

E1.19

# ES Chapter 19 - Schedule of Environmental Commitments

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THE CROWN  
 ESTATE

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East Hemel

# 19. Schedule of Environmental Commitments

## 19.1 Introduction

19.1.1 This Chapter provides a summary of the additional mitigation commitments outlined within the **ES Volume 2: Chapters 7 to 17** inclusive. Mitigation is an iterative process of controlling environmental effects by a hierarchy of avoidance (most desirable), reduction, amelioration and compensation. In EIA, mitigation can be:

- Embedded (primary) mitigation - measures that have been 'designed into' the proposals and are integral to the Development. Such measures will be approved as part of the outline planning permission. This includes anything shown on the Parameter Plans and anything included in the Development Specification (including the Development Quantum).
- Additional (secondary) mitigation - measures that are not specifically designed into the Development and which requires a commitment from the Applicant to carry out further actions (e.g. S106 or planning conditions).
- Tertiary mitigation - any mitigation that is required regardless of the EIA process, such as measures imposed by legislative requirements (for example, protected species licensing) and / or standard tried and tested sectorial practices (for example, the implementation of a Construction Environmental Management Plan (CEMP)).

19.1.2 It is important to distinguish between these three forms of mitigation, as the embedded mitigation has helped to define the Development details that have been assessed, in the presence of the tertiary mitigation. The EIA is seeking to identify additional (secondary) mitigation (i.e. mitigation which would not be adopted regardless of the EIA process).

19.1.3 In each topic-specific Chapter, the 'Assessment of Likely Significant Effects' section (i.e. without additional mitigation) represents an assessment of the Development comprising the embedded design measures and tertiary mitigation, whilst the 'Residual Effects' section assesses the Development with the additional mitigation measures in place. Primary (or 'embedded') mitigation measures are described in **ES Volume 2, Chapter 5: The Development** and within each of the Technical Chapters, where relevant (see **ES Volume 2, Chapters 7 - 17**). The embedded mitigation measures will be secured by the approval of the Parameter Plans and Development Specification (which future Tier 2 and Reserved Matters applications will need to adhere to) and the application drawings for the A414/Green Lane junction and access from the B487/ Hemel Hempstead Road (Redbourn Road).

19.1.4 The residual effects of the Development have been assessed as part of the EIA and can be described as the effects which remain after the implementation of the primary, tertiary and any secondary mitigation measures. The secondary mitigation measures and their corresponding residual effects to which they address are presented below in **Table 19.1** and **Table 19.2**. It is expected that the secondary mitigation measures will be secured through appropriately worded planning conditions or financial obligations. Reference should be made to each Technical Chapter for the full definition of the effect stated and the proposed secondary mitigation.

19.1.5 For clarity, those mitigation measures considered to be tertiary mitigation are also included in **Table 19.1** and **Table 19.2** where these will also need to be secured through appropriately worded planning conditions.

## 19.2 Likely Significant Effects of the Works and Required Tertiary and / or Secondary Mitigation Measures

19.2.1 Within **Table 19.1** and **Table 19.2**, any adverse or beneficial residual effects identified as being significant within their respective Technical Chapter have been colour-coded, corresponding to the key below. Where no Tertiary and / or Secondary Mitigation has been identified, this is indicated with 'None' under the relevant column.

Key for Tables 19.1 and 19.2
Significant Adverse Residual Effect
Significant Beneficial Residual Effect
Insignificant or No Residual Effect

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**Table 19.1: Likely Significant Effects of the Works and Required Tertiary and / or Secondary Mitigation Measures**

The Works						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
Landscape and Visual	Effect on landscape character	LCA 094 – Buncefield Plateau (extended)	Major Adverse	Implementation of a Construction Environmental Management Plan (CEMP) as detailed <b>within ES Volume 3, Appendix 6.1: Outline Construction Environmental Management Plan</b> . Mitigation measures within the CEMP include general good site housekeeping, controls on construction light lighting and provision of hoardings.	None	Major Adverse
		LCA H3 – Industrial Fringe, LCA 010 – St Stephen’s Plateau, LCA Industrial Urban Fringe: Hemel Hempstead Industrial Estate	Moderate Adverse	CEMP	None	Moderate Adverse
		LCA 096 – Upper Ver Valley, LCA 095 – Revel End Plateau	Minor Adverse	CEMP	None	Minor Adverse
		LCA Urban: Hemel Hempstead, LCA 009 – Bedmond Plateau	N/A	CEMP	None	N/A
	Effect on visual amenity	Viewpoint 1: View from Hogg End, Viewpoint 7: View from residential dwellings on and near Holtsmere End Lane, Viewpoint 9: View from PRoW near Falmsteadbury Farm, Viewpoint 21: View from residential dwellings on Mansdale Road and	Minor Adverse	CEMP	None	Minor Adverse

