

# CHAPTER 14:

# EFFECT INTERACTIONS

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## 14.0 CUMULATIVE EFFECTS

### 14.1 Introduction

- 14.1.1 This chapter provides an assessment of the likely cumulative effects of the Proposed Development as required by the EIA Regulations.
- 14.1.2 There are two types of cumulative effects: Type 1, intra-project effects which are the combined effects of individual topic impacts on a particular sensitive receptor, and Type 2, inter-project effects which are the combined effects of several development schemes (in conjunction with the Proposed Development) which may, on an individual basis be insignificant but, cumulatively, have a significant effect.
- 14.1.3 Type 2 Cumulative Effects; Inter-project effects have been considered for committed developments located within 1 km radius from the boundary of the Site, the full list is provided in **Chapter 3: EIA Methodology Table 3.8** of this ES. Committed Developments slightly beyond 1 km from the Site have also been considered due to the size and the potential for interaction with the Site. These effects have been assessed in each technical chapter of this ES and are summarised in **Table 14.1**.

### 14.2 Intra-Project Effects

- 14.2.1 There is potential during both construction and operation of the Proposed Development for a combination of environmental effects to arise at the same time, affecting the same receptor or location.
- 14.2.2 There is no established EIA methodology for assessing effect interactions on a particular receptor, although the European Commission<sup>1</sup> (EC) has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. This approach has been modified and applied to determine the potential for effect interactions.
- 14.2.3 **Table 14.1** and **Table 14.2** identify the potential residual effects on relevant groups of sensitive receptors, as a result of the Proposed Development, as previously identified through the individual topic assessments. These tables define these effects across both construction and operation and then further identifies the anticipated effect interactions (cumulative effects) during each of these phases. Residual effects that are beneficial or adverse in nature and that are minor, moderate or major in scale have been considered.
- 14.2.4 Further details on the assumptions made around the delivery and construction phasing of the Proposed Development are provided within **Chapter 5: The Proposed Development and Construction Overview**.

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<sup>1</sup> European Community (1999); Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.

**Table 14.1: Summary of Intra-Project Effects Construction Phase**

Receptor	Residual Effect	Potential for Intra-Project Effects
Residential (neighbouring and local properties)	<p><b>Noise:</b></p> <ul style="list-style-type: none"> <li>• Minor adverse – Construction plant and machinery noise for residential receptors within 15 m.</li> <li>• Minor adverse – Construction vibration for residential receptors within 25 m.</li> </ul> <p><b>Landscape and Visual Impact:</b></p> <ul style="list-style-type: none"> <li>• Major-Moderate adverse – Reduction in quality of views from immediately adjacent homes.</li> <li>• Moderate-minor adverse – Reduction in quality of views from homes in the wider area, schools, community facilities and open space.</li> <li>• Minor adverse – Reduction in quality of views from roads and public rights of way.</li> </ul>	Potential for interaction of effects as a result of noise and visual impacts.
Commercial (neighbouring local commercial properties and businesses)	<p><b>Socio-economics:</b></p> <ul style="list-style-type: none"> <li>• Minor beneficial – Increase in local spending in RBC.</li> </ul>	No potential for the interaction of effects.
Ecology	<p><b>Ecology:</b></p> <ul style="list-style-type: none"> <li>• Minor beneficial – New invertebrate habitat.</li> </ul>	No potential for the interaction of effects.
Surface and groundwater	None.	None.
Heritage assets (listed buildings, conservation areas)	None.	None.
Archaeological assets	None.	None.
Global climate	<p><b>Climate Change:</b></p> <ul style="list-style-type: none"> <li>• Minor adverse - GHG emissions from construction plant, construction vehicles and embedded materials in construction.</li> </ul>	No potential for the interaction of effects. The effects of global climate change on other topic areas is assessed in <b>Volume 2, Chapter 13: Climate Change</b> .

Receptor	Residual Effect	Potential for Intra-Project Effects
Landscape and views (character areas and local and long distant views)	<p><b>Landscape and Visual Impact:</b></p> <ul style="list-style-type: none"> <li>• Ranging from minor adverse to minor beneficial – Contribution to the contextual landscape</li> <li>• Ranging from minor adverse to minor beneficial – effect on county and local level landscape character</li> <li>• Major adverse – effect on site landscape character</li> <li>• Minor adverse – change to site topography</li> <li>• Major adverse – change to site land cover</li> <li>• Major - moderate adverse – initial loss of some trees on site</li> <li>• Minor adverse - negligible – impact on access to public rights of way</li> <li>• Ranging from moderate-major beneficial to moderate to major adverse - Changes to building height form</li> <li>• Moderate adverse – change to night-time character of the Site and surroundings</li> </ul>	No potential for the interaction of effects.

