vegetation

Data downloaded on 28th August 2022; data issued by Defra in August 2020

5.5.3 The average background NO_2, NO_x, PM_{10} and $PM_{2.5}$ concentrations for the grid squares in which the Site is located are predicted to be below the relevant objectives in 2021.

5.5.4 The data take into account existing sources such the existing Kronospan facility and the local major road network. It should be noted however that the data are effectively an average concentration across each 1 km square. Pollutant concentrations will therefore be higher at any individual receptor close to any particular sources, such as the B5070 and A483 to the east.

5.5.5 It should also be noted that the projections in the 2018 LAQM background maps are based on assumptions which were current before the Covid-19 outbreak in the UK[14]. As such these maps do not reflect either short- or long-term impacts on emissions in 2020 and beyond resulting from behavioural change during the national or local lockdowns.

5.6 Monitored Air Quality

5.6.1 WCBC undertakes ambient air monitoring across its area using a combination of continuous (automatic) monitors and passive diffusion tubes.

Continuous (Automatic) Monitoring

5.6.2 The continuous analysers include a new analyser installed in July 2020 in Chirk. Details are provided in Table 5.4 and the location in Drawing 5.1.

Table 5.4: Automatic Monitoring Location[1]

Ref.	Location	Grid ref.	Pollutants Monitored	Type	Distance & Orientation from Site
Wrexham Chirk	Chirk	329318 338300	NO_2, NO_x, VOCs, PM_{10}, $PM_{2.5}$	Urban industrial	735m SE

1: Data as presented in North Wales Authorities ASR 2021

[14] COVID-19: Following the outbreak of a global pandemic of the Coronavirus disease 2019 (COVID-19) due to the SAR-CoV-2 virus, the UK Government declared several restrictions on non-essential travel and movement from 23rd March 2020 onwards.

5.6.3 The results for 2020 from this analyser relevant to the assessment are summarised below.

Table 5.5: Automatic Monitoring Results – Wrexham Chirk Analyser[1,2]

Pollutant	Averaging Period	2020 Concentrations (annualised)	AQAL
NO_2	Annual mean	21.0 µg/m^3	40 µg/m^3
	1-hour mean	0 exceedances of 200 µg/m^3	18 exceedances of 200 µg/m^3
PM_{10}	Annual mean	9.3 µg/m^3	40 µg/m^3
	24-hour mean	0 exceedances of 50 µg/m^3	35 exceedances of 50 µg/m^3
$PM_{2.5}$	Annual mean	3.0 µg/m^3	25 µg/m^3

1: Data as presented in North Wales Authorities ASR 2021

2: Data capture reported as 44%; results annualised in the ASR 2021 in accordance with Defra guidance

5.6.4 All measured concentrations in 2020 at the new Chirk analyser were well below the relevant AQALs.

Passive Monitoring (Diffusion Tubes)

5.6.5 The WCBC diffusion tube monitoring network includes several locations in Chirk as detailed below and shown in Figure 5.2 and detailed in Table 5.6.

Table 5.6: Diffusion Tube Monitoring Locations[1]

Ref.	Location	Grid ref.	Type	Distance & Orientation from Site
10	Ysgol Y Waun	329300 338300	suburban	735m SE
22	Holyhead Road	328900 338700	intermediate	275m S / SSE
48	Church Street	329082 337590	roadside	1.3km SSE

1: Data as presented in North Wales Authorities ASR 2021

5.6.6 The monitoring results for 2016-2020 are summarised below:

Table 5.7: Diffusion Tubes - Annual Mean Nitrogen Dioxide Concentrations

Diffusion Tube ID	Annual Mean NO_2 Concentrations (µg/m^3) (*bias-adjusted and annualised as appropriate)*				
	2016	2017	2018	2019	2020
10	13.2	12.5	11.8	12.4	10.0
22	16.3	15.9	15.7	14.7	13.3
48	-	-	18.3	14.3	12.3

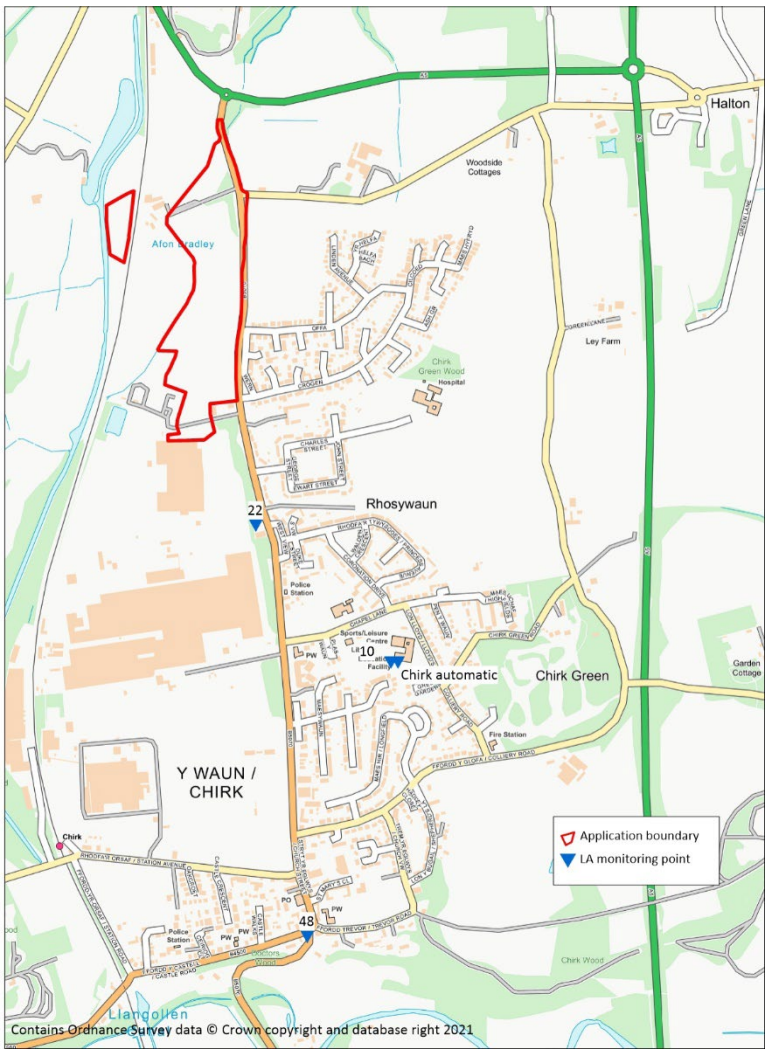
1: Data as presented in North Wales Authorities 2021 ASR

Any highlighted figures indicate exceedances of the long-term UK AQO

5.6.7 All annual mean concentrations have been well below the long-term AQAL of 40 µg/m^3.

5.6.8 The monitoring location of most relevance to this assessment is diffusion tube ID 22, located close to the stretch of the B5070 between the existing and proposed new facility access. It is noted however that this tube is located under an area of trees which may influence the results. At 13.3 – 16.3 µg/m^3 over the 2016-2020 period the annual mean NO2 concentrations are however well below the AQAL.

Figure 5:2: Nearby NO_2 Monitoring Locations



5.7 Industrial Activities and Other Aerial Emission Sources

5.7.1 The existing Kronospan facility is a source of aerial emissions and is likely to affect local air quality to an extent. This is discussed further in Section 7.7. In addition, the Cadbury's facility located to the south of the Kronospan facility may influence local air quality. No other potential sources of aerial emissions have been identified that may affect air quality at the residential properties close to the Site, other than the local road network.

5.8 Wind Speed and Direction

5.8.1 The most important meteorological parameters governing the atmospheric dispersion of pollutants are:

- wind direction: determines the broad direction of transport of the emission;
- wind speed: affects ground level emissions by determining the initial dilution of pollutants emitted; and
- atmospheric stability: a measure of atmospheric turbulence and hence dispersion of pollutants.

