UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks and adjoining land, Bedford

Environmental Statement Volume 1

Chapter 6 - Ecology and Nature Conservation

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TABLES

6. ECOLOGY AND NATURE CONSERVATION

6.1. INTRODUCTION

6.1.1. This chapter presents the assessment of potentially significant effects of the Proposed Development upon identified important ecological features[1]. The assessment includes terrestrial and aquatic ecology and ornithology. It should be read in conjunction with the description of the Proposed Development provided in **Chapter 2: Description of the Proposed Development (Volume 1)** of the Environmental Statement (ES)**.** The Site is divided into four Zones referred to as the Core Zone, Lake Zone, West Gateway Zone and East Gateway Zone. These Zones are hereafter collectively referred to as 'the Site.'

6.1.2. The ecological assessment has had regard to the approach set out in the Chartered Institute for Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment* **(Ref. 6.5)**. This Ecological Impact Assessment (EcIA) identifies existing important ecological features and considers the potential impact of the Proposed Development on these identified features during the Construction and Operational Phases based upon timescales as detailed in **Chapter 3: Approach to EIA (Volume 1)**. Important ecological features considered within this assessment include statutory and non-statutory designated sites, habitats and notable flora, protected and important species and ornithological interests.

6.1.3. This EcIA assesses the following impact pathways that could trigger effects upon important ecological features:

Construction Phase (including initial Site clearance and demolition)

- Habitat loss, damage or degradation;
- Habitat fragmentation/loss of flight paths/dispersal routes;
- Habitat disturbance;
- Killing, injuring and disturbance of protected or otherwise important species;
- Increased dust, noise, vibration, visual and light disturbance;
- Hydrological effects, including changes to water quality/quantity;
- Pollution/contamination incidents; and
- Spread of invasive species.

Operational Phase

- Surface water quality effects and hydrological changes;
- Increased recreational pressures and urbanisation;
- Potential for deterioration in air quality triggered by increased traffic accessing the Site; and

[1] An ecological feature is defined as any ecological feature that is sensitive to or has the potential to be affected by the Proposed Development. As defined by Chartered Institute of Ecology and Environmental Management (2018), important ecological features are those requiring specific assessment within Ecological Impact Assessment.

- Effects of lighting changes, collision risk at height and road or rail traffic collision to wildlife.

SUPPORTING DOCUMENTATION

6.1.4. Potential effects on ecological features are interrelated with potential effects on landscape, air quality, water, and noise. Therefore, this chapter should be read in conjunction with several other environmental assessments including **Chapter 5: Traffic and Transport (Volume 1)**, **Chapter 7: Landscape and Visual Impact Assessment (Volume 1)**, **Chapter 8: Air Quality (Volume 1)**, **Chapter 9: Noise and Vibration (Volume 1)** and **Chapter 12: Water Resources (Volume 1)**.

6.1.5. Furthermore, this EcIA is supported by figures and a series of other appendices documents intended to be read in conjunction as detailed below:

- **Figure 6.1: Ecological Designations Plan (Volume 2)**;
- **Figure 6.2: UK Habitats Plan (Volume 2)**;
- **Figure 6.3: Bedfordshire Great Crested Newt (GCN) District Level Licence (DLL) - Impact Risk Zones Within Site (Volume 2);**
- **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**;
- **Appendix 6.2: Aquatic Habitat Scoping Assessment Report (Volume 3)**;
- **Appendix 6.3: Badger Survey Report CONFIDENTIAL (Volume 3);**
- **Appendix 6.4: Outline Habitat Creation and Enhancement Plan (Volume 3)**;
- **Appendix 6.5: Outline Landscape and Ecology Management Plan (Volume 3)**;
- **Appendix 6.6: Inter-Project Cumulative Assessment (Volume 3)**;
- **Appendix 6.7: Great Crested Newt Survey Report (Volume 3)**;
- **Appendix 6.8: Macrophyte Survey Report (Volume 3)**;
- **Appendix 6.9: Breeding Bird Survey Report (Volume 3)**;
- **Appendix 6.10: Bat Roost Appraisal Report (Volume 3)**;
- **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3)**;
- **Appendix 6.12: Reptile Survey Report (Volume 3)**;
- **Appendix 6.13: Terrestrial Invertebrate Survey Report (Volume 3**);
- **Appendix 6.14: UK Habitat Classification Report (Volume 3);**
- **Appendix 6.15: Wintering Bird Survey Report (Volume 3);**
- **Appendix 6.16: Bat Activity Survey Report (Volume 3);**
- **Appendix 6.17: Aquatic Ecology Survey Report (Volume 3);**
- **Appendix 6.18: Barn Owl Survey Report (Volume 3);**
- **Appendix 6.19: Letters of Comfort - Protected Species Licencing (Volume 3);** and
- **Appendix 2.3: Outline Construction Environmental Management Plan (Volume 3).**

6.1.6. This chapter has been prepared with reference to relevant legislation and policy, including international legislation, domestic environmental legislation, UK nature conservation policy, local biodiversity guidance and national and local planning policy.

6.1.7. A detailed account of the relevant legislation and policy is provided in **Appendix 3.1: Legislation, Policy and Guidance for all ES Technical Topics (Volume 3)**.

6.2. ASSUMPTIONS USED TO INFORM THE ASSESSMENT

6.2.1. The overriding intention is to reduce the impact of the Proposed Development through design, to conserve, restore and enhance biodiversity. Principles of the design of the Proposed Development include:

- To retain, protect and enhance existing vegetation whenever practicable and appropriate;
- To create new compensatory habitats of higher ecological value;
- For soft landscaping and new planting to be provided where practicable; and
- Planting, including woodland, scrub and grassland habitats will be comprised of native species, and where possible, of local provenance.

6.2.2. Several assumptions have been made within this EcIA as follows:

- The EcIA is based upon the adoption of the principles of **Appendix 6.4: Outline Habitat Creation and Enhancement Plan (OHCEP) (Volume 3)**. These have been agreed through discussions with UDX and show indicative layout of habitat retention, creation and enhancement measures which will be adopted within the Site and minimum areas of broad habitat types;
- Elstow Brook will be protected with a 10m buffer ('Riparian Zone') on the eastern side within the Lake Zone and both banks in the West Gateway Zone (excluding the proposed new road crossing location). Neither bank in the West Gateway Zone will be diverted;
- The proposed road crossing over Elstow Brook within the West Gateway Zone will be a clear span design (non-open cut) with no abutments/piles to be located within the channel or within 10m of the bank top edge and allow maintenance of the water flow and habitat connectivity;
- The only encroachment into the Elstow Brook Riparian Zone will be to enable outflows to be constructed within isolated areas and associated with the provision and use of green infrastructure and future drainage and habitat maintenance activities;
- Any outflows into watercourses or water bodies within the Site will be designed to sufficiently filter pollutants arising from surface water run off as set out in **Appendix 12.3: Drainage Strategy (Volume 3)**, **Chapter 12: Water Resources (Volume 1)** and Sections 3.2 and 3.10 of **Appendix 2.3: Outline Construction Environment Management Plan (OCEMP) (Volume 3)**;
- Any proposed new groundwater abstraction well (borehole) would be subject to the requirements of a groundwater abstraction licence and associated assessments would be undertaken as part of the groundwater abstraction licence application, including a hydrogeological and ecological assessment;

- Residential properties and outbuildings located within the Site along Manor Road and Broadmead Road Farmhouse would not be demolished, modified, or be subject to any material change in use as part of the Proposed Development. The exception to this is Vine Cottages and associated outbuildings on Manor Road, which will be demolished.
- Establishment periods (including creation, monitoring, maintenance and management activities) will be refined as part of the detailed Landscape and Ecology Management Plan. All assessments take into account the expected timescales for habitats to become established. Indicative establishment periods for newly created habitats have been determined using Department for Environment Food and Rural Affairs (2012) guidance, and are as follows:
  - Watercourses: 5 years;
  - Ponds: 5 years;
  - Grasslands: 15 years;
  - Scrub: 7 years;
  - Open mosaic habitat: 10 years;
  - Hedgerows: 10 years;
  - Woodland: 30+ years;
- In the event of any partial or complete failure of a mitigation measure, it would be repaired or reinstated, in line with the principles set out in Table 5-1 of the **Appendix 6.5: Outline Landscape and Ecology Management Plan (OLEMP) (Volume 3)**;
- The assessment of residual likely significant effects section of this chapter considers the residual effects following the successful establishment of habitats, unless otherwise specified; and
- Additional landscaping and habitat provision would be delivered outside the EEA locations, in line with the principles of the Green Infrastructure Strategy (document reference 6.2.1.0), with indicative spatial proposals set out in Section 3.6 of the Green Infrastructure Strategy. It is likely that additional ecological mitigation and enhancement will be delivered by these areas of green infrastructure. The assessment in this ES does not consider any of the ecological benefits that may arise from these areas. This is because the assessment take a cautious worst case approach and relies solely on those habitats to be delivered by the minimum EEA area.

6.2.3. In addition to these assumptions, there are elements of this ecological assessment which refer to phases or stages of the Proposed Development. The Primary Phase construction activities are set out in **Table 3-1** of **Chapter 3: Approach to EIA (Volume 1)**. Of particular relevance to this ecology assessment and **Appendix 6.4: OHCEP (Volume 3)**, **Appendix 6.5: OLEMP (Volume 3)** and **Appendix 2.3: OCEMP (Volume 3)** is the advance delivery of ecology and drainage preparatory and mitigation works, primarily in the Lake Zone. These activities are required to implement the ecological habitat creation and enhancement plan (**Appendix 6.4: OHCEP (Volume 3)**) and will commence during the initial advanced works phase (Phase 1a) as set out in **Appendix 2.3: OCEMP (Volume 3)**.

6.2.4. Elements of the ecological mitigation works, where required, will be progressed via and alongside the delivery of the Drainage Strategy (as set out in **Chapter 12: Water Resources (Volume 1)** and **Appendix 12.3: Drainage Strategy (Volume 3)**), including modification and enhancement of the existing water bodies and watercourses in the Lake and Core Zone. The ecological mitigation works will also include advance habitat creation, to begin establishing compensation habitats for impacts elsewhere on the Site. These works will include the early establishment of receptor sites for species

such as reptiles, as well as artificial badger sett creation. These activities will support species mitigation requirements to facilitate development of the Core Zone and other areas later in the programme.

6.2.5. The assessment of ecological effects is based on a suite of ecological desk studies and field surveys as reported in Appendices 6.1 – 6.18 which provides a robust data set to inform this assessment. Limited survey work remains underway, to inform anticipated protected species licence applications in 2025, and has not therefore been completed in full prior to drafting this chapter of the ES. Where survey data is subject to limitations, a cautious worst case (that provides a robust assessment of likely significant effects) approach to the assessment has been completed, built upon survey data gathered 2024 - 2025, review of prior existing data and professional judgement. **Table 6-1** provides a summary of this on a receptor by receptor basis.

Table 6-1 - Baseline Assessment Approach

Receptor	Survey status	Assessment approach
Habitats	UK Habitat Classification (UKHAB) and hedgerow surveys completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data.
Aquatic macrophytes (vascular aquatic plants)	Aquatic macrophyte surveys completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data.
Aquatic macroinvertebrates	Aquatic macroinvertebrate surveys completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data.
Terrestrial invertebrates	Terrestrial invertebrate surveys completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data.
Fish	Fish surveys of the watercourses and lakes completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data.
Great crested new	Surveys completed in full barring access limitations and technical limitations of sampling prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**. No measures to address survey limitations required. This is because the Bedfordshire District Level Licence (DLL) will be used to fully mitigate effects on great crested newts. Use of the DLL does not require full survey	Based on full survey data reported in **Appendix 6.7: Great Crested Newt Survey Report (Volume 3)**, with cautious worst case approach applied in relation to water bodies where access or technical restrictions limited the outcomes of the survey.

Receptor	Survey status	Assessment approach
	data, with the Delivery Partner for the Bedfordshire DLL having confirmed the Proposed Development can access the DLL on the basis of completed survey effort in 2024/25 (see **Appendix 6.19: Letters of Comfort - Protected Species Licencing (Volume 3)**).	
Reptiles	Reptile surveys completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data.
Breeding birds	Three to four (some parts of the Site could not be accessed for the first survey visit) breeding bird survey visits involving walked transects across the Site were completed in spring and early-summer 2024. Additional breeding bird survey visits were completed in spring 2025. No measures to address survey limitations required. This is because limitations to survey were minor given overall effort expended. See Section 6.4 (Limitations) in **Appendix 6.9: Breeding Bird Survey Report (Volume 3**) for further details.	Cautious worst case assessment based on assessment of habitats during UKHAB surveys (see **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)** and survey data reported in **Appendix 6.9: Breeding Bird Survey Report (Volume 3)**) and desk study data.
Wintering birds	Wintering bird surveys completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data
Barn owl	Targeted barn owl roost and nest-site assessment surveys completed between Q4 2024 to Q1 2025. Survey Results are reported in **Appendix 6.18 Barn Owl Survey Report (Volume 3).** Barn owl surveys normally include three stages of work, where potential roosting/nesting sites are identified. Stage 3 surveys have not been completed for the Proposed Development. This is not considered a significant limitation due to potential roosting/nesting sites being outside the Site or in areas of habitat that would not be removed for the Proposed Development. In , the Stage 1 & 2 survey work has confirmed the Site contains limited habitat suitable for barn owl foraging.	Cautious worst case assessment based on survey data reported in **Appendix 6.18: Barn Owl Survey Report (Volume 3)**

Receptor	Survey status	Assessment approach
	The survey work completed to date is therefore considered to provide a robust basis for the assessment of potential impacts on barn owls. Stage 3 surveys will nevertheless be completed prior to construction for the Proposed Development commencing, to support legal compliance with the legislation protecting barn owl.	
Badgers	Badger surveys completed in full prior to completion of **Chapter 6: Ecology and Nature Conservation (Volume 1)**.	Based on full survey data.
Bats	Ground Level Tree Assessment surveys completed in full, barring limitations associated with land access and timing of surveys. Preliminary assessment of buildings and structures to check their suitability for roosting bats by visual inspection complete. Targeted surveys of trees, buildings and structures to confirm suitability for roosting bats/presence or likely absence of bat roosts were carried out in 2024, and Q1 2025 and are reported in **Appendix 6.10: Bat Roost Appraisal Report (Volume 3)**). Surveys to assess bat activity across the Site were undertaken from May – October 2024. Results are reported in **Appendix 6.16 Bat Activity Survey Report (Volume 3)**). Limitations to the surveys are set out in Section 3.7 of the Bat Roost Appraisal Report and Section 3.6 of the Bat Activity Survey Report. Limitations have been addressed through the cautious worst case approach applied to the assessment and are not considered significant. In addition, further survey effort will be deployed to support compliance with protected species legislation and specifically to gather data for a protected species licence application to Natural England. Pre-construction inspections and mitigation will also be completed by a suitably qualified ecologist, as per Section 3.2 of Appendix 2.3: OCEMP (Volume 3).	Cautious worst case assessment based on assessment of habitats during UKHAB surveys (see **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**), and survey data reported in **Appendix 6.10: Bat Roost Appraisal Report (Volume 3)**) and **Appendix 6.16: Bat Activity Survey Report (Volume 3).**

Receptor	Survey status	Assessment approach
Otter	Otter surveys completed in full prior to finalisation of **Chapter 6: Ecology and Nature Conservation (Volume 1)**, barring some access limitations. These survey limitations are not considered significant as the majority of optimal habitat was inspected thoroughly, with only sub-optimal or negligible suitability habitats having limited access. In addition, pre-construction inspections will be completed by a suitably qualified ecologist, as per Section 3.2 of Appendix 2.3: OCEMP (Volume 3).	Based on full survey data reported in **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3)**, with cautious worst case approach applied in relation to water bodies where access or technical restrictions limited the outcomes of the survey.
Water vole	Water vole surveys completed in full prior to finalisation of **Chapter 6: Ecology and Nature Conservation (Volume 1)**, barring some access limitations. Sufficient survey data gathered to conclude likely absence of the species.	Based on full survey data reported in **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3)**.

6.3. EVOLUTION OF MITIGATION DESIGN AND HABITAT CONNECTIVITY

6.3.1. Habitat connectivity and corridors for the movement of wildlife have been integrated into the design of the Ecological Enhancement Areas (EEA). These are designed to provide connectivity through the Site, e.g. the Riparian Zone along Elstow Brook and the diverted watercourse in the Core Zone, and the wildlife crossing structures between the main Lake Zone EEA and the Northern Ecology Area. These measures will provide suitable habitat connectivity within the Site for amphibians (including great crested newts), reptiles, birds, bats, badgers and otter.

6.3.2. As well as their role in providing habitat connectivity within the Site, these features have been provided, where practicable, in locations that support habitat connectivity with the wider landscape surrounding the Site. For example, the Lake Zone and Northern Ecology Area EEA are adjacent to semi-natural habitats and County Wildlife Sites to the north and east, whilst the Elstow Brook Riparian Zone and wide-span-crossing provide connectivity with the wider Elstow Brook to the north and south of the Site.

6.3.3. Whilst habitat connectivity measures have therefore been designed to provide functional connectivity within the Site, they also have the benefit of supporting habitat and species connectivity with adjacent land outside the Site. It is important to note however that while the Proposed Development integrates effectively with adjacent habitats, it is not dependent on these habitats.

6.4. ENGAGEMENT, SCOPE AND STUDY AREA

ENGAGEMENT UNDERTAKEN TO DATE

6.4.1. Meetings have been held with Natural England and NatureSpace to discuss various aspects of the Proposed Development. A number of documents have also been provided to Natural England and

NatureSpace relating to the ecological assessment for the Proposed Development. A summary of the engagement to date is set out in **Table 6-2** below.

Table 6-2 - Natural England and NatureSpace Engagement

Type of Engagement	Date	Topics reviewed/discussed
Meeting	April 2024	An initial meeting was held to discuss the principles of the Proposed Development, the approach to the EcIA, key elements of the Proposed Development, and the approach to future engagement between UDX and Natural England.
Meeting	June 2024	Meeting between UDX and Natural England to review: - Effects on statutory designated sites; and - Overview of proposed ecological mitigation approach for the Proposed Development including review of an initial draft of the Indicative Habitat Creation and Enhancement Plan.
Provision of written material from UDX to Natural England	June 2024	Provision of written material from UDX to Natural England, including the following: - **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**; - **Appendix 6.2: Aquatic Habitat Scoping Assessment Report (Volume 3)**; - **Appendix 6.3: Badger Survey Report CONFIDENTIAL (Volume 3)**; - **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**; and - **Annex A: Air Quality Technical Note** of **Report to Inform Habitats Regulations Screening Assessment (Document Reference 6.13.0)**.
Provision of written advice from Natural England to UDX	July 2024	Written response from Natural England to UDX covering advice on: - Biodiversity Net Gain (BNG); - Confirmation of agreement to assessment on statutory designated sites; and - Information on the Letter of No Impediment (LONI) process in relation to protected species licensing.
Meeting (Natural England)	August 2024	Meeting between UDX and Natural England, with further discussion relating to ecological mitigation delivery, the LONI process for protected species licencing, and an update on the results of ongoing protected and notable species surveys at the Site.
Meeting (Natural England)	May 2025	Meetings were held between UDX and Natural England on 1 and 8 May. UDX provided project updates including detail on survey data for protected species, proposed mitigation, and the proposed Green Infrastructure Strategy (**Document Reference 6.2.1.0).** The parties discussed timescales, including in relation to future protected species licensing requirements.

Type of Engagement	Date	Topics reviewed/discussed
		A document setting out the Summary of Agreed Position between the two parties is submitted as Appendix 4 of the **Planning Statement (Document Reference 6.1.0).**
Meeting (NatureSpace)	May 2025	A meeting was held between UDX and NatureSpace Partnership on 29 May. UDX provided an overview of the Proposed Development along with updates on the status of the application for planning permission and the expected requirement for the use of District Level Licensing (DLL) for great crested newts. NatureSpace Partnership provided an overview of operation of the Bedfordshire DLL scheme, including how it could be deployed and secured for the Proposed Development. NatureSpace Partnership described the initial steps that UDX would need to take to enable NatureSpace to complete their Stage 1 assessment and confirm the DLL could be deployed for the Proposed Development. UDX committed to providing necessary information to inform NatureSpace's stage 1 assessment. Both Parties agreed to work together to refine and confirm requirements for use of the DLL for the Proposed Development.

6.4.2. As the statutory BNG regime does not apply, UDX is not applying the BNG approach to the Proposed Development. UDX's plan includes an EEA that spans more than 48.2 hectares (~18% of the site) and that has been specifically designed to provide an array of habitat capable of accommodating a range of wildlife, thereby supporting biodiversity goals. This has included embedding ecological design into the development of drainage proposals for the Proposed Development. In addition, the Natural England Green Infrastructure Principles have been applied to areas of the Proposed Development where sufficient design information is available to allow this. A Green Infrastructure Strategy has been developed **(Document Reference 6.2.1.0**.) which sets out the green infrastructure for the Proposed Development in greater detail.

6.4.3. UDX has been working with Natural England to maximise areas of agreement, with this recorded in the Summary of Agreed Position (SoAP) between UDX and Natural England (**Appendix 4** of the **Planning Statement (Document Reference 6.1.0)**).

6.4.4. Where required, further stakeholder engagement is likely to be undertaken as the Proposed Development progresses. The primary focus of the engagement is likely to be with Natural England in relation to securing any necessary protected species licences, with formal applications for licences only able to be submitted after permission has been received. Further engagement with NatureSpace Partnership will also be required in relation to the use of the Bedfordshire DLL to provide strategic mitigation for great crested newts.

SCOPE OF THE ASSESSMENT

6.4.5. A formal Environmental Impact Assessment (EIA) scoping process has not been undertaken prior to preparation of this ES. However, each environmental topic has undertaken specific environmental technical assessments in line with best practice guidance, engagement with statutory bodies and using professional judgement.

6.4.6. The scope of this EcIA has been established through the review of existing information outlined below through the remainder of Section 6.3 of this chapter, combined with professional experience of EcIA and the outcome of desk study and site survey work.

6.4.7. Ecological features have been scoped out of this assessment if they do not meet the criteria to be 'important' in an EcIA context, or because they could not be significantly affected. Where impacts on a feature are uncertain, the precautionary principle is applied, and the feature is 'scoped-in' (included) for a more detailed assessment. Further information can be found in **Chapter 3: Approach to EIA (Volume 1)** and the remainder of this section.

6.4.8. This assessment has considered the potential for the Construction and Operational Phases of the Proposed Development to result in likely significant effects upon 'important' ecological features.

International Statutory Designated Sites

6.4.9. A desk-based exercise to review and determine the potential requirement for the completion of a formal Habitat Regulations Assessment Screening has been undertaken. This is presented in the **Report to Inform Habitats Regulations Screening Assessment (Document Reference 6.13.0)**.

6.4.10. The assessment concludes that the Proposed Development is not predicted to trigger likely significant effects (or have any perceptible effects at all) on habitats sites. As the Proposed Development is not predicted to have any perceptible effects alone, it also could not contribute to likely significant effects in-combination with other plans and projects and as such consideration of in-combination effects is not required.

6.4.11. The findings of the assessment have been agreed with Natural England, as set out in the SoAP (**Appendix 4** of the **Planning Statement (Document Reference 6.1.0**)).

Features Scoped into the Assessment

6.4.12. This section identifies the ecological features scoped into the assessment:

- Statutory designated sites;
- Non-statutory designated sites which extend into the Site, namely Kempston Hardwick Pit County Wildlife Site (CWS) and Coronation Pit CWS, plus those which may be subject to other impacts with a Zone of Influence (ZoI) that could extend beyond the Site; and
- Habitats (including Habitats of Principal Importance (HPIs));

6.4.13. Protected species:

- Mammals – badger (*Meles meles*), bats (*Chiroptera*) (including roosting, foraging and commuting habitats), and otter (*Lutra lutra*);
- Amphibians – great crested newts (*Triturus cristatus*) and other amphibians;
- Reptiles – widespread species including viviparous lizard (*Zootoca vivipara*), slow-worm (*Anguis fragilis*), grass snake (*Natrix helvetica*), and adder (*Vipera berus*);
- Breeding and wintering birds – Habitats Directive Annex 1, WCA Schedule 1, Species of Principal Importance (SPI), Birds of Conservation Concern (BoCC) and Red and Amber List species;
- Terrestrial invertebrates – legally protected species, Red List species, SPI, nationally scarce species and overall assemblage;

- Aquatic invertebrates – legally protected species, SPI;
- Fish – legally protected species and SPI; and
- Invasive Non-Native Species.

EXTENT OF THE STUDY AREA

6.4.14. **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)** outlines the extent of the study area and has had regard to good practice guidance published by CIEEM (**(Ref. 6.3)** and **(Ref. 6.4)**). The following distances are collectively referred to as the 'study area' throughout this report:

- Statutory designated sites of international importance (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites) within the Site and extending up to 10km from the Site;
- Statutory designated sites of international importance for bats or birds within the Site and extending up to 30km from the Site;
- Statutory designated sites of national importance (Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs)) and non-Statutory Designated Sites (CWSs and Roadside Nature Reserves (RNRs)) within the Site and extending up to 2km from the Site (widened where appropriate to include indirect effects e.g. due to traffic);
- Any legally protected and conservation notable species, within the Site and extending up to 2km of the Site;
- HPIs[2], and woodland listed on the Ancient Woodland Inventory[3] within the Site and extending up to 2km from the Site; and
- Water bodies and watercourses within the Site.

6.5. METHODOLOGY

METHOD OF BASELINE DATA COLLATION

Desk Study

6.5.1. A desk study assessment is detailed within **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**. This included a data search from the Bedfordshire and Luton Biodiversity Recording and Monitoring Centre as well as open-source datasets provided by Natural England. The desk study included information on statutory sites, non-statutory sites, species records, and protected and notable habitats.

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[2] Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances, these are primarily based on aerial photograph analysis rather than field survey.

[3] The ancient woodland inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600.

Field Surveys

6.5.2. Field surveys were undertaken within the Site between February 2024 and March 2025 by suitably qualified and experienced ecological assessors. The detailed findings are presented within **Appendix 6.1 to Appendix 6.3** and **Appendix 6.7 to Appendix 6.18** (**Volume 3**). These provide an overview of the habitat types and species identified within the Site.

6.5.3. An assessment has been made of the suitability of the Site to support protected/notable species such as bats, badger, reptiles, water vole, otter, amphibians, and breeding/wintering birds, fish, terrestrial invertebrates, aquatic macroinvertebrates, and macrophytes, with recordings made of any evidence of their presence. Field surveys have been completed for these species groups as reported in **Appendix 6.3** and **Appendix 6.7 to 6.18 (Volume 3)**.

6.5.4. A badger survey has been completed, the findings of which are outlined in **Appendix 6.3: Badger Survey Report CONFIDENTIAL (Volume 3)**. This is not published publicly alongside this ES due to the welfare implications associated with releasing the location of badger records but will be provided separately to the relevant planning authority and relevant consultees.

ASSESSMENT METHODOLOGY

6.5.5. An assessment of likely ecological effects associated with the Proposed Development has been undertaken. This has had regard to the EcIA methodology published by the CIEEM **(Ref. 6.5)**. This method has three key stages:

- Identification of important ecological features;
- Determining the geographic scale at which each feature is important; and
- Determining likely significant effects on each feature.

6.5.6. Details of the methodology followed are set out in **Appendix 3.2: Significance Criteria for All ES Technical Topics (Volume 3)**.

6.6. BASELINE CONDITIONS

OVERVIEW

6.6.1. This section addresses the existing desk study and field survey data for the Site. The Site has been subject to a series of ecological investigations, as set out in **Appendix 6.1 to Appendix 6.3** and **Appendix 6.7 to Appendix 6.18** (**Volume 3**). This section also incorporates information collected by other parties including from a Preliminary Ecological Appraisal (PEA) undertaken by Arcadis in 2023 **(Ref. 6.6)**; an Ecological Appraisal undertaken by Delta Simons[4] in 2018 **(Ref. 6.7)**; and an EcIA for a small part of the Site undertaken by Naturally Wild in 2022 **(Ref. 6.8)**.

Desk Study

6.6.2. The detailed findings of the desk study are presented in **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)** and **Appendix 6.2: Aquatic Habitat Scoping Assessment Report (Volume 3)**. A summary is outlined in this chapter to provide context to the EcIA.

[4] It is recognised that the Delta Simons 2018 report is out of date for EIA purposes and over five years old **(Ref. 6.7)**.

Statutory Designated Sites

6.6.3. There is one SAC where bats are the primary designation feature within 30km of the Site, with details presented in **Table 6-3**. The desk study identified no National Site Network sites or Ramsar sites (hereafter referred to collectively as Habitats Sites) within 10km of the Site.

Table 6-3 - National Network sites within 30km of the Site where bats are a qualifying interest

Site name	Size (ha)	Distance and orientation from the Site	Reasons for Designation
Eversden and Wimpole Woods SAC	66.48	29.4km northeast	Eversden Wood consists of a mixture of ancient coppice woodland and high forest woods likely to be of more recent origin. The habitats present also support a nationally important summer maternity roost for barbastelle bats (*Barbastella barbastellus*).

6.6.4. There are no Statutory Designated Sites of National Importance (e.g. SSSIs) within 2km of the Site. However, professional judgement has been used to identify any additional Statutory Designated Sites which may fall beyond the 2km study area which could be impacted by the Proposed Development, informed by the extent of SSSI Impact Risk Zones (IRZs). Relevant Statutory Designated Sites have been identified and are presented in Table 6-4.

Table 6-4 - Relevant SSSIs

Ecological Feature	Scoped in (Yes/No)	Location in relation to the Site	Qualifying Features/Reason for Citation
Kings Wood and Glebe Meadows, Houghton Conquest SSSI	Yes	Located 2.3km southeast of the Site. The associated SSSI IRZ extends into the Site.	Kings Wood is an example of ash/maple woodland, characteristic of the heavy Oxford and Boulder Clays. It represents a habitat which has become increasingly scarce in Bedfordshire and over its natural range in lowland England. The SSSI boundary also overlaps with the Kingswood and Glebe Meadows, Houghton Conquest Local Nature Reserve (LNR).
Marston Thrift SSSI	Yes	Located 3.1km southwest of the Site. The associated SSSI IRZ extends into the Site.	Marston Thrift is an example of ash/maple woodland, characteristic of the heavy Oxford and Boulder Clays. It represents a habitat which has become increasingly scarce in Bedfordshire and over its natural range in lowland England. The wood is characteristic of an ancient, semi-natural woodland, formerly managed as coppice-with standards.
Hanger Wood SSSI	Yes	Located 4.6km northwest of the Site. Located adjacent to the A428. The associated SSSI IRZ extends into the Site.	Hanger Wood is an ancient woodland and SSSI in the parish of Stagsden, Bedfordshire in the UK. Situated approximately 1km east of the village of Stagsden, the 24.12 hectares woodland was declared a SSSI in 1988, being described by Natural England as "*one of the*

Ecological Feature	Scoped in (Yes/No)	Location in relation to the Site	Qualifying Features/Reason for Citation
			best remaining examples of wet ash-maple woodland in Bedfordshire" (**Ref 6.15**).
Maulden Wood and Pennyfather's Hill SSSI, Maulden Heath SSSI and Maulden Church Meadow SSSI	Yes	Three adjoining SSSIs, located approximately 5.5km southeast of the Site. Maulden Wood and Pennyfather's Hill SSSI is adjacent to the A6. The associated SSSI IRZ extends into the Site.	Maulden Wood and Pennyfather's Hill is a large block of mixed deciduous and coniferous woodland on a cap of boulder clay. The Site supports an exceptionally rich invertebrate fauna including both county and national rarities and therefore has a distinctive and important contribution to make to invertebrate conservation in Bedfordshire. The other SSSI comprise areas of acid grassland and associated habitats. The SSSI boundary for Maulden Church Meadow also overlaps with the boundary for Maulden Church Meadows LNR.

