
Ansty Garden Community

Environmental Statement

Volume 2

November 2023



CHAPTER 14: EFFECT INTERACTIONS

14 Effect Interactions

14.1 Introduction

14.1.1 This chapter provides an assessment of the likely cumulative effects of the Proposed Development and Parkland Reserve Site 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 effects on a particular sensitive receptor; and
- Type 2, inter-project effects which are the combined effects of several committed schemes (in conjunction with the Proposed Development and Parkland Reserve Site) 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 schemes located within 5 km radius from the boundary of the Site and Parkland Reserve Site, the full list is provided in **ES Volume 2, Chapter 3: EIA Methodology, Table 3.6** of this ES. These effects have been assessed in each technical chapter of this ES and are summarised in **Table 14.3**.

14.2 Intra-Project Effects

14.2.1 There is potential during both the construction and operation of the Proposed Development and Parkland Reserve Site 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 (EC)¹ 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 and Parkland Reserve Site, as previously identified through the individual topic assessments. Both tables define anticipated effects across both construction and operation and identify anticipated effect interactions (cumulative effects)

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

during each of these phases. The identification of effect interactions is based on the combined professional judgement of the topic specialists and EIA coordination team. Residual effects that are beneficial or adverse in nature and that are minor, moderate or major in scale have been considered.

- 14.2.4 Having identified a potential for an effect interaction, that effect interaction is evaluated qualitatively. Considerations may include the exact location and duration where residual effects are anticipated and the sub-division of receptors into smaller categories (for example, residents of a particular street, or specific species or habitats). For each likely effect interaction, it is noted whether the interaction is sufficient for the significance of the interactive effect to be greater than the individual residual effects in isolation and, where this is the case, an effect interaction significance is given. Even where the effect interaction is no more significant than the residual effects in isolation, the nature of the effect is further explained and summarised in this chapter and in the **Non-Technical Summary (ES Volume 1)** so that the nature of the interactive effect can be fully understood.

Potential for Intra-Project Effects during Construction

Table 14:1: Summary of Intra-Project Effects – Construction Phase

Receptor	Residual Effect	Potential for Intra-Project Effects
Residential	<p><u>Air Quality:</u> Effect of construction dust and emissions on health of nearby residents (minor adverse).</p> <p><u>Noise and Vibration:</u> Effect of construction noise on existing residential receptor (R1) (minor adverse). Effect of construction noise on existing residential receptor (R3) (minor adverse). Effect of construction noise on existing residential receptor (R4) (minor adverse). Effect of construction noise on future occupiers of Phases 1 and 2 (minor adverse).</p>	Potential for interaction of Air Quality and Noise and Vibration effects.
Commercial	<p><u>Socio-Economics:</u> Effect on construction workers expenditure (major beneficial).</p>	No potential for interactive effects.
Community	<p><u>Air Quality:</u></p>	No potential for

Receptor	Residual Effect	Potential for Intra-Project Effects
	Effect of demolition and construction dust and emissions on health of nearby residents (minor adverse).	interactive effects.
Pedestrians and transport users	None.	No potential for interactive effects.
Agriculture and Soils	Agriculture and Soils: Effect on agricultural land of BMV quality (moderate adverse). Effect on soils (minor adverse). Effect on farm businesses (minor adverse).	No potential for interactive effects.
Ecological	Air Quality: Effect of construction dust and emissions on nearby ecological receptors (minor adverse). Ecology and Biodiversity: Effect on biodiversity value (moderate adverse). Effect on priority habitat woodland and hedgerows (moderate adverse). Effect on badgers (moderate adverse). Effect on bat roost features (moderate adverse). Effect on suitable skylark breeding habitat (moderate adverse). Effect on common dormice (moderate adverse). Effect on great crested newts and other amphibians (moderate adverse). Effect on riparian wildlife (moderate adverse).	Potential for interaction of Air Quality and Ecological effects.
Climate Change (global atmosphere)	Climate Change Mitigation and Adaptation: Effect of global climate (minor adverse).	No potential for interactive effects.
Built Heritage	Built Heritage: Effect on the significance of the Listed building group at the centre of the Site (but excluded from the planning application boundary) (Grade II listed The Place and Grade	No potential for interactive effects.