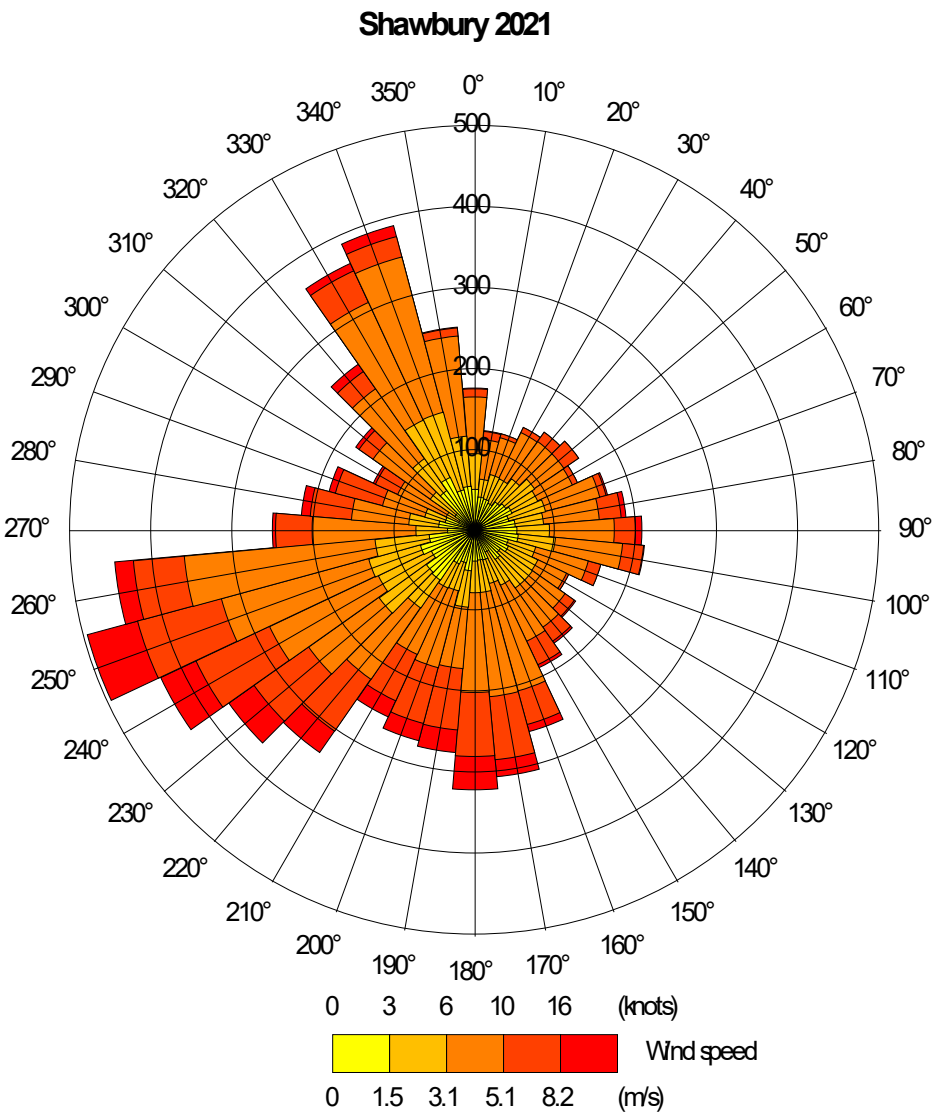
5.8.2 The closest meteorological station to the Site that measures data suitable for use in dispersion modelling is located at Shawbury (about 31km to the south-east). Data for Shawbury has been used in atmospheric modelling work undertaken by other parties in relation to the wider Kronospan facility[15] and hence has been utilised in this AQA.

5.8.3 Data for the year 2021 has been provided by the ADM Ltd, a recognised supplier of meteorological data. The windrose derived from the data is provided below in Figure 5.3.

5.8.4 The windrose depicts annual average wind speeds and directions for each year. It shows the prevailing wind direction to be from sectors 180º through to 260º, i.e. from the south, southwest and west and sectors 330º -340º, i.e. north-northwesterly. These are broadly typical of standard UK conditions, although with a greater north-westerly influence than typical.

[15] Fichtner Consulting Engineers Limited, Chirk Particleboard Facility, Dispersion Modelling Assessment, S2376-0030-0003RSF, 31st July 2021; submitted to Natural Resources Wales (NRW) in relation to an Environmental Permit consolidation and variation application

Figure 5.3: Annual Windrose for Shawbury (year 2021)



6 Construction Dust Assessment

6.1 Introduction

6.1.1 Subject to granting of planning permission construction works are expected to commence in Quarter 3 2023 and last 72 weeks to completion of the access road, lorry park, roundwood storage and associated facilities. Subsequent construction works from late 2024 to 2026 would comprise the electricity substation.

6.1.2 Initial construction works would include cut and fill excavation works to create a level development platform, including the importation of about 11,200 m^3 of clean materials, and creation of the wetlands and bund construction. This would be followed by more general earthworks and construction of new infrastructure and buildings.

6.1.3 All access / egress to the Site during construction would be via the existing Afon Bradley Farm access which would be initially improved to enable access for the earthworks prior to later construction of the new roundabout and access. HGV movements during the construction phase are expected to peak at 200 HGV movements per day (100 in / 100 out) and 40 2-way staff movements per day (20 in / 20 out).

6.1.4 All HGV movements would be via the B5070 to the north of the Site access and via the A5 to / from the A483 to the north-east.

6.1.5 In accordance with the IAQM guidance the assessment of construction dust considers receptors up to 350m from the Site boundary and 50m from edges of roads used for construction traffic up to a distance of 500m from the access / egress point.

6.2 General Observations

6.2.1 Airborne dust occurs when fine particles are disturbed and loosened by physical activity such as breaking, excavating, loading and transport, or by an airstream passing over such materials. It is generally accepted that winds of more than 5 m/s across loose fine materials can cause windblown dust emissions.

6.2.2 Light winds will transport fine particles already suspended in the atmosphere due to disturbance. In calm conditions, any raised dust tends to settle out in the vicinity of the source. In windier conditions, the dust may be carried for a greater distance before settling out. The distance the dust will be carried depends on the wind speed, the particle size of the dust, the topography of the Site and its surroundings.

6.3 Potential Dust Sources

6.3.1 Fugitive dust emissions arising from Site activities may result in:

- the soiling of dust surfaces,
- visible dust plumes,
- locally elevated PM_{10} concentrations.

6.3.2 The principal potential sources of airborne dust arising from the Proposed Development are likely to be:

- earthworks / site preparation,
- loading and tipping,
- site haulage,
- road haulage,
- materials handling, including soils and building materials,
- windblow across stripped areas,
- windblow across stockpiles of construction materials, and
- concrete batching.

6.3.3 Site preparation would involve initial soil strip and cut and fill activities. Significant quantities of dust may be raised during these operations if appropriate mitigation options are not adopted. The proposed scheme includes for early construction of a bund on the eastern site edge, in the order of 2-4m high rising to 7m high near the roundabout. The bund will serve to aid in the reduction of off-site dispersion of any dust generated on site.

6.3.4 Loading and tipping of potentially dusty materials such as road base and other aggregates may create visible dust emissions although these will be short lived.

6.3.5 Site haulage is typically the principal potential dust source on construction sites due to the physical disturbance of particles by vehicle movements over bare soil or loose surfaces. The potential impact is increased over longer distances when speeds tend to be greater and more effort is required to maintain a smooth damp running surface. The haul distances at the application Site may range up to a maximum of about 600m. Over such distances, and in the absence of appropriate mitigation, significant quantities of dust may be raised.

6.3.6 Dust may also be raised by road haulage due to spillage or windblow from unsheeted loads and due to the adherence of mud and soil to the wheels and underbodies of vehicles leaving the Site. This may subsequently be deposited as track-out on roads in the vicinity of the Site, and on drying, be raised as dust by the passage of vehicles. In the event of road vehicles travelling across unsurfaced and muddy ground, track-out may occur

6.3.7 The handling of soils, construction materials, and aggregates can be a potentially significant dust source, particularly under dry conditions.

6.3.8 It is generally accepted that winds blowing at more than 5 m/s across loose fine materials can lead to airborne dust emissions. Winds of 5 m/s or greater blow in the UK for about one third of the time annually, decreasing slightly in summer months. Windblown dust from areas of bare soil and materials stockpiles could therefore arise for prolonged periods.

6.3.9 Plant emissions are generally not a significant source of dust except where large numbers of plant are present close to boundaries and then only if not operating in accordance with current emissions standards or emitting black smoke.

6.3.10 In summary, the principal potential sources of dust are likely to be initial earthworks, haulage, windblow across disturbed surfaces and materials handling.

6.4 Risk of Dust Effects Arising

6.4.1 The risk of fugitive dust emissions from the application Site resulting in the loss of amenity and / or health or ecological effects is related to:

- the nature of the activities being undertaken;
- the duration of these activities;
- the size of the Site;
- the meteorological conditions (wind speed, direction and rainfall);
- the proximity of receptors;
- the adequacy of mitigation measures applied to reduce or eliminate dust; and,
- the sensitivity of the receptors to dust.

6.4.2 With reference to the IAQM guidance the potential dust emission magnitudes for activities at the Site have been assessed as follows:

Table 6.1: Dust Emission Magnitude

Activity	Class	Comment
demolition	n/a	no demolition of existing buildings required
earthworks	large	site area of >10,000m^2; total material to be moved >100,000 tonnes
construction	large	total building volume >100,000m$^{3;}$ predominantly at ground level
trackout	large	potential internal unpaved road lengths of >100m; >50 HDV outward movements in any one day

6.5 Sensitivity of the Area

6.5.1 The Site is located within a mixed-use area, with isolated residential properties to the immediate south-east and north-west and wider residential development of Chirk across the B5070 to the east / southeast.

6.5.2 No statutory designated ecological Sites have been identified within 50m of the Site boundary or within 50m of the road network that may be affected by trackout.