The Works					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Hertfordshire Way (Long Distance Path)				
	Viewpoint 2: View from highway near Old Jeromes (residential), Viewpoints 3 and 4: View from Punchbowl Lane, Viewpoints 6 and 26: View from highway on Redbourn Road / Hemel Hempstead Road, Viewpoint 11: View from PRoW near Baker's Farm, Viewpoint 13: View from PRoW near Brikklin Wood, Viewpoints 14 and 17: View from highway on A4147 Hemel Hempstead Road, Viewpoint 16: View from residential dwellings on Leverstock Green, Viewpoint 27N and 27S: Views from the Nickey Line (permissive path)	Moderate Adverse	CEMP	None	Moderate Adverse
	Viewpoint 5: View from residential dwellings on Cherry Tree Lane and Punchbowl Lane (West), Viewpoint 18NE and 18SE: Views from residential dwellings on Westwick Row facing north-east and south-east, Viewpoint 25 and 28: View from PRoWs FP009 and FP011 north of the Site, Viewpoint 29: View from highway A414 Breakspear Way.	Major Adverse	CEMP	None	Major Adverse

The Works						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
	Viewpoint 8 and 20: View from residential dwellings on and near Gaddesden Lane and within the National Landscape, Viewpoint 12: View from the grounds of Gorhambury House – Registered Park and Garden, Viewpoint 19: View from Woodwells Cemetery, Viewpoint 23: View from PRoW near Batchwood Hall, Viewpoint 24: View from Aubrey Fort	N/A	CEMP	None	N/A	
	Viewpoint 10: View from PRoW by Flowers Farm, Viewpoint 15: View from PRoW by Bedmond Road, Viewpoint 22: View from PRoW east of Redbourn	Negligible	CEMP	None	<b>Negligible</b>	
Ecology and Nature Conservation	Internationally and Nationally Designated Sites <sup>1</sup>	Habitat loss, air quality, dust deposition, surface water and contamination	Not Significant	CEMP	None	<b>Not Significant</b>
	Locally Designated Sites <sup>2</sup>	Habitat loss / degradation, air quality, dust deposition, surface water, contamination and lighting	Not Significant	CEMP	None	<b>Not Significant</b>

<sup>1</sup> Includes the following designated sites: Chiltern Beechwoods Special Area of Conservation (SAC); Roughdown Common Site of Special Scientific Interest (SSSI); Bricket Woods & Common SSSI; Ashridge Commons and Woods SSSI; and Tring Woodlands SSSI

<sup>2</sup> Includes the following designated Local Wildlife Sites (LWS): Westwick Row Wood; Disused Railway Line Hemel Hempstead; Blackwater Wood; Westwick Hall; Potters Crouch Plantation, Holy Trinity Church, Leverstock Green; Kettlewell’s Farm Area; High Wood (Hemel Hempstead); Prae Wood; Woodhall Wood LWS; Appspound Wood; Windmill Hill Wood & Adjoining Woodlands; Great Revel End Farm; Widmore Wood; Birch Wood (near Potters Crouch); Redbourn Common; Bury Wood (near Redbourn); Maylands Wood; Gorhambury Cottage Area; Gorhambury Icehouse; Long Deans Woods; Long Deans Meadow; Wellfield Spring; Temple Cottage Area, Gorhambury; Very Valley (by Chequer Lane); Rant Meadow Wood / Bennets End Pit; Featherbed Lane Copse by Serge Hill; Potters Crouch Section; Long Spring (Potters Crouch); Serge Hill Meadow; Redbournbury Meadows; Hay Wood (Holtmere); Scrubs Wood; New Wood (W of Redbourn); Park Wood (near Chiswell Green); Piecorner and Hanging Wood

The Works						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
	Locally Designated Sites – Nickey Way Dismantled Railway Local Wildlife Site (LWS)	Habitat loss / degradation	Moderate Adverse	CEMP	<p>Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b>) to be developed at detailed design stage, and included in an Ecological Mitigation, Enhancement and Management Strategy (EMEMS) which will detail and secure all mitigation measures required to minimise impacts to the LWS as well as the habitat creation and enhancement opportunities and their long-term management. This EMEMS will incorporate the requirements of a Landscape and Ecological Management Plan (LEMP) and will be submitted for approval as one of the Pre-commencement Conditions.</p> <p>Financial contribution towards the maintenance and improvement of the Nickey Line.</p>	<b>Negligible (Not Significant)</b>
		Air quality, dust deposition, surface water and contamination	Not Significant	None	<b>Not Significant</b>	
	Ancient Woodland	Habitat loss / degradation, air quality, dust deposition, surface water and contamination	Not Significant	CEMP	None	<b>Not Significant</b>
	Veteran Trees	Air quality, dust deposition, surface water and contamination	Not Significant	CEMP	None	<b>Not Significant</b>
		Habitat loss / degradation	Not Significant	CEMP	None	<b>Not Significant</b>

The Works						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
	Habitats of Principle Importance (HPI) <sup>3</sup>	Habitat loss / degradation, air quality, dust deposition, surface water and contamination	Not Significant	None	<b>Not Significant</b>	
	HPI – Hedgerows	Habitat loss / degradation	Moderate Adverse	CEMP	Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to HPI Hedgerows as well as the habitat creation and enhancement opportunities and their long-term management. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions.	<b>Not Significant</b>
		Air quality, dust deposition, surface water and contamination	Not Significant	None	<b>Not Significant</b>	
	Badger	Habitat loss, habitat fragmentation, killing or injury and disturbance	Not Significant	CEMP Mitigation License Precautionary working practices / Reasonable Avoidance Measures (RAMS)	None	<b>Not Significant</b>

<sup>3</sup> Includes the following Habitats of Principle Importance (HPI): Woodland (on- and off-Site); Coastal & Floodplain Grazing Marsh; Wood Pasture & Parkland; and Traditional Orchard.

