

7 Biodiversity

7.1 Introduction

7.1.1 This chapter was prepared by Tyler Grange LLP and assesses the likely significant effects on biodiversity as a result of the Development.

7.1.2 The chapter is supported by the following technical appendices:

- Appendix 7.1: Legislation and Planning Policy; and,
- Appendix 7.2: Botanical and Protected Species Survey Results.

7.1.3 The assessment is also supported by the following figures which are provided at the end of this chapter:

- Figure 7.1: 11920_P01_Phase One Habitat Survey; and,
- Figure 7.2: Indicative flood compensation and water storage map (Drawing No. S1358-Ext-37)

Competence

7.1.4 Aaron Grainger BSc MSc MCIEEM is the principal author of the biodiversity chapter of this ES. He is a Full Member of the Chartered Institute of Ecology and Environmental Management ('CIEEM') and has over 10 years' experience in the environmental sector and has produced numerous ES chapters for a wide-range of projects. His experience includes large-scale residential schemes, as well as, managing the ecological and biodiversity input into the ES chapters for several nationally significant infrastructure projects.

7.2 Legislation, Planning Policy and Guidance

Legislation Context

7.2.1 Specific habitats and species receive legal protection in the UK under the following various pieces of legislation (with more detail contained in Appendix 7.1):

- The Wildlife and Countryside Act 1981 (as amended)¹;
- The Conservation of Habitats Species Regulation 2017 (the 'Habitats Regulations')²;
- The Countryside and Rights of Way Act 2000³;
- The Protection of Badgers Act 1992⁴;
- The Hedgerows Regulations 1997⁵;
- The Natural Environment and Rural Communities (NERC) Act 2006⁶; and,
- The Wild Mammals (Protection) Act 1996⁷;

7.2.2 Where relevant, the assessment takes account of this legislative protection.

Planning Policy Context

7.2.3 The relevant policy to the Development is summarised, below, with more detail contained in Appendix 7.1.

National

- The National Planning Policy Framework 2019⁸ ('NPPF').

Local

- Cherwell Local Plan 2011 - 2031 Part 1⁹;
- Oxfordshire Biodiversity Action Plan¹⁰; and,
- Cherwell Corporate Biodiversity Action Plan 2016-18¹¹.

Guidance

- BS 42020:2013. Biodiversity – Code of practice for planning and development¹²; and
- CIEEM Guidelines for Ecological Impact Assessment in the United Kingdom, Ireland: Terrestrial, Freshwater, Coastal and Marine¹³.

7.3 Assessment Methodology

Consultation

7.3.1 Table 7.1 summarises key comments raised by consultees of relevance to this assessment and how the assessment has responded to them.

Table 7.1: Consultation Response Summary

Consultee (Date) and Comment	Response
Cherwell District Council (Ecology Team)	
<p>“As this will be an outline application it may be acceptable to submit some full survey results after submission of the application documents. However generally we require all EPS information and habitat data up front as this is a material consideration in making a determination. A full ‘worst case scenario’ approach may be difficult and undesirable to plan for. It is hard to say until we have the submission whether the approach outlined below will be sufficient for a decision to be made. It could be I would have to submit a holding response to any consultation whilst awaiting further information”.</p> <p>“Promised Land Meadows is still a proposed site awaiting further survey information however generally we treat proposed sites as DWS (as we do for LWS) for the purposes of planning”.</p>	<p>We have undertaken all surveys for EPS with the exception of the final bat activity survey which will be completed in September/October 2019. It is considered that this is a sufficient dataset to upon to base the assessment of effects on EPS.</p> <p>Promised Land Farm proposed DWS has been surveyed as part of the work to inform this ES. The Site is not of a sufficient botanical quality to warrant its designation as a DWS. As the Site is still proposed as a DWS, the potential effects have still been assessed in this chapter and appropriate mitigation proposed.</p>
Banbury Ornithological Society (BoS)	
<p>Albion Land have had two consultation meetings with BoS on the 5th April and 29th May 2019. BoS expressed an interest in taking on the management of the wetland area as part of an extension to the Bicester Wetland Reserve LWS</p>	<p>New areas of wetland have been designed to create habitat suitable for breeding birds. The area of wetland vegetation in the east of the Site that will be created to compensate for the loss of semi-improved grassland resulting from construction of the development will be managed in perpetuity by BoS.</p>