Receptor	Residual Effect	Potential for Intra-Project Effects
	II listed Barn North of Forsyth's Farmhouse); Grade II listed Mackerell Cottage; and Grade II listed West Riddens Farmhouse (minor adverse).	
Landscape and Views	<p><u>Landscape and Visual Impact Assessment:</u></p> <p>Effect on landscape character (moderate-minor adverse to moderate-major adverse).</p> <p>Effect on natural landscape receptors (moderate-minor adverse to moderate adverse).</p> <p>Effect on cultural / social landscape receptors (major adverse).</p> <p>Effect on perceptual and aesthetic landscape receptors (major adverse).</p> <p>Effect on landscape character receptors (moderate to major adverse).</p> <p>Effect on views for residential receptors (minor adverse to major adverse).</p> <p>Effect on views for transient from transport corridors (neutral to moderate adverse).</p> <p>Effect on views for transient from public rights of way (neutral to major adverse).</p> <p>Effect on views for receptors using visitor attractions and areas of open space (minor adverse-negligible to moderate-minor adverse).</p>	No potential for interactive effects.

Air Quality and Noise and Vibration Effects

- 14.2.5 Individual effects that have the potential to interact during this period are largely related to increased noise and vibration and dust, as a result of construction activities. When these effects are combined, they have the potential to create a combined nuisance effect on the closest sensitive receptors. However, it should be noted that these effects will be transient and temporary in nature.
- 14.2.6 Effects relating to dust will be controlled by measures included within a CEMP, to ensure that impacts to sensitive receptors are minimised (i.e. a Dust Management Plan or similar). Additionally, any non-road mobile machinery use

on the Site will comply with the emissions requirements specified in the relevant legislation and a CLP will be implemented, which will include the stipulation of the absence of on-site parking and the encouragement of staff to use public transport.

- 14.2.7 Effects during the noisiest periods would be controlled and managed through the Section 61 process of the Control of Pollution Act 1974. This, combined with the implementation of Best Practicable Means (BPM) and the Construction Environmental Management Plan (CEMP) (which will manage construction traffic, routes and delivery periods) would reduce the potential interactive effect so that it is not significant.

Air Quality and Ecological Effects

- 14.2.8 The construction of the Proposed Development and Parkland Reserve Site has the potential to impact upon nearby ecological receptors due to construction dust and emissions. As stated above, effects relating to dust and emissions will be controlled by measures included within a CEMP to ensure that impacts to ecologically sensitive receptors are minimised.

Potential for Intra-Project Effects during Operation

Table 14:2: Summary of Intra-Project Effects – Operational Phase

Receptor	Residual Effect	Potential for Intra-Project Effects
Residential	<p><u>Socio-Economics:</u> Effect on provision of housing (major beneficial). Effect on demand for educational facilities (early years) (moderate beneficial). Effect on demand for educational facilities (secondary) (minor adverse). Effect on demand for educational facilities (SEND school) (moderate beneficial). Effect on provision of community facilities (minor beneficial). Effect on provision of open and play space (moderate beneficial).</p> <p><u>Traffic and Transport:</u> Pedestrian delay (minor adverse). Driver delay (minor adverse).</p>	No potential for interactive effects.
Commercial	<p><u>Socio-Economics:</u></p>	No potential for interactive effects.