Non-Statutory Designated Sites

6.6.5. There are 10 non-statutory designated sites within the study area which are listed in **Table 6-5** and shown in **Figure 6.1: Ecological Designations Plan (Volume 2)**. All of these are County Wildlife Sites (CWSs) or Roadside Nature Reserves (RNRs) designated at a Bedfordshire level. CWS designations are non-statutory, with designation not arising from or being made in response to legislation.

6.6.6. CWS in the Bedford Borough Council area are selected by the Bedfordshire and Luton Biodiversity Recording and Monitoring Centre CWS Panel, in accordance with relevant guidelines[5]. CWS and RNR are considered to be of **County** importance, given they are selected on the basis of being '*sites of significant nature conservation interest outside the network of statutorily protected wildlife areas*', as set out in the guidelines referenced at footnote 5. The Kempston Hardwick Pit CWS and Coronation Pit CWS extend partially into the Site, with approximately 26.7ha and 5.0ha within the Site respectively.

Table 6-5 - Non-Statutory Designated Sites within the study area

Site Name (and total area)	Location in relation to the Site	Scoped In (Yes/No)	Description
Kempston Hardwick Pit CWS (86.6ha)	Partially within the Site (Lake Zone) Approximately 26.7ha of the CWS extends into the Site boundary. This	Yes Partially within the Site	The CWS was designated for the habitat mosaic of woodland, scrub, semi-improved neutral grassland, as well as the open water habitats of the lake itself. It contained neutral grassland, semi-natural broadleaved woodland, broadleaved plantation, scrub, and ditches.

[5] Bedfordshire and Luton Local Sites Partnership (December 2020). Bedfordshire and Luton County wildlife Sites: Selection Guidelines. Version 14.

Site Name (and total area)	Location in relation to the Site	Scoped In (Yes/No)	Description
	equates to approximately 31% of the total area of the CWS.		New Zealand pygmyweed (*Crassula helmsii*) and other non-native invasive plant species have been recorded within the CWS **(Ref. 6.6)**.
Coronation Pit CWS (95.4ha)	Partially within the Site (Core Zone) Approximately 5ha of the CWS (woodland and scrub habitats) extend into the Site boundary. This equates to approximately 5.2% of the total area of the CWS.	Yes Partially within the Site	The CWS was primarily designated for the large (33ha) water body which is a former quarry excavation. In addition, the citation mentions neutral and calcareous grassland habitats.
Stewartby Lake CWS (111.48ha)	0.17km south	Yes Distance between CWS and Site, hydrological linkages and potential air quality effects	The CWS was recognised for containing calcareous grassland, neutral grassland, and ponds. Within the grassland were several small areas of marshy grassland and shallow ponds.
Elstow Pit CWS (32ha)	0.33km east	Yes Distance between CWS and Site, hydrological linkages and potential air quality effects.	The CWS comprises the southern part of Elstow Pit. It was designated for supporting mosaic grassland, neutral grassland, scrub, swamp, and open water habitats.
Quest Pit CWS (68.88ha)	0.64km southeast	Yes Distance between CWS and Site, hydrological linkages and potential air quality effects.	The CWS was designated primarily due to the wetland areas being an important habitat for a range of bird species including little egret (*Egretta garzetta*), lesser black-backed gull (*Larus fuscus*), shelduck (*Tadorna sp.*), herring gull (*Larus argentatus*), gadwall (*Mareca strepera*), ringed plover (*Charadrius hiaticula*), little ringed plover (*Charadrius dubius*), redshank (*Tringa totanus*), and pochard (*Aythya elvet*).
Kempston West End CWS (0.46ha)	0.71km north	No Distance between CWS and Site, no linkages or predicted source	The CWS was recognised for colonies of common calamint (*Clinopodium ascenden*) and creeping yellow cress (*Rorippa sylvestris*). The Site supports a mosaic of coarse grassland with large bramble (*Rubus fruticosus*

Site Name (and total area)	Location in relation to the Site	Scoped In (Yes/No)	Description
		of effect from the Proposed Development	*agg.*) Patches, and areas of dense and developing scrub and woodland.
Marston Bypass RNR (0.7ha)	0.82km south	No Distance between CWS and Site, no linkages or predicted source of effect from the Proposed Development	The site consisted of a wide verge where the bypass diverged from the original road into Marston Moretaine south of the village, and a small area adjacent to a bridge over the road. Areas of the site were seeded with wildflowers when the road was built.
Rookery Clay Pit CWS (153.1ha)	1.33km south	No Distance between CWS and Site, no linkages or predicted source of effect from the Proposed Development	The CWS was recognised for containing three large pools, while the surrounding vegetation over most of the pit area was sparse ephemeral/short perennial with a large area of rank neutral grassland in the northwestern corner. Small patches of marsh vegetation were scattered throughout the grassland and the more northern part of the ephemeral vegetation. There was a broadleaved plantation at Ordnance Survey (OS) Grid Reference TL018418.
Wootton Wood CWS (50.59ha)	1.47km west	No Distance between CWS and Site, no linkages or predicted source of effect from the Proposed Development	The CWS was recognised for containing ancient semi-natural broadleaved woodland, and neutral grassland.
River Great Ouse CWS (213.1ha)	1.65km north	No Distance between CWS and Site, no linkages or predicted source of effect from the Proposed Development	CWS was recognised for the river habitat and adjacent habitats and features which were considered part of the river system.

Habitats of Conservation Importance

Woodland

6.6.7. There is a single area of ancient (or ancient re-planted) woodland present within 2km of the Site. This is Wootton Wood (total area equating to 27.5ha) located approximately 1.6km west of the Site, separated by the A421 and residential and industrial development of Wootton. A total of 61 areas of

deciduous woodland and five areas of traditional orchard, which are listed as HPI under the *NERC Act (as amended)* (**Ref 6.17**) were identified within 2km of the Site.

6.6.8. The Proposed Development is not predicted to result in effects upon Wootton Wood or the five areas of traditional orchard due to their distance from Site. However, the desk study identified that the Proposed Development crosses 16 areas of potential deciduous woodland. This habitat forms part of the UKHab field survey data mapped within the Site. Potential effects on this habitat will therefore be assessed in the ES.

Watercourses and Water bodies

6.6.9. One Water Framework Directive (WFD) designated water body, Elstow Brook (US Shortstown) water body (water body ID: GB105033038050) was identified in the Site boundary. Elstow Brook, which forms part of the Great River Ouse catchment runs through the West Gateway Zone and along the northwestern boundary of the Lake Zone. In 2022, the WFD ecological status of this water body was Moderate overall, whilst the physio-chemical status of this water body was Good overall.

6.6.10. The Proposed Development has been designed to comply with the objectives of WFD as shown in **Water Framework Directive Assessment (Document Reference 6.15.0)**.

6.6.11. As shown in Section 1 and Section 5 of **Appendix 12.3: Drainage Strategy (Volume 3)** the detailed design of proposed works to Elstow Brook and Core Zone watercourse will be progressed by the relevant Undertaker[6] in engagement with the IDB and EA, and subject to Land Drainage Consent. The proposed road crossing located in West Gateway Zone over Elstow Brook will consist of a clear span bridge set 600mm higher than the 1 in 100 year plus climate change modelled river level. The bridge abutments will be set back 10m from the top of bank with detailed design informed by riparian habitat, bank stability and ecological importance to reduce impacts. The watercourse diversion located in Core Zone will be replaced within the same Zone and the form, shape and appearance will be enhanced through meandering channel (note that top of banks remain straight) which may include alternate berms in the channel to vary flow and provide sinuosity, varied side slopes, landscaping vegetation, improved gradients, and cross-sectional shape, as shown in **Annex 2** of **Appendix 12.3: Drainage Strategy (Volume 3)**.

6.6.12. Based on the above and the WFD Assessment (Document Reference 6.15.0), the Proposed Development complies with the objectives of The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

FIELD SURVEY AND EXISTING SITE INFORMATION

Habitats

6.6.13. The full findings of habitat surveys of the Site are presented in **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3), Appendix 6.14: UK Habitat Classification Report (Volume 3)** and in the aquatic habitat scoping assessment **Appendix 6.2: Aquatic Habitat Scoping Assessment Report (Volume 3)**.

6.6.14. The Site, comprising a total area of 268ha, is broadly bounded by Marston Vale Railway Line located to the west of the Lake and West Gateway Zones. To the east, the Lake Zone is bordered by the wider

[6] The persons (corporate or otherwise) who are permitted to carry out the Proposed Development (including their contractors and other persons appointed by them in connection with the carrying out of the Proposed Development).

Kempston Hardwick Pit CWS and the Coronation Pits CWS lakes to the southeast of the Core Zone. The East Gateway Zone is traversed by the Sheffield to London St Pancras Midland Main Railway Line and associated vegetated corridor. The Core Zone is dominated by arable cropland habitat, which is bounded by grassland margins, hedgerows and an area of woodland to the east forming part of Coronation Pit CWS. Several small field ponds are present within the Core Zone.

6.6.15. The Lake Zone consisted of more varied habitats, with large areas of water bodies, reedbeds and other neutral grassland present. Towards the south of the Lake Zone, open mosaic habitat (OMH) on previously developed land was recorded (including in areas where the former, now demolished, brick pits/quarry operational buildings and storage areas were historically located). Pockets of woodland and scrub were also present throughout the Site. The remaining areas within the Site primarily comprised roads (A421 to the west, Manor Road, and B530 to the east of the Lake Zone) and associated hardstanding. The Elstow Brook flows through the West Gateway Zone along the northwestern boundary of the Lake Zone alongside the Midland Main Railway Line.

6.6.16. **Table 6-6** presents a summary of the UKHab habitat types present within the Site. The location and extent of the habitats is shown indicatively on **Figure 6.2: UK Habitats Plan (Volume 2)**.

6.6.17. Since the completion of **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**, minor changes to the Site boundary have been made as the Proposed Development layout has evolved. The Site boundary as defined for the PEA, was slightly different to that used for the ES. UKHab surveys have also been completed, as reported in **Appendix 6.14: UK Habitat Classification Report (Volume 3)**. Therefore, habitat areas and types presented in **Table 3-3** of **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)** differ from those presented in **Table 6-6** which is specific for the purposes of this EcIA and reflects the latest habitat surveys of the Site.

Table 6-6 - UKHab Categories and Habitats of Principal Importance with the Site

UKHab Category and code	HPI	Estimated Area (ha) or Length (m)
Other lowland mixed deciduous woodland (w1f7)	Yes	26.56ha
Reedbeds (f2e)	Yes	6.35ha
Standing open water and canals (r1)	Yes	13.61ha
OMH on previously developed land (Secondary Code 80) (OMH comprises a mosaic of other habitats so is not included in area totals)	Yes	2.8ha
Total HPI area-based habitats (a)		**46.52ha**
Artificial unvegetated – unsealed surface (u1c)	No	6.06ha
Bramble scrub (h3d)	No	0.19ha
Cereal crops (c1c)	No	139.96ha
Developed land – sealed surface (u1b)	No	19.51ha
Sparsely vegetated urban land (u1f)	No	2.39ha

UKHab Category and code	HPI	Estimated Area (ha) or Length (m)
Hawthorn scrub (h3f)	No	1.42ha
Mixed scrub (h3h)	No	7.92ha
Modified grassland (g4)	No	8.24ha
Other blackthorn scrub (h3a6)	No	0.07ha
Other broadleaved woodland (w1g)	No	0.96ha
Other neutral grassland (g3c)	No	33.21ha
Other woodland – mixed (w1h)	No	0.14ha
Suburban mosaic of developed and natural surface (u1d)	No	1.51ha
Total non HPI habitats (b)		**221.58ha**
Total HPI and non HPI (a + b)		**268.10ha***
Linear Habitats		
Rivers and streams (r2)	Yes	7,755.0m
Native hedgerow (h2a)	Yes	1,700.0m
Hedgerow with trees (h2a 11)	Yes	3097.0m
Ecologically valuable line of trees (w1g34)	No	277.0m

*Total site area and percentages calculated may slightly differ to total Site area due to rounding of figures and mapping artifacts.

Notable, veteran and ancient trees

6.6.18. The **Arboricultural Impact Assessment Report (Document Reference 6.11.0)**, details the results of the arboricultural survey conducted across the Site. The survey categorises trees and tree groups including arboricultural features of High, Moderate, Low and Very Low quality in accordance with British Standard BS5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' **(Ref 6.18)**.

6.6.19. One veteran tree (T80 is shown on page 9 of 11 of the **Appendix C: Tree Removal and Protection Plan** of the **Arboricultural Impact Assessment Report (Document Reference 6.11.0)**) was identified within the Site; a multi-stemmed willow (*Salix* sp.) located on the west bank of Elstow Brook (at approximate OS Grid Reference: TL 02081 43996) in the West Gateway Zone. The tree was classified as veteran due to size, age and other veteran criteria features such as a retrenching canopy, presence of deadwood, crown cavities and a large basal cavity with exposed decaying heartwood. Veteran trees are classed as irreplaceable habitat as per planning policy **(Ref 6.20)**.

Protected Species

6.6.20. The full list of protected species and species of conservation concern considered within the study area is outlined in **Appendices 6.1 to 6.3** and **Appendices 6.7 to 6.18**. **Table 6-7** presents a summary of existing protected species information.

Table 6-7 - Summary of Protected or Important Species within the study area

Species/Species Group	Baseline Status Summary
Badger	The 2024 data search returned 16 records for badger within the study area, with badger also recorded on-Site (**Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**). The badger surveys conducted (details provided in **Appendix 6.3: Badger Survey Report CONFIDENTIAL (Volume 3)** have identified the presence of 19 confirmed or possible badger setts across the Site (accounting for access limitations) and a further six within proximity to it. Badger is confirmed to be present across the extent of the Site in all Zones with the presence of additional sett building habitat and foraging resource provided by the woodland, scrub and arable habitats.
Bats	*Roosting bats* The 2024 data search identified two bat roosts records within the study area. The closest was a soprano pipistrelle (*Pipistrellus pygmaeus*) roost which was recorded within a building approximately 1.1km west of the Site in 2015. The other was a common pipistrelle (*Pipistrellus pipistrellus*) roost recorded within the same area of buildings approximately 1.2km west of the Site in 2015 (Section 3 of **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**). Additionally, Natural England provided information on a previously issued European Protected Species (EPS) licence for bats at Stewartby Brickworks (OS Grid reference TL 0171 4279), located approximately 850m south of the Site. Surveys conducted for this EPS licence identified various roosts for a number of species. Some species may share roosting sites with others, so the total number of roost locations is likely to be fewer than the 17 species roosts indicated below:: ▪ Two brown long-eared bat (*Plecotus auratus*) hibernation roosts; ▪ Nine common pipistrelle hibernation and maternity and day roosts; ▪ Two Daubenton's bat (*Myotis daubentonii*) hibernation roosts; ▪ Two soprano pipistrelle hibernation roosts; and ▪ Two whiskered bat (*Myotis mystacinus*) hibernation roosts. There are trees within the Site which have potential suitability to support roosting bats (**Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**). In addition, 89 trees with confirmed or potential suitability for roosting bats have been identified within or adjacent to the Site, following initial appraisal work. Targeted surveys to confirm presence or likely absence of roosts in these were completed in 2024 (**see Appendix 6.10: Bat Roost Appraisal Report (Volume 3)** and **Appendix 6.16: Bat Activity Survey Report (Volume 3)**). Survey work to inform protected species licence applications is to be completed in 2025.

Species/Species Group	Baseline Status Summary
	Bat roosts have been confirmed in Trees 81 (bat species could not be confirmed) and Tree 116 (pipistrelle sp), with single bats recorded in each tree during climbed surveys in 2024. Brown long-eared and common pipistrelle bats were recorded in the Guardhouse in low numbers during hibernation surveys in 2025. *Foraging and Commuting bats* The 2024 data search returned records of five bat species, including common pipistrelle, Daubenton's bat, Natterer's bat (*Myotis nattereri*), noctule (*Nyctalus noctula*), and soprano pipistrelle. Past ecological reports also recorded brown long-eared bat, common pipistrelle and Nathusius' pipistrelle (*Pipistrellus nathusii*) within the Site **(Ref. 6.7)**. There was optimal foraging and commuting habitat for bats within the Site, including the standing water, hedgerows, lines of trees, woodland, scrub and watercourses, which are well connected to other habitat in the wider landscape. Bat activity surveys were completed in 2024, to assess levels of foraging and commuting bat activity. Detailed methodologies and results are set out in **Appendix 6.16: Bat Activity Survey Report (Volume 3)**. Nine species of bats were recorded during these activity surveys: ▪ barbastelle; ▪ noctule; ▪ Leisler's Bat; ▪ serotine; ▪ Plecotus sp; ▪ Myotis sp; ▪ common pipistrelle; ▪ soprano pipistrelle; and ▪ Nathusius' pipistrelle. The majority of bats recorded were common and soprano pipistrelle, which are common and widespread species. Low levels of barbastelle bat activity, a species of conservation relevance given its restricted distribution, were recorded, with the majority of the records from along the Elstow Brook corridor in the West Gateway Zone. Further recordings were made from a hedgerow in the centre of the Core Zone, with very low levels of activity recorded in the Lake Zone and the East Gateway Zone.
Water vole	Whilst the updated 2024 data search did not provide records of water vole (*Arvicola amphibius*) from within the study area, a previous third-party report (**Ref.6.6**) stated they received seven records of water vole from within 2km and more historic records from around Stewartby lake to the south of the Site. Furthermore, surveys conducted of the ditch in the Core Zone in 2023 **(Ref. 6.6)** did record potential evidence of water vole. The ditch traversing the Core Zone and the Elstow Brook were confirmed by the Preliminary Ecological Appraisal (PEA) to be suitable for supporting water voles. Despite being managed, these watercourses have appropriate bank profiles, vegetation, and water levels to facilitate burrow creation and foraging. Additionally, the former quarry pit lakes in the Lake Zone provide suitable habitats for water voles.

Species/Species Group	Baseline Status Summary
	Although the shallower banks are less ideal for burrow creation, water voles can adapt to standing water bodies, especially where reedbed habitats are present.. Targeted surveys for water voles were completed in 2024 for the Proposed Development. The methods used and results obtained are described in **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3)**. These recorded no evidence of water vole and also confirmed the presence of mink (*Neovison vison*), a non-native species which is well-adapted to predate water voles, sometimes causing their localised extinction through predation. Water vole are therefore likely to be absent from the Site.
Otter	The 2024 desk study identified 14 records of otter (*Lutra lutra*) from within the study area. The closest record of otter was from a location approximately 0.18km west of the Site (**Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**). Additional records are known from Stewartby Lakes located south of the Site, and the River Great Ouse catchment which the Elstow Brook links to. Elstow Brook is likely to offer at least transient opportunities for otter, with some sections with greater level of cover and overhanging vegetation/trees having potential to provide holt creation opportunities. Presence of predated/opened swan mussel (*Anodonta cygnea*) found on the banks of Elstow Brook would indicate that food resources are present and that this indicates use by otter and/or American mink (*Mustela vison*) which the desk study also returned records for. The lakes within the Lake Zone have sufficient vegetative cover on the banks for holt creation. They also provide potential foraging resource as they are likely to support fish and aquatic invertebrates. During the aquatic scoping survey evidence of a potential otter spraint was identified around the lake in the central area of the Lake Zone. Whilst no confirmed otter holts have been identified several potential features were incidentally recorded on Elstow Brook during the badger survey (**Appendix 6.3: Badger Survey Report CONFIDENTIAL (Volume 3)**) which could be used by otter. Targeted otter surveys were also completed in 2024. The methods used and results obtained are described in **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3)**. Evidence of otter was recorded, with activity focussed in water bodies in the Lake Zone including Kempston Hardwick Pit and along the Elstow Brook corridor within and also to the north and south of the West Gateway Zone. A sighting of an individual otter hunting in Coronation Pit lake to the east of the Core Zone was also recorded. It is considered that otter likely use the Site for foraging and commuting purposes as part of a larger territory within the local landscape.
Great crested newt (GCN)	The 2024 desk study has confirmed that the study area is of particular importance for GCN (*Triturus cristatus*) with a total of 165 records of GCN within 2km. The closest desk study record for GCN presence is in a pond approximately 40m north of the Site. A total of 18 European Protected Species Mitigation Licences (EPSMLs) are also present within 2km of the Site. The closest is mapped (source www.magic.gov.uk) approximately 80m east of the Site. Receptor sites agreed for these licenced mitigation schemes are located adjacent to the Site. Twelve water bodies have been identified within the Site, with a further 23 water bodies present outside the Site boundary but within 250m of the Site. Population surveys were conducted in May and June 2017 by Delta Simons **(Ref. 6.7)** which identified populations within ditches and desk study records indicated that GCN size classes of small and medium have been recorded within the ponds within 500m of the Site. No metapopulation assessments were completed.

Species/Species Group	Baseline Status Summary
	Whilst acknowledged (see Section 6.8) to be historic, surveys referenced in a third-party report (**Ref 6.7**) conducted in 2014 confirmed the presence of GCN within the Site at that time. The Site contains extensive suitable habitat for GCN including both breeding habitat (water bodies including lakes, ponds and wet ditches) and terrestrial habitats (woodland, grassland, scrub and rubble/spoil piles for shelter). Great crested newt eDNA surveys have been completed of water bodies within and up to 250m from the Site. The *GCN Conservation Handbook* **(Ref 6.21)** recommends surveying ponds within up to 500m of a development site, where it is "…*thought likely that great crested newt populations centred on these ponds would be affected by changes to the plot…*". In the case of the Proposed Development, a range of barriers to dispersal of GCN around the boundaries of the Proposed Development were identified. These included major and minor roads, railway lines, watercourses, and areas of residential and industrial development (e.g. see **Figure 6.1: Ecological Designations Plan (Volume 2)**). Given the presence of these barriers to dispersal, a 250m survey buffer was considered appropriate. Surveys were completed in June 2024, with 17 water bodies subject to survey. Land access constraints meant not all water bodies within 250m of the Site could be surveyed. In addition, survey results from seven water bodies were 'indeterminate,' i.e. no reliable result could be obtained. Of the remaining ponds that were surveyed, three were negative for GCN eDNA and seven were positive for GCN eDNA. One of the negative ponds (Pond 26) was subject to significant access limitations during survey. The 'negative' survey result obtained for this pond is therefore not considered to be reliable and is treated as 'indeterminate, i.e. it is possible GCN use this pond. The positive water bodies were Ponds 1, 5, 6, 21, 23, 25, and 34. The locations of water bodies are shown within **Appendix 6.7: Great Crested Newt Survey Report (Volume 3)**. The ponds with positive eDNA results were located in the south of the Core Zone (and within 250m south of it) and in the far north of the Core Zone and south of the Lake Zone, either side of Manor Road. Torchlight surveys of Ponds 6, 26, 35, 36 and 37 within the Site were completed on the 24th to 25th February 2025. One male GCN was recorded in Pond 6 during these surveys. One female and four male GCN were recorded in Pond 35 during this survey. The full results are presented in **Appendix 6.7: Great Crested Newt Survey Report (Volume 3)**. Additionally, two juvenile GCN were recorded incidentally within the Site during the otter and water vole surveys, the locations of which are shown in **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3)**.
Reptiles	In total, 36 records of reptiles were returned, of which 19 were attributed to grass snake (*Natrix helvetica*) and to common lizard (*Zootoca vivipara*), with the closest desk study record being common lizard (approximately 460m east of the Site). Suitable habitat for grass snake is present for foraging (watercourses/lakes adjacent to the Site) and refuge, particularly in grassland close to the various watercourses and scrub within the Lake Zone. Additionally, there was suitable habitat for slow worm (*Anguis fragilis*) and common lizard within the grassland habitats, as well as the margins of the hedgerows and lines of trees, although this was less well connected. Dead logs and wood in the understorey of woodland provided suitable resting places and hibernacula for reptiles (**Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**).

Species/Species Group	Baseline Status Summary
	Reptile surveys were completed in July to September 2018 within the Lake Zone which identified a low population of common lizard and grass snake (**(Ref. 6.7)** and **(Ref. 6.8)**). There is presence of toads (*Bufo bufo*) within the Lake Zone and the water bodies are highly suitable to support populations of amphibians which would provide a suitable foraging resource for grass snake. Surveys in 2024 for the Proposed Development have reconfirmed the presence of reptiles at the Site, see **Appendix 6.12: Reptile Survey Report (Volume 3)**. These recorded low numbers of viviparous lizards and an individual grass snake within the Site. Additionally, three adult grass snakes were recorded incidentally during the otter and water vole surveys, the locations of which are shown in **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3)**. No records of adder (*Vipera berus*) were provided for within 2km of the Site, however there are numerous records of this species slightly further south between Stewartby and Ampthill. Given the historic operational activities undertaken at the Site, habitats are likely to have remained sub optimal to support this species (lack of woodland edge, heathland), however possible habitat corridors which would offer dispersal are present around the Site (railway corridor, Elstow Brook).
Bird listed under Annex 1 of the EU Birds Directive and/or Schedule 1 of the Wildlife and Countryside Act (WCA)	Results from the desk study identified 24 bird species, listed on Schedule 1 of the WCA (**Ref. 6.16)** that were potentially recorded from within 1km of the Site (**Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**). Of these, the following species are known to breed in Bedfordshire: bearded tit (*Panurus biarmicus*), bittern (*Botaurus stellaris*), Cetti's warbler (*Cettia cetti*), garganey (*Spatula querquedula*), hobby (*Falco Subbuteo*), kingfisher (*Alcedo atthis*), little ringed plover (*Charadrius dubius*), marsh harrier (*Circus aeruginosus*), Mediterranean gull (*Ichthyaetus melanocephalus*), peregrine (*Falco peregrinus*) and red kite (*Milvus milvus*) **(Ref. 6.22)** During the breeding bird survey in 2024 (see **Appendix 6.9: Breeding Bird Survey Report (Volume 3)**) two Annex 1/WCA Schedule 1 bird species were recorded within the Site (red kite and kingfisher) though no evidence of breeding was obtained. Red kite was recorded hunting in the Lake Zone and Core Zone, with kingfisher recorded in the Lake Zone only. One Annex 1 (but not listed on WCA Schedule 1) species, common tern (*Sterna hirundo),* was recorded within the Site on one occasion, with no evidence of breeding. There is limited suitable nesting habitat (woodland and areas of tall trees) for red kite within the Site, although nesting in close proximity to the Site boundary cannot be discounted. The kingfisher recorded during the survey was likely derived from a local breeding pair and though no nesting sites were located on-Site, breeding within proximity to the Site cannot be discounted. One WCA Schedule 1 species (but not listed on Annex I) was recorded breeding within the Site in 2024 (Cetti's warbler). In addition, little ringed plover may have attempted to nest on-Site and hobby was recorded though with no evidence of breeding within the Site. Suitable habitat for barn owl foraging has been recorded within the Site, with occasional incidental sightings of barn owls recorded within the Site in 2024.
Breeding bird species: SPI and/or Birds of Conservation	Results from the desk study, identified 29 BoCC5 red-listed species (including the SPI listed below), potentially recorded from within the Site (**Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**). A total of 13 SPI were recorded breeding/holding territory within the Site during the breeding bird survey in 2024: grey partridge (*Perdix perdix*), turtle dove (*Streptopelia*

Species/Species Group	Baseline Status Summary
Concern 5 (BoCC5) red list	*turtur*), cuckoo, skylark (*Alauda arvensis*), grasshopper warbler (*Locustella naevia*), song thrush (*Turdus philomelos*), house sparrow (*Passer domesticus*), dunnock (*Prunella modularis*), yellow wagtail (*Motacilla flava*), bullfinch (*Pyrrhula pyrrhula*), linnet *Linaria cannabina*, yellowhammer *Emberiza citrinella* and reed bunting (*Emberiza schoeniclus*). Lapwing (*Vanellus vanellus*), herring gull and starling (*Sturnus vulgaris*) were also recorded but no evidence of breeding was obtained. Three BoCC5 red-listed species (that are not SPI) were also recorded breeding within the Site in 2024: pochard, nightingale (*Luscinia megarhynchos*) and greenfinch (*Carduelis chloris*). The populations of nightingale (2 pairs/territories), pochard (1 pair) and turtle dove (1 pair) recorded within the Site in 2024 will form substantial proportions (>10%) of their respective county populations. Scrub, woodland, arable farmland and vegetation around the fringes of the water bodies within the Site (and within the adjacent sections of Kempston Hardwick Pit CWS and Coronation Pit CWS) provide suitable breeding habitat for the range of species described above.
Breeding bird species: BoCC5 Amber list and other species occurring in potentially important numbers.	Nine BoCC5 Amber list species (which are not SPI) were recorded breeding/holding territory within the Site during the breeding bird survey in 2024: mallard (*Anas platyrhynchos*), moorhen (*Gallinula chloropus*), stock dove (*Columba oenas*), wood pigeon (*Columba palumbus*), willow warbler (*Phylloscopus trochilus*), sedge warbler (*Acrocephalus schoenobaenus*), whitethroat (*Sylvia communis*), wren (*Troglodytes troglodytes*) and meadow pipit (*Anthus pratensis*). A further three species (not SPI or BoCC5 red/amber) were recorded breeding within the Site in 2024, in numbers that are likely to exceed 1% of their respective Bedfordshire population totals (mute swan (C*ygnus olor*), great crested grebe (*Podiceps cristatus*) and reed warbler (*Acrocephalus scirpaceus*)). In addition, numbers of breeding coot (*Fulica atra*) and garden warbler (*Sylvia borin*), are likely to be close to 1%. Scrub, woodland, grassland and vegetation around the fringes of the water bodies within the Site (and within the Kempston Hardwick Pit CWS and Coronation Pit CWS) provide suitable breeding habitat for these species.
Wintering/non-breeding bird assemblage	A further 19 species were recorded within the Survey Area during the breeding bird surveys for which no evidence of breeding was obtained (see **Table 3-1** in **Appendix 6.9: Breeding Bird Survey Report (Volume 3)**). Non-breeding waterbirds were recorded foraging and resting on the lakes and their edges, including little egret (*Egretta garzetta*), grey heron (*Ardea cinerea*), cormorant (*Phalacrocorax carbo*) (peak count of five birds on the lakes within the Core Zone on 6 June), greylag Goose (*Anser anser)* (peak count of nine birds) and teal (*Anas crecca*) (four birds on the lakes within the Lake Zone on 19 June 2024). Grey Heron and Greylag Goose are likely to breed in the local area. Other species recorded in the breeding bird survey either foraging in/over or flying over the Site included kestrel (*Falco tinnunculus*), hobby (*Falco subbuteo*), Sparrowhawk (*Accipiter nisus*), barn swallow (*Hirundo rustica*), swift (*Apus apus)*, raven (*Corvus corvax)*, grey wagtail (*Motacilla cinerea*), lapwing (*Vanellus vanellus*), and oystercatcher (*Haematopus ostralegus*), all of which were likely to relate to local breeding birds. Non-breeding starling (*Sturnus vulgaris)*, Black-headed Gull (*Chroicocephalus ridibundus*), Herring Gull (*Larus argentatus*) and lesser black-backed gull (*Larus fuscus)* were also recorded on-Site.

