



KRONOSPAN, CHIRK

**NORTH ACCESS ROAD INTO THE KRONOSPAN
FACILITY, LORRY PARK, WEIGHBRIDGES AND
WEIGHBRIDGE BUILDING, WEIGHBRIDGE CAR PARK
AND FACILITIES BLOCK, ROUNDWOOD STORAGE
AREAS, 132KV SUBSTATION, AND ANCILLARY
WORKS**

**ENVIRONMENTAL STATEMENT CHAPTER 9.0 – SUMMARY OF
RESIDUAL EFFECTS AND CONCLUSIONS**

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9.0 RESIDUAL EFFECTS AND CONCLUSIONS

9.1 Residual Effects

9.1.1 **ES Chapters 5.0 – 8.0 (topic chapters)** have considered the potential environmental impacts and effects of the Proposed Development. This chapter summarises those likely environmental effects of the Proposed Development that have been identified, following implementation of the embedded mitigation or impact avoidance measures included in the design of the Proposed Development (as introduced in **Section 2.5 of ES Chapter 2.0 (EIA Methodology)** and described in further detail in **ES Chapters 5.0 – 8.0 (topic chapters)**).

9.1.2 This chapter also summarises additional mitigation, monitoring and/or enhancement measures (where relevant), and the residual effects, following their assumed implementation.

9.1.3 The above information is provided in **Table 9.1** below.

9.1.4 To provide further clarification on the nature of the effects, each has been identified for the purposes of this summary as:

- Short term (St) – effects occurring only over a short period of time. As the Proposed Development is designed (and assessed) to be permanent, medium-term effects (occurring for the duration of the Proposed Development's operation) and long-term effects (occurring beyond the operation of the Proposed Development) are deemed to be covered under 'permanent' effects (see below).
- Temporary (T) – effects that are not permanent because the effect would no longer occur if the impact was removed within the relevant timescale.
- Permanent (P) – effects that remain and cannot be readily reversed within the relevant timescale.
- Direct (D) – effects that result from a direct impact.
- Indirect (In) – also known as secondary effects, effects that result indirectly.