Receptor	Residual Effect	Potential for Intra-Project Effects
	Effect on additional expenditure supported by residents and operational workers (major beneficial).	
Community	Socio-Economics: Effect on provision of community facilities (minor beneficial).	No potential for interactive effects.
Pedestrians and transport users	None.	No potential for interactive effects.
Agriculture and Soils	None.	No potential for interactive effects.
Ecological	Air Quality: Effect of traffic emissions on nearby ecological receptors (minor adverse). Ecology and Biodiversity: Effect on biodiversity value (moderate beneficial). Effect on priority habitat woodland and hedgerows (moderate beneficial). Effect on bat roost features (moderate beneficial). Effect on suitable skylark breeding habitat (moderate beneficial). Effect on common dormice (minor beneficial). Effect on great crested newts and other amphibians (minor beneficial). Effect on reptiles (minor beneficial). Effect on riparian wildlife (minor beneficial). Effect on hedgehogs (minor beneficial).	Potential for interaction of Air Quality and Ecological effects.
Climate Change (global atmosphere)	Climate Change Mitigation and Adaptation: Effect of global climate (minor adverse).	No potential for interactive effects.
Built Heritage	Built Heritage: Effect on the significance of the Listed building group at the centre of the Site (but excluded from the planning application boundary) (Grade II listed The Place and Grade	No potential for interactive effects.

Receptor	Residual Effect	Potential for Intra-Project Effects
	II listed Barn North of Forsyth's Farmhouse); Grade II listed Mackerell Cottage; and Grade II listed West Riddens Farmhouse (minor adverse).	
Landscape and Views	<p><u>Landscape and Visual Impact Assessment:</u></p> <p>Effect on landscape character (moderate-minor adverse to moderate adverse).</p> <p>Effect on natural landscape receptors (minor adverse to moderate-minor beneficial).</p> <p>Effect on cultural / social landscape receptors (moderate adverse).</p> <p>Effect on perceptual and aesthetic landscape receptors (moderate-minor adverse).</p> <p>Effect on landscape character receptors (moderate-minor adverse to moderate adverse).</p> <p>Effect on views for residential receptors (negligible to moderate adverse).</p> <p>Effect on views for transient from public rights of way receptors (neutral to moderate adverse).</p>	No potential for interactive effects.

Air Quality and Ecological Effects

- 14.2.9 There remains the potential interaction between traffic emissions (namely NO_x, NH₃, nitrogen deposition and acid deposition) and ecological priority habitats such as ancient woodlands (lichens and bryophytes) that may be present in the ancient woodland habitat.
- 14.2.10 The existing air quality assessment has identified that two ancient woodlands at the Site and four woodlands to the south of the Site will pass the critical load level 1% process contribution by more than 1% for NO_x, annual mean NH₃ (Ammonia) and nutrient Nitrogen deposition, though for on-site woodland only the nutrient nitrogen deposition threshold is passed. These impacts are largely as a result of projected future traffic increases once the Proposed Development is operational. However, it has yet to be determined whether sensitive lichens and bryophytes are present in the location identified as giving rise to exceedances.

- 14.2.11 Nitrogen deposition in all forms has the potential to affect plant communities, creating favourable conditions for vegetation that thrives in more nutrient-rich environments. The most sensitive receptors within woodland environments are bryophytes and lichens, which often thrive within ancient woodlands with closed canopies where humidity levels may be elevated.
- 14.2.12 Anticipated increases in nitrogen levels caused by vehicles that run on fossil fuels are unclear. Whilst government commitments on the phasing out of petrol and diesel cars is presently uncertain, the trend in public purchasing of electric vehicles is positive, with the intent to buy electric cars at 54 % amongst the UK public, compared with 41 % for petrol and diesel cars. If applied to the process contribution NOx, annual mean NH₃ (Ammonia) and nutrient Nitrogen deposition, the potential levels would be significantly reduced.
- 14.2.13 Further detailed survey work will be undertaken at the reserved matters stage to identify the presence / absence of bryophytes and lichens and an Ancient Woodland Nitrogen Impact Assessment will be undertaken, if required.
- 14.2.14 Further mitigation involves the establishment of 20 m buffer areas around the ancient woodland at the Site which will help reduce the effects of elevated nitrogen deposition through sequestration. Taking into consideration the proposed mitigation measures, the interactive effect is not considered to be significant.