Species/Species Group	Baseline Status Summary
	Of the non-breeding bird species recorded, there was very limited suitable nesting habitat for sparrowhawk, red kite and hobby, though nesting close to the Site cannot be entirely discounted. Lapwing and oystercatcher could potentially nest in the open fields within the Lake and Core Zones; and greylag goose on the lakes. The desk study data and the survey data gathered during the 2024 breeding bird surveys suggested that the Site could support a diverse community of wintering birds in addition to the breeding bird community. Targeted wintering bird surveys of the Site were completed between October 2024 and March 2025 (see **Appendix 6.15: Wintering Bird Survey Report (Volume 3)**). These confirmed the site supported a diverse range of bird species, including those associated with wetland, scrub and farmland, with 55 species recorded. Many of the species recorded are resident in the area and were therefore also noted during the breeding bird survey in 2024, such as Cetti's Warbler. The numbers of wintering farmland birds recorded were generally low, with few large flocks noted; but included Grey Partridge, Meadow Pipit, Linnet and Yellowhammer. However, relatively high numbers of Lapwing and Skylark were recorded using the fields within the Site. Potentially important numbers of waterbirds were recorded on the lakes outside the Site to the east of the Core Zone. Potentially important numbers were also recorded within the Site, including Mute Swan, Wigeon, Tufted Duck, Pochard, Great Crested Grebe, Cormorant, Lapwing and Coot.
Terrestrial invertebrates	The mosaic of habitats including the grassland, water bodies, woodland, scrub and previously disturbed ground within the Lake Zone, provide habitat opportunities for a range of invertebrate species. Butterfly and moth surveys were completed within the Lake Zone in 2018 (to inform previous proposals for part of the Site) which included walked transect surveys. These provide useful historical records and context relating to invertebrate communities at the Site. Dingy skipper (*Erynnis tages*) and grizzled Skipper (*Pyrgus malvae*) were recorded during the 2017 surveys (the former also recorded in 2024 by surveys in the Lake Zone), both of which are SPI. Dingy Skipper, small heath (*Coenonympha pamphilus*) and wall (*Lasiommata megera*) were the only SPI recorded in 2018. Eleven other butterfly species were also recorded. The terrestrial invertebrate surveys completed for the Proposed Development in spring 2024 recorded seven species of specific conservation interest. These included one ant species, one weevil species, an additional record of dingy skipper, and four bee species. The Site is within a B-Line nature reserve **(Ref. 6.9a)**. B-Lines are an informal conservation network which aim to link existing wildlife areas, creating a network across the UK. The Site is also in proximity to the Coronation Pit CWS which is also partially located within the Bedfordshire Greensands Important Invertebrate Area (IIA) mapped area **(Ref. 6.9b)**. As are described as places that contain nationally or internationally significant invertebrate populations and their habitats. Given the proximity to the IIA, similarity in habitats and extensive invertebrate habitat within part of the Lake Zone, there is potential for similar invertebrate species and assemblages to be present. The results of the invertebrate surveys identified 306 species across the Site, of which seventeen are of conservation concern. These include two ground beetles (*Amara montivaga* and *Pilistichus connexus*), a chequered beetle (*Opilo mollis*), Thistle Bud Weevil (*Larinus carlinae*), Thistle-head Weevil (*Rhinocyllus conicus*), Red Collared

Species/Species Group	Baseline Status Summary
	Click Beetle (*Ischnodes sanguinicollis*), a click beetle (*Procraerus tibialis*), a tumbling flower beetle (*Mordellistena variegata*), a planthopper (*Asiraca clavicornis*), Brown Tree Ant (*Lasius brunneus*), Short-spined Nomad Bee (*Nomada guttulate*), Sharp-collared Furrow Bee (*Lasioglossum malachurum*), Lobe-spurred Furrow Bee (*Lasioglossum pauxillum*), Four-spotted Furrow Bee (*Lasioglossum quadrinotatum*), Swollen-thighed Blood Bee (*Sphecodes crassus*), Dark Blood Bee (*Sphecodes niger*) and Grizzled Skipper. Full results are provided in **Appendix 6.13: Terrestrial Invertebrate Survey Report (Volume 3)**.
Fish	Environment Agency **(Ref. 6.23)** fish survey data from Elstow Brook in 2011, approximately 1.2km downstream of the proposed crossing point of Elstow Brook, recorded seven fish species. Of these, two fish species of conservation interest; spined loach (*Cobitis taenia*) and European bullhead (*Cottus gobio*), were identified. The presence of spined loach in the Elstow Brook is important to note as in the UK, spined loach distribution is restricted. The species occurs in only five river catchments (Trent, Welland, Witham, Nene, and Great Ouse) and their associated watercourses. The results of the eDNA surveys in November 2024 show that Elstow Brook supports a coarse fish community, characteristic of the habitat observed. The DNA of one species of conservation interest, European eel (*Anguilla anguilla*), was detected within the Elstow Brook sample. No amplifiable DNA was detected in the eDNA sample taken from the Core Zone watercourse. However, during the spring 2024 aquatic macroinvertebrate surveys, it was noted that European bullhead and nine-spined stickleback (*Pungitius pungitius*) were present in the watercourse. The results from the eDNA surveys show that all four lakes support coarse fish communities, characteristic of habitats observed. The DNA of one species of conservation interest, European eel, was detected within the Lake 1 sample. Full results are provided in **Appendix 6.17: Aquatic Ecology Survey Report (Volume 3)**.
Aquatic macroinvertebrates	Environment Agency **(Ref. 6.23)** aquatic macroinvertebrate data from Elstow Brook in 2014 approximately 1.3km downstream of the proposed bridge crossing of Elstow Brook recorded the presence of one INNS New Zealand mud snail (*Potamopyrgus antipodarum*). No legally protected or otherwise notable aquatic macroinvertebrate species were recorded in the survey. The results of aquatic macroinvertebrate surveys conducted in spring and autumn 2024 indicate that Elstow Brook supports an aquatic macroinvertebrate assemblage of limited diversity. One species of note, a beetle (*Anacaena bipustulata*) was recorded in the autumn sample from Elstow Brook. The species is classified as Notable (scare in Great Britain but not of Red Data Book Status). No INNS were recorded in the spring or autumn 2024 samples. The results of the spring and autumn 2024 aquatic macroinvertebrate surveys suggest that the Core Zone watercourse supports an aquatic macroinvertebrate assemblage of limited diversity, with no notable species identified. One INNS, the amphipod (*Crangonyx pseudogracilis/floridanus* agg), was recorded in both the autumn and spring samples. Detailed results of the targeted surveys completed in spring and autumn 2024 are presented in **Appendix 6.17 Aquatic Ecology Survey Report (Volume 3)**.
Macrophytes	The watercourses and water bodies within the Site provide potential to support macrophyte communities. The results of macrophyte surveys conducted in summer 2024 indicate that Elstow Brook is subject to watercourse management resulting in a macrophyte community of

Species/Species Group	Baseline Status Summary
	low diversity and conservation value. Common reed (*Phragmites australis*) was recorded along the margins of the watercourse in **Appendix 6.2: Aquatic Habitat Scoping Assessment Report (Volume 3)**. Additionally, dried specimens of an invasive waterweed (*Elodea sp.*), were noted within the spoil, likely from the management of the watercourse, that has been discarded on the bank top. Further details are set out within **Appendix 6.8: Macrophyte Survey Report (Volume 3).** The Core Zone watercourse was assessed as providing suitable habitat for a low-moderately diverse macrophyte community, that may be impacted by episodic dry periods. Further details are set out within **Appendix 6.8: Macrophyte Survey Report (Volume 3)**.

Invasive Non-Native Species

6.6.21. Previous Desk Studies have identified invasive non-native species (INNS) within the study area which include records for Japanese knotweed (*Reynoutria japonica*), Japanese rose (*Rosa rugosa*), New Zealand pygmyweed and Nutall's waterweed (*Elodea nuttallii*) **(Ref. 6.6)**.

6.6.22. Japanese knotweed was recorded within the grass verge south of Manor Road. No other non-native invasive plant species were identified during the habitat survey. Considering the nature and extent of the Site, it is possible that other invasive non-native plants may be present.

6.6.23. Desk study data identified that the invasive New Zealand mud snail (*Potamopyrgus antipodarum*), was recorded historically in Elstow Brook (**Appendix 6.2: Aquatic Habitat Scoping Assessment Report (Volume 3)**). One INNS, the amphipod (*Crangonyx pseudogracilis/floridanus* agg), was recorded in both the autumn and spring 2024 samples obtained from the Core Zone watercourse **(Appendix 6.17: Aquatic Ecology Survey Report (Volume 3)**.

6.6.24. Surveys for water voles and otters in 2024 (described in **Appendix 6.11: Otter and Water Vole Survey Report (Volume 3**)) recorded evidence of mink (Neovison vison), a non-native predatory mammal commonly associated with wetlands and watercourses. This species is a particularly effective predator of water vole, with populations of the two species rarely co-existing in the long term.

6.6.25. INNS are scoped into the EcIA given the legal constraints associated with their presence. Many of the species recorded above are identified as invasive non-native species in legislation such as the Wildlife and Countryside Act (1981, as amended). It can be an offence to release or allow the spread of such species in the wild.

FUTURE BASELINE

6.6.26. The future ecological baseline conditions and status of species within the Site in the absence of the Proposed Development is difficult to predict as it would be entirely dependent on the future land use and management if the Proposed Development was not progressed.

6.6.27. **Appendix 18.1: Long List of Committed Developments (Volume 3)** provides details of the developments in the study area that are assumed to have been implemented by 2038. No committed developments have been identified in this study area that are predicted to materially alter the baseline conditions up to 2038 for ecology.

6.6.28. Alternatively, were this not the case, as the majority of the Core Zone and West Gateway Zone comprise agricultural land, in the absence of the Proposed Development, the ecological value of these habitats is likely to remain largely the same assuming the land continued to be cultivated. The scrub and wet woodland forming part of Coronation Pit CWS located to the east of the Core Zone will mature but would not likely increase in value if not managed or thinned and water regimes did not change significantly.

6.6.29. The historical, current, and future commitments in terms of water regimes for Coronation and Kempston Hardwick Pits has been discussed with the Internal Drainage Board (as detailed in **Chapter 12: Water Resources (Volume 1)**). An ecological management plan for the CWSs is not apparent and therefore it is not currently clear what objectives are secured for the management and future water environment associated with these habitats. However variable water levels are of ecological benefit and aligns with the historical water regimes/changes which have occurred during various periods of the operational lifespan of the former brick works.

6.6.30. Habitats located within the Lake Zone may increase in value. These include wetland, scrub and open mosaic habitats associated with the former Kempston Hardwick Pits. Unmanaged habitats within the Site such as rank grassland and OMHs, are likely to develop increasing amounts of scrub cover, and eventually develop into successional woodland. The habitats within the Lake Zone (excluding those which are arable and hard standing) are successional in nature and would over time revert to dense scrub and in the long-term woodland. Whilst this would be beneficial for those species which are supported by scrub and woodland, this would reduce the amount and quality of the grassland and more open brownfield habitats. As a consequence, this may reduce the distribution of species which are supported by these types of habitats e.g. reptiles, terrestrial invertebrates, and ground nesting birds.

6.6.31. The extent of invasive plant species within the water bodies in the Lake Zone would potentially increase and could over time reduce the extent of open water present (subject to the future water management regime in the absence of the Proposed Development). An increase in invasive species is likely to result in a decrease in the condition of habitats, use of the water bodies by otter, and the diversity of aquatic invertebrates in affected areas.

SENSITIVE OR 'IMPORTANT' ECOLOGICAL FEATURES

6.6.32. **Table 6-8** identifies the sensitive receptors which have been included in this assessment. These are called 'Important Ecological Features' (IEF) through the remainder of this assessment, in accordance with CIEEM terminology **(Ref 6.5)**.

Table 6-8 - Important Ecological Features included in the Assessment

Ecological Feature	Ecological Importance on a Geographic Scale	Justification to Scope Into the EcIA
Statutory Designated Sites		
Marston Thrift SSSI	National	The SSSI is located 3.1km southwest of the Site. There is a risk in relation to air quality effects due to increased traffic during the Construction and Operational Phase.
Maulden Wood and Pennyfather's Hills SSSI	National	The SSSI is located 5.5 km southeast of the Site. There may be indirect impacts in relation to air quality effects due to an increase in traffic during the Construction and Operational Phase, with the SSSI adjacent to the A6.
Kings Wood and Glebe Meadows, Houghton Conquest SSSI	National	The SSSI is located 2.3km southeast of the Site. There may be impacts on air quality due to an increase in traffic during the Construction and Operational Phases.
Hanger Wood SSSI	National	The SSSI IRZ overlaps with the north of the Site, with the SSSI being located 4.6km northwest of the Site. There may be indirect impacts in relation to air quality during the Construction and Operational Phase from an increase in traffic along the A428 which is located adjacent to the SSSI and is a major traffic route.
Non-Statutory Designated Sites		
Kempston Hardwick Pit CWS	County	The CWS extends into the Site and as such there will be direct impacts to the CWS through the degradation or partial loss of habitats, including mosaic habitats of woodland, scrub, semi-improved neutral grassland, and open water. In addition, there are likely to be indirect impacts on the CWS's flora and fauna.
Coronation Pit CWS	County	The CWS extends into the Site and as such there will be direct impacts in relation to CWSs designated habitats which include water bodies, semi-natural broadleaved woodland plantations, areas of dense scrub, and patches of tall swamp vegetation. In addition, there is likely to be indirect impacts on the CWS's flora and fauna.

Ecological Feature	Ecological Importance on a Geographic Scale	Justification to Scope Into the EcIA
Elstow Pit CWS	County	There will be potential indirect effects upon the CWS from cumulative air quality impacts, which based upon **Chapter 8: Air Quality (Volume 1)** are predicted to exceed screening criteria.
Quest Pit CWS	County	There will be potential indirect effects upon the CWS from cumulative air quality impacts, which based upon **Chapter 8: Air Quality (Volume 1)** are predicted to exceed screening criteria.
Stewartby Lake CWS	County	There will be potential indirect effects upon the CWS from cumulative air quality impacts, which based upon **Chapter 8: Air Quality (Volume 1)** are predicted to exceed screening criteria.
Habitats		
HPIs (Terrestrial) Woodland (all HPI types; 26.56ha), Reedbed (6.35ha), Native Hedgerow and Hedgerow with Trees (4.8km) and Open Mosaic on Previously Developed Land (2.8ha)	Up to County	There will be potential effects due to the loss or degradation of HPIs located within the Site (as detailed in **Table 6-6**) during the Construction and Operational Phases. The habitats are each evaluated as up to County importance and therefore are combined here, however are assessed individually in **Table 6-11 and Table 6-12**.
HPIs (Aquatic) Watercourses and water bodies including 1) standing open water (r1) (13.61ha), 2) rivers and streams (Elstow Brook, and drainage	Local	There are likely to be impacts due to the loss or degradation of aquatic habitats; standing water and rivers and stream habitats (including Elstow Brook and drainage ditches) during the Construction and Operational Phases.

Ecological Feature	Ecological Importance on a Geographic Scale	Justification to Scope Into the EcIA
ditches extending to a length of 7.8km across the entire Site).		
Veteran Tree (T80, West Gateway Zone)	National	There is one veteran tree located within the Site. Veteran trees are identified as 'irreplaceable' habitats in national planning policy **(Ref 6.24)**, highlighting their importance as ecological features and that it takes hundreds of years for them to develop. The veteran tree at the Site is within the West Gateway Zone and could therefore be impacted by construction and/or operation of the Proposed Development.
Non-HPIs including arable, scrub and grassland (excludes artificial unvegetated and suburban mosaic).	Site	Several habitat types including grassland and scrub, arable, woodland and linear habitats (tree lines) which do not meet the criteria as HPI are present within the Site. These are categorised as being of Site level importance, they represent habitat types that are common and widespread within the local area and wider County. As such, these habitats/features have been scoped out of further assessment and will not be discussed further in this EcIA. Where these habitats support protected or species of interest, these are discussed under the relevant species assessment.
Protected Species		
Badger	Local	There are likely to be impacts to badgers in relation to removal of setts. Along with impacts to foraging and commuting badgers through the removal of habitat, severance and effects of lighting during the Construction and Operational Phases. Full protection under the *Protection of Badgers Act 1992* **(Ref 6.25),** but not of nature conservation value and common in local, county and national context. Badger is likely to be widespread in the area and are not listed as a SPI. Considering the legal status of this species and results of the surveys, overall, the value of the Site for badger is considered to be of Local value.

Ecological Feature	Ecological Importance on a Geographic Scale	Justification to Scope Into the EcIA
Bats	County	*Bats - roosting* There are likely to be impacts to roosting bats. This is through the removal of buildings, including Vine Cottages on Manor Road, the guardhouse in the south of the Lake Zone which is a confirmed roost for brown long-eared bats, areas of woodland/individual mature trees which could support roosting bats, and Trees 81 and T116, both of which are confirmed bat roosts (as set out in **Appendix 6.10: Bat Roost Appraisal Report (Volume 3)**). *Bats - foraging and commuting* There are likely to be impacts to foraging and commuting bats through the removal of flight lines (severance), removal of foraging habitat, and disturbance from noise and lighting.
Otter	Local (likely) Up to County (precautionary)	Based upon the suitability and extent of potential habitats within the Site for otter combined with the legal and conservation status of this species, the Site is predicted to be of at least Local importance. There are likely to be impacts to individual otters and otter habitats, due to the removal of suitable foraging and commuting habitat through habitat loss, severance, degradation and lighting and noise disturbance.
GCN	County	There is the potential to encounter GCN within terrestrial habitats on-Site. There are likely to be impacts on GCN where present including risk of harm and the removal of suitable GCN habitat including water bodies, scrub, rank grassland, OMH, trees, woodland, and hedgerows. In addition, there is potential for severance of habitats where construction of infrastructure creates barriers between retained habitats inside and outside the Site. There is also a risk of pollution of water bodies during construction.
Reptiles	Local	Reptiles have been recorded within the Site in low numbers. There are likely impacts including risk of incidental harm and the removal of suitable habitat for refuge and foraging such as water bodies, scrub, rank grassland, OMH, woodland, and hedgerows. There is also a risk of pollution of water bodies during construction. Reptiles may also be at risk from increased noise, vibration and visual disturbance during the Construction and Operational Phases.

Ecological Feature	Ecological Importance on a Geographic Scale	Justification to Scope Into the EcIA
Annex 1 EU Birds Directive/Schedule 1 breeding birds	County	Annex 1 - No confirmed breeding by these birds was identified within the Site, however there may be impacts to habitats utilised for hunting/feeding and the potential for 'significant disturbance' during construction and operation. Based on partial survey data gathered in 2024, it was considered possible that some limited on-Site breeding by Annex 1 species could occur, with potential for removal or modification of habitat used for nesting. Schedule 1 - There are likely to be impacts through the removal or modification of nesting bird habitat such as scrub, rank grassland, open mosaic habitat, trees, woodland and hedgerows, with the presence of Schedule 1 species confirmed on-Site.
Breeding birds: SPI and/or BoCC5 Red list	Up to County	The Site supports a number of breeding SPI and/or BoCC5 Red list birds, there are likely to be impacts through the removal or modification of nesting bird habitat such as scrub, rank grassland, open mosaic habitat, trees, woodland, hedgerows and wetlands. Breeding birds are also likely to be disturbed (and displaced) during the Construction and Operational Phases.
Breeding birds: BoCC5 Amber list/other species of conservation value	District	The Site supports a number of BoCC5 Amber list species of breeding birds. There are likely to be impacts through the removal of nesting bird habitat such as scrub, rank grassland, open mosaic habitat, trees, woodland, hedgerows and wetlands. Breeding birds are also likely to be disturbed (and displaced) during the Construction and Operational Phases.
Non-breeding/wintering birds	Up to County	The Site supports a diverse community of non-breeding birds, including wintering species. This includes species listed on Annex 1 of the Birds Directive or Schedule 1 of the WCA, SPI species, and species that are red-listed or amber-listed under BoCC5. There are likely to be impacts to wintering birds through the removal of suitable habitat. Wintering birds are also likely to be disturbed (and displaced) during the Construction and Operational Phases.
Terrestrial invertebrates	County	As detailed in **Table 6-7** the Site, particularly the Lake Zone contains a complex of habitats offering a diverse array of different habitats (particularly the acid grassland, scrub and open mosaic habitat) and, therefore, it is likely to support a diverse range of terrestrial invertebrate species, including nationally scarce species and SPI.

Ecological Feature	Ecological Importance on a Geographic Scale	Justification to Scope Into the EcIA
		There are likely to be impacts through the removal or degradation of suitable habitat from within the Site. Where habitats suitable to support terrestrial invertebrate are retained there is a risk of indirect effects upon habitats through construction and operational activities.
Fish	County	The Site supports a number of fish species within the watercourses and water bodies present. Of note is the presence of European eel. There are likely to be impacts through the risk of pollution of watercourses and water bodies; along with the removal or degradation of suitable habitat.
Aquatic macroinvertebrates	Local	The watercourses and water bodies within the Site support aquatic macroinvertebrate communities of low-moderate diversity. There are likely to be impacts through the risk of pollution of watercourses and water bodies; along with the removal or degradation of suitable habitat.
Macrophytes	Local	The watercourses and water bodies within the Site support macrophyte communities of low-moderate diversity. There are likely to be impacts through the risk of pollution of watercourses and water bodies; along with the removal or degradation of suitable habitat and the direct removal of the plants themselves.
Other Receptors		
INNS (including Japanese knotweed and aquatic invasive plants)	N/A	Incidental records of INNS have been identified in locations within and close to the Site. Additional presence of INNS cannot be ruled out from within the Site, including within watercourses and water bodies, particularly in the Lake Zone. The spread of invasive non-native species (if present) could occur during construction and operation. This could lead to non-compliance with legislation meant to limit their spread, and lead to habitat degradation affecting habitats and species on and adjacent to the Site.

6.7. ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

6.7.1. This section of the chapter sets out the predicted impacts and effects of the Proposed Development on Important Ecological Features, including with and without consideration of targeted measures to address potential effects. Impacts have been assessed for the Construction and Operational Phases of the Proposed Development.

6.7.2. Further details of Construction Phase mitigation measures are outlined in the following documents which should be read in conjunction with **Table 6-11**; **Appendix 2.3: OCEMP (Volume 3)** and **Appendix 6.4: OHCEP (Volume 3).** Operational Phase mitigation measures are set out in **Appendix 6.4: OHCEP (Volume 3)** and, **Appendix 6.5: OLEMP (Volume 3).** One of the key principles of the outline design has been to focus development on areas of lower value (including non-HPI) habitats wherever possible. For example, the Core Zone will be situated primarily in areas of arable fields that are of lower ecological interest than most other habitats present within the Site.

6.7.3. Furthermore, **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** has been produced which shows the intended spatial configuration of new habitat, drainage and landscape elements across the Proposed Development. This plan sets out and establishes key areas for habitat creation which will be used for compensating ecological effects. The newly created habitat areas will also act as habitat provision for species features which may require translocation in advance of the Construction Phase.

6.7.4. The interaction between the various documents covering ecological mitigation and monitoring controls is summarised in Table 6-9, below.

Table 6-9 - Core Ecology Controlling Documents

Relevant Document	Mitigation Type	Timing
Appendix 6.4: OHCEP (Volume 3)	Sets out indicative proposals for habitat creation	Chronologically, habitats will largely be created prior to or during the Construction Phase.
Appendix 2.3: OCEMP (Volume 3)	Identities the main environmental mitigation measures associated with the Construction Phase of the Proposed Development. It reflects (and provides more detail on) those mitigation measures that would be implemented during construction, other than habitat creation measures which are covered by the **Appendix 6.4: OHCEP (Volume 3)**. Section 3.2 is specific to ecology including habitats and species mitigation measures.	Commitments to be complied with during Primary Construction Phase and future construction to deliver ERC developed in West Gateway Zone and Lake Zone.

Relevant Document	Mitigation Type	Timing
Appendix 6.5: OLEMP (Volume 3)	sets out objectives, management actions and indicative prescriptions for the establishment and long-term management of the landscape and ecological mitigation and enhancement measures of the Proposed Development. The **Appendix 6.5: OLEMP (Volume 3)** includes measures for monitoring the success of landscape and ecological mitigation and enhancement measures. Measures for managing and remediating any failed landscape and ecological mitigation and enhancement measures are also included.	Commitments relevant generally to the Operational Phase of the Proposed Development – but must be complied with as soon as new habitat is planted/established

CONSTRUCTION PHASE

6.7.5. The following elements could give rise to likely significant effects during Construction of the Proposed Development and are therefore included in this assessment:

- Habitat loss, damage or degradation;
- Habitat fragmentation/loss of flight paths/dispersal routes;
- Habitat disturbance;
- Accidental killing, injuring and disturbance of protected or important species;
- Increased dust, noise, vibration, visual and light disturbance;
- Hydrological effects, including changes to water quality/quantity;
- Pollution/contamination incidents; and
- Spread of invasive species.

6.7.6. **Table 6-10** Indicative Mitigation Seasonality provides indicative timings for when mitigation would be implemented, in accordance with the seasonality of relevant species. Please note that timings are indicative, as for many species these timings are affected by weather conditions in a given year.

6.7.7. **Table 6-11** sets out the assessment of ecological effects arising from the Construction Phase.

Table 6-10 - Indicative Mitigation Seasonality

Ecological Feature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Badger	Construct artificial setts, no destruction or disturbance to existing setts						Exclusion from existing setts, disturbance and sett closures under licence					
Bats - Maternity roosts	Maternity roost works under licence (if required)				Avoid works affecting bat maternity roosts (if required)				Maternity roost works under licence (if required)			
Bats - Hibernation roosts	Avoid works affecting bat hibernation roosts			Hibernation roost works under licence							Avoid works affecting bat hibernation roosts	
Nesting birds	Optimal period for removing nesting bird habitat		Nesting bird season. Removal of nesting bird habitat avoided where practicable or completed with ecological site support						Optimal period for removing nesting bird habitat			
Wintering birds	Core wintering bird period – minimise disturbing works and deploy mitigation			Work within wintering bird areas possible with mitigation in relation to disturbance not required						Core wintering bird period – minimise disturbing works and deploy mitigation		
Great crested newts & other amphibians	GCN generally hibernating, clearance of suitable hibernation features and ponds avoided.		Capture and translocation programmes including pitfall trapping and relocation of individual GCN as required under DLL, vegetation clearance and hibernacula dismantling.								GCN generally hibernating, clearance of suitable hibernation features and ponds avoided.	
Reptiles	Reptiles hibernating, clearance of suitable hibernation features avoided			Capture and translocation programmes, vegetation clearance and hibernacula dismantling						Reptiles hibernating, clearance of suitable hibernation features avoided		
Otter	No specific seasonal constraints however restrictions would apply in the unlikely event a breeding holt was discovered. Works potentially affecting otters completed with ecological site support.											

Table 6-11 - Assessment of potential effects, mitigation, residual effects and monitoring during construction

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Statutory Designated Sites		
SSSIs 1) Kings Wood and Glebe Meadows, Houghton Conquest SSSI, 2) Hanger Wood SSSI, 3) Marston Thrift SSSI, and 4) Maulden Wood and Pennyfather's Hill SSSI, Maulden Heath SSSI and Maulden Church Meadow SSSI	**Potential Effects**	The dispersion modelling and dust assessment completed for the air quality assessment (**Chapter 8: Air Quality (Volume 1)**) has been used to inform the assessment of air quality effects on important ecological features. Detailed results are presented in **Chapter 8: Air Quality (Volume 1)**. All SSSI's are located in excess of 2km from the Proposed Development. This puts them outside the ZoI of the Proposed Development in relation to dust, which is considered to be within up to 250m of the Site, as per best practice guidance **(Ref. 6.10)**. Activities during the Construction Phase will be relatively short-lived compared to the Operational Phase and are not predicted to lead to exceedances of air quality screening criteria for oxides of nitrogen (NO_x), ammonia (NH_3), or nitrogen deposition. In light of the above, no perceptible air quality effects to SSSI are predicted during the Construction Phase, with no potential for significant effects.
	Additional Mitigation	No mitigation measures are deemed necessary beyond those embedded in the general construction measures upon which the Air Quality assessment has been based and those which are included in **Appendix 2.3: OCEMP (Volume 3)**.
	Residual Effects and Monitoring	**No change** predicted upon identified SSSIs **(Not Significant)**.
Non-Statutory Designated Sites		

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Kempston Hardwick Pit CWS	**Potential Effects**	Temporary disturbance and change of CWS Habitats - approximately 26.7ha (31%) of the CWS is located within the Lake Zone within the Site. Approximately 15.1ha[7] (~17%) of this area is expected to experience change due to implementation of the drainage strategy for the Site and related works in the Lake Zone. The CWS area within the Site comprises two lakes (one large lake to the northeast and a second lake surrounded by dense scrub to the southwest (termed as the Kempston Hardwick Clay Pit (North) artificial lake in **Chapter 12: Water Resources (Volume 1)**), grassland and varying coverage of scattered and dense scrub dominating terrestrial habitats within the Site. The drainage strategy for the Proposed Development (see **Appendix 12.3: Drainage Strategy (Volume 3)**) would require some phased adaptations of the lakes located within the CWS (as well as offering a surface water solution within the two smaller lakes located outside the CWS boundary). These changes would include the lakes being partially reprofiled and taking receipt of surface water (transported via a watercourse through the Core Zone). This will have a potential effect upon the standing water and marginal and bankside habitats currently present in the CWS. The extent of standing water may increase, and the implementation of the drainage strategy will also require a new connection pipe and pumping and treatment units to be constructed close to the lakes to facilitate the treatment and movement of water. These works will result in a temporary effect upon the existing CWS habitats plus some potential for permanent habitat loss/change dependent on detailed design of the drainage infrastructure. It is not possible to quantify the specific areas of habitat which may be affected until detailed drainage design is complete with a best estimate for the area of the CWS affected presented above. This recognises that the area affected in the initial phases of the Proposed Development will be subject to disturbance and change, but that measures as outlined below will address longer term impacts upon the CWS integrity. Effects on CWS habitats could also occur from accidental spillages, silt laden run-off and dust during the Construction Phase. In addition, potential effects to CWS retained trees and scrub from severance of roots, compaction of the soil, or exclusion of air and water to the soil could occur. Construction activities alone are not expected to lead to exceedances of air quality screening criteria for oxides of nitrogen (NO_x), ammonia (NH_3), or nitrogen deposition. As such, no perceptible air quality effects (other than dust) to CWS are predicted during the Construction Phase, with no potential for significant effects. Given that approximately 31% of the CWS could be subject to construction impacts and habitat modification, there is considered to be an adverse effect, significant at the County Level, arising from the unavoidable disturbance during construction. There is predicted to be a direct, long-term **Major adverse** effect **(Significant)** on Kempston Hardwick Pit CWS.