Study Area and Scope

- 7.3.2 The study area is defined by the Zone of Influence (Zoi) of the Development. As will be described in this chapter, this was determined during the assessment process.
- 7.3.3 The study area is broadly confined to the Site itself and the immediate surrounding area. In accordance with best practice guidance (CIEEM, 2018), potential effects that could occur at greater distances were assessed with respect to international statutorily protected sites and national statutorily and non-statutorily protected sites up to 5km and 2km, respectively, from the development Site. In addition, potential effects to protected and priority fauna species within 2km were considered.
- 7.3.4 It was assumed that enabling works and Site clearance will commence in 2020 and construction will last until 2025. For the purposes of the assessment, it was assumed the Development will be operational in 2026.
- 7.3.5 As set out in the Development Specification Document, Appendix 5.3, there are a range of Completed Development scenarios that could arise at the Site dependent on whether the Health and racquet club is delivered as part of the Application 1 site and/or whether Application 2 is approved alongside Application 1. As such, the following scenarios were assessed within this chapter:
- Scenario 1: Application 1 – Employment Development Only;
 - Scenario 2: Application 1 – Employment & Health and racquet club;
 - Scenario 3: Application 1 - Employment Development & Application 2; and,
 - Scenario 4: Application 1 - Employment & Health and racquet club & Application 2.

Establishing Baseline Conditions

- 7.3.6 To determine the important ecological features within the study area, a combination of desk-based research and surveys was undertaken.

Data Search

- 7.3.7 Protected and priority species records were obtained for the area within a 1km radius of the Site. This set out to collate existing ecological baseline information available in the public domain and information held by relevant third parties to inform this chapter. Areas around the Site to which searches for information were undertaken varied depending on the ecological resource considered, in accordance with current best practice guidance.
- 7.3.8 The following information was requested from Thames Valley Environmental Records Centre ('TVERC'):
- Records of legally protected and notable species; and,
 - Records of non-statutory sites designated for nature conservation value within 2km of the Site.
- 7.3.9 The online Multi-Agency Geographic Information for the Countryside ('MAGIC') database was consulted (which utilises data provided by Natural England) for records of statutory designated sites and woodland listed on the Ancient Woodland Inventory within 2km of the Site. This search was extended to 10km for Natura 2000 sites (Special Areas of Conservation ('SAC') and Special Protection Areas ('SPA') and Ramsar sites.

Surveys

Phase 1 Habitat Survey

- 7.3.10 A Phase 1 habitat survey of the Site was carried out on the 17th October 2018 by Tyler Grange. The survey covered the entire Site, including boundary features, and was undertaken in appropriate weather (dry conditions with wind reaching 1 on the Beaufort scale, 4/8 cloud cover and 11°C). Buildings and trees within and adjacent to the Site were assessed for their suitability to support roosting bats.
- 7.3.11 Habitats were described and mapped following the standard Phase 1 habitat survey methodology. Phase 1 habitat survey is a standard technique for classifying and mapping British habitats. The dominant plant species were recorded, and habitats identified according to their vegetation types. Where appropriate consideration was given to whether each habitat would qualify as a Habitat of Principal Importance following habitat descriptions published by the Joint Nature Conservation Committee.
- 7.3.12 Target notes were made where specific features of ecological interest (e.g. invasive plants) were identified or where habitat features were too small to be mapped.

