

Chapter 13: Intra-Development Cumulative Effects

13. Intra-Development Cumulative Effects

13.1. Introduction

This chapter of the ES provides an assessment of the potential for intra-development cumulative effects.

13.2. Intra-Development Cumulative Effects

The Institute of Environment Management and Assessment (IEMA) (1) Guidance identifies two types of cumulative effects:

- Inter-project (or ‘inter-development’) effects – incremental changes caused by other existing and/or approved development schemes occurring together with the proposed development and the cumulative effects combining to worsen the effect of a particular impact; and
- Intra-project (or ‘intra-development’) effects – those effects that occur as a result of impact interaction between different environmental topics within the same project. For example, a project might affect bird species as a result of direct loss of habitat and by noise and light disturbance. Each of these when considered in isolation may have a limited effect but taken together the sum is greater than the parts.

The cumulative schemes relevant to this EIA are identified within Chapter 2 *EIA Methodology*. The inter-development effects of these schemes have been assessed within each individual technical chapter, as appropriate. Intra-development effects have subsequently been assessed within this chapter.

The assessment of cumulative intra-development effects considers the combination of identified significant effects of more than one technical assessment category which have the potential to affect the same sensitive receptor.

All residual effects, both those deemed to be significant (i.e. Major/Moderate for the majority of topics with the exception of biodiversity) and those of lesser significance (i.e. Minor for the majority of topics with the exception of biodiversity) have been considered. This is because, in aggregate, several minor effects could lead to the sensitive receptors experiencing an overall effect that is greater than the sum of its parts. However, Negligible effects (which also includes ‘neutral’ or ‘no impact’ assessments) have not been listed as these are considered unlikely to result in significant effects even in aggregate.

Residual effects of both an adverse and beneficial nature are considered as part of the assessment. When fully and thoroughly considered with all aspects shown, if a receptor has an effect identified from only one topic then the overall effect is considered to remain that identified. If several topics identify effects for a single receptor then they have been considered and the residual effect adjusted according to the collective weight of the effects’ significance and nature (adverse/beneficial).

For some environmental aspects, no interactions with other aspects can occur and so no combined cumulative effects could arise. Where this is the case, the assessment states that there is no potential for effect interactions.

Based on the methodology detailed within this chapter, **Table 2.1** and **Table 13.2.2** present the potential for interactions of individual effects during the demolition and construction and completed development stages, respectively. The effects set out in the tables relate to the proposed development scenario.

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Table 2.1
Intra-development Cumulative Effects Assessment – Demolition & Construction Stage

Sensitive Receptor/Receptor Group	Demolition & Construction Residual Effects	Intra-Development Cumulative Effect Potential?	Potential For Intra-Development Cumulative Effect Interaction?
Local labour force & economic activity	Socio-Economics Generation of construction employment – Minor Beneficial	No	No
Users of A5156 link	Transport Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic – Minor Adverse	No	No
Users of A534 link	Transport Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic – Minor Adverse Landscape and Visual Construction activity within view – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Considering the collective weight of the effects' scale and nature, a Minor Adverse effect (not significant) is anticipated.
Users of Industrial Estate Road link	Transport Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic – Minor Adverse	No	No
Users of B5130	Landscape and Visual Impacts from construction activity within view – Minor Adverse	No	No
R01 - Harcourt, Ridley Wood	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels would only occur where works are undertaken in close proximity to this receptor. On balance, the intra-development cumulative effects at these receptors are likely to be Minor Adverse (not significant).
R02 - 2 Bryn Lane	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels would only occur where works are undertaken in close proximity to this receptor. On balance, the intra-development cumulative effects at these receptors are likely to be Minor Adverse (not significant).
R03 - Spring Grove, Hugmore Lane	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels would only occur where works are undertaken in close proximity to this receptor. On balance, the intra-development cumulative effects at these receptors are likely to be Minor Adverse (not significant).
R04 - Ty Gwanwyn, Hugmore Lane	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse Vibration impacts resulting from demolition and construction site on-site activities – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels would only occur where works are undertaken in close proximity to this receptor. Additionally, not all demolition and construction works would result in vibration, and therefore, the effects would be temporary, intermittent and short-term. On balance, the intra-development cumulative effects at these receptors are likely to be Minor to Moderate Adverse at worst (not significant).
R05 - Holt Lodge Farm, Hugmore Lane	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels

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Sensitive Receptor/Receptor Group	Demolition & Construction Residual Effects	Intra-Development Cumulative Effect Potential?	Potential For Intra-Development Cumulative Effect Interaction?
			would only occur where works are undertaken in close proximity to this receptor. On balance, the intra-development cumulative effects at these receptors are likely to be Minor Adverse (not significant).
R06 - Ambergate, Hugmore Lane	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels would only occur where works are undertaken in close proximity to this receptor. On balance, the intra-development cumulative effects at these receptors are likely to be Minor Adverse (not significant).
R07 – Yr Efail, Wrexham Road	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels would only occur where works are undertaken in close proximity to this receptor. On balance, the intra-development cumulative effects at these receptors are likely to be Minor Adverse (not significant).
R08 - Aldersey Farm, Francis Lane	Noise and Vibration Noise impacts resulting from demolition and construction stage on-site activities – Minor Adverse Noise impacts resulting from demolition and construction traffic – Minor Adverse Landscape and Visual Impacts from construction activity within view – Minor Adverse	Yes, these effects are considered to have the potential to interact to produce an intra-development cumulative effect.	Throughout the demolition and construction period, there are times when the receptor could experience noise impacts from both on-site activities and construction traffic. However, maximum noise levels would only occur where works are undertaken in close proximity to this receptor. When considering the collective weight of the noise impacts with the visual impacts, a Minor to Moderate Adverse effect (not significant) is anticipated.
Native hedgerows	Biodiversity Overall residual effects on native hedgerows during the demolition and construction stage are considered to range from negligible, not significant to negative/moderate adverse, significant at the County level – Moderate Adverse	No	No
Scattered trees	Biodiversity Overall residual effects on scattered trees during the demolition and construction stage range from negligible, not significant to negative/minor adverse, significant at the Local level – Minor Adverse	No	No
Standing water (ponds)	Biodiversity Overall residual effects on standing water during the demolition and construction stage are considered to range from negligible, not significant to negative/minor adverse, significant at the Local level – Minor Adverse	No	No
Great crested newt (GCN) (Triturus cristatus) and other priority (Section 7 (S7)) amphibian species	Biodiversity Overall residual effects on GCN and common toad during the demolition and construction stage are considered to range from negligible, not significant to minor beneficial, significant at the Local level – Minor Beneficial	No	No
Bats	Biodiversity Overall residual effects on bats during the demolition and construction stage are considered to range from negligible, not significant to negative/minor adverse, significant at the Local level- Minor Adverse	No	No
Breeding birds	Biodiversity Overall residual effects on breeding birds during the demolition and construction stage are considered to range from negligible, not significant to negative/minor adverse, significant at the Local level – Minor Adverse	No	No
National Landscape Character Area 13 Deeside and Wrexham	Landscape & Visual Loss of agricultural land. Increase in disturbance – Minor Adverse	No	No
National Landscape Character Area 14 Maelor	Landscape & Visual	No	No