The Works					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
Bats	Habitat loss, habitat fragmentation and killing or injury	Major Adverse		Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to bats as well as the habitat creation and enhancement opportunities and their long-term management. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions.  Protected Species Working Method Statement (PSWMS), to be secured by planning condition.	<b>Not Significant</b>
	Disturbance	Minor Adverse	CEMP Mitigation License Precautionary working practices / RAMS		<b>Not Significant</b>
Barn owl	Habitat loss, killing or injury and disturbance	Not Significant	CEMP Precautionary working practices / RAMS	None	<b>Not Significant</b>
Breeding bird assemblage	Habitat loss	Moderate Adverse	CEMP	Implementation of a Farmland Bird Mitigation Strategy, to be developed as part of the EMEMS which will be submitted for approval as one of the Pre-commencement Conditions.	<b>Not Significant</b>
	Killing or injury and disturbance	Not Significant	Precautionary working practices / RAMS		<b>Not Significant</b>
Raptors	Habitat loss, killing or injury and disturbance	Not Significant	CEMP Precautionary working practices / RAMS	None	<b>Not Significant</b>
Wintering bird assemblage	Habitat loss, killing or injury and disturbance	Not Significant	CEMP Precautionary working practices / RAMS	None	<b>Not Significant</b>

The Works					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
Heritage and Archaeology	Loss of buried archaeological remains and earthworks during the Works (early prehistoric remains (Palaeolithic – Mesolithic))	Moderate Adverse	None	Implementation of an Archaeological Mitigation Strategy as detailed within <b>ES Volume 2, Chapter 9: Heritage and Archaeology</b> . This would include:	<b>Neutral (no impact)</b>
	Loss of buried archaeological remains and earthworks during the Works (Bronze Age to Late Iron Age remains)	Moderate Adverse	None	<ul style="list-style-type: none"> <li>Targeted archaeological excavation of buried archaeological remains as defined in bespoke WSIs.</li> </ul>	<b>Neutral (no impact)</b>
	Loss of buried archaeological remains and earthworks during the Works (early Medieval and Medieval remains)	Moderate Adverse	None	<ul style="list-style-type: none"> <li>Archaeological monitoring (watching brief) in other areas where potential buried archaeological remains could be exposed / disturbed during the Works.</li> </ul>	<b>Neutral (no impact)</b>
	Loss of buried archaeological remains and earthworks during the Works (early post-Medieval and Modern remains)	Negligible	None	<ul style="list-style-type: none"> <li>Publication and dissemination of the results of the archaeological work to interested local and regional stakeholders.</li> </ul>	<b>Neutral (no impact)</b>
	Loss of historic landscape character (post-1950 Fields)	Negligible	None	None	<b>Negligible</b>
	Loss of historic landscape character (18 <sup>th</sup> century irregular enclosure and 18 <sup>th</sup> century co-axial enclosure)	Minor Adverse	None	None	<b>Minor Adverse</b>
	Loss of historic landscape character (historic or important hedgerows)	Negligible	None	None	<b>Negligible</b>
	Effect on designated and non-designated heritage assets	Negligible	CEMP	None	<b>Negligible</b>
Transport and Access	Effect on severance	Up to Minor Adverse (Not Significant) on select links	CEMP	None	Up to <b>Minor Adverse (Not Significant)</b> on select links

The Works					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Effect on driver delay	Up to Minor Adverse (Not Significant) on select links	CEMP	None	Up to <b>Minor Adverse (Not Significant)</b> on select links
	Effect on pedestrian delay	Up to Minor Adverse (Not Significant) on select links	CEMP	None	Up to <b>Minor Adverse (Not Significant)</b> on select links
	Effect on pedestrian amenity	Up to Minor Adverse (Not Significant) on select links	CEMP	None	Up to <b>Minor Adverse (Not Significant)</b> on select links
	Effect on accidents and safety	Negligible	CEMP	None	<b>Negligible</b>
	Effect on fear and intimidation	Negligible	CEMP	None	<b>Negligible</b>
Air Quality	Construction dust	The IAQM dust guidance recommends that significance is only assigned to the effect after the activities are considered with mitigation in place.	Submission and implementation of a CEMP which is to include dust mitigation, as detailed within <b>ES Volume 3, Appendix 11.4.</b>	None	<b>Negligible</b>
	Construction road traffic emissions – NO <sub>2</sub>	Existing human receptors	Not Significant	None	None
		Existing ecological receptors	Not Significant	None	None