Update Botanical Survey

- 7.3.13 In order to describe the plant communities present, a floral species list was compiled during a walkover of the Site followed by a quadrat survey to provide a detailed description of the floral composition of the existing grass sward.
- 7.3.14 Quadrat survey methods were based upon those described in Rodwell (1992)¹⁴. The survey involved an initial walkover to determine an area of visibly structurally homogeneous vegetation. Following this, the species were listed, and the vegetation recorded within five 2m x 2m quadrats. This size of quadrat was used as the sward was relatively dense and gave a reasonable representation of the typical floristic composition across the area surveyed. Floristic abundance was expressed using the Domin scale (see Appendix 7.2 for further details).
- 7.3.15 The survey was undertaken by John Moorcroft (Ecology Associate), a full member CIEEM on the 28th May 2019. The weather conditions on the day of the survey were mostly dry, 15°C with a light breeze and light showers.

Great Crested Newt Survey - Environmental DNA Analysis

- 7.3.16 A Habitat Suitability Assessment (HSI) of ponds P1 and P2 which are both on-Site, as well as, P3 which was located within 250m of the Site was undertaken. In addition, all on-site ditches were subject to an HSI assessment, undertaken during the extended Phase 1 habitat survey, following best practice guidance (English Nature, 2001). See Appendix 7.2 for more details.
- 7.3.17 There are several waterbodies to the east of the Site beyond the Langford Brook that form part of the Bicester Wetland Reserve site. These were scoped out of further assessment as the Langford Brook is sufficiently fast flowing to create a barrier to the dispersal of great crested newts to suitable terrestrial habitats on-Site.
- 7.3.18 All waterbodies considered likely to have potential to support great crested newt were subject to an environmental DNA (eDNA) analysis. This is an approach approved by Natural England for providing a rapid means of establishing the likely presence/absence of GCN in a waterbody.

7.3.19 Water samples were taken from the waterbody on 25th June 2019 by an experienced GCN surveyor and Natural England Licence holder Christian Cairns BSc Msc (Licence number 2017-28614-CLS-CLS). Sterile kits provided by Nature Metrics Ltd were used, following standard methodology to prevent contamination of the samples¹⁵. A full copy of the results of this analysis is provided in Appendix 7.2.

Bat Surveys

Ground level preliminary bat roost assessment surveys

7.3.20 A ground level preliminary bat roost assessment ('PBRA') survey of all buildings and trees present on-Site was completed following the Bat Conservations Trust's Good Practice Guidelines (2016)¹⁶.

7.3.21 The PBRA for the buildings followed standard methodology which comprised an external inspection, and where possible an internal survey to assess the buildings potential to support roosting bats. In summary, this required the following:

- A visual inspection of the exterior of the building, examining features such as brickwork, lead flashing, and tiles for evidence of use/potential use by bats, including the presence of bat droppings and staining from fur-oil or urine; and,
- A number of other factors were considered, including the presence of features suitable for use by bats, proximity to foraging habitats or cover, and potential for disturbance from lighting and other sources.

7.3.22 The PBRA for the trees required the surveyor to assess the trees present on-Site in line with the criteria provided in Table 7.2.

Table 7.2 Tree Assessment Criteria (adapted from BCT Guidelines, 2016)

Suitability	Description of Roosting Habitats
Negligible	Negligible habitat features on-Site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain Potential Roosting Features (PRFs) but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection conditions and surrounding habitat.

Activity Transects

7.3.23 Dusk activity surveys were undertaken on 20th May 2019 and 17th June 2019. Surveyors used a combination of visual observation and echolocation detection techniques to identify any bat activity on the Site. The dusk surveys started approximately at sunset and ended approximately two hours after sunset.

7.3.24 The same transect route was walked for each of the surveys. This covered all Site boundaries and potential features of interest on-site, namely hedgerows and trees, as well as, the habitat associated with the Langford Brook. The transect was walked at a constant speed along a planned route recording visual and sound observations such as number of bats, flight directions and activity (e.g. commuting / foraging).

- 7.3.25 Anabat expresses and BatBox Duets were used during the dusk activity surveys. Recordings were analysed using Analook software to examine bat activity found on-site.
- 7.3.26 One final transect is to be undertaken in September/October 2019 as the autumn visit as per best practice guidance. The results will be detailed in a separate report.