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Sensitive Receptor/Receptor Group	Demolition & Construction Residual Effects	Intra-Development Cumulative Effect Potential?	Potential For Intra-Development Cumulative Effect Interaction?
	Loss of agricultural land. Increase in disturbance – Moderate Adverse		
Overall character of the setting of the application site	Landscape & Visual Increase in urban character and visual disturbance – Minor Adverse	No	No
Overall character of the application site	Landscape & Visual Loss of agricultural land & change to construction site – Moderate Adverse	No	No
Users of Francis' Lane	Landscape & Visual Demolition and construction activity within view – Major-Moderate Adverse	No	No
Users of Public Footpath Holt 25	Landscape & Visual Demolition and construction activity within view – Major-Moderate Adverse	No	No
Users of Public Footpath Holt 26/Isycoed 6	Landscape & Visual Demolition and construction activity within view – Major-Moderate Adverse	No	No
Users of Ridlewood Road	Landscape & Visual Construction activity within view – Moderate-Minor Adverse	No	No
Users of Bryn Lane	Landscape & Visual Demolition and construction activity within view – Minor Adverse	No	No
Employees of Ridley Wood Industrial Complex	Landscape & Visual Construction activity within view – Minor Adverse	No	No
Users of Hugmore Lane	Landscape & Visual Construction activity within view – Minor Adverse	No	No
Users of Abenbury Way	Landscape & Visual Construction activity within view – Minor Adverse	No	No
Employees of and visitors to Clays Driving Range and Golf Course	Landscape & Visual Construction activity within view – Minor Adverse	No	No
Residents of Hugmore House	Landscape & Visual Construction activity within view – Minor Adverse	No	No
Users of Hugmore Farm	Landscape & Visual Construction activity within view – Minor Adverse	No	No
Residents of Hazel Brook House	Landscape & Visual Construction activity within view – Minor Adverse	No	No
Users of Public Footpath Holt 24	Landscape & Visual Construction activity within view – Major-Moderate Adverse	No	No
Residents of Laurel Grove House	Landscape and Visual Impacts from construction activity within view – Minor Adverse	No	No
Users of Public Bridleway Abenbury 10 and Public Footpath Abenbury 12	Landscape and Visual Impacts from construction activity within view – Moderate Adverse	No	No
Users of Borrass Hall Lane	Landscape and Visual Impacts from construction activity within view – Minor Adverse	No	No

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Table 13.2.2
Intra-Development Cumulative Effects Assessment— Completed Development Stage

Sensitive Receptor/Receptor Group	Completed Development Residual Effects	Intra-Development Cumulative Effect Potential?	Potential For Intra-Development Cumulative Effect Interaction?
Local economic activity & labour force	<u>Socio-Economics</u> Generation of operational employment – Moderate Beneficial	No	No
Users of A534 link	<u>Transport</u> Impacts on pedestrians from fear and intimidation relating to operational traffic (incl. both Option 1 & 2 traffic data) – Minor Adverse	No	No
Users of Industrial Estate Road	<u>Transport</u> Impacts on pedestrians from fear and intimidation relating to operational traffic (Option 2 traffic data) – Minor Adverse	No	No
Users of Bryn Lane link	<u>Landscape and Visual</u> Impacts from completed buildings within view – Major-Moderate Adverse during the opening year, reducing to Minor Adverse following 15 years	No	No
R03 - Spring Grove, Hugmore Lane	<u>Noise and Vibration</u> Noise impacts resulting from on-site operational activities (such as deliveries and servicing and plant) – Moderate Adverse	No	No
R04 - Ty Gwanwyn, Hugmore Lane	<u>Noise and Vibration</u> Noise impacts resulting from on-site operational activities (such as deliveries and servicing and plant) – Moderate Adverse	No	No
R05 - Holt Lodge Farm, Hugmore Lane	<u>Noise and Vibration</u> Noise impacts resulting from on-site operational activities (such as deliveries and servicing and plant) – Moderate Adverse	No	No
R06 - Ambergate, Hugmore Lane	<u>Noise and Vibration</u> Noise impacts resulting from on-site operational activities (such as deliveries and servicing and plant) – Minor Adverse	No	No
Residents of dwellings along Francis' Lane (incl. R08 - Aldersey Farm)	<u>Landscape and Visual</u> Impacts from completed buildings within view – Minor Adverse	No	No
Potential Hotel Receptors	<u>Noise and Vibration</u> Noise impacts (on HR03 & HR06) resulting from on-site operational activities (such as deliveries and servicing and plant) – Moderate Adverse	No	No
Native hedgerows	<u>Biodiversity</u> Loss or degradation of native hedgerows, with the implementation of additional mitigation – Minor Beneficial	No	No
Scattered trees	<u>Biodiversity</u> Loss or degradation of scattered trees, with the implementation of additional mitigation – Minor Beneficial	No	No
Standing water (ponds)	<u>Biodiversity</u> Loss or degradation of ponds, with the implementation of additional mitigation – Minor Beneficial	No	No
Great crested newt (GCN) (Triturus cristatus) and other priority (Section 7 (S7)) amphibian species	<u>Biodiversity</u> Impacts on GCN and other S7 amphibians from habitat loss/degradation and maintenance of FCS, with the implementation of additional mitigation – Minor Beneficial	No	No
Breeding birds	<u>Biodiversity</u> Impacts on breeding birds from habitat loss, with the implementation of additional mitigation – Minor Beneficial	No	No
National Landscape Character Area 13 Deeside and Wrexham	<u>Landscape and Visual</u> Impacts from presence of additional industrial buildings (Opening year; and Opening year + 15 years) – Minor Adverse	No	No
National Landscape Character Area 14 Maelor	<u>Landscape and Visual</u> Impacts from presence of additional industrial buildings – Moderate Adverse during the opening year, reducing to Minor Adverse following 15 years	No	No
Overall character of the setting of the application site	<u>Landscape and Visual</u> Influence of expanded industrial estate (Opening year; and Opening year + 15 years) – Minor Adverse	No	No
Overall character of the application site	<u>Landscape and Visual</u>	No	No