Table 9.1: Summary of Likely Residual Effects

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
ES Chapter 5.0 – Landscape and Visual					
Construction	Landscape fabric	No Effect	N/A	No Effect	N/a
	Landscape character of the Site	Significant effects for approximately fifteen months whilst the majority of works in the Site are carried out	N/A	Significant effects for approximately fifteen months whilst the majority of works in the Site are carried out	St, T, D
	Landscape character along the B5070 corridor	Significant effects would be experienced along the corridor of the B5070 to the east and north-east, during the nine-month period when the highway works would take place	N/A	Significant effects would be experienced along the corridor of the B5070 to the east and north-east, during the nine-month period when the highway works would take place	St, T, D
	Afon Bradley Farm	Significant for the duration of the	N/A	Significant for the duration of the	St, T, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
		construction period		construction period	
	Visual effects from the B5070, north-east of the Site	Significant following site clearance and whilst highway works are ongoing. These effects would be experience for approximately twelve months.	N/A	Significant following site clearance and whilst highway works are ongoing. These effects would be experience for approximately twelve months.	St, T, D
	Visual effects from Lodge Farm Cottage and Parkgate Cottage	Significant for the nine month period during which highway works are ongoing	N/A	Significant for the nine month period during which highway works are ongoing	St, T, D
	Visual effects from B5070 south-east of Site and from adjacent properties	Effects would be significant for the fifteen-month period during which the majority of construction works would take place	N/A	Effects would be significant for the fifteen-month period during which the majority of construction works would take place	St, T, D
	Other construction stage	Not significant	N/A	Not significant	St, T, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	visual effects				
	Night-time effects	Night-time landscape and visual effects during the construction phase would be limited and would not be significant	N/A	Night-time landscape and visual effects during the construction phase would be limited and would not be significant	St, T, D
Operation	Landscape fabric – pasture grassland	Moderate adverse	N/A	Moderate Adverse	P, D
	Landscape fabric – hedgerows	Moderate adverse in the short-term, becoming moderate beneficial in the medium and longer-term due to new planting and an overall increase in hedgerow cover	N/A	Moderate adverse in the short-term, becoming moderate beneficial in the medium and longer-term due to new planting and an overall increase in hedgerow cover	P, D
	Landscape fabric – woodland and mature	Moderate adverse in the short-term, becoming moderate beneficial in the medium and	N/A	Moderate adverse in the short-term, becoming moderate beneficial in the medium and longer-term due to new	P, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	trees	longer-term due to new planting and an overall increase in tree cover		planting and an overall increase in tree cover	
	Landscape character LCA7a	Moderate adverse	N/A	Moderate adverse	P, D
	Landscape character LCA5a	Minor adverse	N/A	Minor adverse	P, D
	Viewpoint Y	Moderate to major adverse (short-term), reducing to moderate adverse in the medium and longer-term as new planting establishes	N/A	Moderate to major adverse (short-term), reducing to moderate adverse in the medium and longer-term as new planting establishes	P, D
	Viewpoint F	Moderate adverse (short-term), reducing to minor to moderate adverse as new planting	N/A	Moderate adverse (short-term), reducing to minor to moderate adverse as new planting establishes	P, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
		establishes			
	Viewpoint W	Moderate adverse (short-term), reducing to minor adverse (medium and longer-term)	N/A	Moderate adverse (short-term), reducing to minor adverse (medium and longer-term)	P, D
	Viewpoint C	Minor to moderate adverse	N/A	Minor to moderate adverse	P, D
	Viewpoint Z	Minor to moderate adverse	N/A	Minor to moderate adverse	P, D
	Viewpoints B, L, U, V and X	Minor adverse	N/A	Minor adverse	P, D
	Viewpoints I, J, Q and T	Minor adverse (short-term, winter), reducing to no effect in the medium and longer term, as proposed planting establishes No effect in summer due to screening by existing vegetation	N/A	Minor adverse (short-term, winter), reducing to no effect in the medium and longer term, as proposed planting establishes No effect in summer due to screening by existing vegetation	St, T, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	Viewpoints G, H, K, M and N	No effect	N/A	No Effect	N/a
	Views from Afon Bradley Farm	Not significant	N/A	Not Significant	P, D
	Views from properties at the north-western edge of Chirk (along Wern, Offa and Linden Avenue)	Significant in the short-term, reducing to non-significant as new planting establishes	N/A	Significant in the short-term, reducing to non-significant as new planting establishes	P, D
	Views from Bryn Hyfryd	Significant	N/A	Significant	P, D
	Views from Lodge Farm Cottage and Parkgate Cottage	Not significant	N/A	Not Significant	P, D
	Night-time landscape and visual effects	Not significant	N/A	Not significant	P, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	Clwydian Range and Dee Valley AONB	Not materially affected	N/A	Not materially affected	P, D
	Special Landscape Area	Not materially affected	N/A	Not materially affected	P, D
	Cumulative Landscape and Visual Effects	Negligible	N/A	Negligible	P, D
ES Chapter 6 – Historic Environment					
Construction	Afon Bradley Farm Complex, Pontcysyllte Aqueduct and Canal	Moderate adverse	N//A	Moderate adverse	St, T, D
	Chirk Castle, Registered Park and Garden of Chirk Castle	Slight/Moderate adverse	N/A	Slight/Moderate adverse	St, T, D
	Offa's Dyke	Slight adverse	None proposed	Slight adverse	St, T, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	Lime Kiln (F6)	Neutral (was Moderate adverse), Proposed Development detailed design will include 2m buffer to ensure preservation in situ	None proposed	Neutral	St, T, D
Operation	Afon Bradley Farm Complex, Chirk Castle, Registered Park and Garden of Chirk Castle, Offa's Dyke	Slight adverse	None proposed	Slight adverse	P, D
	Pontcysyllte Aqueduct and Canal	Slight/Moderate adverse	None proposed	Slight/Moderate adverse	P, D
ES Chapter 7.0 – Biodiversity and Nature Conservation					
Construction	Statutory designated sites for nature	Negligible	None proposed	Negligible	N/A

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	conservation				
	Non-statutory designated sites for nature conservation	Negligible	None proposed	Negligible	N/A
	Notable and priority habitats	Minor adverse changing to minor beneficial as hedgerow planting implemented via the Illustrative Landscape Masterplan establishes throughout operation	None proposed	Minor adverse changing to minor beneficial as hedgerow planting implemented via the Illustrative Landscape Masterplan establishes throughout operation	P, D
	On-site habitats	Minor beneficial once newly created habitats via the Illustrative Landscape Masterplan are established	None proposed	Minor beneficial once newly created habitats via the Illustrative Landscape Masterplan are established	P, D
	Birds	Minor adverse changing to minor beneficial once newly	Vegetation removal outside	Minor beneficial once newly created habitats via the Illustrative Landscape	P, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
		created habitats via the Illustrative Landscape Masterplan are established	of breeding season Suitable nesting habitat to be checked by ecologist prior to works commencing	Masterplan are established	
	Bats – foraging and commuting	Minor adverse changing to minor beneficial as landscaping via the Illustrative Landscape Masterplan establishes throughout operation	Lighting directed away from valuable habitats	Minor adverse changing to minor beneficial as landscaping via the Illustrative Landscape Masterplan establishes throughout operation	P, D
	Bats – roosting	Minor adverse	Heras fencing around TN1/T116 fitted with acoustic barriers	Minor adverse	T, In
Operation	Statutory designated sites for nature conservation	Negligible	None proposed	Negligible	N/A