[7] Where habitat areas are quoted within Table 1-11 these are rounded to one decimal place.

	Additional Mitigation	Habitats within Kempston Hardwick Pit CWS will be retained and enhanced within the layout of the Lake Zone proposals as shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. The northeast lake within the CWS will over time partially transition from an early-successional wetland ecosystem to include greater areas of standing water. These may hold deeper water at certain times, for example when periods of extended heavy rainfall occur over the winter. Measures to enhance the bank profile in combination with the drainage work will be undertaken which will provide opportunities to retain and enhance the marginal fen and wetland habitats. This will support retention of some of the current key characteristics of the CWS. The following habitats will be created in this new lake environment: ▪ Shallow, littoral banks supporting aquatic vegetation; ▪ Fringing marginal reedbeds and swamp habitat around approximately 60% of the new lake; ▪ Shallow areas with small islands which could support nesting/roosting wetland birds; ▪ Steep bank/cliff habitat which could support sand martin and/or kingfisher; and ▪ On the new lake southern shore, an open mosaic of grassland, scrub and ruderal vegetation will be created. Provision and establishment of compensation habitats will therefore be provided as set out in Section 2.3 of **Appendix 6.4: OHCEP (Volume 3)**, compensatory habitats will largely be created prior to or during the Construction Phase during Phase 1a (as defined by **Appendix 2.3: OCEMP (Volume 3)**). The Proposed Development will not use the new lake environment for fishing, water sports or hunting (wildfowling) or other activities which are in conflict with wildlife conservation. This would be supported by appropriate design and routing of footpaths/wayfinding and, where appropriate, use of fencing and/or other barriers to manage access to these locations. Any lighting required in the Lake Zone will be designed to ensure sensitive illumination of the new lake environment above current baseline conditions (lux levels and wavelengths) and will be in keeping with Bat Conservation Trust/Institute of Lighting Professionals guidelines for avoiding impact on bats **(Ref. 6.26)**. This habitat retention and creation measures will be incorporated into the detailed Habitat Creation and Enhancement Plan which will be produced at the detailed design stage. Scrub and young trees located to the south of Kempston Hardwick Pits main lake and to the north of Manor Road will be retained to maintain a buffer of vegetation to the water's edge (as shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. The habitat type and species composition will be fully determined at detailed design stage but will be reflective of surrounding habitat and contribute to the provision of similar habitat within the local area. This will provide habitat for a range of fauna. Tree and scrub planting will be undertaken at the boundaries of the Core Zone (which will also act as landscape and visual mitigation and enhance the diverted watercourse to the east of the Core Zone) and within the Lake Zone. Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, noise and vibration management, lighting and ecology as described in Sections 3.2, 3.6, 3.7, and 3.10 of the **Appendix 2.3: OCEMP (Volume 3)** will mitigate indirect impacts upon retained areas of the CWSs adjacent to the Site. In addition to those measures, the boundary of the Site will be marked with protective fencing and signage displayed to make sure that these sensitive areas are protected from construction works. The Lake Zone strategic attenuation will be a Wetland Feature with a permanent level of water, attenuation volume for the Core and Lake Zones and adequate storage for water harvesting requirements and emergency storage in the event of pump failure. The disused pits will be carefully reprofiled, existing rubble/bricks/sediment will be removed as required and reused where possible. Surface Water run-off will be

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		conveyed through multiple levels of treatment and stored in the pits. The proposed bank treatment includes varied side slopes, flat landings, and enhanced landscaping, which provides a supporting environment, encouraging biodiversity and self-sustaining resilient ecosystems (see section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**). The management of new lakes, reedbed habitat and habitats on the banks of lakes in the Lake Zone is described within Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**.
	Residual Effects and Monitoring	The sensitivity of Kempston Hardwick Pit CWS is County. Following implementation of mitigation measures the new deeper-water lake ecosystem, with surrounding wetlands and islands, will result in a direct, long-term **Moderate beneficial** residual effect on the CWS **(Significant)**. The species and habitats occurring in the new lake environment will be different to the early successional species in the CWS's baseline condition. The habitats and species present are anticipated to be of comparable interest and importance to the existing CWS communities. Given that approximately 31% of the CWS could be subject to construction impacts and transition from an early successional wetland ecosystem to support generally deeper water ecosystems, there is also considered to be an adverse effect, significant at the County Level, arising from the unavoidable disturbance during construction. There is predicted to be a direct, medium-term **Major Adverse** residual effect **(Significant)** on Kempston Hardwick Pit CWS. Proposed monitoring requirements are set out in Section 5 of **Appendix 6.5: OLEMP (Volume 3)**.
Coronation Pit CWS	**Potential Effects**	Loss of CWS Habitats - approximately 5ha (5.2%) of the CWS is located within the Core Zone within the Site. In the absence of avoidance or mitigation there would be a loss of CWS habitats which predominantly comprise lowland mixed deciduous woodland and mixed scrub. The majority (~95%) of the CWS including the open water body and surrounding scrub is located outside the Site. These habitats will therefore not be physically disturbed by the Proposed Development. Indirect effects on the CWS habitats located adjacent but outside the Site (to the east of the Core Zone) from accidental spillages, silt laden run-off and dust during Construction Phase could occur. In addition, potential effects to CWS retained trees and scrub from severance of roots, compaction of the soil, or exclusion of air and water to the soil could occur. Construction activities alone are not predicted to lead to exceedances of air quality screening criteria for oxides of nitrogen (NO_x), ammonia (NH_3), or nitrogen deposition. As such, no perceptible air quality effects (other than dust) to CWS are predicted during the Construction Phase, with no potential for significant effects. Given that approximately 5% of the CWS could be subject to construction impacts with additional areas potentially subject to indirect effects, there is predicted to be a direct, long-term **Moderate adverse** effect **(Significant)** on Coronation Pit CWS.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Woodland creation and tree planting will be provided to mitigate for the loss of CWS habitats as shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** and as per Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. This will be incorporated into the landscape proposals across the Site at the boundaries of the Core Zone (which will also act as landscape and visual mitigation and enhance the diverted watercourse to the east of the Core Zone) and within the Lake Zone. As set out in Section 2.3 of **Appendix 6.4: OHCEP (Volume 3)**, compensatory habitats will largely be created prior to or during the Construction Phase during Phase 1a. Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, noise and vibration management, lighting and ecology as described in Sections 3.2, 3.6, 3.7, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**, will also mitigate impacts upon retained areas of the CWSs adjacent to the Site. In addition to those measures, the boundary of the Site will be marked with protective fencing and signage displayed to make sure that these sensitive areas are protected from construction works. The Lake Zone strategic attenuation will be a Wetland Feature with a permanent level of water, attenuation volume for the Core and Lake Zones and adequate storage for water harvesting requirements and emergency storage in the event of pump failure. The disused pits will be carefully reprofiled, existing rubble/bricks/sediment will be removed as required and reused where possible. Surface Water run-off will be conveyed through multiple levels of treatment and stored in the pits. The proposed bank treatment includes varied side slopes, flat landings, and enhanced landscaping, which provides a supporting environment, encouraging biodiversity and self-sustaining resilient ecosystems (see section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**). The management of new lakes, reedbed habitat and habitats on the banks of lakes in the Lake Zone is described in Sections 4.3 to 4.4 of **Appendix 6.5: OLEMP (Volume 3)**.
	Residual Effects and Monitoring	The sensitivity of Coronation Pit CWS is County. After mitigation, the effect is considered to be significant at a Local level. There is likely to be a direct, medium-term **Minor adverse** residual effect **(Not Significant)** following the implementation of mitigation measures. Proposed monitoring requirements are set out in Section 5 of the **Appendix 6.5: OLEMP (Volume 3)**.
Elstow Pit CWS, Quest Pit CWS and Stewartby Lake CWS	**Potential Effects**	These CWS are located outside the Proposed Development, so would not be subject to any land-take or physical disturbance of the habitats they contain. Of the three CWS, Stewartby Lake is the closest to the Proposed Development, at approximately 170m distant at the closest point. Given these distances and that the CWS are partially isolated from the Proposed Development by existing built infrastructure, minimal impacts to them are predicted. **Chapter 12: Water Resources (Volume 1)** predicts no hydrological effects on these sites. Effects during the Construction Phase are predicted to be **Negligible**, and therefore **Not Significant**.
	Additional Mitigation	None required.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	Residual effects are predicted to be **Not Significant.** No monitoring is proposed.
Habitats[8]		
HPIs – other lowland mixed deciduous woodland	**Potential Effects**	A number of woodland areas within the Site have been identified as meeting the criteria as HPI. The following effects are predicted to occur: ▪ Direct loss of HPI other lowland mixed deciduous woodland - approximately 27.7ha is located within the Site. Approximately 12.4ha of this is expected to be removed to facilitate development, including works in the Core Zone, Lake Zone, and East Gateway Zone. ▪ Damage to retained woodland and trees from severance of roots, compaction of the soil, or exclusion of air and water from the soil. ▪ Fragmentation of woodland habitats by Site clearance and subsequent infrastructure delivery. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on woodland habitats.

[8] Whilst habitats are assessed on the basis of the individual HPI descriptions, it should be noted that spatially there is an overlap between habitat types within the Site. Some habitat types, e.g. grassland, woodland, scrub, and open mosaic habitats, exist in a mosaic of habitats, e.g. areas of grassland interspersed with areas of open mosaic habitat and scrub. Please refer to **Table 6-6** for further habitat descriptions.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Woodland and tree habitats will be created across the Site as indicated on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** and as per Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. Approximately 16.1ha of woodland habitats will be created or enhanced, as set out in Table 2.1 of **Appendix 6.4: OHCEP (Volume 3).** Proposals for woodland planting will be fully determined at the detailed design stage and will include replacement tree and woodland planting. Areas of new woodland will link to existing areas of woodland where possible, within the wider landscape to retain habitat corridors. Woodland areas will predominantly native broadleaved woodland, with a smaller component of mixed woodland to increase climate change resilience. The management of areas of woodland will be aimed at enhancing biodiversity (and where conducive landscape and amenity) value rather than any commercial purpose and be designed to support structural and species diversity. Planting would use transplants wherever practicable. Photodegradable rabbit and deer guards would be installed around each transplant to minimise damage to the woodland planting during establishment. Contractors shall secure plants in accordance with required provenance for each location. Compensatory habitats may be delivered during the Construction and/or Operational Phases, depending on the detailed phasing of construction. Enhancement of retained woodland (e.g. along Elstow Brook, to the east of the Lake Zone and Core Zone) will be undertaken to promote the improvement of the natural habitat for native species. Measures will include increasing the diversity of the canopy cover through the removal of species not native to the locality and the planting of native species, such as oak, hazel, silver birch, beech and field maple, to increase their distribution. Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, soil protection, and ecology as described in Sections 3.2, 3.6, 3.9 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**, will also support mitigation of impacts upon retained areas of habitat within and adjacent to the Site. As set out in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)** retained woodland habitats located within the Site or adjacent to it will be protected through the provision of suitable barrier fencing and retained trees (including woodland) in accordance with British Standard BS5837:2012 Trees in Relation to Construction **(Ref 6.18)**. This will include the adoption of a sufficient buffer to protect tree roots (as directed by the **Appendix D: Outline Arboricultural Method Statement** of the **Arboricultural Impact Assessment (Document Reference 6.11.0)**) and erection of protective fencing (or similar) encompassing or demarcating root protection. Arboricultural protection measures are also shown on **Appendix C: Tree Removal and Protection Plan** of the **Arboricultural Impact Assessment (Document Reference 6.11.0)**. Habitat creation and enhancement measures are set out in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**, and management measures during the initial period of establishment are set out in Section 4.3 of **Appendix 6.5: OLEMP (Volume 3)**. Maintenance and management measures are set out in Section 4.4 of the **Appendix 6.5: OLEMP(Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	Based on the available design information, after mitigation there would be a reduction in the extent of woodland habitats of up to 11.6ha, although the extent of loss is expected to be reduced at detailed design stage. Mitigation measures to address indirect effects during construction are predicted to be effective. The sensitivity of these habitats is up to County. Following mitigation effects are considered to be significant at a District scale. There is likely to be a direct, medium-term **Moderate Adverse** residual effect **(Significant)** on woodland HPI following the implementation of mitigation measures. Monitoring of retained and created woodland habitats will be undertaken as outlined in Section 5 of **Appendix 6.5: OLEMP (Volume 3)** for a period of at least 10 years.
HPIs – Reedbeds (excluding those within the CWS)	**Potential Effects**	- Loss or disturbance of approximately 6ha of reedbed habitat located primarily within the Lake Zone. - Indirect effects upon retained reedbed habitat during construction including dust, silt and run off and changes in hydrological conditions. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate Adverse** effect **(Significant)** on reedbed habitats.
	Additional Mitigation	These habitats will be retained and protected within the Proposed Development where possible. Where it is not possible to retain these habitats, compensation habitat will be provided. Compensatory habitats may be delivered during the Construction and/or Operational Phases, depending on the detailed phasing of construction. Approximately 3.6ha of reedbed habitats will be created within drainage lakes and where possible alongside retained and new watercourses as indicated on the **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** and set out in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. The edges of lakes retained or created and enhanced would be planted with reedbed species. The management of these habitats is set out in sections 4.3 to 4.4 of **Appendix 6.5: OLEMP (Volume 3)**. Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, and ecology as described in Sections 3.2, 3.6, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**, will also support mitigation of impacts upon retained areas of habitat within and adjacent to the Site. The Lake Zone strategic attenuation will be a Wetland Feature with a permanent level of water, attenuation volume for the Core and Lake Zones and adequate storage for water harvesting requirements and emergency storage in the event of pump failure. The disused pits will be carefully reprofiled, existing rubble/bricks/sediment will be removed as required and reused where possible. Surface Water run-off will be conveyed through multiple levels of treatment and stored in the pits. The proposed bank treatment includes varied side slopes, flat landings, and enhanced landscaping, which provides a supporting environment, encouraging biodiversity and self-sustaining resilient ecosystems (see section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**).

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	Based on the available design information, after mitigation there would be a reduction in reedbed extent of up to 2.75ha, although the extent of loss is expected to be reduced at detailed design stage. Mitigation measures to address indirect effects during construction and deliver long-term water quality improvements are predicted to be effective. The sensitivity of these habitats is County. After mitigation, the effect is considered to be significant at a District level. There is predicted to be a direct, medium-term **Moderate adverse** residual effect **(Significant)** on reedbed habitat following the implementation of mitigation measures. Proposed monitoring requirements are set out in Section 5 of **Appendix 6.5: OLEMP (Volume 3)**.
OMHs on Previously Developed Land	**Potential Effects**	Loss and degradation of HPI OMH located across the Site – approximately 2.8ha is located within the Lake Zone, with approximately 2.5ha of this potentially subject to loss or disruption during construction. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Major adverse** effect **(Significant)** on OMHs.
	Additional Mitigation	The majority of the area of OMH in the Lake Zone will not be retained within the development proposals. Areas of OMH along the south edge of the retained lake shore will be retained where possible. Compensation for the loss of open mosaic habitat elsewhere on-Site will comprise habitat creation and management in the Lake Zone EEA (see **Figure 1: Indicative Habitat Creation and Enhancement Plan** and Table 2.1 of **Appendix 6.4: OHCEP (Volume 3)**). An area of at least 2.5ha (i.e. equivalent to that predicted to be lost) will be provided. The following broad measures will be incorporated into the habitat works: ▪ Creation of bare ground scrapes through mechanical removal of topsoil to reveal the substrate beneath; ▪ Creation of shallow pools of varying depth and size, which are lined/capped with impermeable material to hold water throughout most if not all of the year; ▪ Creation of piles/mounds of mixed crushed and coarse concrete rubble e.g. salvaged from existing piles, or derived from breaking up existing concrete hardstanding, within the construction footprint; and ▪ Creation of mounds and low bunds using material derived from construction works within the Site. More detail on mitigation proposals in relation to habitat creation measures is contained in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, and ecology as described in Sections 3.2, 3.6, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**, will also support mitigation of impacts upon retained areas of habitat within and adjacent to the Site. Habitat creation and enhancement measures are set out in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**, and management measures during the initial period of establishment are set out in Section 4.3 of **Appendix 6.5: OLEMP (Volume 3)**. Maintenance and management measures are set out in Section 4.4 of the **Appendix 6.5: OLEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of this HPI is County. After mitigation, the effect is considered to be reduced to a Site level. There is predicted to be a direct, medium-term **Minor adverse** residual effect **(Not Significant)** on OMH HPI. Proposed monitoring requirements are set out in Section 5 of the **Appendix 6.5: OLEMP (Volume 3)**.
HPIs – Native Hedgerow and Hedgerow with Trees	**Potential Effects**	▪ Permanent loss and severance of hedgerows – the loss of up to approximately 2.4km of native HPI hedgerow habitats present within the Site; and ▪ Damage/disturbance to retained hedgerows and root zones during construction. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect (**Significant**) on hedgerow habitats.
	Additional Mitigation	Hedgerows will be created and enhanced to provide landscape integration and habitat linkages, with approximately 2.4km to be provided to address predicted losses during construction. New hedgerow planting will utilise native tree and shrub species of local provenance and will aim to maximise species diversity. A diverse ground flora will also be encouraged, to be managed as part of the hedgerow feature. Compensatory habitats may be delivered during the Construction and/or Operational Phases, depending on the detailed phasing of construction. Retained hedgerows will be protected during the Construction Phase by incorporation of a suitable buffer, demarcated with robust Heras or similar fencing, as set out in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**. To promote establishment of hedgerows, translocation of sections of species-rich hedgerows will also be explored (those with more than four native species) where suitable receptor locations around the boundary of the Site are agreed. More detail on mitigation proposals in relation to habitat creation measures is contained in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, and ecology as described in Sections 3.2, 3.6, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**, will also support mitigation of impacts upon retained areas of habitat within and adjacent to the Site.
	Residual Effects and Monitoring	Retention and creation of new hedgerows within the Proposed Development will result in an approximately equivalent extent of hedgerow to that currently present, with opportunities to increase the species richness of created and retained hedgerows relative to baseline. Mitigation measures will seek to address loss of hedgerows by replanting immediately following construction. Replanted hedgerows will nonetheless take time to become established. The sensitivity of this feature is County. After mitigation, the effect is considered to be reduced to a Local level. There is predicted to be a direct, medium-term **Minor adverse** residual effect **(Not Significant)** on hedgerow habitats. Proposed monitoring requirements are set out in Section 5 of the **Appendix 6.5: OLEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
HPIs – Watercourses and water bodies including 1) standing open water (r1), 2) rivers and streams.	**Potential Effects**	▪ Permanent loss of pond habitat within the Core Zone (field ponds). ▪ Temporary disturbance to HPI standing open water habitats located within the Lake Zone primarily with limited extents across the remainder of the Site. The Drainage Strategy for the Proposed Development (see **Appendix 12.3: Drainage Strategy (Volume 3)**) would require the existing three separate lakes in the Lake Zone to be reprofiled and filled with water attenuated from the operational Core Zone. The two smaller lakes will be co-joined to the currently larger of the three by infilling to form one larger, deeper lake. This will lead to a markedly higher, permanent water levels in this part of the CWS. Presently the two smaller lakes fill intermittently and occasionally dry out, with a marked fringe of terrestrial habitat. Filling and re-profiling of the smaller lakes will result in a loss of areas (not possible to quantify until detailed drainage design is complete) of bare earth, ephemeral vegetation, scrub and marginal wetland habitat; ▪ Loss and disturbance of HPI running water (ditches and WFD Elstow Brook) habitats located across the Site – approximately 7.8km of this linear habitat is located within the Site, with approximately 6.4km potentially lost or disturbed during construction; ▪ Fragmentation of aquatic habitats by Site clearance and subsequent infrastructure delivery; ▪ Accidental and incidental releases of silt and water-borne pollutants could enter the watercourses and water bodies on and downstream of the Site. This could degrade the water quality in aquatic habitats; and ▪ Noise, vibration, and lighting disturbance from works could disturb fauna using aquatic habitats. This could disrupt ecosystem balance in aquatic habitats, e.g. through repelling predators that are required to support a stable ecosystem. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Major adverse** effect **(Significant)** on watercourse and water body habitats.

	Additional Mitigation	The wet ditch that is located within the Core Zone and runs between Coronation Pit CWS in the south towards the Lake Zone and Manor Road (see **Figure 6.2: UK Habitats Plan (Volume 2)**) will be diverted to enable construction within the Core Zone. The watercourse will be recreated along the eastern boundary of the Core Zone which will include suitable habitat creation through planting, seeding and natural colonisation, where appropriate. New or re-profiled watercourses and water bodies will be designed with suitable water levels and embankment profiles. They will be planted and seeded to support the establishment of a species-rich bankside and aquatic flora. The principles of the design of this new drain are provided in Section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**. The new watercourse will be created in advance of the destruction of the existing watercourse to enable any protected or important plant and animal species to be relocated to this area. Compensatory habitats may be delivered during the Construction and/or Operational Phases, depending on the detailed phasing of construction. The Lake Zone strategic attenuation will be a Wetland Feature with a permanent level of water, attenuation volume for the Core and Lake Zones and adequate storage for water harvesting requirements and emergency storage in the event of pump failure. The disused pits will be carefully reprofiled, existing rubble/bricks/sediment will be removed as required and reused where possible. Surface Water run-off will be conveyed through multiple levels of treatment and stored in the pits. The proposed bank treatment includes varied side slopes, flat landings, and enhanced landscaping, which provides a supporting environment, encouraging biodiversity and self-sustaining resilient ecosystems (see section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**).The following habitats which have indicative locations shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** and as set out in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)** will be created in this new lake environment: ▪ Shallow, littoral banks supporting aquatic vegetation; ▪ Fringing marginal reedbeds and swamp habitat around approximately 60% of the new lake; ▪ Shallow areas with small islands which may support nesting/roosting wetland birds; ▪ Steep bank/cliff habitat which could support sand martin or kingfisher; and ▪ On the new lake southern shore, a, a mosaic of grassland, scrub and ruderal vegetation will be created. Measures to protect riparian and aquatic habitats from disturbance or degradation, are outlined in Sections 3.2 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**. Measures include the following (with additional detail in **Appendix 2.3: OCEMP (Volume 3)**): ▪ A 10m construction exclusion zone from the top of the bank of the Elstow Brook (Riparian Zone); ▪ Noise, vibration, lighting, and biosecurity measures employed during construction to avoid negative impacts on species present in the brook; and ▪ Sediment, pollution, and surface water run off controls in proximity to the Elstow Brook and any hydrologically connected watercourses. Additional measures to enhance the Riparian Zone of the Elstow Brook are proposed, including grassland and scrub planting within the Riparian Zone, particularly in the Lake Zone where this is currently arable habitat. As such there will be no deterioration of the WFD Elstow Brook habitats. The detailed Habitat Creation and Enhancement Plan will set out the refined measures at the detailed design stage. An overview of proposed habitat measures is set out in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		All site-based staff will be made aware of the need to protect watercourses from contamination, including *Environment Agency and Construction Industry Research and Information Association guidance* (**(Ref. 6.27)** and **(Ref. 6.28)**) and legal obligations. This should be implemented through appropriate site barriers and signage alongside site inductions and task briefings for contractors. Appropriate measures to protect the water environment will be implemented during the Construction Phase of the Proposed Development in order to eliminate or minimise risk to aquatic flora and fauna. These measures are detailed in full in Sections 3.2 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** with a summary below: ▪ Sediment management and water quality monitoring would be implemented during any construction works with the potential to affect any watercourse, and a plan for appropriate remediation measures to ameliorate any adverse effects should they occur would be prepared; ▪ When construction activities, including stock piling and plant and vehicle washing, occur near a watercourse they would be separated from the watercourse with barriers (e.g. sediment fences) to prevent surface runoff from these sites entering the watercourse; ▪ Construction activities would be as far from the bank top of a watercourse and/or connected hydrological pathways as practicable; and ▪ Works required within the 10m buffer would likely require ecological method statements.
	Residual Effects and Monitoring	Based on the available design information, after mitigation there would be an increase in the extent of water bodies of up to 6.9ha, with the potential for additional water bodies of ecological value to be provided through detailed design of areas outside the EEA. The ecological condition of water bodies and watercourses are also predicted to be improved relative to baseline. Mitigation measures to address indirect effects during construction and deliver long-term water quality improvements are predicted to be effective. The sensitivity of watercourses and water bodies is at the Local scale. There is likely to be a **Moderate Beneficial** residual effect on watercourses and water bodies **(Significant)** following the implementation of mitigation measures. Proposed monitoring requirements are set out in Section 5 of the **Appendix 6.5: OLEMP (Volume 3)**.
Veteran Tree (T80, West Gateway Zone)	**Potential Effects**	Veteran trees are considered an irreplaceable habitat. Veteran trees are therefore considered to be an Important Ecological Feature at a National scale. The veteran tree will be retained. However, there could be potential damage/disturbance to the tree due to construction of West Gateway Road layout and associated activities. This could include potential severance of roots, compaction of the soil, or exclusion of air and water to the soil upon which the tree is dependant. Prior to the application of mitigation, there is predicted to be a permanent, indirect, long-term **Moderate Adverse** effect **(Significant)** on the retained veteran tree.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Measures to protect the tree will be adopted as set out in the **Appendix D: Outline Arboricultural Method Statement** of the **Arboricultural Impact Assessment (Document Reference 6.11.0)**) to include erection of protective fencing (or similar) encompassing or demarcating at least the root protection area. Arboricultural protection measures are shown on the **Appendix C: Tree Removal and Protection Plan** of the **Arboricultural Impact Assessment** (**Document Reference 6.11.0**). Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, and ecology as described in Sections 3.2, 3.6, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**, will also support mitigation of impacts upon the retained veteran tree.
	Residual Effects and Monitoring	The residual effect upon the veteran tree is assessed as being **Negligible (Not Significant)**. Proposed monitoring requirements are set out in Section 5 of the **Appendix 6.5: OLEMP (Volume 3)**.
Invasive Non-Native Species	**Potential Effects**	▪ Disturbance and spread of invasive species including Japanese knotweed and other potentially present INNS across the Site.
	Additional Mitigation	Pre-construction surveys will be undertaken by an appropriately qualified Environmental Advisor or appointed invasive species contractor to fully determine the presence of INNS across the Site. Measures to manage INNS would be implemented during construction, to avoid or appropriately manage areas of INNS, e.g. through eradication prior to earthworks. Method statements will be prepared to minimise the risk of incidental spreading of INNS by construction works. This will include measures such as the use of fencing, signage, and controls over soil stripping and storage. Contaminated soils will be carefully excavated and disposed of or reused in accordance with legal requirements. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)** outlines the measures which will be adopted for the management and control of invasive plant species. The methodology to remove and dispose of invasive species would be specified by an appropriately qualified and where necessary licensed contractor.
	Residual Effects and Monitoring	**No Change** (INNS are not evaluated therefore not subject to assessment). Effects on Important Ecological Features expected to be **Not Significant**. Monitoring during the Construction Phase and beyond for invasive species will be undertaken as committed to in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)** and Section 4.4 of the **Appendix 6.5: OLEMP (Volume 3)**.
Protected Species		