6.5.3 The sensitivity of the area to dust soiling, human health and ecological impacts has been assessed in accordance with the IAQM guidance as follows:

Table 6.2: Sensitivity of Area[1]

Activity	Sensitivity	Comment
Dust Soiling Effects on People & Property		
demolition	n/a	*no demolition works proposed*
earthworks	medium	1-10 residential properties within 20m of potential dust sources and 10-100 within 50m of potential dust sources
construction	medium	
trackout	low	1-10 residential properties within 50m of roads likely to be used for construction traffic (up to 500m from Site entrance)
Human Health Impacts[2]		
demolition	n/a	*no demolition works proposed*
earthworks	low	1-10 residential properties within 20m of potential dust sources and 10-100 within 50m of potential dust sources
construction	low	
trackout	low	1-10 residential properties within 50m of roads likely to be used for construction traffic (up to 500m from Site entrance)
Ecological Impacts		
demolition	n/a	*no demolition works proposed*
earthworks	n/a	no statutory or locally designated sites identified within 50m of Site boundary
construction		
trackout	n/a	no statutory or locally designated sites identified within 50m of potentially affected road network

1: With reference to Tables 2 to 4 of IAQM guidance

2: IAQM guidance provides different sensitivity banding depending on the area background PM_{10} concentrations. Defra data provides a predicted background PM_{10} concentration of 6.97-7.68 µg/m^3 for the grid squares in which the Site and receptors are located for 2022. On this basis reference to the background concentration band of <24 µg/m^3 is considered appropriate.

6.5.4 The Site boundary has been used to measure the distances between receptors and potential sources of dust emissions in order to provide a conservative assessment, even though sources of dust emissions may be located well within the Site itself during much of the construction phase.

6.6 In determining the overall sensitivity of the area other factors should be taken into account such as other local dust generating sources and the prevailing wind direction. The following points are therefore noted with regards to the Site:

- the prevailing wind direction is southerly through to westerly and adjoining residential areas are therefore partially located downwind.

6.6.1 Taking these factors into account the overall sensitivity is defined as set out below:

Table 6.3: Outcome of Defining the Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	n/a	medium	medium	low
Human Health	n/a	medium	medium	low
Ecological	n/a	not sensitive	not sensitive	not sensitive

6.7 Assessment of Fugitive Dust and PM_{10} Impacts

6.7.1 Taking into account the dust emission magnitude and the sensitivity of the area, the risk of dust impacts, in the absence of mitigation, at nearby sensitive receptors are as follows:

Table 6.4: Risk of Dust Impacts

Potential Impact	Risk			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	n/a	medium	medium	low
Human Health	n/a	low	low	low
Ecological	n/a	n/a	n/a	n/a

Note: Based on Tables 7, 8 and 9 in the IAQM guidance

6.7.2 In summary, the assessment indicates that there is a *medium* risk of dust soiling impacts arising from fugitive dust during the earthworks and construction phases due to the proximity of residential properties to the Site boundary. There is a *low* risk of PM_{10} human health impacts during the earthworks and construction phases.

6.7.3 There is a *low* risk of dust soiling and PM_{10} health impacts due to trackout during construction on the basis the egress is to be via the Afon Bradley Farm access.

6.8 Mitigation

6.8.1 Principal potential sources of dust would be the earthworks, internal haulage across bare or loose surfaces, materials handling (e.g. loading and tipping) and wind blow across disturbed surfaces and materials handling.

6.8.2 The impact of construction activities however can be readily controlled through the implementation of standard best practice in respect to dust control and site management, as detailed in guidance issued by the Institute of Air Quality Management (IAQM)[4].

6.8.3 A Construction Environmental Management Plan (CEMP) is to be developed and implemented for the construction phase of the Proposed Development. This would include management and control measures in respect of dust and emissions and is expected to include an Air Quality Plan

(AQO). In addition, the CEMP would include a Construction Traffic Management Plan (CTMP) which is expected to encompass elements such as HGV routing and storage of materials.

6.8.4 Principal measures that can be employed for the management and control of dust emissions and included within such a CEMP and CTMP are provided below.

6.8.5 As an over-riding requirement, should winds carry visible dust towards the Site boundaries, the operations giving rise to the dust in that part of the site will be modified or suspended until more suitable conditions pertain, or until effective dust control measures are implemented.

6.8.6 Haulage within the site should be restricted to designated haul routes, which will as far as possible be located towards the centre of the site, and away from sensitive receptors to the east. The surface of the internal haul routes should be inspected daily, and any potholes or other defects made good.

6.8.7 Further standard good practices in respect of haulage include:

- avoiding abrupt changes in horizontal and vertical alignment,
- grading and maintenance of unsurfaced routes,
- setting an appropriate site speed limit,
- even loading of vehicles to avoid spillages,
- regular removal of spilled material from site routes,
- dust suppression by regular spraying with clean water in dry conditions,
- cleaning of any trackout or other deposits from the adjacent highways.

6.8.8 A suitable supply of clean water for dust suppression purposes will be maintained, under all climatic conditions, throughout the construction works.

6.8.9 Other more general matters and the management of the site can affect the likelihood of significant dust emissions. These include:

- minimisation of drop heights during tipping and loading,
- loading and tipping in the lee of existing structures and stockpiles,
- maintenance of equipment and plant to ensure its efficient operation,
- use of clean water for dust suppression, to avoid re-circulating fine material,
- high standards of house-keeping to minimise trackout and windblown dust, and
- effective staff training in respect of the causes and prevention of dust.

6.8.10 No additional mitigation measures to those standard measures utilised for construction are considered necessary.

6.8.11 The implementation of the outlined mitigation measures would serve to reduce the risk of dust impacts to low at most and would be not significant.

6.8.12 The effectiveness of the mitigation measures outlined above will, to a large extent, rely on the actions and behaviour of contractors. As noted above the procedures and measures for the control of dust during the construction phase will be incorporated within the CEMP which will be implemented prior to work commencing on Site. The CEMP will be developed and agreed with WCBC, and other regulators / consultees as required, prior to the commencement of the construction activities.

7 Vehicle Exhaust Emissions Assessment – Operational Phase

7.1 Screening Assessment

7.1.1 Information has been provided by the appointed Transport Consultant on the estimated vehicle movements to the existing main Kronospan facility access and to the proposed northern access.

7.1.2 The Proposed Development is expected to result in a redistribution of the existing vehicle movements to / from the facility, resulting in 1,527 AAWT HGVs (annual average 24 hour weekday traffic) and 20 AAWT LDVs travelling to / from the new north access rather than the existing access.

7.1.3 The Proposed Development would not result in any additional vehicle movements on the local road network. The key changes therefore would be a reduction in movements on the stretch of the B5070 between the existing and proposed new access point, the introduction of a new roundabout and associated movements at the new access point and movements within the lorry park and wider new infrastructure.

7.1.4 As discussed in **Appendix A**, the IAQM guidance provides indicative criteria of changes in vehicle movements of +500 AADT LGVs and +100 AADT HGVs, where distant to an AQMA, and the introduction of new junctions that may cause traffic to significantly accelerate / decelerate, for indicating when an air quality assessment is required.

7.1.5 Residential properties are located within 20m of the affected local road network and further assessment of the potential impacts, whether beneficial or adverse, of vehicle exhaust emissions has therefore been carried out using atmospheric dispersion modelling.

7.1.6 It is noted that the traffic data is available as AAWT rather than AADT. The facility operates 24/7 and hence the use of AAWT rather than AADT data will not significantly affect the assessment and results.

7.2 Model Input Parameters

7.2.1 The atmospheric dispersion model ADMS-Roads (v5.0.1.3) has been used to predict the changes in concentrations of the key pollutants associated with road transport, NO_2, PM_{10} and $PM_{2.5}$ due to the Proposed Development at selected receptors in proximity to the Site.

Traffic Data

7.2.2 The assessment has been based on the traffic data as provided by the appointed Transport Consultant and provided in **Appendix B**. The data has been provided as Annual Average Weekday Traffic (AAWT) data and has been used to generate appropriate data for input into the ADMS-Roads model.

7.2.3 A summary of the data on which the assessment has been based is summarised below in Table 7.1.

Table 7.1: Summary of Traffic Data used In Model - 2026[1, 2]

Road Link	Without Development		With Development	
	LDVs	HGVs	LDVs	HGVs
Existing Access	**1,169**	**1,527**	**1,149**	**0**
B5070 S of access	19,376	1,000	19,356	966
B5070 N of access	19,687	2,463	19,664	966
New Access	**39**	**0**	**59**	**1,527**
B5070 S of new access	19,330	2,476	19,308	979
B5070 N of new access	18,575	2,450	18,547	2,480
Old Black Park Road	1,086	26	1,086	26
A5 west of B5070 junction	15,153	1,271	15,143	1,278
A5 east of B5070 junction	21,043	2,938	21,025	2,963
A483 N	57,683	6,087	57,670	6,102
A483 S	46,002	5,637	45,998	5,644
Unnamed road	5,633	211	5,631	211

1: Data provided by the Transport Consultant

2: Major changes are experienced at the existing and new access point and stretch of B5070 between these two points; other changes in traffic data are minor due to nature of count calculations

7.2.4 The model set-up included the B5070, the A5 / A483 junction and the A54 / A483 junction. adjoining A1, and movements within the Proposed Development.

7.2.5 The Proposed Development modelled road network is shown below in Figure 7.1.

7.2.6 The available data has been used to estimate vehicles movements to the different parking areas in the Proposed Development.

7.2.7 Traffic speeds used in the model are based on site observations and Defra Guidance, particularly with respect to junctions and traffic lights[6].