The Works					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Construction road traffic emissions – PM <sub>2.5</sub>	Existing human receptors	Not Significant	None	None
		Existing ecological receptors	Not Significant	None	None
	Construction road traffic emissions – PM <sub>10</sub>	Existing human receptors	Not Significant	None	None
		Existing ecological receptors	Not Significant	None	None
Noise and Vibration	Construction road traffic noise	<b>Minor Adverse to Insignificant</b>	Submission and implementation of a CEMP which is to include measures recommended within <b>ES Volume 2, Chapter 12: Noise and Vibration.</b>	None	<b>Minor Adverse to Insignificant</b>
	Construction activity noise	<b>Minor Adverse to Insignificant</b>	Submission and implementation of a CEMP which is to include measures recommended within <b>ES Volume 2, Chapter 12: Noise and Vibration.</b>	None	<b>Minor Adverse to Insignificant</b>
Agricultural Land Use	Loss of best and most versatile (BMV) agricultural land	Major Adverse	None	None	<b>Major Adverse</b>
	Loss of soil resource and function	Moderate Adverse	None	Implementation of a Soil Resources Management Plan (see <b>ES Volume 3, Appendix 13.2</b> ) as part of the CEMP.	<b>Minor Adverse</b>
Water Resources and Flood Risk	Effect on the chalk aquifer from piled foundations creating a pollution pathway during the Works	Moderate Adverse	CEMP	Submission of a Piling Method Statement and Risk Assessment.	<b>Not Significant</b>
	Effect on the River Ver from the potential risk of surface water pollution through the construction of the drainage system or accidental runoff or spillage	Not Significant		None	<b>Not Significant</b>

The Works						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
	by sediments, fuels, chemicals and / or construction materials during the Works					
	Effect on Site workers and occupants from the potential risk of local flooding on the Site due to an increase in runoff from the Site during the Works	Not Significant		None	<b>Not Significant</b>	
	Effect on local water resources from an increased water demand during the Works	Not Significant		None	<b>Not Significant</b>	
	Effect on water supply and drainage infrastructure from an increased water demand during the Works	Not Significant		None	<b>Not Significant</b>	
	Greenhouse Gas (GHG) Impact Assessment	Effect on global climate as a result of embodied carbon emissions associated with the construction (upfront carbon A1-A5) of the Development, including buildings and infrastructure works	Major Adverse	Submission and implementation of a CEMP which is to include measures recommended within <b>ES Volume 2, Chapter 15: Climate Change</b> .	Submission of a pre- and post-construction Whole Life Carbon Assessment (WCLA).	<b>Moderate Adverse</b>
Climate Change	Climate Change Resilience (CCR) Assessment	Effect on community and people, the built environment, infrastructure systems and services and the natural environment as a result of surface water flooding (from wetter winters and increased, prolonged humidity), extreme wind & storms, subsidence or ground movement and drought & heatwaves (from warmer summers and increased solar radiation)	Moderate Adverse	Submission and implementation of a CEMP which is to include measures recommended within <b>ES Volume 2, Chapter 15: Climate Change</b> . This would include: <ul style="list-style-type: none"> <li>Inclusion of a risk assessment for climate hazards and their potential impacts to the construction workforce and natural environment and incorporate detailed proposals on mitigation measures to</li> </ul>	None	<b>Minor Adverse</b>

The Works					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
			alleviate risks for these sensitive receptors.		
Socio-economics	Effect on construction employment	County Area – Minor Beneficial	None	None	County Area – <b>Minor Beneficial</b>
Health	Health effects from access to Public Rights of Way (PRoW) and open space for physical activity and recreation	Insignificant	None	None	Insignificant
	Health effects from changes in transport nature and flow rate	Minor Adverse	None	None	<b>Minor Adverse</b>
	Health effects from changes in socio-economic factors	Minor Beneficial	None	None	<b>Minor Beneficial</b>
	Health effects from changes in air quality	Insignificant	None	None	<b>Insignificant</b>
	Health effects from changes in noise exposure	Insignificant	None	None	<b>Insignificant</b>

**Table 19.2: Likely Significant Effects of the Completed and Operational Development and Required Tertiary and / or Secondary Mitigation Measures**

ES Technical Chapter	Description of Effect / Receptor	The Completed and Operational Development			Significance of Residual Effect	
		Significance of Effect	Tertiary Mitigation	Secondary Mitigation		
Landscape and Visual	Effect on landscape character	LCA 094 – Buncefield Plateau (extended)	Year 1 – Major Adverse	None	None	Year 1 – <b>Major Adverse</b>
			Year 15 – Moderate Adverse	None	None	Year 15 – <b>Moderate Adverse</b>
	LCA H3 – Industrial Fringe	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>	
			Year 15 – Neutral	None	None	Year 15 – <b>Neutral</b>
	LCA 010 – St Stephen’s Plateau	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>	
			Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>
	LCA 096 – Upper Ver Valley	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>	
			Year 15 – Minor Beneficial	None	None	Year 15 – <b>Minor Beneficial</b>
	LCA Urban: Hemel Hempstead	Year 1 – N/A	None	None	Year 1 – N/A	
			Year 15 – N/A	None	None	Year 15 – N/A
	LCA Industrial Urban Fringe: Hemel	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>	