Static Monitoring

- 7.3.27 To supplement the manned activity survey data, automated surveys of the Site were also conducted. Three Anabat Express static detectors were placed on the Site, between the 20th and 24th May and the 17th and 21st June 2019. Echolocation calls were later analysed to identify calls characteristic of different bat species or group of species present.
- 7.3.28 The Anabat Expresses were set to begin recording half an hour before sunset and to continue until half an hour after sunrise. Anabat expresses and BatBox Duets were used during the dusk activity surveys. Recordings were analysed using Analook software to examine bat activity found on-site.
- 7.3.29 One further period of static monitoring is to be undertaken in September 2019. The results will be detailed in a separate report.

Emergence Survey

- 7.3.30 One dusk emergence of building B1, a two-storey dwelling of a brick construction with a tiled roof situated on the existing poultry farm of the Application 2 site, (low potential to support roosting bats) was undertaken in June 2019.
- 7.3.31 Surveyors were positioned to provide adequate visual coverage of all suitable features present on the building. For the emergence survey, the surveyors were in position 15 minutes before sunset and observed the building until 1.5 hours after sunset.
- 7.3.32 Surveyors used a combination of visual observation and echolocation detection to identify any bats emerging from or re-entering the building. A Batbox Duet detector connected to an Edirol recorder was used throughout the surveys. The Batbox Duet detector records in both heterodyne and frequency division formats. Analook software was used to analyse sonograms of any calls which could not be identified in the field.

Reptile Survey

- 7.3.33 Reptile surveys were undertaken across the Site to identify the presence or likely absence of reptiles and to determine the size of any population(s) present. These surveys were conducted in-line with Froglife Advice Sheet 10¹⁷ (Froglife, 1999), Natural England's standing advice¹⁸, and were completed within the active season for reptiles (March to October inclusive).
- 7.3.34 A total of 60 reptile refugia, comprising 0.5×1m pieces of bitumen roofing felt, were deployed on the 20th March 2019 within areas of suitable habitat identified during the extended Phase 1 habitat survey.
- 7.3.35 25 mats were placed along the western hedge boundary, 15 were placed along the ditch running through the centre of the Site from the western to the eastern boundary. The remaining 20 mats were placed along the ditch running parallel from the west-east ditch, with ten mats placed on the western side of the ditch and 10 on the eastern side of the ditch.

7.3.36 Refugia were left *in situ* for seven days to bed in, before seven subsequent survey checks were undertaken between 27th March and 21st May 2019 during suitable weather conditions (dry, warm air temperature between 9°C to 18°C, intermittent sun and light winds).

7.3.37 In addition to checking beneath the artificial refugia, visual searches of the top of the artificial refugia, and searches of natural refugia/basking spots were also undertaken during each reptile survey visit.

Identifying Likely Significant Effects

Evaluation of Ecological Resources

7.3.38 The evaluation of ecological resources was made with reference to the guidance on ecological impact assessments published by CIEEM 2018¹⁹. This process included:

- Identifying those ecological features likely to be affected; and,
- Evaluating the features to identify those of importance, i.e. those which if their integrity or conservation status were affected, national or local policies (or in some cases legislation) would be triggered.

7.3.39 The level of importance of specific ecological receptors was assigned using a geographic frame of reference using the following terms: International; National; Regional; County; District; Local; and/or within the Site boundary only.

Determining Effect Significance

Sensitivity of Receptor

7.3.40 The Ecological Impact Assessment (EclA) guidelines do not require the sensitivity of the receptor to be assessed, the receptor is described in terms of its ecological value on a geographical scale which is determined through professional judgement and is based on factors such as quality and extent of a habitat, or the rarity of a habitat or species. To more accurately define the level of importance of an ecological feature, the geographical scale referenced in the guidelines (CIEEM 2018) was applied as set out in Table 7.3.