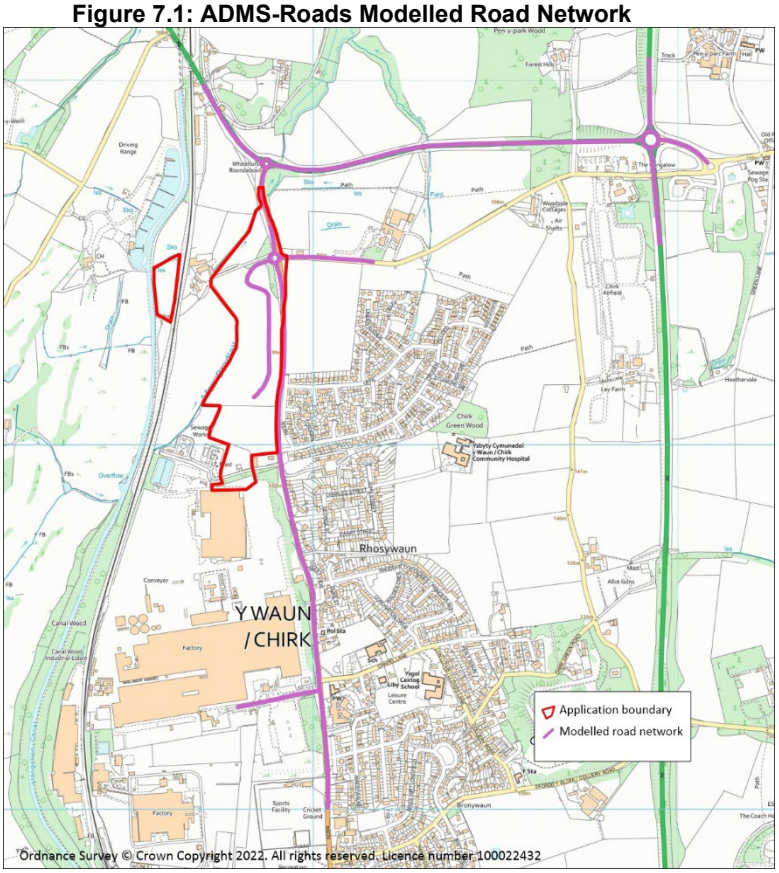
Emission Factors

7.2.8 The ADMS-Roads v5 model incorporates the Emissions Factor Toolkit (EFTv11.0) issued by Defra in November 2021.

Meteorological Data

7.2.9 The dispersion modelling has been undertaken using 1 year of hourly sequential data for Shawbury for 2021 as discussed above in Section 5.

Figure 7.1: ADMS-Roads Modelled Road Network



Summary Model Conditions

7.2.10 The general model conditions are summarised below:

Table 7.2: Model Conditions

Variables	Model Input
traffic data	derived from AAWT data provided by Axis
emissions	NO_x, PM_{10}
emission factors	EFT 11.0; applied for each assessment year
emissions profiles	average throughout 24 hours
surface roughness at source	0.005m (short grass (airfield))
meteorological data	1 year (2021) hourly sequential data for Shawbury
surface roughness at meteorological station	0.5m (suburban)
minimum Monin-Obukov length	1m (default)
model output	long-term annual mean road-NO_x, road-PM_{10} and road-$PM_{2.5}$ concentrations
receptors	x, y coordinates, z = 1.5m (see Figure 7.1)

7.3 Modelled Scenarios

7.3.1 The assessment has considered the vehicle movements associated with the existing facility and the Proposed Development. The model has been run for the following scenarios:

Table 7.3: ADMS-Roads Model Scenarios

Scenario	Year	Description
A	2026	Existing Development – incorporates cumulative schemes identified in the Transport Assessment
B	2026	Proposed Development – new north access & roundabout

7.4 Modelled Receptors

7.4.1 Potential receptors were identified from a review of aerial photography, OS mapping and site visit observations.

7.4.2 A total of 19 human health receptors were included in the model as summarised below in Table 7.4 and shown in Figure 7.2. These all represent residential building facades located within 200m of the Proposed Development and / or the affected stretch of B5070. They have all been modelled at an elevation of 1.5m.

Table 7.4: Summary of Modelled Human Health Receptors

Receptors	Location
R5	Residential properties on Old Black Park Road
R6	Afon Bradley Farm
R7-R8	Residential receptors near proposed new lorry park
R9-R18	Residential properties near affected stretch of B5070 Holyhead Road

Note: Receptors R1-R4 and R19 not included in report as not within 200m of affected local road network or additional vehicle movements within the Proposed Development

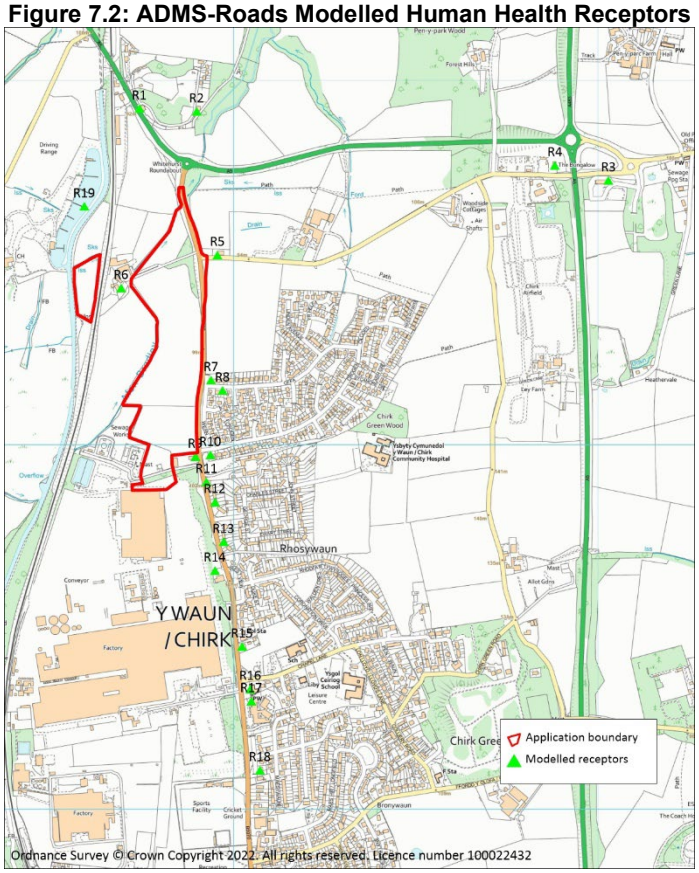
7.5 Model Output and Verification

Model Verification

7.5.1 The model has been used to predict annual mean road contributions of concentrations of NO_x, NO_2, and PM_{10} at the modelled locations.

7.5.2 Where possible it is usual practice to verify the model in accordance with Defra guidance[6]. This is done by comparing modelled data with monitored data and, where necessary, deriving an adjustment factor. In this instance however it has not been possible to carry out verification as the traffic data is based on counts carried out in 2022 whereas the monitoring data is for 2020. Given the impacts of the COVID-19 pandemic[14] it would not be appropriate to backdate the traffic data to enable verification with 2020 monitoring data.

Figure 7.2: ADMS-Roads Modelled Human Health Receptors



Note: receptor points R1-R4 and R19 not included in assessment report as not within 200m of affected local road network or additional vehicle movements within the Proposed Development

Assessment

7.5.3 Total annual mean NO_2 concentrations at each modelled receptor for the 'with' and 'without' development scenarios for 2026 have been calculated from the modelled road-NO_x concentrations using the 'NO_x to NO_2' calculator provided on the Defra LAQM website (version 8, 19th August 2020). The calculator requires the input of background NO_2 concentrations which were obtained from Defra background concentrations for each relevant grid square for 2026.

7.5.4 The model set-up has included the stetch of the B5070 adjacent to the Site. No adjustments have been made to the background NO_2 concentrations used in the assessment and as such for those receptors close to the dual carriageway there will be a degree of double counting the road contributions as the B5070 contributions will also be incorporated in the Defra background data.

7.5.5 Total annual mean PM_{10} concentrations are calculated by summing the predicted road source PM_{10} contributions and the predicted background PM_{10} concentrations for 2026 for the grid square in which the receptors are located.

7.5.6 Full results are presented in **Appendix** C.

7.5.7 The results have been used to determine both the predicted changes in pollutant concentrations at receptor facades with the development and the resulting total pollutant concentrations. The assessment of these changes has been carried out through reference to the IAQM guidance as detailed in **Appendix A**.

7.6 Model Results

Proposed Development

7.6.1 The predicted modelled increases in annual mean NO_2 concentrations at receptors with the Proposed Development are assessed in accordance with the IAQM guidance and summarised below.

Table 7.5: Summary of Maximum Predicted Façade and Modelled Increases in NO_2 (based on 2026)

Receptor	Maximum Change in Annual Mean Concentration		Predicted Façade Concentration[2,3]	Impact
	(µg/m³)	*%[1]*	*(µg/m³)*	
Residential receptors near proposed new access				
R5	-0.05	0	8.43	*negligible*
R6	+0.03	0	7.11	*negligible*
Residential receptors near proposed new lorry park				
R7	-0.12	0	9.47	*negligible*
Residential receptors near affected stretch of B5070				
R11	-0.71	-2	15.27	*negligible*

1: maximum change in annual mean concentration as % of assessment level; rounded in accordance with IAQM guidance
2: maximum NO_2 concentration based on predicted background concentrations for grid squares in which receptors are located for the modelled years
3: Defra's 'NO_x to NO_2 calculator' (v8.0) used; Wales rural traffic

7.6.2 Changes in annual mean NO_2 concentrations at receptor R5, representing the nearest properties on Old Black Park Road to the proposed new junction are 0% of the AQAL resulting *negligible* severity of impacts. These results are consistent with expectations given the Proposed Development includes for a realignment of the road and the proposed roundabout is set-back from the properties compared to the existing road alignment.