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Badger	**Potential Effects**	▪ Direct effects (damage/destruction and displacement of individual badgers) to badgers and their setts within the Site including a potential active main sett; ▪ Disturbance of badger occupying a sett (where a sett can be retained and avoided/protected during the construction (and operational) phases of the Proposed Development, but where works may take place within 30m of it); ▪ Severance and loss of badger habitat and general disturbance during construction; and ▪ Risk of harm from construction traffic and construction locations. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on badgers.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Licenced Badger Sett Closure – where removal or significant disturbance to badger setts cannot be avoided a mitigation licence will be required from Natural England to undertake a licenced closure of the sett. The application will require additional survey data and monitoring of setts to re-affirm their status prior to construction. Any setts confirmed as 'active' are likely to need to be covered under the mitigation licence to enable legal closure. Generally Natural England grant licenses for sett closures to take place between July and November inclusive. Artificial sett(s) will be created prior to sett closure to mitigate for the loss of any main sett(s) present. Artificial setts would be constructed within a suitable location (informed by the field survey data and ensuring linkages and sufficient access to foraging resource and retained setts within a clan/territory are retained) within the EEAs, in accordance with the standard methodology prescribed by Natural England. An indicative location for artificial sett provision would be in the Northern Ecology Area as shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. The artificial sett(s) would be sited within an area of retained suitable habitat that can be protected throughout construction and remain protected post construction. Techniques such as baited trails will be used to encourage badgers to discover and begin making use of artificial setts. Avoidance of and reduction of disturbance to retained setts - Vegetation clearance works may need to take place close to active setts. This could result in disturbance effects upon any badgers using them. The Badger licence may also include measures to minimise the risk of damage or disturbance to retained setts, including buffer zones around retained or created setts, and best practice protocols to safeguard the welfare of badger during the Construction Phase. These measures are also committed to through their inclusion in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, which sets out Construction Phase badger mitigation measures in greater detail. Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)** sets out mitigation measures relevant to the establishment of habitat and structures for protected species, and Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out maintenance and management mitigation measures that will occur during both the Primary Construction Phase and Operational Phase. Severance and loss of habitat and access to foraging grounds - Corridors for wildlife movement have been incorporated into the Proposed Development, which facilitate movement both within and out with the Site, including between the different EEAs. This includes the clear span bridge crossing of Elstow Brook in the West Gateway Zone and the proposed wildlife crossing structures under Public Road B in the Lake Zone. The Northern Ecology Area will also include grassland, woodland and scrub habitats which will be established to provide suitable foraging conditions. Grassland, scrub, and woodland habitats within the wider EEA will also provide additional foraging habitat. Risk of accidental harm to individual badgers – measures are proposed in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)** to manage the risk of harm to badger during construction. These include measures such as the use of fencing, securing excavations overnight, and the use of construction traffic speed limits. Pre-construction badger surveys and continued monitoring throughout the construction stage will be undertaken to support legal compliance. General construction mitigation measures in relation to noise and vibration management, lighting and ecology as described in Sections 3.2 and 3.7 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on badgers.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of badger within the Site has been categorised as Local. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation effects are predicted to be temporary **Minor Adverse (Not Significant)** on badger. Monitoring of measures adopted to mitigate the potential effects upon badger during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.
Bats – Roosting	**Potential Effects**	▪ Loss or damage of confirmed and potential roosting features – two confirmed tree roosts and one confirmed building roost (see Table 6.7); ▪ Disturbance of bats whilst occupying a roost; and ▪ Fragmentation/severance effects through Site clearance and installation of infrastructure, i.e. existing bat roosts that are retained could have reduced connectivity with the surrounding landscape. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on roosting bats.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Any bat roosts lost to the Proposed Development will be compensated for through the provision of suitable replacement roost provision e.g. bat boxes or replacement structures. Demolition of buildings or tree work to confirmed roosts will also need to be completed under mitigation licence from Natural England. **Appendix 2.3: OCEMP (Volume 3)** outlines the bat mitigation measures which would be adopted for roosting bats including the principles of measures which would be undertaken as part of a Natural England licence. These measures would include provision of compensatory roost sites within suitable retained/created habitat before roosts can be destroyed and timing of roost destruction to avoid sensitive periods in the bat lifecycle (i.e. maternity and/or hibernation). Further details on bat habitat creation measures is provided in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. Should replacement structures be required, these would be provided within the grounds of the existing Vine Cottages, in the East Gateway Zone, north of Manor Road. This location provides connectivity with adjacent woodland and wetland habitats to the north and is also adjacent to the majority of buildings (associated with the existing Vine Cottages) that would require demolition as part of the Proposed Development. Ecological watching briefs for buildings/structures/trees/features with bat roost suitability or confirmed as bat roosts will be carried out. Works to remove features of bat roost potential will be carried out by hand/using hand tools by contractors with support from a suitably experienced and licensed bat Ecologist (or their Accredited Agents/Assistants) acting as an Ecological Clerk of Works (ECoW). Once all potential/confirmed bat roost features have been removed, buildings can be demolished. Prior to commencement of works, all contractors will be briefed and provided necessary site briefings and methods statements. Bat boxes will be installed within suitable locations with the Site to provide additional roosting habitat. As set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**, an indicative target of one bat box per medium or high suitability tree will be adopted. Bat boxes will be located in areas away from core activity of the operational theme park, as set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. This will minimise noise and visual disturbance of replacement roosts. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bat mitigation measures, Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)** sets out bat habitat creation measures, Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out set out maintenance and management mitigation measures that will occur during both the Primary Construction Phase and Operational Phase. Construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on bats.
	Residual Effects and Monitoring	The sensitivity of roosting bats within the Site has been categorised as County. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation effects are predicted to be **Minor Adverse (Not Significant)**. Monitoring of measures adopted to mitigate the potential effects upon roosting bats during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP Plan (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Bats – Non-Roosting (foraging and commuting)	**Potential Effects**	▪ Loss of bat foraging and commuting habitats - The removal of semi-natural habitats including woodland, grassland, scrub, standing water and linear features including hedgerow to facilitate the construction of the Proposed Development; ▪ Fragmentation/severance effects through Site clearance and installation of infrastructure could reduce connectivity for foraging and commuting bats within and surrounding the Site; and ▪ Disturbance effects upon foraging habitats and commuting routes during construction from increased traffic, lighting, noise e.g. piling and rock crushing. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on foraging and commuting bats.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	To maintain connectivity for bats throughout the Proposed Development, the landscaping proposals will include planting of woodland, trees and hedgerows around the Site boundary. This will minimise disruption of flight paths and allow connectivity for bats through the landscape. As set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)** dark corridors (overnight light levels under one lux) will be incorporated into the design where possible. Bat 'hop-overs' will be created where appropriate using retained mature vegetation and/or transplanted specimen trees. These features will be installed in areas which are likely to require mitigation to facilitate road crossing by bats. Trees will be planted to maintain a flightline of at least 5m above the road height. Gaps between canopies will be less than 10m wherever practicable and no more than 20m. Such a feature is likely to be located within a dark corridor that will be retained for commuting bats on either side of Manor Road, between the Lake Zone and Core Zone. Bat 'hop-overs' will be linked into existing retained and newly proposed hedgerows and new woodlands as far as practicable. Habitat connectivity will also be maintained and enhanced by the protection of the Riparian Zone along Elstow Brook in the West Gateway Zone and Lake Zone and the Diverted Watercourse in the Core Zone (see **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**). Retention and protection of the Elstow Brook Riparian Zone through the West Gateway Zone is of particular note, as the majority of barbastelle bat calls from the 2024 surveys were recorded here. Where not prevented by safety considerations, required nocturnal lighting will be positioned and/or directed away from important habitat features for bats, including woodland, trees, lakes, wet ditches, Elstow Brook and boundary habitats such as hedgerows and lines of trees. No lighting levels above 0.5 lux will be permitted to reach trees with suitability for roosting bats. This is set out further in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3).** Lighting measures are also expected to be controlled through the requirement for a European Protected Species Mitigation Licence (EPSML) for the Proposed Development. This can be applied for after grant of permission for the Proposed Development. Any lighting required will be restricted to, and directed towards, the working areas to prevent any light spill and disturbance/displacement of roosting, foraging and commuting bats in adjacent habitat. Habitats of importance for commuting and foraging bats are considered to be ditches and other water bodies, broadleaved woodland, scattered trees, lines of trees, hedgerows, scrub and grassland. Development of a Construction Lighting Management Plan for the Construction Phase, as per the measures outlined in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)** will help to minimise lighting impacts as far as is practicable. The maintenance and monitoring of the required dark corridors during construction will allow bats to continue to forage and commute across the Site. Construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on bats. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)** (sets out Construction Phase bat mitigation measures Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)** sets out bat habitat creation measures, Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out set out maintenance and management mitigation measures that will occur during both the Primary Construction Phase and Operational Phase.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of non-roosting bats within the Site has been categorised as up to County. After mitigation, the effect is considered to be applicable at up to a District level. There is predicted to be a direct, medium-term **Moderate adverse** residual effect **(Significant)** on commuting and foraging bats following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon roosting bats during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.
Otter	**Potential Effects**	▪ Loss of otter habitats; watercourses, lakes, and surrounding vegetation; ▪ Risk of accidental harm to individual otters; ▪ Disturbance of otter habitat during construction in adjacent areas including from noise and vibration e.g. piling and rock crushing; ▪ Fragmentation/severance effects through Site clearance and installation of infrastructure, i.e. creating barriers to the movement of otters along watercourses and through water bodies within and adjacent to the Site; ▪ Disturbance of an otter whilst occupying a holt; and ▪ Disruption and/or reduction in food sources for otter, e.g. through reductions in fish populations resulting from works to lakes and watercourses. ▪ Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term Moderate adverse effect (Significant) on otter.

	Additional Mitigation	Pre-construction surveys will be carried out to re-assess and determine status of otter on watercourses and water bodies within 250m from construction areas. Survey will be completed prior to construction works in a Phase starting, as outlined in **Appendix 2.3: OCEMP (Volume 3)**. Habitats within the Site with suitability to support otter will be retained wherever possible. Elstow Brook will be retained and protected from construction activities by incorporation of the 10m Riparian Zone on the eastern extent. The lakes within the Lake Zone will be maintained, and whilst subject to activities to facilitate their adoption within the Drainage Strategy (**Appendix 12.3: Drainage Strategy (Volume 3)**) will be retained as suitable otter habitats. Where works are within the vicinity of a watercourse or water body known or assumed to support otter, but will not be directly impacted by the Proposed Development (e.g. sections of Elstow Brook in the Lake Zone, and the water bodies in the Lake Zone) a 10m Riparian Zone will be maintained along the watercourse/to the edge of the water body and the working area wherever practicable. The area will be demarcated to prevent encroachment onto otter habitat. These protection measures would remain in place until the completion of construction activities, potentially longer depending on the Operational Phase activities adjacent to the watercourse corridor or lake areas. Mitigation measures during construction specifically for otter include: ▪ Pre-construction surveys to reconfirm the status of otter habitat usage of the Site and surrounding watercourses within the Proposed Development; ▪ Avoidance of any obstructions to established otter paths and access to open water; and ▪ The marking of, and adherence to, 30m exclusion zones around any holts and shelters identified. If otters are known or suspected to be breeding, the exclusion zone will be extended to a 200m radius and consideration given to whether an EPS licence is required from Natural England. Any exclusion zone could be reduced to 100m depending on the nature of the works, topography, and natural screening. This would require judgement from a Suitably Qualified Ecologist. If breeding was confirmed and exclusion zones of the size set out above were not possible, works will be undertaken in accordance with an EPSML. As part of the licence, appropriate compensation would be provided to make sure that alternative habitat is provided in advance of the potential effect occurring. Works within 30m of a holt, or 100-200m of an active natal den, might need to be delayed until a Natural England otter licence has been obtained or the holt is no longer in use, as set out in section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**. The increase in the extent and improvement in the condition of water bodies and watercourses within the Site would provide enhanced habitat for otter as they establish following their creation and enhancement. There would be a net increase in the extent of water bodies of approximately 6.9ha. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase otter mitigation measures in greater detail. Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)** sets out otter habitat creation measures, Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out set out maintenance and management mitigation measures that will occur during both the Primary Construction Phase and Operational Phase. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on otter.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of otter within the Site has been categorised as up to County. After mitigation, the effect is considered to be applicable at up to a Local level. There is predicted to be a direct, medium-term **Moderate beneficial** residual effect **(Significant)** on otter following the adoption of mitigation. This assumes that an otter holt(s) is/are not identified within the Site (which is considered unlikely, based on the survey and assessment work completed to date). Monitoring of measures adopted to mitigate the potential effects upon otter during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.
GCN	**Potential Effects**	- Risk of harm and injury of GCN; - Loss of GCN breeding and terrestrial habitat; - Severance of GCN habitats resulting in barriers to dispersal and breeding habitats; and - Impacts upon great crested newt aquatic and terrestrial habitat within and adjacent to the Site from construction activities, e.g. incidental release of water-borne pollutants and dust deposition. Prior to the application of mitigation, there is predicted to be a permanent, direct and indirect, long-term **Moderate Adverse** effect **(Significant)** on great crested newt.

	Additional Mitigation	Commitment to the adoption of a District Level Licence (DLL) approach via a compensation payment to the DLL delivery partner prior to construction commencing, as set out in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**. NatureSpace Partnership Ltd has advised that they can see no impediment to the Proposed Development being covered by the Bedfordshire District Level Licensing Scheme (letter ref 202410008; see **Appendix 6.19: Letters of Comfort - Protected Species Licencing (Volume 3)**). On-Site mitigation requirements will be confirmed by the DLL delivery partner through the detailed DLL mitigation licencing process following submission of the application for planning permission. Mitigation measures to be adopted are expected to include limited trapping and relocation operations (of individual GCN) during Site clearance in parts of the Site. The likely requirement for trapping is triggered by part of the Site being within the Bedfordshire DLL 'Red Zone', as shown on **Figure 6.3: Bedfordshire GCN DLL - Impact Risk Zones Within Site (Volume 2)** of this chapter. Approximately 20.7% (34.8 ha) of the Site is within the Red Zone. The DLL scheme identifies that Red Zone areas are likely to be of high importance for local GCN populations. On-site mitigation requirements for GCN would be confirmed via conclusion of the DLL process. NatureSpace Partnership have proposed two conditions that need to be secured via the planning permission for the Proposed Development, to secure reliance on the DLL. The first of these is as follows: 1) No development hereby permitted shall take place except in accordance with the terms and conditions of the Council's Organisational Licence (WML-OR152, or a 'Further Licence') and with the proposals detailed on plan "Universal Destinations & Experiences UK Project: Impact plan for great crested newt District Licensing (Version 1)", dated 13th May 2025. Reason: In order to ensure that adverse impacts on great crested newts are adequately mitigated and to ensure that site works are delivered in full compliance with the Organisational Licence (WML-OR152, or a 'Further Licence'), section 15 of the National Planning Policy Framework, Circular 06/2005 and the Natural Environment and Rural Communities Act 2006. A draft Condition has been proposed for inclusion in any planning permission granted for the Proposed Development, including the wording set out above. The second Condition proposed by NatureSpace Partnership is as follows: 2) No development hereby permitted shall take place except in accordance with Part 1 of the Great Crested Newt Mitigation Principles, as set out in the District Licence (WML-OR152, or a 'Further Licence') and in addition in compliance with the following: Works to existing ponds onsite may only be undertaken during autumn/winter, unless otherwise in accordance with the Great Crested Newt Mitigation Principles. Works which will affect likely newt hibernacula may only be undertaken during the active period for amphibians. Capture methods must be used at suitable habitat features prior to the commencement of the development (i.e., hand/destructive/night searches), which may include the use of temporary amphibian fencing, to prevent newts moving onto a development site from adjacent suitable habitat, installed for the period of the development (and removed upon completion of the development). Amphibian fencing and pitfall trapping must be undertaken at suitable habitats and features, prior to commencement of the development.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Reason: In order to ensure that adverse impacts on great crested newts are adequately mitigated and to ensure that site works are delivered in full compliance with the Organisational Licence (WML-OR152, or a 'Further Licence'), section 15 of the National Planning Policy Framework, Circular 06/2005 and the Natural Environment and Rural Communities Act 2006. This Condition is secured via inclusion in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**. No specific habitat compensation for GCN is proposed within the Site given that the Proposed Development will use a DLL. The DLL will deliver off-Site compensation habitat suitable to maintain the conservation status of GCN in Bedfordshire. The DLL may take on-site habitat creation delivered via the HCEP into account, as part of the process of finalising requirements for the Proposed Development to be covered by the DLL. The creation of new suitable habitat within the Ecological Enhancement Areas could provide habitat for GCN (and other amphibians including common toad) is set out in Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. These habitats would be managed in the long term to optimise their benefit for wildlife. Whilst not considered necessary to mitigate effects on GCN, they would provide an incidental benefit if colonised by the species. Management details are included within Sections 4.3 and 4.4 of the **Appendix 6.5: OLEMP (Volume 3)**.
	Residual Effects and Monitoring	The sensitivity of great crested newt within the Site has been categorised as up to County level. After mitigation, the effect is considered to be **Negligible**, and therefore **Not Significant**, due to the assumed implementation of the DLL, which is expressly designed to maintain the favourable conservation status of GCN within Bedfordshire**.** The monitoring requirements for GCNs would be subject to agreement of the DLL approach and associated licensing requirements. At present, no monitoring of amphibian populations is expected to be required during Construction or Operation, as this is not typically required for DLL.
Reptiles	**Potential Effects**	▪ Direct incidental harm and injury of reptiles through topsoil stripping and Site clearance; ▪ Fragmentation/severance effects through Site clearance and installation of infrastructure, i.e. reducing connectivity between different areas of retained reptile habitat; and ▪ Loss of suitable reptile habitats including foraging and shelter/hibernation resource across the Site; scrub, grassland, standing water and woodland. ▪ Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on reptiles.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Prior to construction activities in areas supporting reptiles, mitigation will be necessary to avoid harm or injury. These measures, are outlined in **Appendix 6.4: OHCEP (Volume 3)**. The principles of the mitigation include completion of translocation and sensitive habitat removal in advance of construction. Translocation activities can only be carried out between March and October inclusive (with variation for weather conditions). Features/habitats suitable to provide refuge for reptiles within working areas that cannot be avoided e.g. brash or log piles will be dismantled by hand under the supervision of the EcoW. This will only be completed during suitable weather conditions in the reptile active period. The translocation of reptiles will require a receptor area for reptiles to be moved to. It is proposed that this area will be contained within the Lake Zone within existing/created grassland habitat (the Northern Ecology Area, as described in Section 2 of **Appendix 6.4: OHCEP (Volume 3)**. The detailed Landscape and Ecology Management Plan (LEMP) to be prepared at detailed design stage will set out long-term management and maintenance measures that will be adopted to support reptiles post-development. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase reptile mitigation measures in greater detail. Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to operation. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.6 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on reptiles.
	Residual Effects and Monitoring	The sensitivity of reptiles within the Site has been categorised as Local. After mitigation, the effect is considered to be applicable at up to a Site level. There is predicted to be a direct, medium-term **Minor adverse** residual effect **(Not Significant)** on reptiles following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon reptiles during construction will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Breeding birds: Annex 1 EU Birds Directive/WCA Schedule 1	**Potential Effects**	▪ Potential for the destruction/damage of active nests (including eggs and/or live young) of WCA Schedule 1 and potentially Annex I species. ▪ Disturbance to breeding WCA Schedule 1 and potentially Annex I bird species due to visual presence, lighting, and noise from operatives and their machinery during the Construction Phase, including piling and rock crushing. ▪ Loss or modification of suitable habitat for nesting and foraging habitat for WCA Schedule 1 species, including removal/modification of all arable farmland within the Site, removal or modification of approximately 2.5ha of open mosaic habitat, 12.4ha of woodland habitats, 6ha of reedbed habitats, 2.4km (linear) of hedgerows, 6.4km (linear) of ditch habitat, 9.5ha of freshwater wetland habitats (ponds and lakes), 39.3ha of grassland habitats, and 6.4ha of scrub habitats. ▪ Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. ▪ Indirect effects upon retained habitats used by nesting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of water bodies and water courses. During the breeding bird surveys in 2024 and 2025 (see **Appendix 6.9: Breeding Bird Survey Report (Volume 3)**) two Annex 1/WCA Schedule 1 bird species were recorded within the Site (red kite and kingfisher) though no evidence of breeding was obtained. These species could however breed in areas close to the Site. Nesting sites for these species are therefore unlikely to be lost or modified as a result of the Proposed Development. There is potential for limited effects on nesting individuals of these species through Construction Phase impacts on their foraging grounds, and potential for noise and visual disturbance. Cetti's warbler (WCA Schedule 1, not Annex 1) was identified breeding on-Site during the 2024 breeding bird surveys, with 11 territories estimated to be present in habitat within 100m of the Site, primarily associated with scrub habitats around the fringes of water bodies in the lake Zone. The removal or modification of scrub and reedbed habitats is estimated to affect up to nine of the identified territories. Birds continuing to use retained habitats in and adjacent to the Site would also be subject to increased disturbance, habitat fragmentation, and indirect changes to habitat condition that could affect nesting success. It is possible that low numbers of other species of Annex 1/WCA Schedule 1 species could breed within or adjacent to the Site. The breeding bird surveys in 2024 recorded little-ringed plover (WCA Schedule 1) on-Site early in the survey programme, in the area of hard-standing and open-mosaic habitat in the south of the Lake Zone; it is possible that this species attempted to breed in 2024. The majority of potentially suitable breeding habitat for little-ringed plover in this location would be removed to facilitate the Proposed Development. Hobby was also recorded on-Site during the breeding bird surveys, although with no evidence of breeding; this species could potentially breed in woodland within or adjacent to the Site (although on-Site habitat is considered sub-optimal), with on-Site habitats providing suitable conditions for foraging. Some limited habitat for barn owl foraging has been recorded within the Site. Occasional incidental sightings of barn owls have been recorded within the Site in 2024. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on Annex 1/WCA Schedule 1 breeding birds.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Prior to any construction works commencing, a pre-works check for nesting WCA Schedule 1 bird species will be carried out by a suitably qualified ornithologist on any previously identified potential nest sites and other habitats identified as having the potential to support nesting WCA Schedule 1 species, informed by the results obtained from bird surveys undertaken in 2024 and subsequently. A method statement would be produced as part of the detailed Construction Environmental Management Plan setting out the procedures to be followed in relation to managing potential impacts on Annex 1/WCA Schedule 1 birds. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase Annex 1/Schedule 1 bird mitigation measures in greater detail. Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)** set out habitat creation measures and Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to both operation, including habitat creation and management. Proposals for habitat creation and enhancement are set out on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. This includes provision and/or enhancement of woodland, scrub, open mosaic, grassland, reedbed, and watercourse habitats. Habitat measures would take several years or more to mature, and hence the benefits of these habitat measures would not be immediate. Areas of replacement/enhanced scrub and reedbed habitats would provide suitable nesting habitat for Cetti's warbler, mitigating some of the loss/modification to these habitats. The detailed design of the EEA would seek to provide a similar or greater proportion of open mosaic habitat to that lost during Site clearance and construction (2.5ha). This would be provided in the Lake Zone EEA, where there would be limited public access. It would therefore provide potentially suitable breeding habitat for little-ringed plover. There would be an approximate net loss of reedbed and scrub habitats of 2.75ha and 6.4ha, respectively. It is possible that additional scrub and reedbed habitats could be incorporated into the detailed landscape and ecology design, including in areas outside the EEA. This cannot be confirmed prior to detailed design and is therefore not reflected in the residual effects assessment below. **Appendix 6.4: OHCEP (Volume 3)** proposals also include provision of a suitable bank feature on the eastern side of the EEA in the Lake Zone, which would be designed to provide suitable conditions for nesting kingfisher and sand martin. This would be expected to provide potentially suitable conditions for nesting within one year of being constructed, providing enhanced conditions for breeding kingfisher on-Site. The enhancements to the retained Elstow Brook corridor in the Lake Zone and the diverted watercourse in the Core Zone are also likely to provide enhanced conditions for foraging kingfisher along these watercourses, relative to baseline conditions. Rough grassland and woodland/scrub edges would also provide suitable foraging habitat for barn owl. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on Annex 1 and WCA Schedule 1 birds.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of Annex 1 and WCA Schedule 1 birds within the Site has been categorised as up to County. After mitigation and considering the results of the 2024 and 2025 surveys, the effect is considered to remain applicable at up to a County level. There is predicted to be a direct, long-term **Moderate adverse** residual effect **(Significant)** on Annex 1 and WCA Schedule 1 birds following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon Annex 1 and WCA Schedule 1 birds during construction will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.
Breeding birds: SPI and/or BoCC5 Red Listed	**Potential Effects**	▪ Potential for destruction/damage of nests supporting SPI and/or BoCC5 Red list species during construction period. ▪ Disturbance to breeding SPI and/or BoCC5 Red list species due to visual -presence, lighting, and noise from operatives and their machinery during the Construction Phase, including piling and rock crushing. ▪ Loss or modification of suitable habitat for nesting and foraging habitat for SPI and/or BoCC5 species, including removal/modification of all arable farmland within the Site, removal or modification of approximately 2.5ha of open mosaic habitat, 12.4ha of woodland habitats, 6ha of reedbed habitats, 2.4km (linear) of hedgerows, 6.4km (linear) of ditch habitat, 9.5ha of freshwater wetland habitats (ponds and lakes), 39.3ha of grassland habitats, and 6.4ha of scrub habitats. ▪ Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. ▪ Indirect effects upon retained habitats used by nesting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of water bodies and water courses. The removal and modification of existing habitats during construction would reduce the availability of habitat for SPI and BoCC5 species. Habitat recorded as supporting territories of a number of these species during the 2024 breeding bird surveys would be affected. The following species would likely experience substantial declines, due to their sensitivity to disturbance and/or due to removal of a substantial proportion of the suitable nesting/foraging habitat within the Site: grey partridge; skylark; dunnock; linnet; yellowhammer; reed bunting; nightingale; bullfinch; and greenfinch. The following species would likely experience some declines during construction, due to a degree of disturbance and/or due to removal of a proportion of suitable nesting/foraging habitat within the Site: turtle dove; cuckoo; song thrush; house sparrow; yellow wagtail; and pochard. The following species are not expected to be substantially affected, due to the majority or all of the habitat supporting identified territories being retained and limited disturbance during construction being predicted: grasshopper warbler. It is possible that other SPI or BoCC5 red list species could use the Site for nesting and/or foraging and also be affected by the impact pathways described above. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Major adverse** effect **(Significant)** on SPI and BoCC5 red list breeding birds.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Where possible, the clearance of vegetation with the potential to support any nesting bird species will be undertaken outside the breeding bird season (the breeding season is typically from 1 March to 31 August inclusive). Where this is not possible, checks for nesting birds will be carried out by a suitably qualified ecologist no more than 48 hours prior to clearance. If active nests are found (which will then be protected under the WCA), suitable mitigation measures will be put in place to avoid destruction/damage to the nest and its contents, until the young have fledged or left the nest. These measures will likely include the implementation of a buffer zone around the nest site in which no works can take place. The Proposed Development includes proposals for habitat retention, creation, enhancement and management that would provide suitable habitat for a range of breeding birds, including SPI and BoCC5 red list species recorded at the Site. Habitat creation measures are referenced in the **Appendix 6.4: OHCEP (Volume 3)**. These habitats would be managed in the long term as outlined in the **Appendix 6.5: OLEMP (Volume 3)**. Habitat provision across the Site would include approximately 20.5ha of water bodies (ponds, and lakes with associated islands), 4.2km of watercourses including the diverted watercourse in the Core Zone and the enhanced Elstow Brook corridor, 16.1ha of woodland habitats, 3.5ha of species-rich neutral grassland, 2.5ha of OMHs, and 3.2ha of dense and scattered scrub. Additional habitat would be provided through the provision of green infrastructure within the wider Proposed Development, outside the EEA, with this to be specified as part of the detailed design process. The EEA would provide retained and enhanced and new habitat expected to be suitable for the following species recorded at the Site: turtle dove; cuckoo; song thrush; house sparrow; dunnock; yellow wagtail; bullfinch; linnet; yellowhammer; reed bunting; pochard; nightingale; and greenfinch. Provision of additional habitat as part of green infrastructure within the wider development may also provide additional habitat for these and other species. Bird boxes/nesting structures will be installed in areas of retained habitat within the Proposed Development to enhance potential nesting opportunities across the Site. Depending on the design and locations of new structures within the Site, boxes may also be installed on these. Bird box designs will be of long-lasting woodcrete or equivalent and reflect the nesting requirements of species that have been recorded at the Site, as well as common and widespread farmland and woodland species. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bird mitigation measures in greater detail. Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)** sets out relevant habitat creation measures, and Sections 4.3 and 4.4 of the **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to operation. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on bird SPI/Red list bird species.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	With the mitigation measures described above in place, effects on the recorded SPI and BoCC5 red list species would be reduced. It is likely that the following species would still experience substantial declines, primarily due to the majority of their typically preferred habitats being removed: grey partridge; skylark; and yellowhammer. The following species would likely experience some declines during construction but are predicted to continue to breed successfully at the Site albeit in reduced numbers, primarily due to reduced habitat availability and residual effects of disturbance: turtle dove; cuckoo; song thrush; dunnock; linnet; bullfinch; reed bunting; nightingale; and greenfinch. The following species are not expected to be substantially adversely affected or could experience increases in population, primarily due to the provision of habitat within the EEA and reduced impacts from or limited susceptibility to disturbance: pochard; grasshopper warbler; house sparrow; and yellow wagtail. With the net loss of most habitats other than standing water there is likely to be an overall reduction in the number and diversity of breeding birds using the Site, although it is possible this could be countered to some extent through detailed design measures included in green infrastructure. The works to the EEA in the Lake Zone to increase the extent of standing water, would provide enhanced habitat for a range of wildfowl in addition to pochard. The EEA in the Lake Zone also includes provision for islands within the lake, which would provide additional and enhanced breeding habitat for wildfowl and other wetland bird species. The proposals to control mink populations at the Site, as set out in Section 4.5 of the **Appendix 6.5: OLEMP (Volume 3)** may also reduce predation pressure on wildfowl and other wetland birds. The sensitivity of SPI/BoCC5 Red List bird species within the Site has been categorised as County. After mitigation, the effect is considered to be applicable at up to a District level. There is predicted to be a direct, long-term **Moderate Adverse** residual effect **(Significant)** on SPI and BoCC5 red list breeding birds following the adoption of mitigation Monitoring of measures adopted to mitigate the potential effects upon these species during construction will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Breeding birds: BoCC5 Amber list and other species of conservation value	**Potential Effects**	▪ Potential for destruction/damage of nests supporting BoCC5 amber list species during construction period. ▪ Disturbance to breeding birds due to visual presence, lighting, and noise from operatives and their machinery during the Construction Phase, including piling and rock crushing. ▪ Loss or modification of suitable habitat for nesting and foraging habitat for BoCC5 amber list species and other species of conservation concern, including removal/modification of all arable farmland within the Site, removal or modification of approximately 2.5ha of open mosaic habitat, 12.4ha of woodland habitats, 6ha of reedbed habitats, 2.4km (linear) of hedgerows, 6.4km (linear) of ditch habitat, 9.5ha of freshwater wetland habitats (ponds and lakes), 39.3ha of grassland habitats, and 6.4ha of scrub habitats. ▪ Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. ▪ Indirect effects upon retained habitats used by nesting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of water bodies and water courses. The removal and modification of existing habitats during construction would reduce the availability of habitat for BoCC5 amber list species. Habitat recorded as supporting territories of a number of these species during the 2024 breeding bird surveys would be affected. The following species would likely experience substantial declines, due to their sensitivity to disturbance and/or due to removal of a substantial proportion of the suitable nesting/foraging habitat within the Site: woodpigeon; whitethroat; wren; meadow pipit; and reed warbler. The following species would likely experience some declines during construction, due to a degree of disturbance and/or due to removal of a proportion of suitable nesting/foraging habitat within the Site: mallard; moorhen; stock dove; willow warbler; sedge warbler; mute swan; great crested grebe; coot; and garden warbler. It is possible that other BoCC5 amber list and other species of conservation value could use the Site for nesting and/or foraging, and also be affected by the impact pathways described above. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on BoCC5 amber list and other species of conservation value breeding birds.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Where possible, the clearance of vegetation with the potential to support any nesting bird species will be undertaken outside the breeding bird season (the breeding season is typically from 1 March to 31 August inclusive). Where this is not possible, checks for nesting birds will be carried out by a suitably qualified ecologist no more than 48 hours prior to clearance. If active nests are found (which will then be protected under the WCA), suitable mitigation measures will be put in place to avoid destruction/damage to the nest and its contents, until the young have fledged or left the nest. These measures will likely include the implementation of a buffer zone around the nest site in which no works can take place. The Proposed Development includes proposals for habitat retention, creation, enhancement and management that would provide suitable habitat for a range of breeding birds, including BoCC5 amber list species recorded at the Site. Habitat creation measures are referenced in the **Appendix 6.4: OHCEP (Volume 3)**. These habitats would be managed in the long term as outlined in the **Appendix 6.5: OLEMP (Volume 3)**. Habitat provision across the Site would include approximately 20.5ha of water bodies (ponds, and lakes with associated islands), 4.2km of watercourses including the diverted watercourse in the Core Zone and the enhanced Elstow Brook corridor), 16.1ha of woodland habitats, 3.5ha of species-rich neutral grassland, 2.5ha of OMHs, and 3.2ha of dense and scattered scrub. Additional habitat would be provided through the provision of green infrastructure within the wider Proposed Development, outside the EEA, with this to be specified as part of the detailed design process. The EEA would provide retained and enhanced and new habitat expected to be suitable for the following species recorded at the Site: mallard; moorhen; woodpigeon; willow warbler; sedge warbler; whitethroat; wren; mute swan; great crested grebe; reed warbler; coot; and garden warbler. Provision of additional habitat as part of green infrastructure within the wider development may also provide additional habitat for these and other species. Bird boxes/nesting structures will be installed in areas of retained habitat within the Proposed Development to enhance potential nesting opportunities across the Site. Depending on the design and locations of new structures within the Site, boxes may also be installed on these. Bird box designs will be of long-lasting woodcrete or equivalent and reflect the nesting requirements of species that have been recorded at the Site, as well as common and widespread farmland and woodland species. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bird mitigation measures in greater detail and Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)** set out habitat creation measures. Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to operation. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on bird SPI/Red list bird species.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	With the mitigation measures described above in place, effects on the recorded BoCC5 amber list and other species of conservation value would be reduced. It is likely that the following species would still experience substantial declines, primarily due to the majority of their typically preferred habitats being removed: stock dove and meadow pipit. The following species would likely experience some declines during construction but are predicted to continue to breed successfully at the Site albeit in reduced numbers, primarily due to reduced habitat availability and residual effects of disturbance: woodpigeon; willow warbler; whitethroat; wren; reed warbler; and garden warbler. The following species are not expected to be substantially adversely affected or could experience increases in population, primarily due to the provision of habitat within the EEA and reduced impacts from or limited susceptibility to disturbance: mallard; moorhen; sedge warbler; mute swan; great crested grebe; and coot. With the net loss of most habitats other than standing water, there is likely to be an overall reduction in the number and diversity of breeding birds using the Site, although it is possible this could be countered to some extent through detailed design measures included in green infrastructure, which are not factored in to this assessment. The works to the EEA in the Lake Zone to increase the extent of standing water, would provide enhanced habitat for a range of wildfowl in addition to those recorded at the Site to date. The EEA in the Lake Zone also includes provision for islands within the lake, which would provide additional and enhanced breeding habitat for wildfowl and other wetland bird species. The proposals to control mink populations at the Site, as set out in Section 4.5 of **Appendix 6.5: OLEMP (Volume 3)** may also reduce predation pressure on ground-nesting wildfowl and other wetland birds. The sensitivity of amber list bird species within the Site has been categorised as District. After mitigation, the effect is considered to be applicable at up to a Local level. There is predicted to be a direct, long-term **Minor Adverse** residual effect **(Not Significant)** on BoCC5 amber list and other species of conservation value following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon these species during construction will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Non-breeding/wintering birds	**Potential Effects**	▪ Disturbance to foraging/roosting birds due to visual presence, lighting, and noise from operatives and their machinery during the Construction Phase, including piling and rock crushing. ▪ Loss or modification of suitable habitat for foraging and roosting, including removal/modification of all arable farmland within the Site, removal or modification of approximately 2.5ha of open mosaic habitat, 12.4ha of woodland habitats, 6ha of reedbed habitats, 2.4km (linear) of hedgerows, 6.4km (linear) of ditch habitat, 9.5ha of freshwater wetland habitats (ponds and lakes), 39.3ha of grassland habitats, and 6.4ha of scrub habitats. ▪ Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. ▪ Indirect effects upon retained habitats used by roosting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of water bodies and water courses. The proposed construction works would affect habitats used by the majority of non-breeding species recorded during the 2024 breeding bird surveys. It is also likely that a range of wintering birds using the Site would be impacted. This could include species covered by one or more of the range of designations described above for breeding birds. Of the key species recorded during the wintering bird surveys (see section 4 of **Appendix 6.15: Wintering Bird Survey Report (Volume 3)**) the following species would likely experience substantial declines, due to their sensitivity to disturbance and/or due to removal of a substantial proportion of the suitable nesting/foraging habitat within the Site: skylark and lapwing. The following species would likely experience some declines during construction, due to a degree of disturbance and/or due to removal or modification of a proportion of suitable nesting/foraging habitat within the Site: coot, cormorant, great crested grebe, mute swan, pochard, tufted duck and wigeon. Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Major Adverse** effect **(Significant)** on non-breeding/wintering birds.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	To minimise disturbance to wintering birds, particularly within wetland habitats located east of the Lake Zone (Kempston Hardwick Pits) and Core Zone (Coronation Pits), the duration of vegetation clearance and subsequent construction activities would be limited to the shortest time feasible. Strict adherence to construction working zones and fencing around these zones will restrict access into foraging/roosting habitat and will reduce potential effects during the Construction Phase. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bird mitigation measures in greater detail. Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)** set out habitat creation measures. Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to operation. The Proposed Development includes proposals for habitat retention, creation, enhancement and management that would provide suitable habitat for a range of non-breeding/wintering birds, including species recorded at the Site. Habitat creation measures are referenced in **Appendix 6.4: OHCEP (Volume 3)**. These habitats would be managed in the long term as outlined in **Appendix 6.5: OLEMP (Volume 3)**. Habitat provision across the Site would include approximately 20.5ha of water bodies (ponds, and lakes with associated islands), 4.2km of watercourses including the diverted watercourse in the Core Zone and the enhanced Elstow Brook corridor, 16.1ha of woodland habitats, 3.5ha of species-rich neutral grassland, 2.5ha of open mosaic habitats, and 3.2ha of dense and scattered scrub. Additional habitat would be provided through the provision of green infrastructure within the wider Proposed Development, outside the EEA, with this to be specified as part of the detailed design process. The EEA would provide retained and enhanced and new habitat expected to be suitable for the following species recorded at the Site: little egret; grey heron; cormorant; greylag goose; teal; red kite; kestrel; hobby; sparrowhawk; barn swallow; swift; grey wagtail; oystercatcher; starling; black-headed gull; herring gull; and lesser black-backed gull; coot; great crested grebe; mute swan; lapwing; pochard; tufted duck; and wigeon. Provision of additional habitat as part of green infrastructure within the wider development may also provide additional habitat for these and other species. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on wintering birds.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	With the mitigation measures described above in place, effects on the recorded non-breeding species would be reduced. It is likely that the following species would still experience substantial declines, primarily due to the majority of their typically preferred habitats being removed or their lack of tolerance to disturbance: grey wagtail; lapwing; and oystercatcher. The following species would likely experience some declines during construction but are predicted to continue to use habitats at the Site albeit in reduced numbers, primarily due to reduced habitat availability and residual effects of disturbance: kestrel; hobby; sparrowhawk; barn swallow; swift; raven; starling; and black-headed gull. The following species are not expected to be substantially adversely affected or could experience increases in population, primarily due to the provision of habitat within the EEA and reduced impacts from or limited susceptibility to disturbance: little egret; grey heron; cormorant; great crested grebe; mute swan; pochard; tufted duck; wigeon; greylag goose; teal; herring gull; lesser-black-backed gull; and red kite. With the net loss of most habitats other than standing water, there is likely to be an overall reduction in the number and diversity of non-breeding/wintering birds using the Site, although it is possible this could be countered to some extent through detailed design measures included in green infrastructure. The works to the EEA in the Lake Zone to increase the extent of standing water, would provide enhanced habitat for a range of wildfowl and wetland-associated birds in addition to those recorded at the Site to date. The EEA in the Lake Zone also includes provision for islands within the lake, which would provide additional and enhanced habitat for wildfowl and other wetland bird species relative to baseline conditions. The proposals to control mink populations at the Site, as set out in Section 4.5 of **Appendix 6.5: OLEMP (Volume 3)** may also reduce predation pressure on ground-nesting wildfowl and other wetland birds. The sensitivity of non-breeding and wintering birds within the Site has been categorised as up to County. After mitigation, the effect is considered to be applicable at up to a District level. There is predicted to be a direct, long-term **Moderate Adverse** residual effect **(Significant)** on non-breeding/wintering birds following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon wintering birds during the Construction Phase will be undertaken as committed to in **Appendix 2.3: OCEMP (Volume 3)**, **Appendix 6.5: OLEMP (Volume 3)** and **Appendix 6.4: OHCEP (Volume 3)**.
Terrestrial Invertebrates	**Potential Effects**	▪ Loss of habitats/habitat features supporting important species or assemblages of terrestrial invertebrates; ▪ Fragmentation/severance effects through Site clearance and installation of infrastructure could reduce connectivity of habitats for terrestrial invertebrates within and surrounding the Site; and ▪ Temporary disturbance effects upon terrestrial invertebrate habitats within and adjacent to the Site from construction activities, e.g. incidental release of water-borne pollutants and dust deposition. ▪ Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate Adverse** effect **(Significant)** effect on terrestrial invertebrates.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Habitat creation in the Lake Zone would include suitable habitat features for a range of terrestrial invertebrate species as set out in Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. These habitats would be managed in the long term as set out in **Appendix 6.5: OLEMP (Volume 3)**, with detailed measures to be specified in the detailed LEMP. Log piles will be created on-Site to serve as invertebrate habitat. These would be placed within sunny positions in grassland and scrub habitats within retained or created habitats. Purpose built invertebrate "hotels" will be installed in landscaped areas to provide refuge for specific taxonomic groups, i.e., the provision of nesting habitat for solitary bees. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase invertebrate mitigation measures in greater detail. Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)** sets out habitat creation measures specific to invertebrates. Sections 4.5 and 4.5 of the **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to operation. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on terrestrial invertebrates.
	Residual Effects and Monitoring	The sensitivity of terrestrial invertebrates within the Site has been categorised as County importance, with habitats located within Kempston Hardwick Pit CWS of particular note. After mitigation, the effect is considered to remain applicable at up to a County level. There is predicted to be a direct, long-term **Moderate adverse** residual effect **(Significant)** on terrestrial invertebrates following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon terrestrial invertebrates during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.
Fish	**Potential Effects**	Water affected by pollution draining from the Proposed Development could enter the watercourses and water bodies on-Site. This could provide an impact pathway affecting fish, for example through the transport of pollution following a pollution incident or increased silt run-off. Any construction works in close proximity to or within watercourses or water bodies have the potential to cause disturbance to fish populations due to noise and vibration e.g. piling and rock crushing, and increased lighting. Fragmentation/severance effects through Site clearance and installation of infrastructure and watercourse diversions/modifications could reduce connectivity of habitats for fish within and surrounding the Site. Some removal and disturbance of aquatic habitats would also take place during construction, to facilitate the Surface Water Drainage design (see section 5.4 of **Appendix 12.3: Drainage Strategy (Volume 3)**). Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate Adverse** effect **(Significant)** effect on fish.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Measures to mitigate disturbance, pollution and potential harm or injury of fish (including spined loach, European eel and bullhead) and loss of riparian habitat during the Construction Phase are included in **Appendix 2.3: OCEMP (Volume 3)**. Should any part of a watercourse need to be impounded during the works, then a fish translocation may need to be carried out to remove fish from the impoundment. Piling and rock crushing activities will adopt 'soft start' procedures when being undertaken within the Lake Zone, West Gateway Zone within 50m of the Elstow Brook and within the Core Zone within 50m of the diverted watercourse (once established). Rock crushing in the Lake Zone would be undertaken as far away as practicable (and at least 50m) from the Kempston Hardwick Pit lakes (including retained habitats around the lakes) to reduce noise and vibration effects on fish. The diverted watercourse along the eastern boundary of the Core Zone will be designed to include enhancements for fish. It will also support a more favourable hydrological regime for fish relative to baseline conditions. The location of the proposed watercourse diversion is shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase fish mitigation measures in greater detail. Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)** sets out fish related habitat enhancement measures. Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to operation. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in Sections 3.2, 3.7 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on fish.
	Residual Effects and Monitoring	Based on the available design information, after mitigation there would be an increase in the extent of water bodies of up to 6.9ha, with the potential for additional water bodies of ecological value to be provided through detailed design of areas outside the EEA. The ecological condition of on-site watercourses is also predicted to be improved relative to baseline, due to improvements in water quality and watercourse morphology. Mitigation measures to address indirect effects during construction and deliver long-term water quality improvements are predicted to be effective. The sensitivity of fish is at County level. After mitigation, the effect is considered to be applicable at up to a District level. There is predicted to be a direct, long-term **Moderate Beneficial** residual effect **(Significant)** on fish following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon fish populations during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Aquatic macroinvertebrates	**Potential Effects**	Water affected by pollution draining from the Proposed Development could enter the watercourses and water bodies on-Site. This could provide an impact pathway affecting aquatic macroinvertebrates, for example through the transport of pollution following a pollution incident or increased silt run-off; Fragmentation/severance effects through Site clearance and installation of infrastructure and watercourse diversions/modifications could reduce connectivity of habitats for aquatic macroinvertebrates within and surrounding the Site; and Some removal and disturbance of aquatic habitats would also take place during construction, to facilitate the Surface Water Drainage design and development of the Core Zone (see section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**). Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate Adverse** effect **(Significant)** on aquatic macroinvertebrates.
	Additional Mitigation	Measures to mitigate disturbance, pollution, and loss of riparian habitat during the Construction Phase of the Proposed Development are included in **Appendix 2.3: OCEMP (Volume 3)**. Additional mitigation measures are outlined in **Appendix 6.4: OHCEP (Volume 3)**. These include provision of enhanced/created compensatory habitats, including the enhanced Elstow Brook and the diverted watercourse in the Core Zone, plus the creation of areas of reedbed and other wetland habitats including the expansion of water bodies in the Lake Zone. Proposed locations are shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase aquatic macroinvertebrate mitigation measures in greater detail. Sections 4.3 and 4.4 of the **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to both construction and operation. General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in **Appendix 6.5: OLEMP (Volume 3)** would also support minimisation of impacts on aquatic macroinvertebrates
	Residual Effects and Monitoring	Based on the available design information, after mitigation there would be an increase in the extent of water bodies of up to 6.9ha, with the potential for additional water bodies of ecological value to be provided through detailed design of areas outside the EEA. The ecological condition of on-site watercourses is also predicted to be improved relative to baseline, due to improvements in water quality and watercourse morphology. Mitigation measures to address indirect effects during construction and deliver long-term water quality improvements are predicted to be effective. The sensitivity of aquatic macroinvertebrates is at Local level. After mitigation, the effect is considered to remain applicable at up to a Local level. There is predicted to be a direct, long-term **Moderate beneficial** residual effect **(Significant)** on aquatic macroinvertebrates following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon aquatic invertebrate populations during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Macrophytes	**Potential Effects**	Water affected by pollution draining from the Proposed Development could enter the watercourses and water bodies on-Site. This could provide an impact pathway affecting macrophytes, for example through the transport of pollution following a pollution incident or increased silt run-off. Some removal and disturbance of aquatic habitats would also take place during construction, to facilitate the Outline Surface Water Drainage design and development of the Core Zone (see **Appendix 12.3: Drainage Strategy (Volume 3)**). Prior to the application of mitigation, there is predicted to be a permanent, direct, long-term **Moderate adverse** effect **(Significant)** on aquatic macrophytes.
	Additional Mitigation	Measures to mitigate pollution and loss of riparian habitat during the Construction Phase of the Proposed Development are included in **Appendix 2.3: OCEMP (Volume 3)**. Additional mitigation measures are outlined in the **Appendix 6.5: OLEMP (Volume 3)**. These include provision of enhanced/created compensatory habitats, including the enhanced Elstow Brook and the diverted watercourse in the Core Zone, plus the creation of areas of reedbed and other wetland habitats including the expansion of water bodies in the Lake Zone. Proposed locations are shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase aquatic habitat mitigation measures in greater detail. Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to both construction and operation. General construction mitigation measures in relation to water-borne pollution and ecology as described in Sections 3.2 and 3.10 of **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on aquatic macrophytes.
	Residual Effects and Monitoring	Based on the available design information, after mitigation there would be an increase in the extent of water bodies of up to 6.9ha, with the potential for additional water bodies of ecological value to be provided through detailed design of areas outside the EEA. The ecological condition of on-site watercourses is also predicted to be improved relative to baseline, due to improvements in water quality and watercourse morphology. Mitigation measures to address indirect effects during construction and deliver long-term water quality improvements are predicted to be effective. The sensitivity of aquatic macrophytes is at Local level. After mitigation, the effect is considered to be applicable at up to a Local level. There is predicted to be a direct, long-term **Moderate beneficial** residual effect **(Significant)** on macrophytes following the adoption of mitigation. Monitoring of measures adopted to mitigate the potential effects upon macrophytes during the Construction Phase will be undertaken as proposed in **Table 3-1** in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.