14.3 Inter-Project Effects

- 14.3.1 Cumulative effects resulting from the in-combination impacts from other committed schemes alongside the Proposed Development and Parkland Reserve Site have been considered by each discipline in their respective chapters (**Chapter 6 to 13** and **Volume 3: Landscape and Visual Impact Assessment**). Where there are additional effects beyond the effect of the Proposed Development and Parkland Reserve Site in isolation, these are summarised in **Table 14.3**. The list of committed schemes assessed is included in **Chapter 3: EIA Methodology, Table 3.6**.

Table 14.3: Summary of Inter-Project Effects

EIA Topic	Description
Socio-Economics	<p><u>Construction:</u> Effect on construction worker expenditure (major beneficial).</p> <p><u>Operation:</u> Effect on provision of housing (major beneficial). Effect on additional expenditure supported by residents and operational workers (major beneficial).</p>

EIA Topic	Description
	<p>Effect on demand for educational facilities (primary) (minor beneficial).</p> <p>Effect on demand for educational facilities (SEND school) (major beneficial).</p>
Traffic and Transport	<p>No additional significant residual inter-project effects were anticipated as a result of the Proposed Development and Parkland Reserve Site in combination with committed developments during construction and operation.</p>
Air Quality	<p><u>Construction:</u> Effect of construction dust and emissions on health of nearby residents (minor adverse).</p> <p><u>Operation:</u> None.</p>
Noise and Vibration	<p>No additional significant residual inter-project effects were anticipated as a result of the Proposed Development and Parkland Reserve Site in combination with committed developments during construction and operation.</p>
Agriculture and Soils	<p><u>Construction:</u> Loss of BMV agricultural land (major adverse).</p> <p><u>Operation:</u> None.</p>
Ecology	<p>No additional significant residual inter-project effects were anticipated as a result of the Proposed Development and Parkland Reserve Site in combination with committed developments during construction and operation. The committed developments are situated far enough from the Site that in-combination impacts associated with development activity (such as dust deposition, pollution and noise impacts) are not anticipated. These schemes will / would have impacts upon protected species that are also affected by this establishment of the Proposed Development, including bats, badgers, dormice and great crested newts. This poses potential cumulative effects that affect these species at a landscape level, should the integrated mitigation and compensation measures designed into these cumulative schemes fail to deliver.</p>
Climate Change Mitigation and Adaptation	<p>No additional significant residual inter-project effects were anticipated as a result of the Proposed Development in combination with committed developments during construction and operation.</p>
Built Heritage	<p>No additional significant residual inter-project effects were anticipated as a result of the Proposed Development and Parkland Reserve Site in combination with committed developments during construction and operation.</p>

EIA Topic	Description
Landscape and Visual Impact Assessment	No additional significant residual inter-project effects were anticipated as a result of the Proposed Development and Parkland Reserve Site in combination with committed developments during construction and operation.

- 14.3.2 The scale of additional housing coming forward in combination with committed developments will tend to increase the magnitude of some of the socio-economic effects of the Proposed Development, in relation to an increase in construction employment, an increase in spending within the local economy (MSDC) and an increase in new facilities such as education and health services.
- 14.3.3 The Proposed Development coming forward in combination with the committed developments will increase the magnitude of air quality, in relation to an increase in construction dust and emissions for nearby residents.
- 14.3.4 The Proposed Development and Parkland Reserve Site coming forward in combination with the committed developments will increase the magnitude of some of the agriculture and soils effects, in relation to a loss of best most versatile (BMV) agricultural land available.
- 14.3.5 The Proposed Development and Parkland Reserve Site coming forward in combination with committed developments will also increase the magnitude of some of the ecological effects. This is in relation to effects on designated sites; biodiversity units; priority habitat woodland and hedgerows; badgers; bat roost features; suitable skylark breeding habitat; common dormice; great crested newts and other amphibians; reptiles; riparian wildlife and hedgehogs. However, providing the integrated mitigation and compensation measures designed into these cumulative schemes are delivered no additional significant residual inter-project effects were anticipated.