Table 7.3: Receptor Sensitivity Descriptors

Value (Sensitivity)	Descriptor (CIEEM Equivalent)
Very	International
High	National
Medium	Regional, County
Low	District, Parish/Local
Very Low	Within ZOI only

Magnitude of Effect

7.3.41 Impacts were described with reference to the following characteristics where relevant:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Timing;

- Frequency; and,
- Reversibility.

7.3.42 Magnitude refers to extent, amount, intensity and volume. It is quantified where available data allows and is expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.

Assessing Significance

7.3.43 The significance of ecological effects uses terminology derived from CIEEM guidance. The approach is summarised below:

- **Designated Sites and Ecosystems:** Significant effects encompass impacts on structure and function of defined sites and ecosystems. For designated sites the focus is whether the Development and associated activities are likely to undermine the site's conservation objectives or negatively affect the conservation status of the species or habitats for which the site is designated. For ecosystems, the focus is whether the Development is likely to result in a change in its structure or function.
- **Habitats and Species:** Consideration of conservation status is important for evaluating the significance of effects on individual habitats and species. Conservation status for habitats is determined by the sum of the influences acting on the habitat that may affect its extent, structure and function as well as its typical species composition within a given geographical area. For species, it is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

7.3.44 To be consistent with the terminology used throughout the other chapters of this ES, potential and residual effects (adverse or beneficial) are defined in Table 7.4. These were then used in the summary Table at the end of this chapter.

Table 7.4: Definitions of Significance Criteria for Ecology

Significance Criteria	Description of Criteria
Very Substantial Beneficial	A beneficial effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a regional level or above.
Substantial Beneficial	A beneficial effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a county level.
Moderate Beneficial	A beneficial effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a district level.
Minor Beneficial	A beneficial effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a site or local level.
Negligible	No significant effect on an important ecological feature.
Minor Adverse	An adverse effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a site or local level.
Moderate Adverse	An adverse effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a district level.
Substantial Adverse	An adverse effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a county level.

Very Substantial Adverse	An adverse effect on the conservation status of a defined site or ecosystem(s) and/or the habitats or species that is significant at a regional level or above.
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Evidence Assumptions and Limitations

7.3.45 Due to the timing of the application, it was not possible to complete all surveys for bats. The Applicant has commissioned the following surveys for completion in 2019:

- Bat activity surveys (both static monitoring and walked transects) to be completed between September and October 2019.

7.3.46 The full results of these surveys will not be available until after submission of the planning application, therefore the baseline and assessment in this ES chapter assume a reasonable worst-case scenario based on desk study data and the suitability of the habitats present. Consequently, the lack of these survey results is not considered to be a significant limitation to the conclusions of the ecology chapter.

7.3.47 The bat roost identified in building B1 was categorised as a potential maternity roost for *common pipistrelle bats*. Additional surveys will be undertaken in advance of the Reserved Matters application that requires the demolition of the building to fully characterise the bat roost and inform detailed mitigation proposals and a subsequent European Protected Species Mitigation Licence (EPSML) application.

7.4 Baseline Conditions

Designated Sites

Statutory Sites

7.4.1 The data search confirmed that there are no SPAs, SACs or Ramsar sites within 10km of the Site or any Sites of Special Scientific Interest (SSSIs) within 2km of the Site.

Non-statutory sites

7.4.2 There are two Local Wildlife Sites (LWSs) within 2km of the Site which are described in Table 7.5. LWSs are designated if the site meets the criteria for the selection of LWSs in Berkshire, Buckinghamshire and Oxfordshire²⁰, as such they are both considered to be of up to **county ecological importance**.

Table 7.5: Summary of Designated Sites

Site Name	Distance and Orientation	Description
Bicester Wetland Reserve LWS	Directly adjacent the Site (east)	Designated for its wetland habitats and wintering bird assemblage. This site is managed by Banbury Ornithological Society in co-operation with Thames Water Utilities Ltd. This site is mostly maintained as wet grassland, and includes a small area of reedbed, open water, wet ditches, banks with tall herb and a dry grassland field to the east. The margins around the open water have swamp vegetation and areas of wet grassland. Bird species present include bittern, teal, pintail, pochard, wigeon and gadwall.