OPERATIONAL PHASE

6.7.8. The following elements have the potential to give rise to likely significant effects during the Operational Phase of the Proposed Development:

- Habitat fragmentation, loss of flight paths and dispersal routes;
- Increased lighting, noise and visual disturbance leading to disturbance of species within retained and newly created habitats;
- Increased collision risk to birds, bats and other mobile species;
- Hydrological effects: including changes to water quality and or quantity;
- Air quality impacts due to operational traffic leading to potential degradation habitat degradation;
- Damage or degradation to habitats and disturbance of wildlife through increased recreational pressure and trampling (e.g. to CWSs); and
- Potential positive benefit through provision of habitats with greater biodiversity value than those currently present, and implementation of appropriate management of the retained and created habitats to maximise their biodiversity potential.

6.7.9. The potential for the Operational Phase of the Proposed Development to impact important ecological features is outlined in **Table 6-12**.

6.7.10. Further details of Operational Phase mitigation measures are outlined in the following documents which should be read in conjunction with **Table 1**: **Appendix 6.4: OHCEP (Volume 3)** and **Appendix 6.5: OLEMP (Volume 3)**.

Table 6-12 - Assessment of potential effects, mitigation, residual effects and monitoring during operation

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Designated Sites		
SSSIs: Maulden Wood and Pennyfather's Hill SSSI, Maulden Heath SSSI and Maulden Church Meadow SSSI	**Potential Effects**	Indirect air quality effects upon SSSI habitats. Section 8.6 of the dispersion modelling completed for the air quality assessment (**Chapter 8: Air Quality (Volume 1)**) has been used to inform the assessment of air quality effects on Important Ecological Features. Detailed results are presented in **Chapter 8: Air Quality (Volume 1)**. The outcome of this assessment has concluded that there are no potential significant air quality effects upon any SSSI from the Proposed Development (alone) during operation. Potential cumulative effects are discussed below and in **Appendix 6.6: Inter-Project Cumulative Assessment (Volume 3)**.
	Additional Mitigation	No significant air quality effects upon these SSSI are predicted. There is therefore no requirement for mitigation measures.
	Residual Effects and Monitoring	**No change (Not Significant)**.
Kempston Hardwick Pit CWS	**Potential Effects**	▪ Disturbance: potential increase in visitor pressure from Proposed Development within the CWS; ▪ Disturbance: Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)** and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on operational noise. The maximum predicted impacts within the CWS are <60 dB A based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels diminish with increasing distance from the operational noise sources, and it is anticipated that the majority of the CWS would experience impacts

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		<55dB A. Given the maximum predicted magnitude of noise impacts, significant effects to species mentioned within the CWS are not predicted to arise; ▪ Air quality effects upon CWS habitats, with a maximum predicted nitrogen deposition impact equivalent to 1.40% of the critical load for nitrogen deposition under the 2041 scenario. The exceedance of the critical load screening criteria of 1.0% is negligible (less than half a percent above it) and falls below the 1% screening criteria within 80m of the roadside (see **Appendix 8.8: Results for Ecological Receptors (Volume 3)**); and ▪ Increased risk of water-borne pollution events from Site operations including surface water run-off. In the absence of mitigation there is predicted to be an indirect, long-term **Moderate adverse** effect **(Significant)** on Kempston Hardwick Pit CWS.
	Additional Mitigation	The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Outline Habitat Creation and Enhancement Plan (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures established to reduce disturbance will be completed during the operational phase as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3, in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. To support maintenance and improvement of water quality within the new lake environment, water treatment will be incorporated throughout the drainage design to make sure that water contained and discharged into the new lakes is appropriately treated. These measures are detailed in **Appendix 12.3: Drainage Strategy (Volume 3)** and are expected to improve water quality in the CWS relative to baseline**.** The management of new lakes, reedbed habitat and habitats on the banks of lakes is described within Sections 4.3 and 4.4 **Appendix 6.5: OLEMP (Volume 3)**, with management measures aiming to secure these areas and promote a diverse series of aquatic and marginal habitats. Sections 4.3, and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to operation.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of the CWS is at the County scale. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation, effects are predicted to be **Minor Adverse (Not Significant)**. Monitoring of CWS habitats during the Operational Phase will be undertaken as proposed in Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Coronation Pit CWS	**Potential Effects**	Disturbance: potential increase in visitor and recreational pressure from the Proposed Development within the CWS. Disturbance: Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)** and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on operational noise. The maximum predicted impacts within the CWS are <60 dB A based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels diminish with increasing distance from the operational noise sources, and it is anticipated that the majority of the CWS would experience impacts <55dB A. Given the maximum predicted magnitude of noise impacts, significant effects to species mentioned within the CWS citation are not predicted to arise. Increased risk of water-borne pollution events from Site operations including surface water run-off. In the absence of mitigation there is predicted to be an indirect, long-term **Moderate adverse** effect **(Significant)** on Coronation Pit CWS.
	Additional Mitigation	The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of the CWS is at the County scale. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation effects are predicted to be **Minor Adverse (Not Significant**). Monitoring of CWS habitats during the Operational Phase will be undertaken as proposed in Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Elstow Pit CWS, Quest Pit CWS and Stewartby Lake CWS	**Potential Effects**	These CWS are located outside the Proposed Development. Of the three CWS, Stewartby Lake is the closest to the Proposed Development, at approximately 170m distant at the closest point. Given these distances and that the CWS are partially isolated from the Proposed Development by existing built infrastructure, minimal impacts to them are predicted. **Chapter 12: Water Resources (Volume 1)** predicts no hydrological effects on these sites. Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)** and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on operational noise. The maximum predicted impacts within the CWS's are <60 dB A based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels diminish with increasing distance from the operational noise sources, and it is anticipated that the majority of the CWS would experience impacts <55dB A. Dispersion (air quality) modelling has been completed for these CWS, in relation to predicted emissions from vehicles accessing the Proposed Development. The methods and results of this modelling work are set out in full in **Chapter 8: Air Quality (Volume 1)**. The results of the dispersion modelling show that potential significance thresholds for air quality impacts are marginally exceeded at Stewartby Lakes CWS, with a maximum impact of 1.7% of the critical load for nitrogen deposition. This reduces to at or below the potential significance threshold (1.0% of critical load) at 70m along the dispersion modelling transect. No exceedances of potential significance thresholds are predicted for Elstow Pit CWS or Quest Pit CWS.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Given the minimal exceedance of the potential significance threshold for Stewartby Lakes CWS and the lack of exceedances for the other CWS's, effects are predicted to be **Negligible**, and hence **Not Significant**.
	Additional Mitigation	None required.
	Residual Effects and Monitoring	Effects are predicted to be **Not Significant**. No monitoring is proposed.
Habitats		
HPIs – All Terrestrial Habitats	**Potential Effects**	Degradation of retained/adjacent HPI habitats. Disturbance: potential increase in visitor and recreational pressure from Proposed Development upon HPI. In the absence of mitigation there is predicted to be an indirect, long-term **Moderate adverse** effect **(Significant)** on HPIs.
	Additional Mitigation	Mitigation measures in relation to terrestrial HPI throughout the Operational Phase of the Proposed Development are included in **Appendix 6.5: OLEMP (Volume 3)**. These are summarised here: - Woodland and Tree Maintenance and Management – including plant replacement inspections, removal of nurse species and thinning and felling of selected woodland trees; - Management of hedgerows including rotational cutting and replacement planting where required; - Scrub - Rotational management of scrub to maintain a continuity of supply but prevent excessive regrowth/encroachment; - Grassland – An annual cut of grassland areas, targeted at the late summer/early autumn period, will be completed. Cutting may be completed on a rotational basis, i.e. leaving some areas uncut each year; and

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		- Wetlands and ponds – wetland habitats will be subject to periodic removal of encroaching vegetation and silt build-up, as appropriate to the nature of the wetland feature(s). An indicative rotation for wet reed will be to cut one third in year 3, one third in year 5 and one third in year 8. A number of other measures are proposed to support the establishment and ongoing management of habitats within the Site. The management of new and retained habitats is described within sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**, with management measures aiming to secure these areas and support the ongoing presence of high value habitats within the Site. **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** provides an overview of the proposed layout of retained and created habitats.
	Residual Effects and Monitoring	The sensitivity of this feature is County. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation effects are predicted to be **Minor adverse (Not Significant)**. Monitoring for HPI during the Operational Phase will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
HPIs – Aquatic Habitats (water bodies and watercourses)	**Potential Effects**	Water quality and quantity effects - Water affected by pollution draining from the Proposed Development could enter the watercourses and water bodies on-Site. This could provide an impact pathway affecting aquatic habitats, for example through the transport of pollution following a pollution incident or increased silt run-off. Noise, vibration, and lighting disturbance from works could disturb aquatic fauna using aquatic habitats. In the absence of mitigation there is predicted to be an indirect, long-term **Moderate adverse** effect **(Significant)** on aquatic HPIs.
	Additional Mitigation	Measures to protect riparian and aquatic habitats from disturbance or degradation are outlined in **Appendix 6.5: OLEMP (Volume 3)**. A summary of these measures is provided: - Wetland habitats - Retained and created wetland habitat will be managed in the long-term using the following measures;

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		- Rotational cutting of reed vegetation to create a variety in age and structure as well as retain areas of open water; - Improvements to water quality in retained habitats though removal of or separation from contaminants; - Retained and created watercourses shall be managed to prevent silting up and choking with vegetation; and - A 10m Riparian Zone alongside the diverted watercourse in the Core Zone and Elstow Brook in the Core Zone and Lake Zone will be maintained as wildlife habitat and will be allowed to develop as a mosaic of grassland, wet grassland, scrub and scattered trees (e.g. alder, willow and poplar). A number of other measures are proposed to support the establishment and ongoing management of habitats within the Site. The management of new and retained habitats is described within Section 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**, with management measures aiming to secure these areas and support the ongoing presence of high value habitats within the Site. **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** provides an overview of the proposed layout of retained and created habitats. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. To support maintenance and improvement of water quality within watercourses and lakes, water treatment will be incorporated throughout the drainage design to make sure that water contained and discharged into new and retained watercourses and lakes is appropriately treated. These measures are detailed in section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)** and are expected to improve water quality in watercourses and water bodies within the Site relative to baseline conditions**.**
	Residual Effects and Monitoring	The sensitivity of watercourses and water bodies is at the Local scale. After mitigation, the effect is considered to remain applicable at up to a Local level. Following the adoption of mitigation there is predicted to be an indirect, long-term **Moderate Beneficial** effect **(Significant)**. Monitoring of aquatic HPI during the Operational Phase will be undertaken as proposed in Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Veteran Tree (T80, West Gateway Zone)	**Potential Effects**	During operation the veteran tree would remain in-situ within the retained Elstow Brook corridor through the West Gateway Zone. The Elstow Brook corridor would remain inaccessible to the general public and would be part of the EEA in the West Gateway Zone. Given this, impacts on the veteran tree are predicted to be **Negligible (Not Significant)**.
	Mitigation	None required.
	Residual Effects and Monitoring	Residual effects are predicted to be **Negligible (Not Significant)**.
INNS	**Potential Effects**	Disturbance and spread of invasive species including Japanese knotweed and other potentially present INNS during the Operational Phase of the Proposed Development.
	Additional Mitigation	Measures to manage INNS would be implemented during the Operational Phase, to avoid or appropriately manage areas of INNS, e.g. during treatment of water, landscaping and operational activities. This would include measures for the control of relevant plants and also measures to control existing mink populations at the Site. Section 4.4 of **Appendix 6.5: OLEMP (Volume 3)** sets out the principles which will be adopted for the management and control of invasive plant species.
	Residual Effects and Monitoring	**No change** (INNS are not evaluated therefore not subject to assessment) **(Not Significant)**. Monitoring during the Operational Phase for invasive species will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Protected Species		
Badger	**Potential Effects**	- Disturbance to retained or created badger habitats from operational activities; noise, lighting etc;

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		- Fragmentation of habitat through presence of barriers to dispersal; e.g. extents of developed land, road infrastructure, fencing etc; and - Risk of accidental harm to badger through road traffic casualties. In the absence of mitigation there is predicted to be an indirect, medium-term **Moderate adverse** effect **(Significant)** on badgers.
	Additional Mitigation	Proposed landscaping around the perimeter of the Proposed Development would include predominantly native woodland, scrub and grassland habitat creation that would also benefit badgers by providing additional foraging and commuting habitat. These habitats would be managed in the long term pursuant to the principles of **Appendix 6.5: OLEMP (Volume 3)**. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document Reference 6.3.0)**. A clear span bridge across Elstow Brook is proposed for the new access road in the West Gateway Zone, which will support the movement of badgers through this part of the Site. Suitable underpass provision will also be provided to maintain habitat connectivity and counter fragmentation between the Northern Ecology Area and the rest of the Lake Zone EEA under proposed road infrastructure. The detailed design of these features will include provision of otter/badger fencing if considered necessary based on up to date ecology survey results and the proposed structural and earthworks design. The maintenance/creation of habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. Indicative locations for these features are shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. These will provide linkages for badger and other species across the new road which is proposed in this location.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on badger during operation.
	Residual Effects and Monitoring	The sensitivity of badger within the Site has been categorised as Local. After mitigation, the effect is considered to be applicable at up to Site level. Badgers cannot therefore be subject to significant effects. Following the adoption of mitigation the effect is predicted to result in a **Negligible** residual effect **(Not Significant)**. Monitoring during the Operational Phase for badgers will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Bats – Roosting	**Potential Effects**	Increased disturbance of roosting bats within retained/created roosting habitats from operational activities; noise, vibration, and lighting. In the absence of mitigation there is predicted to be an indirect, medium-term **Moderate adverse** effect **(Significant)** on roosting bats.
	Additional Mitigation	Replacement roosts will be installed in suitable locations in habitats away from operational activities of the Site and will continue to be managed for the duration of the Operational Phase. Veteranisation of retained trees will be used, where practicable, to improve the provision of bat roosting habitat on-Site. Surrounding landscaping will be located and managed so as to provide a buffer between operational activities and retained or created roosts. Artificial roosts will be subject to maintenance and monitoring to keep them in good condition and check for evidence of use. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. In addition to the landscaping measures detailed above which will reduce lighting and noise impacts during the Operational

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Phase, there will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document reference 6.3.0)**. A dark corridor will be an area of land that is not subject to artificial illumination and/or meets the requirements specified in the *Institution of Lighting Professionals Guidance Note: Bats and Artificial Lighting in the UK* **Ref 6.26)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Outline Habitat Creation and Enhancement Plan (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on bats during operation and should be referred to for additional detail.
	Residual Effects and Monitoring	The sensitivity of roosting bats within the Site has been categorised as County. After mitigation, the effect is considered to be applicable at up to Site level. Following the adoption of mitigation there is predicted to be an indirect, short-term **Minor adverse** effect **(Not Significant)**. Monitoring during the Operational Phase for bats will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)** and any post-development monitoring requirements set out in any bat European Protected Species Licence (EPSL) granted for the Site.
Bats – Non-Roosting (foraging and commuting)	**Potential Effects**	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) on foraging and commuting habitat could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)**) provides further detail on how changes in operational noise have been modelled and assessed. Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)** and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on operational noise. The maximum predicted impacts within retained habitats predicted to be of importance for foraging and commuting bats are