7.6.3 Changes in annual mean NO_2 concentrations at receptor R6, representing Afon Bradley Farm, are 0% of the AQAL resulting *negligible* severity of impacts. These results are consistent with expectations given the set-back distance from the access point.

7.6.4 The maximum change in annual mean NO_2 concentrations at receptors R7 and R8, representing those closest to the proposed lorry park, are 0% of the AQAL resulting *negligible* severity of impacts. These results are consistent with expectations given the set-back distance from the

lorry park and proximity to the stretch of the B5070 that would experience a reduction in HGV flows.

7.6.5 The maximum change in annual mean NO_2 concentrations at receptors R9-R18, representing those along the affected stretch of the B5070, is -2% of the AQAL at R11. The resulting in total annual mean concentration is well below the AQAL and the resulting severity of impacts (beneficial) is *negligible.* Changes of -1% of the AQAL are also predicted at modelled receptors points R9-R10 and R12-R16, all with resulting *negligible* impacts.

7.6.6 The maximum predicted modelled increases in annual mean PM_{10} concentrations at the modelled receptors are summarised below.

Table 7.6: Summary of Maximum Predicted Façade and Modelled Increases in PM_{10} (based on 2026)

Receptor	Maximum Change in Annual Mean Concentration		Predicted Façade Concentration[2,3]	Impact
	(µg/m³)	*%[1]*	*(µg/m³)*	
Residential receptors near proposed new access				
R5	-0.05	0	11.15	*negligible*
R6	+0.01	0	10.76	*negligible*
Residential receptors near proposed new lorry park				
R7	-0.3	0	11.39	*negligible*
Residential receptors near affected stretch of B5070				
R11	-0.39	-1	11.42	*negligible*

1: maximum change in annual mean concentration as % of assessment level; rounded in accordance with IAQM guidance
2: maximum PM_{10} concentration based on predicted background concentrations for grid squares in which receptors are located for the modelled years

7.6.7 The maximum change in annual mean PM_{10} concentrations is at receptor R11, representing those along the affected stretch of the B5070, at -1% of the AQAL. The resulting in total annual mean concentration is well below the AQAL and the resulting severity of impacts is *negligible.* Changes of -1% of the AQAL are also predicted at modelled receptors points R9-R10 and R12-R16, all with resulting *negligible* impacts.

7.7 Facility Contributions to the Background Pollutant Concentrations

7.7.1 As noted above in para 5.5.4 the predicted Defra background pollutant concentrations take into account existing sources such as the wider Kronospan facility and the nearby major road network. For further information however reference has also been made to the recent air quality modelling carried out in respect of the existing facility[15] in relation to an application to consolidate and vary the existing Environmental Permit. This Dispersion Modelling Assessment (DMA) considered all combustion plant emission points and panel board manufacturing process emission points and has been accepted by Natural Resources Wales (NRW).

7.7.2 The assessment predicts the maximum annual mean NO_2 and PM_{10} contributions from the process to the north / northeast / east of the facility to peak at 9% (3.6 µg/m^3) and 20% (8 µg/m^3) of the AQALs respectively (Figures 13 and 17 of the DMA; assuming normal operations). With reference to Tables 7.6 and 7.6 above the resulting total NO_2 and PM_{10} concentrations 'with' and 'without' the Proposed Development remain well below the AQALs (<70%) and all predicted impacts remain *negligible*.

7.8 Assessment

7.8.1 As expected the Proposed Development is predicted to result in an increase in annual mean NO_2 and PM_{10} concentrations at Afon Bradley Farm. However, the resulting total concentrations are predicted to remain well below the relevant AQALs and the resulting severity of impacts are described as *negligible*.

7.8.2 Annual mean NO_2 and PM_{10} concentrations are predicted to reduce at all other modelled receptors due to the realignment of the B5070 and reduction of HGV movements on the stretch of road between the proposed new access and existing access. The severity of beneficial impacts at these receptors would be described as *negligible*.

7.9 Mitigation

7.9.1 No significant adverse impact on local air quality has been identified due to vehicle exhaust emissions and further mitigation measures are not therefore deemed necessary. The Proposed Development would result in beneficial impacts, although not 'significant', at properties near the affected stretch of the B5070.

7.10 Assumptions and Limitations

7.10.1 Information on predicted traffic movements has been provided by the appointed Transport Consultant; for full details on derivation of this data reference should be made to the Transport Assessment which has been submitted as part of the planning application documentation. The data has been provided as AAWT rather than AADT. However, it is considered the resulting assessment would be conservative as AADT would be expected to be lower than the AADT figures, both in relation to the facility vehicle movements and movements on the local road network.

7.10.2 The existing and proposed road layouts have been based on site observations, Proposed Development plans and review of existing OS mapping and aerial imagery.

7.10.3 The vehicle emissions assessment has been undertaken using predicted air quality data, vehicle emission factors and the 'NO_x to NO_2' calculator published by Defra in 2020 and is based on the most up to date publicly published data available.

7.10.4 The resulting modelled road-contributions of NO_x and PM_{10} and resulting total NO_2 and PM_{10} concentrations are considered to be consistent with expectations given the local road network, baseline traffic flows and available monitoring data.

7.10.5 It should be noted that neither the predicted background data, UK fleet composition data or vehicle emission factors take into account implications of the COVId-19 pandemic or subsequent behavioural changes.

8 Additional Considerations

8.1 Construction Phase – Vehicle Exhaust Emissions

8.1.1 The core construction phase is expected to last 72 weeks to completion of the access road, lorry park, roundwood storage and associated facilities. Subsequent construction would comprise the electricity substation. HGV movements during the construction are expected to peak at about 200 two-way movements per day (100 in / 100 out). Actual AADT flows would be substantially reduced to this.

8.1.2 As discussed above in Section 6 a CTMP is to be prepared. This would include an HGV routing strategy and details of on-site parking and manoeuvring arrangements, and would seek to ensure that all HGV construction-related traffic is via the strategic highway network.

8.1.3 Given the short-term nature of the construction works, the proposed CTMP and absence of any existing local air quality concerns, it is not considered further assessment of vehicle exhaust emissions associated with the construction phase is required.

8.2 Proposed Roundwood Store and Dust Emissions

8.2.1 The Proposed Development includes for the construction of two roundwood stores. These are to be open and used for the temporary storage of logs prior to transportation to elsewhere within the wider Kronospan facility. There is a low likelihood for the roundwood storage to result in dust emissions. The area would however be incorporated with the Environmental Permit for the facility[16] and measures employed to manage any dust emissions in accordance with the Noise, Dust and Odour Management Plan. Furthermore, the proposals include for a 2m-4m high bund along the eastern edge of the Site providing mitigation to any dust emissions and dispersion towards the housing to the east / southeast.

8.3 Cumulative Impacts

8.3.1 Information on other schemes that have been identified as requiring consideration to determine any potential cumulative impacts are discussed in **ES Chapter 2.0 (Environmental Impact Assessment (EIA) Methodology)**[17] that is to be submitted with the planning application for the Proposed Development.

8.3.2 The 'without development' traffic data provided by Axis and used within the vehicle emission assessment in Section 7 includes any cumulative schemes identified as requiring consideration as discussed in the Transport Assessment[18]. No further consideration is therefore required in relation to vehicle exhaust emissions.

[16] Draft new consolidated Environmental Permit ref: EPR/BW9999IG/V008 issued by Natural Resources Wales (NRW) in July 2022; awaiting determination at time of preparation of this report; to be varied as required in relation to the Proposed Development
[17] Axis, Kronospan, Chirk, Environmental Statement, 3046-01 Kronospan North Access Road
[18] Axis, Proposed Access Road and Lorry Park, Kronospan – Northern Infrastructure, Transport Assessment, 3046-01-TA01

8.3.3 As discussed in Section 6 construction dust can be readily mitigated and no further consideration of cumulative impacts with other projects is deemed necessary in this regard.

9 Summary and Conclusions

9.1 A planning application is to be submitted to WCBC for the construction and operation of a northern access road, lorry park, roundwood storage areas and associated structures, 132kV electricity substation and ancillary works on land to the immediate north of the existing Kronospan facility in Chirk.

9.2 The AQA has considered the potential impacts associated with fugitive dust and vehicle exhaust emissions during the construction and operational phases of the Proposed Development.

9.3 Construction Dust

9.3.1 An assessment has been undertaken of the potential for fugitive dust that may arise during the earthworks and construction phases of the project, and from track-out from the egress points, to impact nearby sensitive receptors through both soiling and human health effects. The assessment takes into account the size of the development and the sensitivity of the surrounding area.