**Potential for Intra Project Effects during Construction**

Visual Impact and Noise and Vibration

14.2.5 There is a potential for disturbance and nuisance effects to local residents and early Site residents due to visual impact and construction noise effects. Residential receptors on Eric Avenue and Kidmore End Road, would be among the worst affected by construction noise; properties on these roads abutting or fronting the Site currently enjoy some of the most open views over the golf course that would be affected by construction traffic and temporary views of construction activities. These interactive effects may be considered significant.

14.2.6 No other residential or community properties are anticipated to experience interactive effects.

**Table 14.2: Summary of Intra-Project Effects Operational Phase**

Receptor	Residual Effect	Potential for Intra-Project Effects
Residential (neighbouring and local properties and future site users)	<p><b>Socio-economics:</b></p> <ul style="list-style-type: none"> <li>• Moderate – minor beneficial – Impact of additional provision for housing.</li> <li>• Minor beneficial – Impact of the additional open space.</li> </ul>	Potential for the interaction of effects

Receptor	Residual Effect	Potential for Intra-Project Effects
	<ul style="list-style-type: none"> <li>• Minor adverse – Impact of additional population on the supply of secondary school places.</li> <li>• Minor adverse - Impact of additional population on the availability of community and leisure facilities.</li> </ul> <p><b><u>Landscape and Visual Impact:</u></b></p> <ul style="list-style-type: none"> <li>• Moderate adverse – change in character of view from immediate residential receptors</li> <li>• Minor adverse – change in character of view from schools and community facilities and open spaces</li> <li>• Moderate adverse (Temporary) – change in character of views from roads, before planting matures</li> <li>• Minor adverse – change in character of views from roads once planting matures</li> </ul> <p><b><u>Air Quality:</u></b></p> <ul style="list-style-type: none"> <li>• Slight Adverse – elevated concentrations of NO<sub>2</sub> beyond acceptable threshold at one location representing 12 properties on Peppard Road</li> </ul>	
Commercial (neighbouring local commercial properties and businesses)	<p><b><u>Socio-economics:</u></b></p> <ul style="list-style-type: none"> <li>• Minor beneficial – Spending of additional population within local economy.</li> <li>• Minor beneficial – Impact on employment increase in labour supply.</li> </ul>	No potential for the interaction of effects
Surface and groundwater	None.	None.
Ecological Assets	<p><b><u>Ecology:</u></b></p> <ul style="list-style-type: none"> <li>• Moderate beneficial – 10% Biodiversity Net Gain</li> <li>• Minor beneficial – Habitat and management plan to reduce effects of increased recreational pressure on Reading Golf Course LWS.</li> <li>• Negligible – minor beneficial – Disturbance on bats and breeding birds and notable species (hedgehogs).</li> </ul>	No potential for the interaction of effects.
Heritage assets (listed buildings, conservation areas)	None.	None.
Global Climate	<b><u>Climate Change:</u></b>	

Receptor	Residual Effect	Potential for Intra-Project Effects
	<ul style="list-style-type: none"> <li>• Minor adverse – GHG emissions associated with energy use in the Proposed Development;</li> <li>• Minor adverse - Operational traffic emissions.</li> </ul>	
Landscape and views (character areas and local and long distant views)	<p><b>Landscape and Visual Impact:</b></p> <ul style="list-style-type: none"> <li>• Minor beneficial – Contribution to the contextual landscape</li> <li>• Minor beneficial – Contribution of tree planting to county level landscape character</li> <li>• Minor adverse – Contribution of built form to local level landscape character</li> <li>• Minor beneficial – Contribution of additional planting to local level landscape character</li> <li>• Major adverse – effect of light pollution on night-time character</li> <li>• Ranging from moderate adverse - moderate beneficial – Change to Site landscape character</li> <li>• Moderate beneficial – Change to Site land cover</li> <li>• Moderate beneficial – Increased public access and footpaths around the Site</li> <li>• Moderate-major beneficial – Appropriate built height and form in the context of surroundings</li> </ul>	No potential for the interaction of effects.