Site Name	Distance and Orientation	Description
Graven Hill LWS	0.85km (south east)	Designated for the presence of ancient semi-natural woodland. It is oak and ash woodland and has a mixed shrub layer including locally abundant hazel with hawthorn, English elm, Midland hawthorn, field maple and blackthorn.

7.4.3 Part of the Site itself is a proposed District Wildlife Site ('DWS') referred to as 'Promised Land Farm', although this has not been formally designated and was not part of the dataset received from TVERC. As such, it does not formally require consideration under local planning policy, but we have included reference to the Sites designation within the assessment.

7.4.4 It is understood that the Site has not been surveyed recently, but historical survey information hold by the Thames Environmental Records Centre (TVERC) indicated that it may contain remnant lowland meadow habitat which is a Habitat of Principal Importance²¹. This was based on records that were over 20 years old. The updated botanical surveys completed by Tyler Grange in late May 2019 to inform this assessment confirm that this area comprises improved and semi-improved grassland which would not constitute lowland meadow.

Habitats

7.4.5 The Phase 1 habitat survey identified several habitat types within or directly adjacent to the Site. The locations of these habitats are illustrated on Figure 7.1 and detailed descriptions of the dominant and notable plant species are provided in Appendix 7.2.

Buildings and Hardstanding

7.4.6 No buildings or hardstanding on the Application 1 site.

7.4.7 Several buildings were present within the Application 2 site. These include building B1, a two-storey dwelling of a brick construction with a tiled roof, and eight buildings associated with the use as an active poultry farm. Buildings are of limited inherent ecological value and are considered to be of **negligible ecological importance**. The potential for these buildings to support protected species (i.e. bats) is discussed separately below in paragraphs 7.4.31 to 7.4.35.

Grassland

7.4.8 The Application 1 site is dominated by three grassland fields bounded by hedgerows that are in current use for grazing cattle.

7.4.9 Field 1 comprises good semi-improved grassland and has the most species diverse sward and broadly conforms to the MG5 *Cynosurus cristatus Centaurea nigra* sub-community, though some of the normally constant species (such as black knapweed *Centaurea nigra* and sweet vernal grass *Anoxanthum odoratum*) were not found in all quadrats. This could be indicative of overgrazing or that the sward has been allowed to become rank in the past.

7.4.10 Fields 2 and 3 comprise improved grassland most closely corresponding to MG6 *Lolium perenne - Cynosurus cristatus* grassland. Though in plot 2 perennial ryegrass *Lolium perenne*, co-dominates with soft brome *Bromus hordeaceus*, indicating perhaps that the field has been cultivated with arable crops in the past.

- 7.4.11 Given the limited species diversity present within the sward and the prevalence of this habitat within the County, both the improved and semi-improved grassland is considered to be of **local ecological importance**.
- 7.4.12 There is also a small area of amenity grassland associated with the buildings present at the existing poultry farm on the Application 2 site which is limited in extent and dominated by perennial rye grass. As such, this small area of amenity grassland is considered to be of **negligible ecological importance**.

Hedgerows

- 7.4.13 There are three hedgerows on Site that partly demarcate the boundaries between the pastoral fields. A description on their structure and species composition are provided below:
- Hedgerow H1 is adjacent to Wendlebury Road and comprises hawthorn, blackthorn, field maple and ash. There are several large mature trees present within the hedgerow, which include crack willow and English oak.
 - Hedgerows H2/H3 are both dominated by hawthorn and blackthorn, with ash also present. They are approximately 2m in height and have been subject to recent management in the form of flail cutting on both sides.
- 7.4.14 Hedgerows are listed in Section 41 of the NERC Act 2006 as a priority habitat and based on the criteria listed in the UK BAP Priority Habitat Descriptions²², all the hedgerows on the Site are likely to qualify as such. Only hedgerow H1 potentially qualifies as important under the Hedgerow Regulations 1997²³ due to the diversity of species present, and the presence of associated features including a pond and mature trees. Overall, the hedgerow network present at the Site provide a network for mobile species and are irreplaceable in the short-term. The hedgerows present on-site are considered to be of up to **local ecological importance**.