9.3.2 In summary, the assessment indicates that there is a *medium* risk of dust soiling impacts arising from fugitive dust during the earthworks and construction phases due to the proximity of residential properties to the Site boundary. There is a *low* risk of PM_{10} human health impacts during the earthworks and construction phases. There is a *low* risk of dust soiling and PM_{10} health impacts due to trackout during construction on the basis all egress is to be via the Afon Bradley Farm access.

9.3.3 The generation and resulting impacts of construction dust can however be readily controlled through the implementation of standard best practice in respect to dust control and site management. The construction dust assessment and outline measures provided in this AQA will be used to inform the CEMP to be agreed in advance of the commencement of site development. It is concluded that with the implementation of appropriate measures no unacceptable impacts on human health, amenity or ecological receptors have been identified.

9.4 Vehicle Exhaust Emissions

The Proposed Development would not result in an increase in vehicle movements to and from the facility compared to currently. The only changes would be a redistribution of vehicle movements, primarily HGVs, to the new north access from the existing access.

9.4.1 Atmospheric modelling of vehicle exhaust emissions has been undertaken to further inform the assessment of potential impacts of vehicle exhaust emissions due to the redistribution on the neighbouring properties to the local road network, both adverse and beneficial.

9.4.2 The proposals would result in a **reduction** of 1,527 AAWT HGVs and 20 AAWT LDVs travelling along the stretch of the B5070 between the existing and new access points. This would accordingly result in a **reduction** in pollutant concentrations at receptors near this stretch of road. Reductions are also predicted at those receptors along this stretch of road that are located near the proposed lorry park; the lorry park being set back from the highway and any impacts from this on receptors along the B5070 being compensated by the reduction of movements on the road itself. The resulting impacts are therefore **beneficial** at these properties.

9.4.3 The maximum reduction in NO_2 and PM_{10} concentrations at the modelled receptors are 0.71 $\mu g/m^3$ and 0.39 $\mu g/m^3$ respectively, 2% and 1% of the relevant AQALs. Background ambient air quality is good in the area and the resulting beneficial impacts, in accordance with the IAQM terminology, would be described as *negligible*.

9.4.4 The proposals for the new roundabout to create the northern access includes realignment of the B5070, resulting in the B5070 being further away from the properties on Old Black Park Road to currently. This therefore would also result in a predicted **reduction** in pollutant concentrations due to vehicle emissions at these properties. The resulting beneficial impacts would be described as *negligible*.

9.4.5 The resultant increases in pollutant concentrations due to the new access at Afon Bradley Farm would be *negligible*.

9.5 Other Considerations

9.5.1 The construction phase would result in additional construction HGV movements to / from the Site over this period. This would be relatively short-lived and given the absence of any local air quality concerns and proposed implementation of a CTMP no significant adverse impacts.

9.5.2 The proposed roundwood storage areas would be encompassed within the wider facility Environmental Permit (to be subject to variation as required). Dust emissions are likely to be of low likelihood from the storage area, but in any event would be controlled in accordance with the dust management plan.

9.6 Overall Conclusions

9.6.1 No unacceptable impacts on existing or future human health, amenity or ecological receptors have been identified through the additional HGV traffic associated with the Proposed Development. The proposals would result in a reduction in vehicle movements, primarily HGVs, travelling along the stretch of the B5070 between the current access and proposed northern access, resulting in a predicted reduction in pollutant concentrations due to vehicle emissions at properties along this stretch and hence beneficial impacts.

9.6.2 No air quality grounds have been identified that would preclude the granting of planning permission for the Proposed Development.

APPENDIX A

Assessment Methodology

Appendix B
Air Quality Assessment Methodology

1. Construction Dust Assessment

1.1. Introduction

1.1. The assessment of the air quality impacts due to the generation and dispersion of dust and PM_{10} during the construction phase has been undertaken in accordance with the current guidance issued by the IAQM[1]. The guidance describes a qualitative assessment methodology to assess the risks of dust and PM_{10} impacts from demolition, earthworks and construction activities and from trackout, and provides guidance for assessing the significance of the effects. The assessment methodology is summarised below but for full details reference should be made to the IAQM guidance.

1.2. Step 1: Screening Assessment

1.2.1. In accordance with the IAQM guidance, the following screening criteria are referred to to indicate whether further detailed assessment is required:

- A human receptor within:
  - 350m of a site boundary; or
  - 50m of the route(s) used by construction vehicles on the public highway, up t 500m from the site entrance(s):
- An ecological receptor within;
  - 50m of the boundary of the site; or
  - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

1.2.2. Where the need for further assessment can be screened out it can be concluded that the level of risk is *negligible* and any effects would not be significant.

1.3. Step 2: Further Assessment

1.3.1. Where further assessment is required this is undertaken through use of the source-pathway-receptor concept. The risk of dust arising in sufficient quantities from a site to cause annoyance and / or health or ecological impacts and resulting effects is dependent on:

[1] Institute of Air Quality Management (2014), *Guidance on the Assessment of Dust from Demolition and Construction*. v1.1.

- the scale and nature of the works (potential **magnitude** of dust emissions);
- the effectiveness of the pathway (i.e. dispersion towards a receptor; proximity of receptors); and
- the sensitivity of the receptors, both human and ecological.

1.3.2. A site is allocated a Potential Dust Emissions Magnitude of large / medium / small for demolition, earthworks, construction and track out taking into account factors such as the size of the site, type of soils, building volume and vehicle movements. Examples are provided below:

Table 1.1: Examples definitions to define dust emission magnitudes for each activity

Activity	Dust Emission Magnitude		
	Large	**Medium**	**Small**
Demolition	• >50,000m^3 build volume • dusty material (e.g. concrete) • on-site crushing	• between 20,000m^3 and 50,000m^3 build volume • potentially dusty material	• <20,000m^3 build volume • low dust material • occurs in winter
Earthworks	• >10,000m^3 site area • >100,000 tonnes material moved • dusty soil type (e.g. clay) • >10 active plant	• <10,000m^3 site are • <100,000 tonnes material moved • possible dusty soil type (e.g. silt) • 5-10 active plant	• <2,500m^3 site area • <20,000 tonnes material moved • large grain soil type (e.g. sand) • <5 active plant
Construction	• >100,000m^3 build volume • onsite concrete batching	• <100,000m^3 build volume • dusty construction material (e.g. concrete)	• <25,000m^3 build volume • low dust construction material (e.g. metal)
Trackout	• >50 outward HDV movements • unpaved road 100m	• 10-50 outward HDV movements • unpaved road 50-100m	• <10 outward HDV movements • unpaved road <50m

1.3.3. The impact of generated dust will depend on the sensitivity of an area. The sensitivity of the area is determined for dust soiling, human health and ecological impacts respectively taking into account several factors, as follows:

- the specific sensitivities of receptors in the area;
- the number of those receptors;
- the distance of the receptors from the dust source;
- in the case of PM_{10}, the local background concentrations; and
- site specific factors, such as whether there are natural shelters or screening e.g. trees to reduce the risk of wind-blown dust.

1.3.4. Examples of receptor sensitivities are summarised in the tables below.

Table 1.2: Example sensitivity of receptors to dust soiling effects

Sensitivity		
High	**Medium**	**Low**
people and property		
• Users expect high level of amenity • Users present continuously • Property appearance / value would be expected to be diminished by dust soiling	• Users expect reasonable level of amenity • Users not present continuously • Property appearance / value might be expected to be diminished by dust soiling	• Users do not expect reasonable level of amenity • Users present for limited time • Property appearance / value would not be expected to be diminished by dust soiling
examples		
Dwellings, car showrooms, long-term car parks, sensitive horticultural land	Places of work, parks	Short-term car parks, playing fields, footpaths, non-sensitive farmland, roads

Table 1.3: Example sensitivity of receptors to PM_{10} health effects

Sensitivity		
High	**Medium**	**Low**
Exposure of members of the public for eight hours or more in a day	Exposure of workers for eight hours or more in a day	Exposure is transient
examples		
• Members of the public • Dwellings, hospitals, schools, care homes	• Workers • Offices, shops	• Playing fields, footpaths, parks, shopping streets

Note: assessment of sensitivity also takes into account local background PM_{10} concentrations

Table 1.4: Example sensitivity of receptors to ecological effects

Sensitivity		
High	**Medium**	**Low**
Locations with international or national designation where the designated feature may be affected by dust soiling	Locations with national designation where the designated feature may be affected by dust soiling	Locations with local designation where the designated feature may be affected by dust soiling
Locations with communities of dust-sensitive species	Locations with important species where dust sensitivity is uncertain	

1.3.5. Receptors are considered up to the following distances:

Table 1.5: Summary of Distances to Receptors Considered

	dust soiling	human health	ecological
demolition, earthworks and construction	up to a distance of 350m from a site		up to a distance of 50m from a site
trackout	up to a distance of 50m from the edge of a road used for construction traffic and up to 500m from the site exit along that road		

1.3.6. The overall sensitivity of an area to dust soiling effects can therefore be assessed as summarised in the example table below.

Table 1.6: Example Summary of the Outcome of the Sensitivity of the Area

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Medium
Human Health	High	High	High	High
Ecological	Medium	Medium	Low	Low

1.3.7. The overall risk of impacts and effects for each activity considers the derived sensitivity of the area and the dust emission magnitude for each phase of the development, as summarised in the matrix below.