### ***Potential for Intra Project Effects during Operation***

#### ***Socio-economics and Visual Effects***

- 14.2.7 There is a potential for an adverse interactive effect on users of Emmer Green Youth and Community Centre. This centre provides premises for North Reading Children’s Centre and Emmer Green Pre-School, and also a venue for local community groups. The new development may lead to additional demand for this facility, and will also reduce the quality of the views northwards from the facility. These interactive effects are not considered significant.
- 14.2.8 There would be no interaction anticipated between the slight adverse air quality effect at properties on Prospect Street and the landscape and socioeconomic effects more specific to Emmer Green due to the distances between the two receptors.

## 14.3 Inter-Project Effects

14.3.1 Cumulative effects resulting from the in-combination impacts from other projects alongside the Proposed Development have been considered by each discipline in their respective chapters (**Chapter 6 to 13**). The effects are summarised in **Table 14.3**. The list of committed developments assessed is included in **ES Chapter 3: EIA Methodology Table 3.8**.

**Table 14.3: Summary of Inter-Project Effects**

Discipline	Description
Socio-economics	<p><b>Construction:</b></p> <ul style="list-style-type: none"> <li>Moderate beneficial – Increased construction employment opportunities.</li> </ul> <p><b>Operation:</b></p> <ul style="list-style-type: none"> <li>Major – moderate beneficial - Impact on population of increase in housing supply, including affordable housing.</li> <li>Moderate – minor beneficial – Impact on employment and skills of residents; Impact on employment increase on labour supply; Spending of additional population within local economy.</li> <li>Minor adverse – Impact of new population on demand for primary school places.</li> <li>Moderate-minor adverse - Impact of new population on demand for secondary school places.</li> </ul>
Traffic and Transport	None.
Air Quality	None.
Noise and Vibration	None.
Water Resources and Flood Risk	None.
Ecology	None.
Archaeology and Heritage	None.
Climate Change and GHG Emissions	None.
Landscape and Visual Impact Assessment	<p><b>Construction</b></p> <ul style="list-style-type: none"> <li>Minor adverse – effect on contextual environment, national and county level landscape character, and night time character</li> </ul> <p><b>Operation</b></p> <ul style="list-style-type: none"> <li>Minor adverse – effect on contextual topographic setting, night-time character and skyline</li> <li>Moderate beneficial – effect on contextual land cover through better use of currently developed space, and more appropriate building height and urban grain compared to existing site uses.</li> <li>Minor beneficial – increase in tree cover and vegetation.</li> </ul>

## 14.4 Summary

14.4.1 There are two types of cumulative effects: Intra-Project effects which result from the interaction of individual effects from the Proposed Development on a particular receptor and Inter-Project effects which result from the combined effects of other projects alongside the

Proposed Development. Details of the committed developments considered within the assessment of inter-project effects can be found in **Volume 2, Chapter 3, Table 3.8.**

### ***Intra-Project Effects***

- 14.4.2 During the construction of the Proposed Development, there is a potential for disturbance and nuisance effects to local residents and early site residents due to visual impact and construction noise effects. This is likely to be limited to residents of Kidmore End Road and Eric Avenue, particularly those with properties fronting or abutting the Site. These interactive effects may be considered significant.
- 14.4.3 During operation, there may be increased demand for Emmer Green Primary School and Emmer Green Youth and Community Centre; users of both facilities would also experience a worsening of views northwards from these locations. The interactive effect is not considered significant.

### ***Inter-Project Effects***

- 14.4.4 The cumulative effect of the Proposed Development and other schemes during construction would be:
- a minor adverse effect on the contextual environment, national and county level landscape character, and night time character; and
  - a moderate – minor beneficial effect due to increased construction employment opportunities.
- 14.4.5 The cumulative effect of the Proposed Development and other schemes during operation would be:
- a minor adverse effect on the contextual topographic setting, night-time character and skyline;
  - a minor adverse effect on demand for primary school places due to the increased population;
  - a moderate- minor adverse effect on demand for secondary school places due to the increased population;
  - a moderate beneficial effect on contextual land cover through better use of currently developed space, and more appropriate building height and urban grain compared to existing site uses;
  - a minor beneficial effect due to increase in tree cover and vegetation in the wider area;
  - a major – moderate beneficial effect due to the increase in housing supply, including affordable housing;
  - a moderate – minor beneficial effect on the local economy due to the employment and skills of residents;
  - a moderate-minor beneficial effect on employment and local economy due to an increase on labour supply; and
  - a moderate-minor beneficial effect on the local economy due to the spending of additional population.