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		<60 dB A. This is based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels diminish with increasing distance from the operational noise sources, and it is anticipated that the majority of habitats expected to be of importance for foraging and commuting bats during the Operational phase would experience impacts <55dB A. Fragmentation of habitat through presence of barriers to dispersal; e.g. extents of developed land, road infrastructure, fencing, noise and lighting. Risk of accidental/incidental harm to bats through collision risk from operational activities could also occur, including from traffic movements, theme park attractions, and firework/drone shows which may operate at height during hours of darkness. In the absence of mitigation there is predicted to be a direct, medium-term **Major adverse** effect **(Significant)** on commuting and foraging bats.
	Additional Mitigation	Mitigation to address potential effects of elements such as fireworks and drone shows on bats is not widely established. Firework and drone show locations will have a minimum horizontal clearance of 50m from any sensitive habitat areas within which no fireworks would be launched/detonated or drone shows take place. Additionally, any fireworks launch locations will be positioned so that the fallout zone does not overlap with any designated EEAs. Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. In addition to the landscaping measures detailed above which will reduce lighting and noise impacts during the Operational Phase, there will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document reference 6.3.0)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Measures detailed within **Appendix 6.4: OHCEP (Volume 3)** will seek to allow for 'dark corridors' linking the Core Zone and the Lake Zone and linking to off-Site wildlife habitat such as that in adjacent CWSs. This will include sensitive lighting design to minimise impacts on bat foraging and commuting habitats. Lighting will be designed to limit stray light, including laterally and vertically. A dark corridor will be an area of land that is not subject to artificial illumination and/or meets the requirements specified in the *Institution of Lighting Professionals Guidance Note: Bats and Artificial Lighting in the UK* **(Ref. 6.12)**. In addition, measures are included in section 3 of **Appendix 6.5: OLEMP (Volume 3)** to manage operational disturbance. Bat 'hop-overs' planting/transplanting methods and design will be focussed within a dark corridor that will be retained for commuting bats on either side of Manor Road, between the Lake Zone and Core Zone. Underpass structures will also be provided to maintain habitat connectivity and counter fragmentation between the Northern Ecology Area and the rest of the Lake Zone under proposed road infrastructure. The maintenance/creation of habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. These measures are shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Retention and protection of the Elstow Brook Riparian Zone through the West Gateway Zone is of particular note, as the majority of barbastelle recordings from the 2024 surveys were recorded here. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Outline Habitat Creation and Enhancement Plan (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on bats during operation, and should be referred to for additional detail.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of foraging and commuting bats within the Site has been categorised as up to County. After mitigation, the effect is considered to be applicable at up to a District level. Following the adoption of mitigation there is predicted to be indirect, medium-term **Moderate Adverse** effect **(Significant)**. Monitoring during the Operational Phase for bats will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)** and any post-development monitoring requirements set out in any bat EPSL granted for the Site.
Otter	**Potential Effects**	- Disturbance to otter within retained habitats within the Site and those located adjacent but outside the Site during the Operational Phase; - Risk of accidental harm to individual otters from road traffic collision; - Fragmentation of habitat through presence of barriers to dispersal; e.g. extents of developed land, road infrastructure, fencing etc; and - Severance of habitat through placement of new infrastructure. Prior to the application of mitigation there is predicted to be a direct, medium-term **Moderate adverse** effect **(Significant)** on otter.
	Additional Mitigation	Suitable habitat for otters will continue to be provided during the Operational Phase. This will include the diverted watercourse along the eastern boundary of the Core Zone, the retained Elstow Brook and associated 10m Riparian Zone, and areas of bankside and aquatic habitats in wetland habitat creation areas in the Lake Zone. A clear span bridge crossing of the Elstow Brook is proposed for the new access road in the West Gateway Zone, which will support the continued movement of otters along the watercourse. Underpass structures will also be provided to maintain habitat connectivity between the Northern Ecology Area and the rest of the Lake Zone under proposed road infrastructure. The detailed design of these features will include provision of otter/badger fencing as appropriate to the proposed design measures at the time. The maintenance/creation of habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. These locations are highlighted on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Outline Habitat Creation and Enhancement Plan (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on otters during operation and should be referred to for additional detail.
	Residual Effects and Monitoring	The sensitivity of otter within the Site has been categorised as up to County. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation there is predicted to be an indirect, short-term **Minor Adverse** effect **(Not Significant)**. Monitoring during the Operational Phase for otter will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
GCN	**Potential Effects**	Disturbance from operational activities to retained/created terrestrial and aquatic habitats within the Site and those located outside within 250m of the Site, which may have become occupied by GCN. Prior to the application of mitigation there is predicted to be a permanent, indirect, medium-term **Moderate adverse** effect **(Significant)** on GCNs.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	No specific habitat compensation for GCN is proposed within the Site given that the Proposed Development will use a DLL. The DLL will deliver off-Site compensation habitat suitable to maintain the conservation status of GCN in Bedfordshire. The DLL may take on-site habitat creation delivered via the HCEP into account, as part of the process of finalising requirements for the Proposed Development to be covered by the DLL. The creation of new habitat in the EEA would in principle provide habitat for GCN and common toad, although this is not required for GCN mitigation due to the reliance on DLL. These habitats would be managed in the long term to optimise their benefit for wildlife and could therefore provide additional benefits for local GCN populations. Management details will be included within the detailed LEMP, with principles of habitat management set out in Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**. Similarly, though not required for mitigation due to the reliance on DLL hibernacula will be created with brash piles and logs arising from the construction and maintenance of the Site which would be placed within mitigation areas for reptiles and could be used by GCN. This should take account of assumed future shading, waterlogging, and maintenance requirements. Maintenance and management details of these features will be included within the detailed LEMP, with principles of habitat management set out in Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**.
	Residual Effects and Monitoring	Following the adoption of mitigation, effects are predicted to be **Neutral (Not Significant)** due to the assumed implementation of the DLL, which is expressly designed to maintain the favourable conservation status of GCN within Bedfordshire. No project-specific monitoring is proposed due to the reliance on the DLL.
Reptiles	**Potential Effects**	Potential operational effects upon reptiles are predicted to be limited as reptiles will have been relocated from the operational areas of the Site into suitable receptor areas, principally the Northern Ecology Area as shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** but also into other areas of the EEA, as required. There is a limited prospect for noise, vibration and visual disturbance of reptiles using retained habitats from operation of the Proposed Development. Fragmentation of habitats could also occur due to operation and maintenance of built infrastructure within the Proposed Development isolating retained areas of habitat supporting reptile populations across the overall Site.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Prior to the application of mitigation there is predicted to be a permanent, indirect, medium-term **Moderate adverse** effect **(Significant)** on reptiles.
	Additional Mitigation	The proposals for habitat reinstatement are set out in **Appendix 6.4: OHCEP (Volume 3)**. Enhanced and created habitat would provide replacement habitat for local reptile populations, which would include the creation of grassland, woodland, scrub and water bodies within the Lake Zone, in particular the Northern Ecology Area. These habitats would be managed in the long term pursuant to the detailed LEMP, to be produced based on the principles in **Appendix 6.5: OLEMP (Volume 3)**. Specific habitat measures for reptiles will include provision of egg-laying sites and artificial hibernation/shelter features. A clear span bridge crossing of the Elstow Brook is proposed for the new access road in the West Gateway Zone, which will support the movement of any reptiles present in this part of the Site, along the Elstow Brook corridor. Two underpass structures will also be provided to maintain habitat connectivity between the Northern Ecology Area and the rest of the Lake Zone under proposed road infrastructure. The maintenance of habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. These features are shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. These will provide linkages for reptiles and other species across the Site. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on reptiles during operation.
	Residual Effects and Monitoring	The sensitivity of reptiles within the Site has been categorised as Local. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation there is predicted to be an indirect, short-term **Minor Adverse** effect **(Not Significant)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Monitoring during the Operational Phase for reptiles will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Breeding birds: Annex 1 EU Birds Directive/WCA Schedule 1	**Potential Effects**	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) on WCA Schedule 1 and Annex 1 bird species could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)** and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on how changes in operational noise have been assessed. The maximum predicted noise impacts within areas of the Site of importance to breeding bird communities are <60 dB A based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels would diminish with increasing distance from noise sources, with the majority of suitable habitat within and adjacent to the Site expected to experience impacts <55dB A. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation. Occasional records of barn owl flying over/foraging at the Site were recorded in 2024. Should barn owls continue to use habitats within the Site during operation, for example foraging within the Lake Zone EEA, they may be at risk of incidental harm from operational traffic. Barn owl can be particularly susceptible to this impact pathway, due to their low flight patterns and (where suitable habitat present) tendency to forage in rough grassland habitats including where these form part of roadside vegetation. Road speeds within the Proposed Development are planned to be 30mph. This reduces the likelihood of road-traffic collisions relative to high-speed major roads such as motorways and dual carriageways, to the extent that collisions are relatively unlikely to occur. Prior to the application of mitigation there is predicted to be a permanent, direct/indirect, long-term **Moderate adverse** effect **(Significant)** on Annex 1 and WCA Schedule 1 birds.
	Additional Mitigation	Installed bird boxes and other artificial nesting features would be monitored, maintained, and replaced as necessary for the lifetime of the Proposed Development. Ongoing management of retained and created habitats under the LEMP would support on-Site bird populations, as set out in Sections 4.3 and 4.4 of **Appendix 6.5:**

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		OLEMP (Volume 3). Any vegetation removal required during the Operational Phase would be completed outside the nesting bird season where possible. Should this not be possible, ecological advice would be sought. The maintenance/creation of EEA habitats including habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. Ongoing habitat management within the EEA would also continue to enhance and maintain the suitability of the habitats present for species such as Cetti's warbler and kingfisher. Mitigation to address potential effects of elements such as fireworks and drone shows on birds is not widely established. Firework and drone show locations will have a minimum horizontal clearance of 50m from any sensitive habitat areas within which no fireworks would be launched/detonated or drone shows take place. Additionally, any fireworks launch locations will be positioned so that the fallout zone does not overlap with any designated EEAs. Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document Reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Outline Habitat Creation and Enhancement Plan (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).**

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on birds during operation. These should be referred to for additional detail.
	Residual Effects and Monitoring	The sensitivity of Annex 1/WCA Schedule 1 birds within the Site has been categorised as of County importance. After mitigation, the effect is considered to be applicable at up to a Local level. Following the adoption of mitigation there is predicted to be a permanent, indirect, long-term **Minor Adverse** effect **(Not Significant)**. Monitoring during the Operational Phase for breeding birds will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Breeding birds: SPI and/or BoCC5 Red Listed	**Potential Effects**	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) on SPI and BoCC5 red list bird species could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)** and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on how changes in operational noise have been assessed. The maximum predicted noise impacts within areas of the Site of importance to breeding bird communities are <60 dB A based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels would diminish with increasing distance from noise sources, with the majority of suitable habitat within and adjacent to the Site expected to experience impacts <55dB A. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation. Prior to the application of mitigation there is predicted to be a permanent, indirect, long-term **Moderate Adverse** effect **(Significant)** on SPI and/or BoCC5 red listed species.
	Additional Mitigation	Installed bird boxes and other artificial nesting features would be monitored, maintained, and replaced as necessary for the lifetime of the Proposed Development. Ongoing management of retained and created habitats under the LEMP would support on-Site bird populations, as set out in Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Any vegetation removal required during the Operational Phase would be completed outside the nesting bird season where possible. Should this not be possible, ecological advice would be sought. The maintenance/creation of EEA habitats including habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. Ongoing habitat management within the EEA would also continue to enhance and maintain the suitability of the habitats present for SPI and BoCC5 red list species predicted to continue breeding at the Site. Mitigation to address potential effects of elements such as fireworks and drone shows on birds is not widely established. Firework and drone show locations will have a minimum horizontal clearance of 50m from any sensitive habitat areas within which no fireworks would be launched/detonated or drone shows take place. Additionally, any fireworks launch locations will be positioned so that the fallout zone does not overlap with any designated EEAs. Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on birds during operation. These should be referred to for additional detail.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects	With the mitigation measures described above in place, effects on the recorded SPI and BoCC5 red list species would be reduced. The species predicted to remain present or colonise the Site in the Construction Phase assessment are predicted to continue using the Site during the Operational Phase. As habitats in the EEA mature and are managed, these are likely to increase in value for the breeding bird community. Whilst species using the EEA would still be subject to some disturbance, the mitigation measures described above would substantially lessen this, particularly for the extents of habitat within the Lake Zone EEA and Northern Ecology Area EEA. As wetland and water body habitats including on islands within the Lake Zone lake mature, the Site is likely to support an increased range of wildfowl and other wetland bird species relative to baseline conditions. The sensitivity of SPI/BoCC5 red list birds within the Site has been categorised as of County importance. After mitigation, the effect is considered to be applicable at up to a Local level. Following the adoption of mitigation there is predicted to be a permanent, indirect, long-term **Minor Adverse** effect **(Not Significant)**. Monitoring during the Operational Phase for breeding birds will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Breeding birds: BoCC5 Amber list and other species of conservation value	**Potential Effects**	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) BoCC5 amber listed birds and other species of conservation value could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1**) and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on how changes in operational noise have been assessed. The maximum predicted impacts within areas of the Site of importance to breeding bird communities are <60 dB A based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels would diminish with increasing distance from noise sources, with the majority of suitable habitat within and adjacent to the Site expected to experience impacts <55dB A. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation. Prior to the application of mitigation there is predicted to be a permanent, indirect, long-term **Moderate Adverse** effect **(Significant)** on BoCC5 amber listed species and other species of conservation concern.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Additional Mitigation	Installed bird boxes and other artificial nesting features would be monitored, maintained, and replaced as necessary for the lifetime of the Proposed Development. Ongoing management of retained and created habitats under the LEMP would support on-Site bird populations, as set out in Section 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**. Any vegetation removal required during the Operational Phase would be completed outside the nesting bird season where possible. Should this not be possible, ecological advice would be sought. The maintenance/creation of EEA habitats including habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. Ongoing habitat management within the EEA would also continue to enhance and maintain the suitability of the habitats present for BoCC5 amber listed and other species of conservation value predicted to continue breeding at the Site. Mitigation to address potential effects of elements such as fireworks and drone shows on birds is not widely established. Firework and drone show locations will have a minimum horizontal clearance of 50m from any sensitive habitat areas within which no fireworks would be launched/detonated or drone shows take place. Additionally, any fireworks launch locations will be positioned so that the fallout zone does not overlap with any designated EEAs. Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on birds during operation. These should be referred to for additional detail.
	Residual Effects	With the mitigation measures described above in place, effects on the recorded BoCC5 amber list and other species of conservation concern would be reduced. The species predicted to remain present or colonise the Site in the Construction Phase assessment are predicted to continue using the Site during the Operational Phase. As habitats in the EEA mature and are managed, these are likely to increase in value for the breeding bird community. Whilst species using the EEA would still be subject to some disturbance, the mitigation measures described above would substantially lessen this, particularly for the extents of habitat within the Lake Zone EEA and Northern Ecology Area EEA. As wetland and water body habitats including on islands within the Lake Zone lake mature, the Site is likely to support an increased range of wildfowl and other wetland bird species relative to baseline conditions. The sensitivity of BoCC5 amber list and other bird species of conservation concern has been categorised as of District importance. After mitigation, the effect is considered to be applicable at up to a Local level. Following the adoption of mitigation there is predicted to be a permanent, indirect, long-term **Minor Adverse** effect **(Not Significant)**. Monitoring during the Operational Phase for breeding birds will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.
Non-breeding/wintering birds	**Potential Effects**	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) to non-breeding/wintering birds could occur during operation. The noise assessment (**Chapter 9: Noise and Vibration (Volume 1)** and **Appendix 9.4: Operational Noise Assessment (Volume 3)**) provides further detail on how changes in operational noise have been assessed. The maximum predicted impacts within areas of the Site of importance to bird communities are <60 dB A based on maximum noise limits at Receptor Control Locations on Manor Road and Broadmead Farm, secured by the **Design Standards (Document Reference 6.3.0)**. Noise levels would diminish with increasing distance from

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		noise sources, with the majority of suitable habitat within and adjacent to the Site expected to experience impacts <55dB A. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation. Prior to the application of mitigation there is predicted to be a permanent, indirect, long-term **Moderate Adverse** effect **(Significant)** on non-breeding/wintering birds.
	Additional Mitigation	Ongoing management of retained and created habitats under the LEMP would support on-Site bird populations, as set out in Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)**. Any vegetation removal required during the Operational Phase in the EEA would be completed with ecological advice. The maintenance/creation of EEA habitats including habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. Ongoing habitat management within the EEA would also continue to enhance and maintain the suitability of the habitats present for non-breeding/wintering bird species predicted to continue using habitats at the Site during the Operational Phase. Mitigation to address potential effects of elements such as fireworks and drone shows on birds is not widely established. Firework and drone show locations will have a minimum horizontal clearance of 50m from any sensitive habitat areas within which no fireworks would be launched/detonated or drone shows take place. Additionally, any fireworks launch locations will be positioned so that the fallout zone does not overlap with any designated EEAs. Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on birds during operation. These should be referred to for additional detail.
	Residual Effects	With the mitigation measures described above in place, effects on the recorded non-breeding/wintering species (and those that could be present) would be reduced. The species predicted to remain present or colonise the Site in the Construction Phase assessment are predicted to continue using the Site during the Operational Phase. As habitats in the EEA mature and are managed, these are likely to increase in value for the local bird community. Whilst species using the EEA would still be subject to some disturbance, the mitigation measures described above would substantially lessen this, particularly for the extents of habitat within the Lake Zone EEA and Northern Ecology Area EEA. As wetland and water body habitats including on islands within the Lake Zone lake mature, the Site is likely to support an increased range of wildfowl and other wetland bird species relative to baseline conditions. The sensitivity of non-breeding/wintering birds has been categorised as of up to County importance. After mitigation, the effect is considered to be applicable at up to a Local level. Following the adoption of mitigation there is predicted to be a permanent, indirect, long-term **Minor Adverse** effect **(Not Significant)**. Monitoring during the Operational Phase for breeding birds will be undertaken as per Section 5.1 of the **Appendix 6.5: OLEMP (Volume 3)**.
Terrestrial Invertebrates	**Potential Effects**	Retained or created habitat suitable for supporting terrestrial invertebrates may be subject to degradation and disturbance through incidental pollution risk and in response to wider changes to Site conditions and management during the operational period. Areas of habitat suitable for invertebrates may also be at risk of increased lighting and noise disturbance and recreational disturbance from users of the Proposed Development.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		Fragmentation of habitats could also reduce connectivity of habitats within the Site for terrestrial invertebrates. Prior to the application of mitigation there is predicted to be a permanent, indirect, long-term **Moderate adverse** effect **(Significant)** on terrestrial invertebrates.
	Additional Mitigation	General operational mitigation measures which will address the potential effects to terrestrial invertebrates are outlined in **Appendix 6.5: OLEMP (Volume 3)**. These include the management of created and retained habitats. The maintenance/creation of habitat corridors around the margins of the Site, for example the Elstow Brook corridor to the west of the Lake Zone, the EEA to the east of the Lake Zone, the Elstow Brook corridor through the West Gateway Zone and the diverted watercourse corridor through the north and east of the Core Zone will support connectivity between on-Site and off-Site habitats. These features are shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document Reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on terrestrial invertebrates during operation. These should be referred to for additional detail.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The sensitivity of terrestrial invertebrates is up to County level. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation there is predicted to be a temporary, indirect, medium-term **Minor adverse** effect **(Not Significant)**.
Fish	**Potential Effects**	During the Operational Phase there is the potential for habitat degradation and/or loss leading to impacts on the fish communities present, potentially including fragmentation from new infrastructure. Aquatic habitats supporting fish populations could also be subject to increased noise, vibration, and lighting disturbance relative to baseline conditions, although this will be limited by the 10m Riparian Zone maintained around retained and diverted watercourses including Elstow Brook. The operation of new outfall discharges may lead to an alteration of flows, with discharges becoming an attractant flow for fish species. Water affected by pollution draining from the Proposed Development could enter the watercourses and water bodies on-Site. This could provide an impact pathway affecting fish, for example through the transport of hydrocarbon pollution following a pollution incident, or increased silt run-off. Prior to the application of mitigation there is predicted to be a permanent, indirect, long-term **Moderate adverse** effect **(Significant)** on fish.
	Additional Mitigation	Aquatic habitats will be subject to ongoing management and monitoring as specified in **Appendix 6.5: OLEMP (Volume 3)**. A clear span bridge crossing of the Elstow Brook is proposed for the new access road in the West Gateway Zone. This will support continued up and downstream movement of fish countering fragmentation risks, through maintaining the bank structure of the watercourse and avoiding enclosing the watercourse in a box culvert or similar. This feature is shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Detailed design of permanent outfalls to consider the exclusion of fish migration pathways, particularly for European eel, and the prevention of entrapment of fish species. The detailed design of these permanent outfalls

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		is to be prepared in under the Land Drainage Consent (see Section 5 of **Appendix 12.3: Drainage Strategy (Volume 3)**). Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document Reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Appendix 6.4: OHCEP (Volume 3)**. This will include measures to control noise and visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3)**. Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on fish during operation. These should be referred to for additional detail. To support maintenance and improvement of water quality within watercourses and lakes, water treatment will be incorporated throughout the drainage design to make sure that water contained and discharged into new and retained watercourses and lakes is appropriately treated. These measures are detailed in **Appendix 12.3: Drainage Strategy (Volume 3)** and are expected to improve water quality in watercourses and water bodies within the Site relative to baseline conditions**.**
	Residual Effects and Monitoring	The sensitivity of fish is up to County level. After mitigation, the effect is considered to be applicable at up to a Local level. Following the adoption of mitigation there is predicted to be a permanent, indirect, long-term **Moderate Beneficial** effect **(Significant)**. Monitoring during the Operational Phase for fish will be undertaken as per Section 5.1 of **Appendix 6.5: OLEMP (Volume 3)**.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
Aquatic macroinvertebrates	**Potential Effects**	During the Operational Phase there is the potential for habitat degradation and/or loss leading to impacts on aquatic macroinvertebrates, potentially including fragmentation from new infrastructure. Aquatic habitats could also be subject to increased noise, vibration, and lighting disturbance relative to baseline conditions, although this will be limited by the Riparian Zones around retained and diverted watercourses including Elstow Brook. Water affected by pollution draining from the Proposed Development could enter the watercourses and water bodies on-Site. This could provide an impact pathway affecting aquatic invertebrates, for example through the transport of hydrocarbon pollution following a pollution incident, or increased silt run-off. Prior to the application of mitigation there is predicted to be a permanent, indirect, long-term **Moderate adverse** effect **(Significant)** on aquatic macroinvertebrates.
	Additional Mitigation	Aquatic habitats will be subject to ongoing management and monitoring as specified in **Appendix 6.5: OLEMP (Volume 3)**. A clear span bridge crossing of the Elstow Brook is proposed for the new access road in the West Gateway Zone. This will support continued habitat connectivity for aquatic invertebrates and counter fragmentation risks, through maintaining the bank structure of the watercourse and avoiding enclosing the watercourse in a box culvert or similar (which will enable natural light to continue to reach the section of watercourse under the bridge). This feature is shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Areas of tree, scrub and shrub planting within the EEA and associated with wider landscaping for the Proposed Development would provide a degree of noise and visual disturbance mitigation, due to their inherent attenuating properties. Section 3.1 of **Appendix 6.4: OHCEP (Volume 3)** and SW5.5, CZ5.1, LZ5.1, LZ5.2 and LZ5.3 in the **Design Standards (Document Reference 6.3.0)** set out how lighting control measures will be established. There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats, therefore confirming continued compliance with the EEA lighting **Design Standards (Document Reference 6.3.0)**. The approach to establishing measures to manage recreational disturbance is set out in Section 3.1 of the **Outline Habitat Creation and Enhancement Plan (Volume 3)**. This will include measures to control noise and

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		visual disturbance, for example through landscaping, signage and wardening. Ongoing maintenance and checks of these measures during the operational phase will be completed as detailed in Section 5 of **Appendix 6.5: OLEMP (Volume 3).** Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on aquatic invertebrates during operation. These should be referred to for additional detail. To support maintenance and improvement of water quality within watercourses and lakes, water treatment will be incorporated throughout the drainage design to make sure that water contained and discharged into new and retained watercourses and lakes is appropriately treated. These measures are detailed in **Appendix 12.3: Drainage Strategy (Volume 3)** and are expected to improve water quality in watercourses and water bodies within the Site relative to baseline conditions**.**
	Residual Effects and Monitoring	The sensitivity of aquatic macroinvertebrates is at Local level. After mitigation, the effect is considered to remain applicable at up to a Local level. Following the adoption of mitigation there is predicted to be a permanent, indirect, long-term **Moderate beneficial** effect **(Significant)**.
Macrophytes (aquatic plants)	**Potential Effects**	Water affected by pollution draining from the Proposed Development could enter the watercourses and water bodies on-Site. This could provide an impact pathway affecting macrophytes, for example through the transport of pollution following a pollution incident or increased silt run-off. Prior to the application of mitigation there is predicted to be a temporary, indirect, long-term **Moderate adverse** effect **(Significant)** on macrophytes.
	Additional Mitigation	Habitats supporting macrophytes (lakes, water courses and ponds) will be subject to ongoing management and monitoring as specified in **Appendix 6.5: OLEMP (Volume 3)**. Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** set out longer term mitigation measures relevant to addressing effects on macrophytes during operation.

Important Ecological Feature	Potential Effects/Mitigation/Residual Effects and Monitoring	
		To support maintenance and improvement of water quality within watercourses and lakes, water treatment will be incorporated throughout the drainage design to make sure that water contained and discharged into new and retained watercourses and lakes is appropriately treated. These measures are detailed in **Appendix 12.3: Drainage Strategy (Volume 3)** and are expected to improve water quality in watercourses and water bodies within the Site relative to baseline conditions**.**
	Residual Effects and Monitoring	The sensitivity of macrophytes is at the Local level. After mitigation, the effect is considered to be applicable at up to a Site level. Following the adoption of mitigation effects are predicted to be **Moderate beneficial (Not Significant)**. Monitoring during the Operational Phase for macrophytes will be undertaken as per **Table 5-1** of the **Appendix 6.5: OLEMP (Volume 3)**.

CUMULATIVE EFFECTS

Intra-Project Effects

6.7.11. This chapter has dealt specifically with important ecological features throughout. The assessment has identified a range of potential sources of effect for each feature (for example the potential effects of habitat loss, light and noise on bats). It has therefore intrinsically addressed intra-project effects of the Proposed Development.

Inter-Project Effects

6.7.12. A number of other proposed and consented projects within the neighbouring geographical areas have been identified to be considered in relation to the potential for cumulative effects. These are set out in **Appendix 18.1: Long List of Committed Developments (Volume 3)**.

6.7.13. The projects which have been agreed to be considered within the cumulative assessment for the Proposed Development are detailed in **Appendix 18.1: Long List of Committed Developments (Volume 3)** and their approximate locations shown on **Figure 18.1: Committed Developments (Volume 2)**. The information available on the extent, type, location, sources of effects or linkages between the Proposed Development and these projects, and their predicted ecological effects (where this data is available) has been subject to a high-level review. This exercise seeks to determine the likelihood of cumulative effects on important ecological features arising from the combined effects of the Proposed Development and the other projects.

6.7.14. Following this review, the only potential for significant cumulative effect identified were those arising from air quality impacts during the Operational Phase. Dispersion (air quality) modelling has been completed to assess the cumulative emissions from the Proposed Development and other developments, and the contribution of these to air quality impacts at designated sites. The full methodology for the dispersion modelling is set out in **Chapter 8: Air Quality (Volume 1)**. Effects could arise due to increased emissions from vehicles, associated with the Proposed Development and other development-driven increases in traffic. These in turn trigger increases in nitrogen deposition rates over designated sites that exceed numerical significance threshold criteria. As these criteria have been exceeded, examination of potential ecological effects that might occur due to these air quality impacts is required.

6.7.15. Potential air quality effects could occur to Maulden Wood and Pennyfather's Hill Site of Special Scientific Interest (SSSI), which is located approximately 5.5km southeast of the Site as shown in **Figure 8.5: Traffic Emissions and Ecological Receptors – Maulden Wood Ancient Woodland & Maulden Wood and Pennyfather's Hills Sites of Special Scientific Interest (Volume 2)**. Cumulative air quality effects on the SSSI are predicted at up to a local level, with a minor significance classification, and therefore are **Not Significant**. This is due to impacts being low in magnitude relative to baseline air quality conditions and because only a limited portion of the SSSI would experience an exceedance of the significance screening thresholds.

6.7.16. Potential air quality effects could also occur to a number of locally designated sites (Kempston Hardwick Pits County Wildlife Site (CWS), Stewartby Lake CWS, Quest Pit CWS, Elstow Pit CWS, Kempston Hardwick Pit CWs and Kempston West End CWS). **The locations of these sites are shown on Figure 8.6: Traffic Emissions and Ecological Receptors – County Wildlife Sites (Volume 2)**. Cumulative air quality effects on the CWSs are predicted at up to a local level, with a minor significance classification, and therefore are **Not Significant**. This is due to impacts being low

in magnitude relative to baseline air quality conditions, because only a limited portion of the CWSs would experience an exceedance of the significance screening thresholds and due to impacts declining over the lifetime of the Proposed Development. No other significant cumulative effects have been identified.

6.7.17. Cumulative Effects are considered across all technical topics in **Chapter 18: Cumulative Effects (Volume 3).** The full analysis of potential cumulative effects from an ecology perspective only is provided in **Appendix 6.6: Inter-Project Cumulative Assessment (Volume 3)**.

6.8. ECOLOGICAL ENHANCEMENTS

6.8.1. The Proposed Development will implement several measures that enhance ecological conditions compared to the baseline. These measures include those aimed at mitigating predicted impacts on Important Ecological Features and ensuring compliance with legislation and policy, as well as features specifically designed to deliver ecological enhancements.