Table 1.7: Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

1.3.8. Other factors such as local topography and prevailing wind direction are also considered.

2. Vehicle Emissions Assessment

2.1. Introduction

2.2. The assessment of vehicle emissions associated with the Proposed Development has been undertaken in accordance with the IAQM guidance in relation to planning, air quality and human health[2] and ecological[3] receptors. Relevant receptors include residential dwellings, schools and hospitals, areas of leisure use and ecologically sensitive sites.

2.3. Screening Assessment

2.4. The level of assessment required was determined through an initial screening review considering the predicted vehicle movements in association with the proposed activities, the routing of vehicles along the roads within the transport assessment study area and locations of sensitive receptors.

2.5. The following criteria were used to determine potentially affected roads:

- LDV (Light Duty Vehicle) flow change by 500 AADT (annual average daily traffic) or more outside an AQMA (Air Quality Management Area), or 100 AADT or more within or adjacent to an AQMA;
- HDV (Heavy Duty Vehicle) flows change by 100 AADT or more outside an AQMA, or 25 AADT or more within or adjacent to an AQMA;
- Road alignment changing by 5m or more;
- Introduction or removal of a junction.

2.6. Where these criteria are met and there are relevant receptors present further assessment is required. This may take the form of a Simple or Detailed Assessment. The IAQM guidance does not specify at what distance a receptor should be to an affected road to indicate the need for further assessment. However, pollution concentrations fall rapidly away from the roadside and are expected to return to background levels within 100m of a road source[4]. For the purposes of the assessment reference is made to Highways England (*now National Highways*) DMRB[5] guidance which requires assessment of receptors within 200m of affected roads.

2.7. Where there are no receptors within 200m of affected roads, these roads have not been considered further and potential impacts of vehicle emissions can be considered *negligible* and as having an insignificant effect.

[2] Institute of Air Quality Management (IAQM), Land-use Planning & Development Control: Planning for Air Quality. v1.2, 2017
[3] Institute of Air Quality Management (IAQM), A guide to the assessment of air quality impacts on designated nature conservation sites, version 1.0, June 2019
[4] Air Quality Consultants (2008), *NO_2 Concentrations and Distance from Roads*, J504
5 Highways England (HE), Design Manual for Roads and Bridges (DMRB), LA 105 Air Quality, Revision 0, November 2019

2.8. Separate guidance is provided by Natural England (NE) in relation to ecological sites[6] and is re-iterated in IAQM guidance[2].

2.9. To assess whether further assessment in relation to ecological receptors was required reference was initially made to the following screening criteria:

- Total vehicle flow change by 1,000 AADT or more; or HDV flows change by 200 HGV AADT or more, where an ecological receptor is located within 200m of the affected road.

2.10. With regards to this planning application the screening assessment concluded that further consideration of vehicle emissions was required, encompassing atmospheric dispersion modelling. Full details of the model approach are provided in the AQA.

[6] Natural England (NE), Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations, v1.4 Final, June 2018

APPENDIX B

Traffic Data

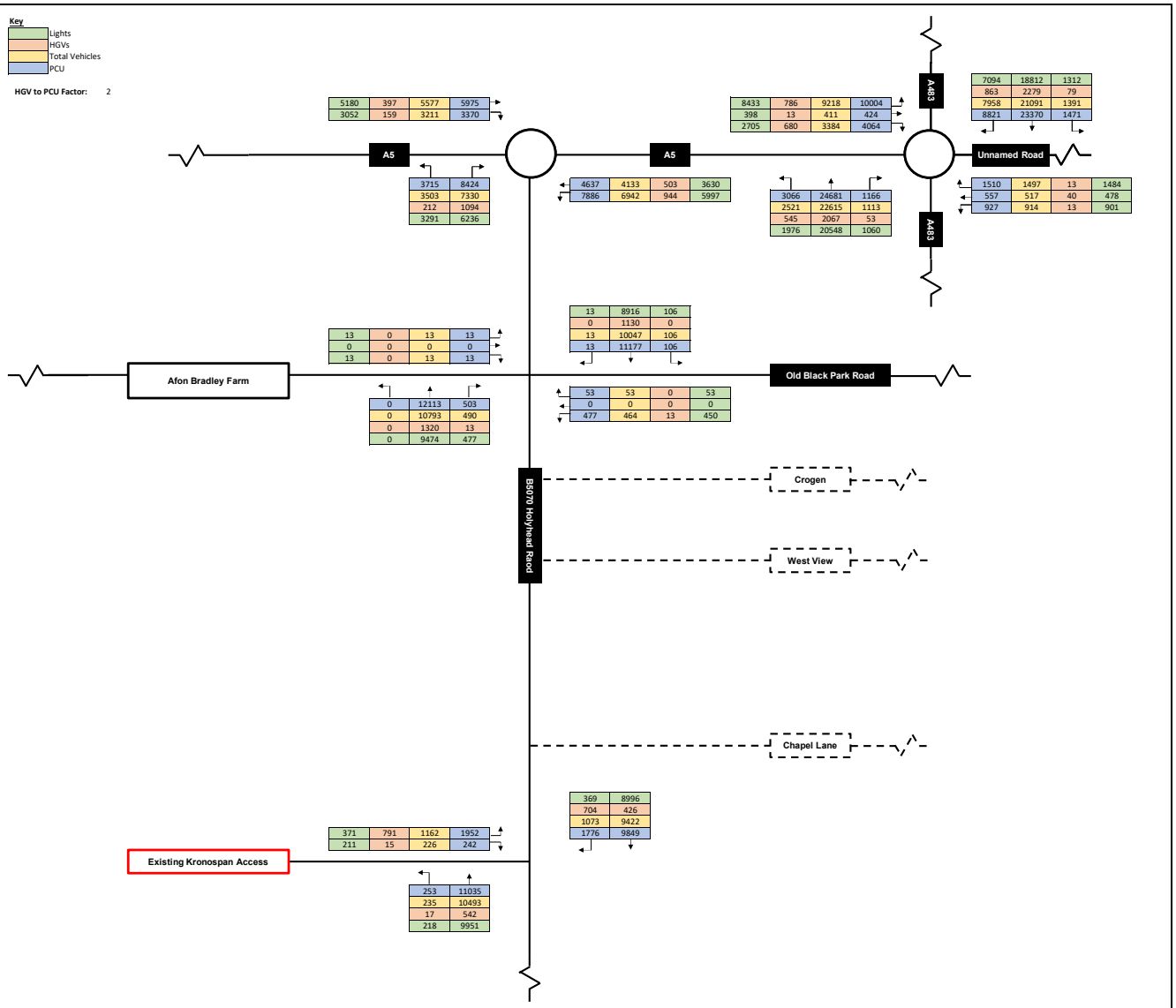
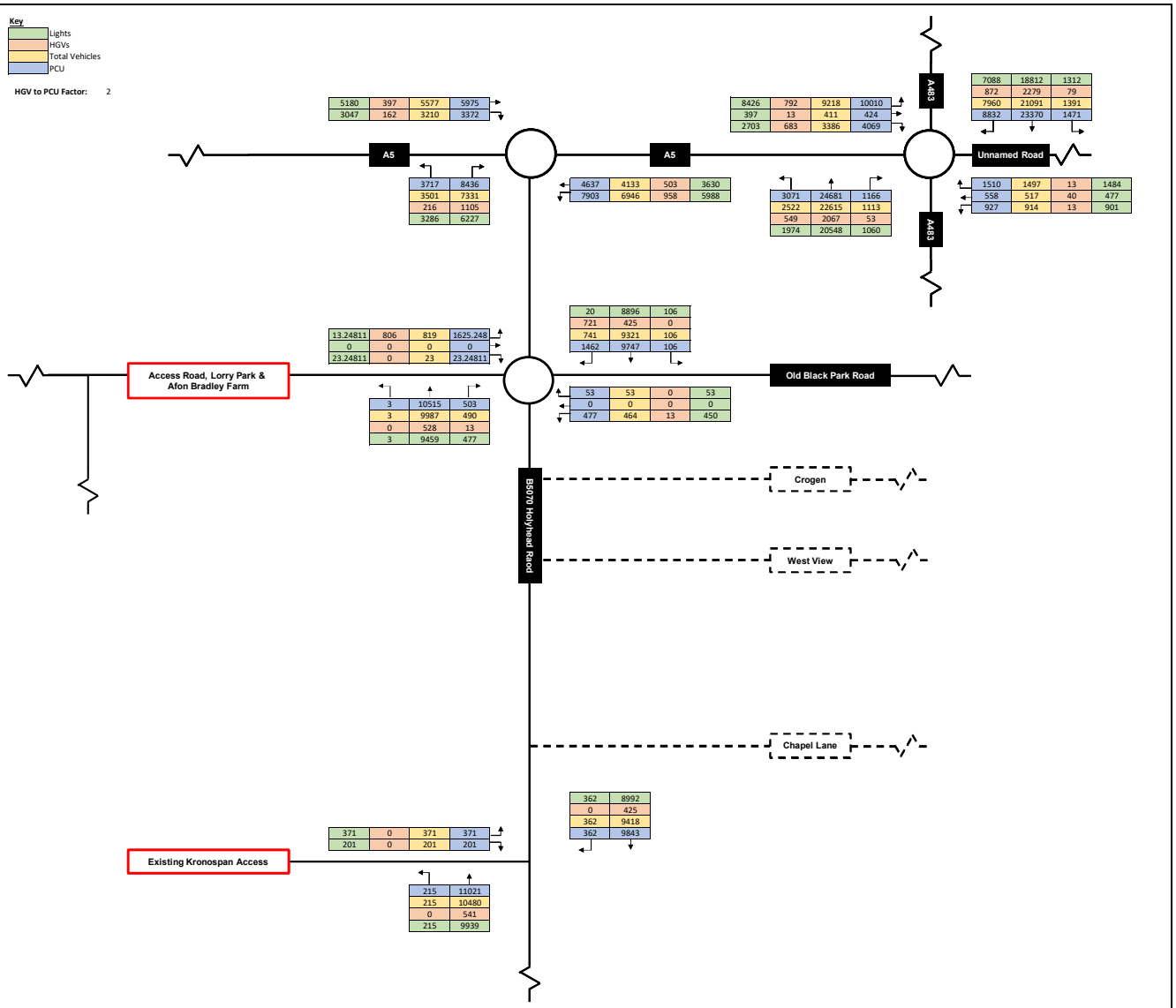