Ditches

- 7.4.15 There are three ditches (D1, D2 and D3) present on-Site which are all associated with hedgerows. Ditch D1 and D3 are shallow and narrow (approximately 0.5m to 0.75m deep and c.1m wide) and were found to be dry at the time of the 2019 survey. No aquatic vegetation was present in either of these ditches and none appeared to have recently supported water. They were also overgrown and found to be dominated by tall ruderal vegetation.
- 7.4.16 Ditch D2 was wet at the time of the survey and is associated with a treeline that borders the adjacent field. The ditch held some water but this was shallow at the time of the survey (approximately 0.3m). The banks were also dominated by woody species associated with the adjacent treeline.
- 7.4.17 As the ditches appear to rarely hold water and support limited aquatic plant species, they are considered to be of **importance within the context of the Site only**.

Trees

- 7.4.18 Mature trees are present throughout the Site, largely associated with the hedgerows. Species present include English oak, ash, silver birch and Leyland cypress. Given the prevalence of mature trees in the wider landscape and the fact that the species present are common and widespread, these trees are considered to be of **importance within the context of the Site only**.
- 7.4.19 A mature treeline (treeline T1) comprising a row of crack willow trees is present associated with the adjacent Langford Brook. The treeline forms a riparian corridor along the eastern boundary of the

Site that also acts as a shelter belt for the grassland fields. The majority of the specimens have been pollarded at 2m. Given the fact that treeline T1 provides habitat connectivity along the Langford Brook and a buffer between the Site and the adjacent Bicester Wetland Reserve LWS, it is considered to be of **local ecological importance**.

Ponds

- 7.4.20 There are two waterbodies present within the Site. Pond P1 is a small (50m²) agricultural pond in the western section of the Application 1 site. It was partly dry at the time of the survey and has limited aquatic and bankside vegetation.
- 7.4.21 Pond P2 is associated with the poultry farm on the Application 2 site and is approximately 1,600m² and surrounded by amenity grassland and ornamental tree specimens (ash and silver birch). The water quality was good, and the banks were largely unshaded (c. 25% shade cover). The presence of macrophyte species was also limited.
- 7.4.22 The ponds are unlikely to qualify a priority habitat under the JNCC criteria for ponds and, as such, are considered to be of **importance within the context of the Site only**. The potential for these ponds to support protected species (i.e. great crested newts), is discussed separately below in paragraphs 7.4.25 to 7.4.28.

Watercourses

- 7.4.23 The Site is adjacent to the Langford Brook which runs along the eastern boundary of the Site and adjacent to treeline T1. The watercourse is shallow (approximately 0.5m deep and 3-4m wide) fast flowing and the water quality appeared to be good at the time of the survey. The watercourse is unlikely to qualify as a habitat of principal importance but is associated with the adjacent grassland and wetland areas on the Site and the adjacent Bicester Wetland Reserve LWS. As such, it is considered to be of **local ecological importance**.

Species

- 7.4.24 There are several species groups relevant to the assessment. The assessment was informed by a review of the habitats present on-Site and desk study information. A description of the known data for each species or species group is provided below along with an assessment of their ecological importance.