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Hempstead Industrial Estate	Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>
	LCA 009 – Bedmond Plateau	Year 1 – N/A	None	None	Year 1 – N/A
		Year 15 – N/A	None	None	Year 15 – N/A
	LCA 095 – Revel End Plateau	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>
		Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>
Effect on visual amenity	Viewpoint 1: View from Hogg End	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>
		Year 15 – Negligible	None	None	Year 15 – <b>Negligible</b>
	Viewpoint 2: View from highway near Old Jeromes (residential)	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Moderate Adverse	None	None	Year 15 – <b>Moderate Adverse</b>
	Viewpoints 3 and 4: View from Punchbowl Lane	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>
		Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Viewpoint 5: View from residential dwellings on Cherry Tree Lane and Punchbowl Lane (West)	Year 1 – Major Adverse	None	None	Year 1 – <b>Major Adverse</b>
		Year 15 – Moderate Adverse	None	None	Year 15 – <b>Moderate Adverse</b>
	Viewpoints 6 and 26: View from highway on Redbourn Road / Hemel Hempstead Road	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>
	Viewpoint 7: View from residential dwellings on and near Holtsmere End Lane	Year 1 – Negligible	None	None	Year 1 – <b>Negligible</b>
		Year 15 – Negligible	None	None	Year 15 – <b>Negligible</b>
	Viewpoint 8 and 20: View from residential dwellings on and near Gaddesden Lane and within the National Landscape	Year 1 – N/A	None	None	Year 1 – N/A
		Year 15 – N/A	None	None	Year 15 – N/A
	Viewpoint 9: View from PRow near Falmsteadbury Farm	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Viewpoint 10: View from PRoW by Flowers Farm	Year 1 – Negligible	None	None	Year 1 – <b>Negligible</b>
		Year 15 – Negligible	None	None	Year 15 – <b>Negligible</b>
	Viewpoint 11: View from PRoW near Baker's Farm	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>
	Viewpoint 12: View from the grounds of Gorhambury House – Registered Park and Garden	Year 1 – N/A	None	None	Year 1 – N/A
		Year 15 – N/A	None	None	Year 15 – N/A
	Viewpoint 13: View from PRoW near Brikklin Wood	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Moderate Adverse	None	None	Year 15 – <b>Moderate Adverse</b>
	Viewpoints 14 and 17: View from highway on A4147 Hemel Hempstead Road	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Viewpoint 15: View from PRoW by Bedmond Road	Year 1 – Negligible	None	None	Year 1 – <b>Negligible</b>
		Year 15 – Negligible	None	None	Year 15 – <b>Negligible</b>
	Viewpoint 16: View from residential dwellings on Leverstock Green	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Negligible	None	None	Year 15 – <b>Negligible</b>
	Viewpoint 18NE and 18SE: Views from residential dwellings on Westwick Row facing north-east and south-east	Year 1 – Major Adverse	None	None	Year 1 – <b>Major Adverse</b>
		Year 15 – Moderate Adverse	None	None	Year 15 – <b>Moderate Adverse</b>
	Viewpoint 19: View from Woodwells Cemetery	Year 1 – N/A	None	None	Year 1 – N/A
		Year 15 – N/A	None	None	Year 15 – N/A
	Viewpoint 21: View from residential dwellings on Mansdale Road and Hertfordshire Way (Long Distance Path)	Year 1 – Negligible	None	None	Year 1 – <b>Negligible</b>
		Year 15 – Negligible	None	None	Year 15 – <b>Negligible</b>
		Year 1 – Negligible	None	None	Year 1 – <b>Negligible</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Viewpoint 22: View from PRoW east of Redbourn	Year 15 – Negligible	None	None	Year 15 – <b>Negligible</b>
	Viewpoint 23: View from PRoW near Batchwood Hall	Year 1 – N/A	None	None	Year 1 – N/A
		Year 15 – N/A	None	None	Year 15 – N/A
	Viewpoint 24: View from Aubrey Fort	Year 1 – N/A	None	None	Year 1 – N/A
		Year 15 – N/A	None	None	Year 15 – N/A
	Viewpoint 25 and 28: View from PRoWs FP009 and FP011 north of the Site	Year 1 – Moderate Adverse	None	None	Year 1 – <b>Moderate Adverse</b>
		Year 15 – Moderate Adverse	None	None	Year 15 – <b>Moderate Adverse</b>
	Viewpoint 27N and 27S: Views from the Nickey Line (permissive path)	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>
		Year 15 – Neutral	None	None	Year 15 – <b>Neutral</b>
	Viewpoint 29: View from highway A414 Breakspear Way	Year 1 – Minor Adverse	None	None	Year 1 – <b>Minor Adverse</b>
		Year 15 – Minor Adverse	None	None	Year 15 – <b>Minor Adverse</b>

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor		Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
Ecology and Nature Conservation	Internationally and Nationally Designated Sites <sup>4</sup>	Air quality and recreation	Not Significant	None	None	Not Significant
	Locally Designated Sites <sup>5</sup>	Air quality, recreation and surface water	Not Significant	None	None	Not Significant
	Locally Designated Sites – Westwick Row Wood LWS; Nickey Way	Air quality and surface water	Not Significant	None	None	Not Significant
	Dismantled Railway LWS; Disused Railway Line Hemel Hempstead LWS	Recreation	Moderate Adverse	None	Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise recreational impacts to these LWSs, as well as their long-term management. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions.  Submission and implementation of a detailed Lighting Strategy to minimise disturbance to bats and badgers from artificial lighting. To be secured by planning condition.	Not Significant
		Recreation	Not Significant	None	None	Not Significant

<sup>4</sup> Includes the following designated sites: Chilterns Beechwood SAC; Roughdown Common SSSI; Bricket Wood Common SSSI; Ashridge Commons and Woods SSSI and SAC; and Tring Woodland SSSI and SAC.