Figure: NA
Project Name: Kronospan Northern Infrastructure
Project Number: 3162-01
Description: 2026 'Do Nothing' Without Development Scenario
Period: AAWT (24 hours)



axis

Figure: NA
Project Name: Sandown Quarry
Project Number: 3162-01
Description: 2026 'Do Something' With Development Scenario
Period: AAWT (24 hours)

APPENDIX C

Vehicle Emissions Results and Assessment

R3030 Kronospan, Chirk
Appendix D Summary of ADMS-Roads Results
NO2

Adjustment factor 1

				2026 Scenario A				2026 Scenario B							
Receptor name	**X(m)**	**Y(m)**	**Z(m)**	**Roadside contribution NO_x[1]**	**Adjusted NO_x[2]**	**Background NO_2[3]**	**Total NO_2[4]**	**Roadside contribution NO_x[1]**	**Adjusted NO_x[2]**	**Background NO_2[3]**	**Total NO_2[4]**	**Absolute change**	**% change NO_2[5]**	**% change rounded[6]**	**Impact descriptor[7]**
				µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³			
Receptors near new access															
R5	328956.19	339521.19	1.5	3.01	3.01	6.81	8.48	2.92	2.92	6.81	8.43	-0.05	-0.13	0	Negligible
R6	328692	339430.5	1.5	0.49	0.49	6.81	7.08	0.55	0.55	6.81	7.11	0.03	0.08	0	Negligible
Receptors near new lorry park															
R7	328938.59	339177.41	1.5	5.04	5.04	6.81	9.59	4.82	4.82	6.81	9.47	-0.12	-0.30	0	Negligible
R8	328970	339149	1.5	2.34	2.34	6.81	8.11	2.23	2.23	6.81	8.05	-0.06	-0.15	0	Negligible
receptors near affected stretch of B5070															
R9	328895.31	338967	1.5	5.53	5.53	9.26	12.28	4.91	4.91	9.26	11.94	-0.34	-0.85	-1	Negligible
R10	328936.59	338972.31	1.5	4.47	4.47	9.26	11.71	3.99	3.99	9.26	11.45	-0.26	-0.65	-1	Negligible
R11	328926.41	338897.69	1.5	12.49	12.49	9.26	15.98	11.14	11.14	9.26	15.27	-0.71	-1.78	-2	Negligible
R12	328948.91	338843	1.5	6.41	6.41	9.26	12.75	5.68	5.68	9.26	12.36	-0.39	-0.98	-1	Negligible
R13	328972.69	338733.31	1.5	6.61	6.61	9.26	12.86	5.85	5.85	9.26	12.46	-0.40	-1.00	-1	Negligible
R14	328948.91	338654.69	1.5	2.97	2.97	9.26	10.89	2.60	2.60	9.26	10.69	-0.20	-0.50	-1	Negligible
R15	329023.59	338446.09	1.5	6.57	6.57	6.95	10.56	5.78	5.78	6.95	10.13	-0.43	-1.08	-1	Negligible
R16	329046.19	338329.81	1.5	4.39	4.39	6.95	9.38	3.86	3.86	6.95	9.08	-0.30	-0.75	-1	Negligible
R17	329048.91	338296.09	1.5	4.24	4.24	6.95	9.29	3.95	3.95	6.95	9.13	-0.16	-0.40	0	Negligible
R18	329072.81	338106.41	1.5	3.05	3.05	6.95	8.64	2.99	2.99	6.95	8.61	-0.03	-0.08	0	Negligible

min	**0.49**	**0.49**	**6.81**	**7.08**	**0.55**	**0.55**	**6.81**	**7.11**	**-0.71**	**-1.78**	**-2**				
max	**12.49**	**12.49**	**9.26**	**15.98**	**11.14**	**11.14**	**9.26**	**15.27**	**0.03**	**0.08**	**0**				

1: Modelled road contribution
2: Adjusted road contribution
3: Defra predicted background concentration for grid square in which receptor located
4: Total NO_2 concentration calculated using Defra NO_x to NO_2 calculator, v8, August 2020
5: Change in pollutant concentration as % of AQAL
6: % change rounded in accordance with IAQM guidance
7: Impact descriptor in accordance with IAQM guidance

R3030 **Kronospan, Chirk**
Appendix D **Summary of ADMS-Roads Results**
PM10

Adjustment Factor 1

			2026 Scenario A-Do Nothing				2026 Scenario B-Do Something							
Receptor Name	**X**	**Y**	**Modelled PM_{10}[1]**	**Adjusted PM_{10}[2]**	**Backgroun d PM_{10}[3]**	**Total PM_{10}[4]**	**Modelled PM_{10}[1]**	**Adjusted PM_{10}[2]**	**Background PM_{10}[3]**	**Total PM_{10}[4]**	**Absolute change**	**% change PM_{10}[5]**	**% change rounded[6]**	**Impact descriptor[7]**
			µg/m³	**µg/m³**	**µg/m³**	**µg/m³**	**µg/m³**	**µg/m³**	**µg/m³**	**µg/m³**	**µg/m³**			
Receptors near new access														
R5	328956.19	339521.19	0.53	0.53	10.67	11.20	0.48	0.48	10.67	11.15	-0.05	-0.12	0	negligible
R6	328692	339430.5	0.08	0.08	10.67	10.75	0.09	0.09	10.67	10.76	0.01	0.01	0	negligible
Receptors near new lorry park														
R7	328938.59	339177.41	0.84	0.84	10.67	11.51	0.72	0.72	10.67	11.39	-0.12	-0.30	0	negligible
R8	328970	339149	0.39	0.39	10.67	11.06	0.33	0.33	10.67	11.00	-0.05	-0.13	0	negligible
receptors near affected stretch of B5070														
R9	328895.31	338967	0.88	0.88	9.82	10.70	0.71	0.71	9.82	10.53	-0.17	-0.44	0	negligible
R10	328936.59	338972.31	0.71	0.71	9.82	10.53	0.58	0.58	9.82	10.40	-0.14	-0.35	0	negligible
R11	328926.41	338897.69	1.99	1.99	9.82	11.81	1.60	1.60	9.82	11.42	-0.39	-0.97	-1	negligible
R12	328948.91	338843	1.02	1.02	9.82	10.84	0.82	0.82	9.82	10.64	-0.20	-0.51	-1	negligible
R13	328972.69	338733.31	1.05	1.05	9.82	10.87	0.84	0.84	9.82	10.66	-0.21	-0.53	-1	negligible
R14	328948.91	338654.69	0.47	0.47	9.82	10.29	0.38	0.38	9.82	10.20	-0.10	-0.24	0	negligible
R15	329023.59	338446.09	1.04	1.04	12.56	13.60	0.83	0.83	12.56	13.39	-0.21	-0.53	-1	negligible
R16	329046.19	338329.81	0.67	0.67	12.56	13.23	0.55	0.55	12.56	13.11	-0.12	-0.29	0	negligible
R17	329048.91	338296.09	0.63	0.63	12.56	13.19	0.57	0.57	12.56	13.13	-0.06	-0.16	0	negligible
R18	329072.81	338106.41	0.44	0.44	12.56	13.00	0.43	0.43	12.56	12.99	-0.01	-0.03	0	negligible

min	**0.08**	**0.08**	**9.82**	**10.29**	**0.09**	**0.09**	**9.82**	**10.20**	**-0.39**	**-0.97**	**-1**		
max	**1.99**	**1.99**	**12.56**	**13.60**	**1.60**	**1.60**	**12.56**	**13.39**	**0.01**	**0.01**	**0**		

1: Modelled road contribution
2: Adjusted road contribution
3: Defra predicted background concentration for grid square in which receptor located
4: Total PM10 concentration calculated by addition of background and modeled contribution
5: Change in pollutant concentration as % of AQAL
6: % change rounded in accordance with IAQM guidance
7: Impact descriptor in accordance with IAQM guidance