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Sensitive Receptor/Receptor Group	Completed Development Residual Effects	Intra-Development Cumulative Effect Potential?	Potential For Intra-Development Cumulative Effect Interaction?
	Change of character to urban – Moderate Adverse during the opening year, reducing to Minor Adverse following 15 years		
Users of Francis’ Lane	<u>Landscape and Visual</u> Impacts from completed buildings within view – Major-Moderate Adverse during the opening year, reducing to Moderate Adverse following 15 years	No	No
Users of Public Footpath Holt 25	<u>Landscape and Visual</u> Impacts from completed buildings within view – Major-Moderate Adverse during the opening year, reducing to Moderate Adverse following 15 years	No	No
Users of Public Footpath Holt 26/Isycoed 6	<u>Landscape and Visual</u> Impacts from completed buildings within view – Major-Moderate Adverse during the opening year, reducing to Moderate Adverse following 15 years	No	No
Users of Ridlewood Road	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year; and opening year + 15 years) – Minor Adverse	No	No
Employees of Ridley Wood Industrial Complex	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year; and opening year + 15 years) – Minor Adverse	No	No
Users of Hugmore Lane	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year; and opening year + 15 years)– Minor Adverse	No	No
Users of Abenbury Way	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year) – Minor Adverse	No	No
Residents of Hugmore Farm	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year; and opening year + 15 years) – Minor Adverse	No	No
Residents of Hazel Brook House	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year) – Minor Adverse	No	No
Users of Public Footpath Holt 24	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year; and opening year + 15 years) – Moderate Adverse	No	No
Users of B5130	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year) – Minor Adverse	No	No
Residents of Laurel Grove House	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year) – Minor Adverse	No	No
Users of Public Bridleway Abenbury 10 and Public Footpath Abenbury 12	<u>Landscape and Visual</u> Impacts from completed buildings within view (opening year; and opening year + 15 years) – Minor Adverse	No	No

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13.3. Summary

From the intra-development cumulative effects assessment reported above, it can be seen that there is the potential for combined effects to arise on individual receptors or receptor groups which have potential to interact with one another to produce intra-development cumulative effects.

During the demolition and construction stage, the following intra-development cumulative effects are anticipated:

- Intra-development cumulative effects to users of A534 relating to transport and visual impacts - **Minor Adverse** (not significant);
- Intra-development cumulative effects to residential receptors (R01 – Harcourt, Redley Wood; R02 – 2 Bryn Lane; R03 – Spring Grove, Hugmore Lane; R05 – Holt Lodge Farm, Hugmore Lane; R06 – Ambergate, Hugmore Lane; R07 – Yr Efail, Wrexham Road) relating to construction noise from both on-site activities and construction traffic – **Minor Adverse** (not significant);
- Intra-development cumulative effects to residential receptor R04 – Ty Gwanwyn, Hugmore Lane relating to impacts from construction noise & vibration – **Minor to Moderate Adverse** (not significant); and
- Intra-development cumulative effects to residential receptor R08 – Aldersey Farm, Francis Lan relating to impacts from construction noise from both on-site activities and construction traffic, as well as visual impacts from on-site construction activity – **Minor to Moderate Adverse** (not significant).

No intra-development cumulative effects are anticipated during the completed development stage.

13.4. Works Cited

1. Institute of Environmental Management and Assessment. *The State of Environmental Impact Assessment Practice in the UK*. s.l. : IEMA, 2011.