<sup>5</sup> Includes the following designated Local Wildlife Sites (LWS): Blackwater Wood; Potters Crouch Plantation, Holy Trinity Church, Leverstock Green; Kettlewell's Farm Area; High Wood (Hemel Hempstead); Prae Wood; Woodhall Wood LWS; Appspound Wood; Windmill Hill Wood & Adjoining Woodlands; Great Revel End Farm; Widmore Wood; Birch Wood (near Potters Crouch); Redbourn Common; Bury Wood (near Redbourn); Maylands Wood; Long Deans Woods; Long Deans Meadow; Wellfield Spring; Very Valley (by Chequer Lane); Rant Meadow Wood / Bennets End Pit; Featherbed Lane Copse by Serge Hill; Potters Crouch Section; Long Spring (Potters Crouch); Serge Hill Meadow; Redbournbury Meadows; Hay Wood (Holtmere); Scrubs Wood; New Wood (W of Redbourn); Park Wood (near Chiswell Green); Piecorner and Hanging Wood.

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
	Locally Designated Sites – Westwick Hall LWS; Gorhambury Cottage Area LWS; Gorhambury Icehouse LWS; Temple Cottage Area, Gorhambury LWS;	Lighting disturbance	Moderate Adverse	None	Submission and implementation of a detailed Lighting Strategy to minimise disturbance to bats and badgers from artificial lighting. To be secured by planning condition.	<b>Not Significant</b>
	Ancient Woodland	Air quality and recreation	Not Significant	None	None	<b>Not Significant</b>
	Habitats of Principle Importance (HPI) <sup>6</sup>	Air quality, recreation, drainage and habitat loss / degradation	Not Significant	None	None	<b>Not Significant</b>
	Badger	Habitat loss, habitat fragmentation	Not Significant	None	Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to badgers, as well as the long-term management of their habitats. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions.  Submission and implementation of a detailed Lighting Strategy to minimise disturbance to badgers from artificial lighting. To be secured by planning condition.	<b>Not Significant</b>
		Killing or injury and disturbance	Moderate Adverse	None		<b>Not Significant</b>

<sup>6</sup> Includes the following Habitats of Principle Importance (HPI): Woodland (on- and off-Site); Coastal & Floodplain Grazing Marsh; Wood Pasture & Parkland; Traditional Orchard and Hedgerows.

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
	Bats	Habitat loss and habitat fragmentation	Not Significant	None	None	<b>Not Significant</b>
		Killing or injury	Moderate Adverse	None	Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to bats, as well as the long-term management of their habitats. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions.  Submission and implementation of a detailed Lighting Strategy to minimise disturbance to bats from artificial lighting. To be secured by planning condition.	<b>Not Significant</b>
		Disturbance to light-sensitive species	Major Adverse	None		<b>Not Significant</b>
	Barn owl	Habitat loss, habitat fragmentation and disturbance	Not Significant	None	None	<b>Not Significant</b>
		Killing or injury	Moderate Adverse	None	Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to barn owls, as well as the long-term management of their habitats. This EMEMS will incorporate the requirements of a	<b>Not Significant</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
				LEMP and will be submitted for approval as one of the Pre-commencement Conditions.	
	Breeding bird assemblage	Habitat loss and disturbance	Not Significant	None	<b>Not Significant</b>
		Killing or injury	Moderate Adverse	None	<b>Not Significant</b>
				Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to breeding birds, as well as the long-term management of their habitats. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions.	
	Raptors	Habitat loss and disturbance	Not Significant	None	<b>Not Significant</b>
		Killing or injury	Moderate Adverse	None	<b>Not Significant</b>
				Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to raptors, as well as the long-term management of their habitats. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions	
	Wintering bird assemblage	Habitat loss and disturbance	Not Significant	None	<b>Not Significant</b>

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect	
	Killing or injury	Moderate Adverse	None	Detailed mitigation measures (such as those suggested in <b>ES Volume 2, Chapter 8: Ecology and Nature Conservation</b> ) to be developed at detailed design stage, and included in an EMEMS which will detail and secure all mitigation measures required to minimise impacts to wintering birds, as well as the long-term management of their habitats. This EMEMS will incorporate the requirements of a LEMP and will be submitted for approval as one of the Pre-commencement Conditions.	<b>Not Significant</b>	
Heritage and Archaeology	Effect on buried archaeological remains	No Effect	None	None	<b>No Effect</b>	
	Effect on historic landscape character	No Effect	None	None	<b>No Effect</b>	
	Effect on the setting of designated and non-designated heritage assets	Grade II 'Wood End Cottages'	Moderate Adverse	None	None	<b>Moderate Adverse</b>
		Grade II 'Large Barn At Wood End Farm, 30 Metres South South West of Farmhouse'	Minor Adverse	None	None	<b>Minor Adverse</b>
		Grade II 'Breakspears'	Minor Adverse	None	None	<b>Minor Adverse</b>
		Grade II 'Westwick Row Farmhouse' and Grade II 'L-Shaped Range of Barns on South Side of Farmyard At Westwick Row Farm'	Minor Adverse	None	None	<b>Minor Adverse</b>
Grade II 'Dell Cottage'		Minor Adverse	None	None	<b>Minor Adverse</b>	