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	Non-statutory designated sites for nature conservation	Negligible		Negligible	N/A
	Notable and priority habitats	Minor adverse changing to minor beneficial as hedgerow planting implemented via the Illustrative Landscape Masterplan establishes throughout operation		Minor adverse changing to minor beneficial as hedgerow planting implemented via the Illustrative Landscape Masterplan establishes throughout operation	P, D
	On-site habitats	Minor beneficial once newly created habitats via the Illustrative Landscape Masterplan are established			P, D
	Birds	Minor beneficial once newly created habitats via the Illustrative Landscape		Minor beneficial once newly created habitats via the Illustrative Landscape Masterplan are established	P, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
		Masterplan are established			
	Bats – foraging and commuting	Minor adverse changing to minor beneficial as landscaping via the Illustrative Landscape Masterplan establishes throughout operation		Minor adverse changing to minor beneficial as landscaping via the Illustrative Landscape Masterplan establishes throughout operation	P, D
	Bats – roosting	Neglgible		Neglgible	N/A
ES Chapter 8.0 – Noise and Vibration					
Construction	Plant noise	Neutral to Minor adverse	None proposed	Neutral to Minor adverse	St, T, D
	Road traffic noise	Neutral		Neutral	St, T, D
	Vibration	Neutral to Minor adverse	BPM in accordance with BS5228	Neutral to Minor adverse	St, T, D
Operation	Plant noise (daytime)	Neutral to Minor adverse	Solid screen east of the lorry	Neutral to Minor adverse	P, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	(according to BS4142)		park to a height of 5m		
	Plant noise (daytime) (according to IEMA guidelines)	Neutral	Solid screen east of the exit lane to a height of 3m	Neutral	P, D
	Plant noise (night-time) (according to BS4142)	Neutral to Moderate adverse	During night-time only, the western extent of the lorry park would be used first to maximise separation	Neutral to Minor adverse	P, D
	Plant noise (night-time) (according to IEMA guidelines)	Neutral	distance to the receptors to the east Engines would be turned off when parked	Neutral	P, D
	Road traffic noise (daytime) (2026)	Neutral to Minor beneficial	None proposed	Neutral to Minor beneficial	P, D
	Road traffic noise	Neutral to Moderate beneficial		Neutral to Moderate beneficial	P, D

Development Stage	Environmental Receptor/Effect (following development design and impact avoidance measures)	Level of Effect (following development design and impact avoidance measures)	Further Mitigation, Monitoring and/or Enhancement	Level of Effect (following further mitigation, monitoring and/or enhancement)	Nature of Effect(s)
	(daytime) (2031)				
	Road traffic noise (night-time) (2026)	Neutral to Minor beneficial		Neutral to Minor beneficial	P, D
	Road traffic noise (night-time) (2031)	Neutral to Moderate beneficial		Neutral to Moderate beneficial	P, D
	Vibration	Neutral		Neutral	P, D
Cumulative Effects					
For all ES topic chapters, the cumulative effects of the Proposed Development would not materially differ from those described in the pre-cumulative assessments. Cumulative effects would not be significant and no additional mitigation measures are proposed to address cumulative effects.					

9.2 Conclusions

- 9.2.1 The design evolution of the Proposed Development, as described in **ES Chapter 3.0 (Alternatives)** and the embedded mitigation measures described in the 'development design, impact avoidance and mitigation' sections of each of the topic chapters (**ES Chapters 5.0 to 8.0**) form a critical part of the Proposed Development subject to EIA. One of the key embedded mitigation measures is the Illustrative Landscape Masterplan which shows the planned extent of new native woodland planting, new native hedgerow planting, new specimen tree planting, new species-rich grassland and new wetland vegetation.
- 9.2.2 Further mitigation, monitoring and/or enhancement measures are proposed to further reduce the level of effect, for example, the installation of permanent screening at the proposed lorry park area and permanent screening close to the property of Bryn Hyfryd.
- 9.2.3 The EIA demonstrates that, with the implementation of embedded and additional mitigation, the residual effects would be acceptable in EIA and planning terms.
- 9.2.4 The EIA demonstrates that, with respect to biodiversity and nature conservation, there would be minor beneficial effects for notable and priority habitats, on-site habitats, birds, and bats once newly created habitats via the Illustrative Landscape Masterplan are established. With respect to noise and vibration, neutral to moderate benefits are anticipated for receptors experiencing road traffic noise due to the HGV traffic no longer travelling past the residential areas down the B5070.