6.8.2. Ecological enhancement measures that will provide benefits beyond the required ecological mitigation include the following:

- Creation of enhanced habitats and hydrological regime for the diverted watercourse in the Core Zone as set out in **Appendix 6.4: OHCEP (Volume 3)** and Section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**;
- The provision of Riparian Zones at the bank-top of Elstow Brook and the diverted watercourse, within the Site. This will represent an improvement compared to baseline conditions, as arable farmland and associated agricultural activities are currently present within ten metres of banktop along existing watercourses and ditches;
- The development and implementation of the Surface Water Drainage Strategy (see Section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**) will include staged treatment of water draining from the Site. This is predicted to result in improved water quality in water bodies that receive operational drainage from the Proposed Development. Improvements in water quality are anticipated to result in an increase in the conservation status of aquatic macroinvertebrate communities;
- The provision of islands within the Lake Zone lake will provide roosting and nesting opportunities for waterfowl and wetland birds with reduced risk from terrestrial predators, where currently there are none. Other habitat creation and enhancement measures associated with the Kempston Hardwick Pit CWS water bodies are predicted to provide an overall enhancement to aquatic habitats in the CWS;
- Measures to control and remove invasive non-native plant species such as Himalayan balsam and New Zealand Pygmyweed;
- Implementation of mink control measures at the Site, as set out in Section 4.4 of **Appendix 6.5: OLEMP (Volume 3)**. Mink control measures would be implemented during the operational phase of the Proposed Development, due to the impracticalities of implementing such measures during in parallel with extensive construction activities. Mink control measures would therefore be instigated during the operational phase, when major construction activities associated with implementation of the Proposed Development are complete. Mink control measures are likely to comprise operations to trap, remove and humanely dispatch individual mink from habitats across

the Site. Removal of mink from the Site would decrease predation pressure on on-site bird communities and increase the suitability of the Site for colonisation by water vole;

- Purpose built invertebrate 'hotels' will be installed in landscaped areas to provide refuge for specific taxonomic groups, i.e., the provision of nesting habitat for solitary bees.
- Ongoing maintenance of the EEA (and other areas of the Proposed Development) – UDX or the relevant Undertaker would retain unified control of the Site and therefore can commit to a long term maintenance and management regime for all habitat and landscape creation on the Site. This provides opportunities for more holistic management of ecology and biodiversity across the Site than is currently the case;
- Landscaping and habitat provision would be delivered outside the EEA locations, in line with the principles of the Green Infrastructure Strategy (document reference 6.2.1.0), with indicative spatial proposals set out in Section 3.6 of the Green Infrastructure Strategy. It is likely that additional ecological mitigation and enhancement will be delivered by these areas of green infrastructure. The assessment in this ES does not consider any of the ecological benefits that may arise from these areas. This is because the assessment take a cautious worst-case approach and does not rely on provisional habitat locations that are identified in the GI Strategy but not included within identified habitat provision on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3**). In reality, the GI Strategy is likely to deliver species-rich and wet grassland planting, areas of wetland and waterbodies, areas of tree planting and additional areas of woodland planting, additional to habitat provision within the EEA. This provides opportunities for increased ecological mitigation and enhancement relative to that assessed in this chapter.

6.9. LIMITATIONS

6.9.1. The limitations which apply to this assessment are outlined below. For each an explanation of the possible impact on this EcIA has been provided in addition to a description of any corrective actions that have been taken to adjust for any limitations.

6.9.2. All data available from all standard and reasonably accessible sources has been reviewed to inform the baseline of this assessment. Other sources may exist which have not been identified; however, the sources of information used in the assessment set out in this chapter are those typically engaged for such investigations and are considered sufficient to inform a robust assessment.

Desk Study Data

6.9.3. Desk study data provided by biological records centres is subject to spatial coverage of biodiversity recording schemes. Negative survey results are frequently not recorded (where surveys have occurred, and species likely absence has been demonstrated). Certain areas (e.g. nature reserves) are often heavily studied, whereas other areas (e.g. private farmland) have infrequently or never been visited. For this reason, the absence of desk study records for a particular species has not been taken to indicate species absence. In all instances, the presence or absence of a particular species in desk study records has been used alongside survey data and the known or anticipated species distributions to infer whether these species may be present. Where doubt exists, a precautionary assessment has been undertaken by assuming a possible species presence in suitable habitat. This has been informed by survey data, where available, and professional judgement.

Field Survey Data

6.9.4. Survey data is typically valid for approximately 18 months to 3 years according to guidance from the CIEEM **(Ref 6.29)** regarding the validity of survey data. This is dependent on the species being surveyed and other contextual factors. Ecological surveys for some taxa/species groups were undertaken in 2017 and 2018 (Delta Simons Report **(Ref. 6.7)**). Pre-existing ecology reports, whilst dated, provide valuable ecological context and have been referred to as part of the package of ecological information used to inform this assessment.

6.9.5. The field survey area incorporated into the reports for **Appendix 6.1: Preliminary Ecological Appraisal Report (Volume 3)**, Arcadis PEA and Delta Simons Ecological Appraisal **(Ref. 6.7)** does not include all the land with the red line boundary. It is noted that Delta Simons preliminary field survey work covers the majority of the Site (see reports for further detail on exact field survey areas and survey extent (**(Ref. 6.1)**, **(Ref. 6.6)** and **(Ref. 6.7)**).

6.9.6. A robust data set suitable to reaffirm the current status of protected species within the Site has been completed and is presented in **Appendices 6.1 to 6.3 and 6.7 to 6.18 (Volume 3)**. The EcIA therefore is based upon the extent of the baseline ecological information available at the time of writing (May 2025), see **Table 6-1**.

6.9.7. Land Access – some areas of the Site had limited land access during the completion of the ecological surveys. Land access restrictions are detailed in **Appendices 6.1 to 6.3 and 6.7 to 6.18 (Volume 3)**, where applicable. In the limited number of cases where access limitations were a constraint to survey, a cautious worst case assessment of baseline conditions has been used to inform the impact assessment and mitigation development. Pre-construction surveys would be completed as set out in **Appendix 2.3: OCEMP (Volume 3)**.

Design

6.9.8. Detailed design information relating to the Proposed Development is not available. In the absence of detailed information, typical activities associated with construction and operational activity of the scale proposed have been identified using professional judgement, advice from UDX, and information provided in **Chapter 2: Description of the Proposed Development (Volume 1)**.

6.9.9. Estimates of habitat loss provided are approximate. Habitat loss calculations for this EcIA have been based on conservative assumptions, i.e. a cautious worst case scenario for habitat loss has been assessed.

6.10. SUMMARY OF LIKELY SIGNIFICANT EFFECTS AND PROPOSED MITIGATION

6.10.1. **Table 6-13** presents a summary of the likely significant effects relating to Ecology and Nature Conservation as a result of the Proposed Development, and the mitigation measures proposed to avoid, prevent, reduce or, offset (if possible and required) any identified significant adverse effects. The table summarises those effects that were identified within the assessment as likely to be significant prior to the consideration of mitigation. Significant effects are identified as major or moderate. Effects that are identified as negligible or minor are not considered to be significant, and therefore, are not listed in the summary table below.

Table 6-13 - Summary of Likely Significant Effects and Proposed Mitigation

Key to table:

P/T = Permanent or Temporary, D/ID = Direct or Indirect, ST/MT/LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
Construction Phase					
Designated Sites					
Kempston Hardwick Pit CWS	Temporary Disturbance and habitat change of CWS Habitats - up to approximately 26.7ha (~31%) of CWS is located within the Lake Zone within the Site. Indirect effects on the CWS habitats located adjacent to the Site (to the east of the Core Zone) from accidental spillages, silt laden run-off and dust.	**Major Adverse** P/D/LT **Significant**	Habitat creation measures as per **Appendix 6.4: OHCEP (Volume 3)** and shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. General Construction Phase mitigation measures as described in Sections 3.2, 3.6, 3.7, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**. Water quality supported through drainage design as per Section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	**Moderate Beneficial*** P/D/LT **Major Adverse*** P/D/MT *[*The loss of the ephemeral wetland ecosystem will not be fully mitigated. However, the provision of a different range*	**Significant** **Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
				and distribution of habitats will provide alternate ecological benefit.]	
Coronation Pit CWS	Loss of CWS Habitats - up to approximately 5ha (5.2%) of the CWS is located within the Core Zone within the Site. This is dominated by Other mixed deciduous woodland and scrub habitats. Indirect effects on the CWS habitats located adjacent but outside the Site (to the east of the Core Zone) from accidental spillages, silt laden run-off and dust.	**Moderate Adverse** P/D/LT **Significant**	Habitat creation will be provided to mitigate for the loss of CWS habitats as shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. General Construction Phase mitigation measures as described in Sections 3.2, 3.6, 3.7, and 3.10 of **Appendix 2.3: OCEMP (Volume 3)**. Water quality supported through drainage design as per Section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	**Minor Adverse** P/D/MT	**Not Significant**
Habitats					
HPIs - Woodlands	Direct loss of woodland habitat and individual trees. Damage to retained woodland and trees.	**Moderate Adverse** P/D/LT **Significant**	Woodland and tree habitats will be created across the Site as indicated on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** and described	**Moderate Adverse** P/D/MT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Fragmentation of woodland habitats by Site clearance and subsequent infrastructure delivery.		in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. Construction mitigation measures in relation to water-borne pollution risk management, dust suppression, soil protection, and ecology as described in **Appendix 2.3: OCEMP (Volume 3)**. Arboricultural protection measures as shown on the **Appendix C: Tree Removal and Protection Plan** of the **Arboricultural Impact Assessment (Document Reference 6.11.0)**.		

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
HPIs - Reedbeds	Loss or disturbance of reedbed habitat located within the Site. Indirect effects upon retained reedbed habitat during construction including dust, silt and run off and change in hydrological conditions.	**Moderate Adverse** P/D/LT **Significant**	Habitat creation and management will be provided as shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** and set out in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. General Construction Phase mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	**Moderate Adverse** P/D/MT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
OMHS on Previously Developed Land	Loss and degradation of HPI OMH located across the Site.	**Major Adverse** P/D/LT **Significant**	Habitat creation and management will be provided as per **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. More detail on habitat creation measures is also contained in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. General Construction Phase mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.	**Minor Adverse** P/D/MT	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
HPIs – Native Hedgerow	Permanent loss and severance of hedgerows. Indirect effects upon retained or created hedgerows during construction including damage and disturbance from dust, silt and run off and change in hydrological conditions.	**Moderate Adverse** P/D/LT **Significant**	Habitat creation and management will be provided as per **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. More detail on habitat measures is contained in Section 3.6 of **Appendix 6.5: OLEMP (Volume 3)**. Retained hedgerows will be protected with Heras or similar fencing. General Construction Phase mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.	**Minor Adverse** P/D/MT	**Not Significant**
HPIs – Watercourses and water bodies	Temporary and permanent loss of aquatic habitats. Water affected by pollution draining from the Proposed Development. Noise, vibration, and lighting disturbance from works could disturb aquatic fauna.	**Major Adverse** P/D/LT **Significant**	Habitat creation and management will be provided as per Section 3.4 and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. This includes lake and watercourse habitat measures including protection of Elstow Brook and creation of more ecologically diverse watercourse diversion in the east of the Core Zone. Measures to protect riparian and aquatic habitats from disturbance or	**Moderate Beneficial** P/D/MT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
			degradation, are outlined in **Appendix 2.3: OCEMP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.		
Veteran Tree (T80, West Gateway Zone)	Risk of damage to retained veteran tree during construction works.	**Moderate Adverse** P/ID/LT **Significant**	Measures to protect the tree will be adopted as outlined in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**. Arboricultural protection measures are shown on the **Appendix C: Tree Removal and Protection Plan** of the **Arboricultural Impact Assessment** (**Document Reference 6.11.0**). General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.	**Negligible**	**Not Significant**
Protected Species					

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
Badger	Damage/destruction of badger setts. Disturbance of badger occupying a sett (where the sett can be retained and avoided/protected). Severance and loss of badger habitat and general disturbance.	**Moderate Adverse** P/D/LT **Significant**	Badger sett closures under licence to Natural England as required. Artificial sett construction to mitigate for loss of main sett(s). Measures to minimise disturbance to retained setts. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on badgers. Establishment of badger specific habitat mitigation measures is set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**.	**Minor Adverse** T/D/ST	**Not Significant**
Bats – Roosting	Direct effect on bats and bat roosts. Loss of potential roosting features. Disturbance of bats whilst occupying a roost. Fragmentation/severance effects through Site clearance and installation of infrastructure, i.e. existing bat roosts that are	**Moderate Adverse** P/D/LT **Significant**	Replacement roosting sites will be provided for any bat roosts lost. A Natural England licence will be obtained licensable activities be required. Measures to minimise the risk of harm to individual bats will be taken, with ecological support for any removal of existing bat roosts. Measures will also be taken to minimise light spill onto retained bat habitats. General construction mitigation measures as described in **Appendix**	**Minor Adverse** T/D/ST	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	retained could have reduced connectivity with the surrounding landscape.		**2.3: OCEMP (Volume 3)** would also support minimisation of impacts on roosting bats. Establishment of bat specific habitat mitigation measures is set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**.		
Bats – Non-Roosting (foraging and commuting)	Loss of bat foraging and commuting habitat. Fragmentation/severance effects through Site clearance and installation of infrastructure could reduce connectivity for foraging and commuting bats within and surrounding the Site. Disturbance effects upon foraging habitats and commuting routes during construction from increased traffic, lighting, noise.	**Moderate Adverse** P/D/LT **Significant**	Habitat retention, creation, and connectivity measures including lighting control measures as specified in **Appendix 2.3: OCEMP (Volume 3)** and **Design Standards (Document Reference 6.3.0)**. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on commuting and foraging bats. Establishment of bat specific habitat mitigation measures is set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**.	**Moderate Adverse** P/D/MT	**Significant**
Otter	Loss of otter habitats. Risk of accidental harm to individual otters.	**Moderate Adverse** P/D/LT	Pre-construction surveys would be completed as specified in **Appendix 2.3: OCEMP (Volume 3)**.	**Moderate Beneficial** P/D/MT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Disturbance of otter habitat during construction in adjacent areas including from noise and vibration e.g. piling and rock crushing. Fragmentation/severance effects through Site clearance and installation of infrastructure, i.e. creating barriers to the movement of otters along watercourses and through water bodies within and adjacent to the Site. Disturbance of an otter whilst occupying a holt Disruption and/or reduction in food sources for otter, e.g. through reductions in fish populations resulting from works to lakes and watercourses.	**Significant**	Elstow Brook will be retained and protected. Suitable habitat for otter will be retained or created along the realigned watercourse in the Core Zone and in the EEA in the Lake Zone (see **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**). If necessary, a protected species licence will be obtained from Natural England and/or exclusion zones put in place around places of shelter. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase otter mitigation measures in greater detail. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on otter.		
GCN	Risk of harm or injury of GCN.	**Moderate Adverse** P/D And ID/LT	Commitment to the adoption of a DLL approach via a compensation payment	**Negligible** N/A	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Loss of GCN breeding and terrestrial habitat. Severance of GCN habitats resulting in barriers to dispersal and breeding habitats. Impacts upon GCN aquatic and terrestrial habitat within and adjacent to the Site from construction activities, e.g. incidental release of water-borne pollutants and dust deposition.	**Significant**	to the DLL delivery partner prior to Construction commencing as specified in **Appendix 2.3: OCEMP (Volume 3)**. On-Site mitigation requirements to be advised by the DLL delivery partner.		
Reptiles	Direct incidental harm or and injury of reptiles through topsoil stripping and site clearance. Fragmentation/severance effects through Site clearance and installation of infrastructure, i.e. reducing connectivity between different areas of retained reptile habitat.	**Moderate Adverse** P/D/LT **Significant**	Provision of suitable habitat and a reptile receptor area for reptiles to be moved to in the Northern Ecology Area (see **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**). Habitat measures for reptiles are described in Section 3.2 of **Appendix 6.5: OLEMP (Volume 3)**. ECoW support during site and vegetation clearance in areas of suitable reptile habitat.	**Minor Adverse** T/D/MT	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Loss of suitable reptile habitats including foraging and shelter/hibernation resource across the Site; scrub, grassland, standing water and woodland.		General construction mitigation measures in relation to general noise and vibration management, lighting, water-borne pollution and ecology as described in **Appendix 2.3: OCEMP (Volume 3)**. Establishment of reptile specific habitat mitigation measures is set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**.		
Breeding birds: Annex 1 EU Birds Directive/WCA Schedule 1	Potential for the destruction/damage of active nests (including eggs and/or live young) of WCA Schedule 1 and potentially Annex I species. Disturbance to breeding WCA Schedule 1 and potentially Annex I bird species due to visual presence, lighting, and noise from operatives and their machinery during the Construction Phase, including piling and rock crushing. Loss or modification of suitable habitat for nesting	**Moderate Adverse** P/D/LT **Significant**	Timing of vegetation clearance outside the nesting bird season where practicable. watching briefs during nesting season where vegetation clearance required within breeding season as set out in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**. Habitat measures would contribute towards compensation habitat for breeding birds as outlined in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. Provision of artificial nesting opportunities set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bird mitigation measures in greater detail.	**Moderate Adverse** P/D/LT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	and foraging habitat for WCA Schedule 1 species. Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. Disturbance effects upon retained habitats used by nesting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of water bodies and water courses.		General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.		
Breeding birds: SPI and/or BoCC5 Red Listed	Potential for destruction/damage of nests supporting SPI and/or BoCC5 Red list species during construction period. Disturbance to breeding SPI and/or BoCC5 Red list species due to visual - presence, lighting, and noise from operatives and their machinery during the	**Major Adverse** P/D/LT **Significant**	Timing of vegetation clearance outside the nesting bird season where practicable. watching briefs during nesting season where vegetation clearance required within breeding season as set out in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**. Habitat measures would contribute towards compensation habitat for breeding birds as outlined in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**.	**Moderate Adverse** P/D/LT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Construction Phase, including piling and rock crushing. Loss or modification of suitable habitat for nesting and foraging habitat for SPI and/or BoCC5 species. Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. Disturbance effects upon retained habitats used by nesting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of waterbodies and watercourses.		Provision of artificial nesting opportunities as set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bird mitigation measures in greater detail. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.		
Breeding birds: BoCC5 Amber list and other species of conservation value	Potential for destruction/damage of nests during construction period. Loss or modification of suitable habitat for nesting and foraging habitat for SPI and/or BoCC5 species.	**Moderate Adverse** P/D/LT **Significant**	Timing of vegetation clearance outside the nesting bird season where practicable. watching briefs during nesting season where vegetation clearance required within breeding season as set out in Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**.	**Minor Adverse** P/D/LT	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. Disturbance effects upon retained habitats used by nesting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of waterbodies and watercourses.		Habitat measures would contribute towards compensation habitat for breeding birds as outlined in Section 3.4 of **Appendix 6.4: OHCEP (Volume 3)**. Provision of artificial nesting opportunities as set out in Section 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bird mitigation measures in greater detail. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.		
Non-breeding/wintering birds	Disturbance to foraging/roosting birds due to visual presence, lighting, and noise from operatives and their machinery during the Construction Phase, including piling and rock crushing. Loss or modification of suitable habitat for foraging and roosting.	**Major Adverse** P/D/LT **Significant**	Minimise duration of vegetation clearance and other site works over winter. Strict adherence to construction working zones and fencing around zones to restrict access into retained habitat. Section 3.2 of **Appendix 2.3: OCEMP (Volume 3)**, sets out Construction Phase bird mitigation measures in greater detail.	**Moderate Adverse** P/D/LT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Fragmentation of habitats by Site clearance and subsequent infrastructure delivery. Disturbance effects upon retained habitats used by roosting and foraging birds, including through dust, silt and run off and changes in hydrological conditions of water bodies and water courses.		General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.		
Terrestrial Invertebrates	Loss of habitats/habitat features supporting important species or assemblages of terrestrial invertebrates. Fragmentation/severance effects through Site clearance and installation of infrastructure could reduce connectivity of habitats for terrestrial invertebrates within and surrounding the Site; and Temporary disturbance effects upon terrestrial	**Moderate Adverse** P/D/LT **Significant**	Habitat creation in the Lake Zone would include suitable habitat features for a range of terrestrial invertebrate species. Proposals are shown on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)** and described in Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. General construction mitigation measures in relation as described in **Appendix 2.3: OCEMP (Volume 3)**.	**Moderate Adverse** P/D/LT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	invertebrate habitats within and adjacent to the Site from construction activities, e.g. incidental release of water-borne pollutants and dust deposition.				
Fish	Indirect effects upon fish habitats from changes to water quality and quantity. Loss of fish habitats, and disturbance to fish populations due to noise, light and vibration; and Fragmentation/severance effects through Site clearance and installation of infrastructure and watercourse diversions/modifications could reduce connectivity of habitats for fish within and surrounding the Site.	**Moderate Adverse** P/D/LT **Significant**	Measures to mitigate disturbance, pollution and potential harm/injury of fish (including spined loach and bullhead) and loss of riparian habitat during the Construction Phase are included in **Appendix 2.3: OCEMP (Volume 3)**. Habitat measures for fish including protection and enhancement of Elstow Brook and creation of the diverted watercourse corridor in the Core Zone and expansion of aquatic habitats in the Lake Zone, as described in Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on fish.	**Moderate Beneficial** P/D/LT	**Significant**
Aquatic macroinvertebrates	Indirect effects upon aquatic macroinvertebrates	**Moderate Adverse**	Measures to mitigate disturbance, pollution, and loss of riparian habitat	**Moderate Beneficial**	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	as a result of changes to water quality and quantity. Loss and disturbance of aquatic habitats. Fragmentation/severance effects through Site clearance and installation of infrastructure and watercourse diversions/modifications.	P/D/LT **Significant**	during the Construction Phase of the Proposed Development are included in **Appendix 2.3: OCEMP (Volume 3)**. Habitat measures for aquatic macroinvertebrates including protection and enhancement of Elstow Brook and creation of the diverted watercourse corridor in the Core Zone plus expansion of aquatic habitats in the Lake Zone, as described in Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)** would also support minimisation of impacts on aquatic macroinvertebrates.	P/D/LT	
Macrophytes	Indirect effects upon macrophytes as a result of changes to water quality and quantity. Some removal and disturbance of aquatic habitats would also take place during construction, to facilitate the Outline Surface Water Drainage	**Moderate Adverse** P/D/LT **Significant**	Measures to mitigate disturbance, pollution, and loss of riparian habitat during the Construction Phase of the Proposed Development are included in **Appendix 2.3: OCEMP (Volume 3)**. Habitat measures for macrophytes including protection and enhancement of Elstow Brook and creation of the diverted watercourse corridor in the Core Zone plus expansion of aquatic	**Moderate Beneficial** P/D/LT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	design and development of the Core Zone.		habitats in the Lake Zone, as described in Sections 3.4 and 3.5 of **Appendix 6.4: OHCEP (Volume 3)**. General construction mitigation measures as described in **Appendix 2.3: OCEMP (Volume 3)**.		
Operational Phase					
Kempston Hardwick Pit CWS	Disturbance: potential increase in visitor pressure from Proposed Development within the CWS. Disturbance: increased noise and lighting from operational activities including late night events. Air quality effects upon CWS habitats. Increased risk of water-borne pollution events from Site operations including surface water run-off.	**Moderate Adverse** P/ID/LT **Significant**	Habitat and disturbance management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	**Minor Adverse** P/ID/LT	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
Coronation Pit CWS	Disturbance: potential increase in visitor pressure during the Operational Phase activities. Disturbance: increased noise and lighting from operational activities including late night events. Increased risk of water-borne pollution events from Site operations including surface water run-off.	**Moderate Adverse** P/ID/ LT **Significant**	Disturbance management measures as per Section 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Appendix 6.4: OHCEP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	**Minor Adverse** P/ID/LT	**Not Significant**
Habitats					
HPIs – All Terrestrial Habitats	Degradation and disturbance of retained/adjacent HPI habitats including operational activities and effects due to visitor pressures and amenity use from Proposed Development.	**Moderate Adverse** P/ID/LT **Significant**	Habitat and disturbance management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	**Minor Adverse** P/ID/LT	**Not Significant**
HPIs – Aquatic Habitats (water	Water quality and quantity effects e.g. pollution	**Moderate Adverse**	Habitat and species management measures as per Sections 4.3 and 4.4	**Moderate Beneficial**	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
bodies and watercourses)	incident or increased silt run-off. Noise, vibration, and lighting disturbance from works could disturb aquatic fauna using aquatic habitats.	P/ID/LT **Significant**	of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	P/ID/LT	
Protected Species					
Badger	Disturbance to retained or created badger habitats from operational activities; noise, lighting etc. Fragmentation of habitat through presence of barriers to dispersal; e.g. extents of developed land, road infrastructure, fencing. Risk of accidental harm to badger through road traffic casualties.	**Moderate Adverse** P/ID/MT **Significant**	Habitat and species management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**	**Negligible** P/ID/ST	**Not Significant**
Bats – Roosting	Increased disturbance of roosting bats within retained/created roosting	**Moderate Adverse** P/ID/MT **Significant**	Maintenance and monitoring of roosting sites.	**Minor Adverse** P/ID/ST	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	habitats from operational activities		Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Habitat and species management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
Bats – Non-Roosting (foraging and commuting)	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) on foraging and commuting habitat could occur during operation Fragmentation of habitat through presence of barriers to dispersal; e.g. extents of developed land, road infrastructure, fencing, noise and lighting.	**Major Adverse** P/D/MT **Significant**	Firework and drone show locations will have a minimum horizontal clearance of 50m from EEAs as per **Design Standards (Document Reference 6.3.0)**. Incidental noise and visual screening from tree, shrub and scrub planting, arising from provision of these habitats as set out on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**.	**Moderate Adverse** P/D/MT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	Risk of harm to bats through collision risk from operational activities; roads, built environments specifically those with moving parts such as attractions and firework/drone shows which may operate at height within hours of darkness.		Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Ongoing habitat and species management measures including habitat connectivity via dark corridors, bat hop-overs, and underpasses, as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
Otter	Disturbance to otter within retained habitats within the Site and those located adjacent but outside the Site during the Operational Phase. Risk of accidental harm to individual otters from road traffic collision. Fragmentation of habitat through presence of	**Moderate Adverse** P/ID/MT **Significant**	Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Habitat and species management measures including provision of wide-span crossing on Elstow Brook, wildlife crossing structures between the Lake Zone and the Northern Ecology Area, and provision of wildlife fencing as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and**	**Minor Adverse** P/ID/ST	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	barriers to dispersal; e.g. extents of developed land, road infrastructure, fencing etc. Severance of habitat through placement of new infrastructure.		**Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
GCN	Disturbance from operational activities to retained/created habitats occupied by GCN.	**Moderate Adverse** P/ID/MT **Significant**	Use of DLL to address potential effects at a strategic level. Incidental habitat benefits (not relied on as mitigation) through measures included in Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Appendix 6.4: OHCEP (Volume 3)**.	**Neutral** N/A	**Not Significant**
Reptiles	Disturbance of retained or created reptile habitats through operational activities. Fragmentation of habitats could also occur due to operation and maintenance of built infrastructure within the Proposed Development isolating retained areas of habitat supporting reptile	**Moderate Adverse** P/ID/MT **Significant**	Habitat and species management measures including provision of wide-span crossing on Elstow Brook, underpasses between the Lake Zone and the Northern Ecology Area as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**.	**Minor Adverse** T/ID/ST	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
	populations across the overall Site.		Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
Breeding birds: Annex 1 EU Birds Directive/WCA Schedule 1	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) on WCA Schedule 1 and Annex 1 bird species could occur during operation. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation. Risk of harm from operational traffic.	**Moderate Adverse** P/D/ID/LT **Significant**	Firework and drone show locations will have a minimum horizontal clearance of 50m from EEAs as per **Design Standards (Document Reference 6.3.0)**. Incidental noise and visual screening from tree, shrub and scrub planting, arising from provision of these habitats as set out on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Habitat and species management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**.	**Minor Adverse** P/ID/LT	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
			Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
Breeding birds: SPI and/or BoCC5 Red Listed	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) on SPI and BoCC5 red list bird species could occur during operation. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation.	**Moderate Adverse** P/ID/LT **Significant**	Firework and drone show locations will have a minimum horizontal clearance of 50m from EEAs as per **Design Standards (Document Reference 6.3.0)**. Incidental noise and visual screening from tree, shrub and scrub planting, arising from provision of these habitats as set out on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Habitat and species management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**.	**Minor Adverse** P/ID/LT	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
			Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
Breeding birds: BoCC5 Amber list and other species of conservation value	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) BoCC5 amber listed birds and other species of conservation value could occur during operation. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation.	**Moderate Adverse** **P/ID/LT** **Significant**	Firework and drone show locations will have a minimum horizontal clearance of 50m from EEAs as per **Design Standards (Document Reference 6.3.0)**. Incidental noise and visual screening from tree, shrub and scrub planting, arising from provision of these habitats as set out on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Habitat and species management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**.	**Minor Adverse** **P/ID/LT**	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
			Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
Non-breeding/wintering birds	Increased disturbance (from humans, attractions and vehicles, lighting and firework and/or drone shows) to non-breeding/wintering birds could occur during operation. Fragmentation of terrestrial and aquatic bird habitat may also occur as a consequence of disturbance and the presence of and operation of built infrastructure during operation.	**Moderate Adverse** P/ID/LT **Significant**	Firework and drone show locations will have a minimum horizontal clearance of 50m from EEAs as per **Design Standards (Document Reference 6.3.0)**. Incidental noise and visual screening from tree, shrub and scrub planting, arising from provision of these habitats as set out on **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0).** Habitat and species management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**.	**Minor Adverse** P/ID/LT	**Not Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
			Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**		
Terrestrial Invertebrates	Degradation and disturbance of retained or created terrestrial invertebrate habitats from operational activities. Fragmentation of habitats could also reduce connectivity of habitats within the Site for terrestrial invertebrates.	**Moderate Adverse** P/ID/LT **Significant**	Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0).** Habitat and species management measures as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**	**Minor Adverse** T/ID/MT	**Not Significant**
Fish	Changes to water quality and quantity with indirect effects on fish. Risk of disturbance from operational activities.	**Moderate Adverse** P/ID/LT **Significant**	Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0).** Habitat and species management measures including continued provision of clear span bridge crossing of Elstow Brook, as per Sections 4.3 and 4.4 of the **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**.	**Moderate Beneficial** P/ID/LT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
			Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).** Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.		
Aquatic macroinvertebrates	Habitat degradation and/or loss leading to impacts on the aquatic macroinvertebrate communities. Changes to water quality and quantity with indirect effects upon macroinvertebrates.	**Moderate Adverse** P/ID/LT **Significant**	Ongoing checks of operational lighting as set out in **Design Standards (Document Reference 6.3.0)**. Habitat and species management measures including continued provision of clear span bridge crossing of Elstow Brook, as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**. Disturbance management measures as per Section 3.1 of **Appendix 6.4: OHCEP (Volume 3).**	**Moderate Beneficial** P/ID/LT	**Significant**

Important Ecological Feature	Description of Effect	Classification of Pre-Mitigation Effect	Additional Mitigation	Classification of Residual Effect	Significant/Not Significant
Macrophytes	Changes to water quality and quantity with indirect effects on macrophytes.	**Moderate Adverse** T/ID/LT **Significant**	Habitat and species management measures including continued provision of clear span bridge crossing of Elstow Brook, as per Sections 4.3 and 4.4 of **Appendix 6.5: OLEMP (Volume 3)** and **Figure 1: Indicative Habitat Creation and Enhancement Plan** of **Appendix 6.4: OHCEP (Volume 3)**. Water quality supported through drainage design as per section 5.3 of **Appendix 12.3: Drainage Strategy (Volume 3)**.	**Moderate Beneficial** P/ID/LT	**Significant**

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