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor		Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
		Grade II 'King Charles II Cottage'	Minor Adverse	None	None	<b>Minor Adverse</b>
		Grade II* 'Westwick Cottage'	Minor Adverse	None	None	<b>Minor Adverse</b>
		Group of Grade II Listed Buildings at Corner Farm comprising 'North and East Ranges of Outbuildings Bounding the Main Yard at Corner Farm', 'West Range of Outbuildings Bounding the Main Yard at Corner Farm Including Pigsty', 'Corner Farm' and 'L-Plan Range of Outbuildings on South and East Sides of East Yard at Corner Farm'	Minor Adverse	None	None	<b>Minor Adverse</b>
Transport and Access	Link 4: A414 Breakspear Way (East)	Effect on severance	N/A	Implementation and monitoring of a Travel Plan based upon the Framework Travel Plan provided in <b>ES Volume 3, Appendix 10.2.</b>	None	Up to <b>Minor Adverse (Not Significant)</b> on select links
		Effect on driver delay	N/A		None	Up to <b>Minor Adverse (Not Significant)</b> on select links

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor		Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
		Effect on non-motorised user delay	N/A		None	Up to <b>Minor Adverse (Not Significant)</b> on select links
		Effect on non-motorised user amenity	N/A		None	Up to <b>Minor Adverse (Not Significant)</b> on select links
		Effect on fear and intimidation	N/A		None	<b>Negligible</b>
		Effect on accidents and safety	N/A		None	<b>Negligible</b>
Air Quality	Operational road traffic emissions – NO <sub>2</sub>	Existing human receptors	Not Significant	None	None	<b>Not Significant</b>
		Existing ecological receptors	Not Significant	None	None	<b>Not Significant</b>
	Operational road traffic emissions – PM <sub>2.5</sub>	Existing human receptors	Not Significant	None	None	<b>Not Significant</b>
		Existing ecological receptors	Not Significant	None	None	<b>Not Significant</b>
	Operational road traffic emissions –PM <sub>10</sub>	Existing human receptors	Not Significant	None	None	<b>Not Significant</b>
		Existing ecological receptors	Not Significant	None	None	<b>Not Significant</b>

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor		Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Site suitability for NO <sub>2</sub> , PM <sub>2.5</sub> and PM <sub>10</sub>	Future human receptors (i.e. occupants of the Development)	Not Significant	None	None	<b>Not Significant</b>
Noise and Vibration	Operational road traffic noise		Minor Adverse to Insignificant	None	None	<b>Minor Adverse to Insignificant</b>
	Operational mechanical plant and equipment noise		Minor Adverse to Insignificant	None	Any mechanical plant or equipment that may be included as part of the Development will be attenuated such that the Rating Level does not exceed the representative background sound level over the plant operational period, or as otherwise required by the Local Planning Authority policy.	<b>Minor Adverse to Insignificant</b>
Agricultural Land Use	Loss of best and most versatile (BMV) agricultural land		N/A	None	None	<b>N/A</b>
	Loss of soil resource and function		N/A	None	None	<b>N/A</b>
Water Resources and Flood Risk	Chalk aquifer	Potential risk for any pollutants present in the surface water runoff to cause an impact on groundwater quality due to infiltration or mobilise any existing contaminants	Not Significant	None	None	<b>Not Significant</b>
	Chalk aquifer	Risk of dissolution features in sitewide geology for infiltration or surface water	Not Significant	None	None	<b>Not Significant</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	runoff. No concentrated infiltration is proposed across the Site				
Chalk aquifer	Current agricultural use presents risk of contamination from fertilisers and pesticides. The Site will no longer be used for agricultural activities	Not Significant	None	None	<b>Not Significant</b>
River Ver	Multi-stage pollution control approach will be implemented prior to discharging into River Ver	Not Significant	None	None	<b>Not Significant</b>
River Ver	Surface water discharge to the River Ver will be limited to greenfield runoff rates, mimicking the existing regime	Not Significant	None	None	<b>Not Significant</b>
Local residents	Existing overland flow routes to be maintained with no increase in flood risk	Minor Beneficial	None	None	<b>Minor Beneficial</b>
Local water resources	Increase in water demand, against the current baseline	Minor Adverse	None	None	<b>Not Significant</b>

The Completed and Operational Development						
ES Technical Chapter	Description of Effect / Receptor		Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Potable water infrastructure	New connections will be required to the potable water supply network	Not Significant	None	None	<b>Not Significant</b>
	Foul water sewer infrastructure	The Development will result in an increased demand into the existing foul water sewer network	Not Significant	None	None	<b>Not Significant</b>
	Surface water sewer infrastructure	The Development will result in an increased demand into the existing surface water sewer network	Not Significant	None	None	<b>Not Significant</b>
Climate Change	GHG Impact Assessment	Effect on global climate as a result of operational carbon emissions of the Development (B6), including impacts from buildings	Major Adverse	None	Implementing post-occupancy evaluation (POE) and real-time energy monitoring systems to ensure buildings perform as designed. Operational energy use will be regularly audited, and performance will be benchmarked against industry standards such as LETI and the UK Net Zero Carbon Buildings Standard. These measures will be secured through planning conditions and monitored throughout the operational life of the Development to ensure continuous improvement and alignment with evolving best practice.	<b>Major Adverse</b>
		Effect on global climate as a result of embodied carbon emissions associated	Major Adverse	None	None	<b>Major Adverse</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	with the operation and end of life emissions of the Development (B1-B5, C1-C4 lifecycle embodied), including impacts from buildings and infrastructure works				
CCR Assessment	Effect of extreme rainfall events, heatwaves and overheating, warmer summers and increased solar radiation on the natural environment	Major to Moderate Adverse	None	<p>Submission and implementation of a LEMP which would consider the potential effects of climate change and incorporate proactive strategies to reduce risks to trees and all other natural ecosystems and habitats against flooding from rainfall events, periods of extreme heat, prolonged hot weather, intense rainfall and stormy / windy conditions and prolonged wet weather.</p> <p>Submission and implementation of an Emergency Preparedness Plan which considers climate-related events, such as wildfires for the natural environment receptors on-Site as well as means of escape for community.</p>	<b>Major to Moderate Adverse</b>
	Effect of heatwaves and overheating, warmer summers and increased solar radiation on the community and people and built environment, infrastructure systems and services	Major to Moderate Adverse	None	<p>Further mitigations, including considerations for shading, cooling, material specifications with high albedo and water efficiency, are to be considered at the detailed design stage.</p> <p>Maintenance and monitoring considerations related to the heat risk resilience for infrastructure and buildings to be considered at the detailed design stage.</p>	<b>Moderate Adverse</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
Socio-economics	Effect on economy	Local Area – Major Beneficial	None	None	Local Area – <b>Major Beneficial</b>
		District Area – Major Beneficial	None	None	District Area – <b>Major Beneficial</b>
	Effect on housing	Local Area – Major Beneficial	None	None	Local Area – <b>Major Beneficial</b>
		District Area – Major Beneficial	None	None	District Area – <b>Major Beneficial</b>
	Effect on expenditure	Local Area – Minor Beneficial	None	None	Local Area – <b>Minor Beneficial</b>
		District Area – Minor Beneficial	None	None	District Area – <b>Minor Beneficial</b>
	Effect on primary healthcare	Local Area – Moderate Beneficial	None	None	Local Area – <b>Moderate Beneficial</b>
	Effect on dental provision	Local Area – Moderate Adverse	None	Existing contribution frameworks if required (i.e. S106 and CIL)	Local Area – <b>Neutral</b>
	Effect on primary education	Local Area – Moderate Beneficial	None	None	Local Area – <b>Moderate Beneficial</b>
		District Area – Minor Beneficial	None	None	District Area – <b>Minor Beneficial</b>
	Effect on secondary education	Local Area – Minor Beneficial	None	None	Local Area – <b>Minor Beneficial</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
		District Area – Minor Beneficial	None	None	District Area – <b>Minor Beneficial</b>
	Effect on open space	Local Area – Moderate Beneficial	None	None	Local Area – <b>Moderate Beneficial</b>
	Effect on community	Local Area – Moderate Beneficial	None	None	Local Area – <b>Moderate Beneficial</b>
	Effect on leisure	Local Area – Major Beneficial	None	None	Local Area – <b>Major Beneficial</b>
		District Area – Moderate Beneficial	None	None	District Area – <b>Moderate Beneficial</b>
	Effect on district centres	Local Area – Minor Beneficial	None	None	Local Area – <b>Minor Beneficial</b>
		District Area – Minor Beneficial	None	None	District Area – <b>Minor Beneficial</b>
Health	Health effects from access to Public Rights of Way (PRoW) and open space for physical activity and recreation	Minor Beneficial	None	None	<b>Minor Beneficial</b>
	Health effects from changes in transport nature and flow rate	Minor Adverse	None	None	<b>Minor Adverse</b>
	Health effects from changes in socio-economic factors	Minor Beneficial	None	None	<b>Minor Beneficial</b>

The Completed and Operational Development					
ES Technical Chapter	Description of Effect / Receptor	Significance of Effect	Tertiary Mitigation	Secondary Mitigation	Significance of Residual Effect
	Health effects from changes in air quality	Insignificant	None	None	<b>Insignificant</b>
	Health effects from changes in noise exposure	Insignificant	None	None	<b>Insignificant</b>
	Health effects from changes in demand for local primary healthcare	Minor Beneficial	None	None	<b>Minor Beneficial</b>