Amphibians

- 7.4.25 There are two ponds present on-Site (pond P1 and pond P2). Three other waterbodies (pond P3 and two ditches D1 and D2) are located within 250m and are considered to possess connectivity to the site through habitat suitable for great crested newts.
- 7.4.26 Pond P2 has the potential to support great crested newts. It was not possible to assess the off-site ponds, but it is assumed that they also are potentially suitable for this species. Pond P1 and Ditches D1, D2 and D3 lacked sufficient water and suitable aquatic and marginal vegetation and are therefore considered suboptimal for great crested newts. Ditch D2 possessed surface flow within the limited water that was in the ditch, making it further unlikely that great crested newts would be present. As such, all the ditches are scoped out of further assessment.
- 7.4.27 The terrestrial habitats present on-Site (grassland and hedgerows) are limited in extent and suitability for great crested newts and there is a lack of connectivity to a large area of optimal habitat. The grassland sward is also heavily grazed reducing its suitability. The adjacent Langford Brook also

presents a barrier to dispersal for great crested newts, as such, ponds located to the east of the brook are not considered to require further assessment. The data search from TVERC returned 21 records for great crested newt within 2km of the Site, although all records were from to the east of the Site.

- 7.4.28 eDNA surveys were undertaken on ponds P1, P2 and P3 in April 2019. A negative result was returned from all 3 waterbodies, as such great crested newt are considered to be absent from the Site and they are not considered further within this assessment.

Badger

- 7.4.29 No evidence of badger activity was recorded during the Phase 1 habitat survey. The data search from TVERC returned 12 badger records from within 2km of the Site which indicates this species is present in the wider landscape.
- 7.4.30 The grassland and hedgerows may be used by foraging badgers, although no evidence of this was recorded during the survey. Whilst badgers are protected under the Protection of Badgers Act 1992, they are common and widespread and are therefore considered to be of **negligible ecological importance**.

Bats

- 7.4.31 The data search from TVERC return records for noctule bat (1), *common pipistrelle* (4), *soprano pipistrelle* (1) and brown long-eared bat (1) as well as an unknown long-eared bat species (1) from within 2km of the Site. These are all common and widespread species in both the local area, and the UK generally.
- 7.4.32 Building B1, within the Application 2 site, is a two-storey dwelling of a brick construction with a pitched roof that was assessed as having low potential to support roosting bats. It possessed several loose tiles and points that may provide access into the roof void of the building. A dawn re-entry survey of the building was completed on the 18th June when up to 20 *common pipistrelle bats* were recorded entering the building via a raised hip-ridged tile on the south-west roof ridge. An additional entry point was also identified under the eaves of the western façade of the building. Taking the precautionary approach, it is assumed that the roost is a small maternity roost for *common pipistrelle bats*.
- 7.4.33 Trees G5 and G7 (as referenced in the Arboricultural Report for the site: 11920_TSS01) are two crack willows present in hedgerow H2 that possess low potential for roosting bats. As they possessed low potential, no further survey work is required under best practice guidance and they can be soft-felled under the supervision of and ecological clerk of works (ECoW).
- 7.4.34 The trees, grassland and hedgerows present on-site and the adjacent Langford Brook offer potential commuting routes to areas of nearby woodland and wetland habitat, as well as, limited foraging opportunities. The activity transects and static monitoring surveys recorded bat activity which was concentrated close to field boundaries. Five species of bat were recorded, including common pipistrelle, soprano pipistrelle, serotine, brown long-eared bat and noctule. The highest levels of activity were recorded at the southern boundary where all five species of bat were recorded foraging and commuting. There were low levels of recorded activity in the middle of fields and to the north of the site where there are higher levels of artificial light spill from the neighbouring properties.

7.4.35 Given the species recorded during the spring and summer visits, the nature and extent of the habitats present and the presence of superior habitats in the vicinity of the Site, it is considered likely that the bat assemblage comprises common and widespread species and is of **up to local ecological importance** is present at the Site.

Birds

7.4.36 There were records for over 79 bird species returned from TVERC from within 2km of the Site, however most of the records are from the adjacent Bicester Wetland Reserve LWS and the Bicester Sewage Treatment Works. Given the extent and quality of the habitat present, the Site is considered likely to support a breeding bird assemblage of common and widespread species.

7.4.37 The majority of wintering bird records are from the neighbouring Bicester Wetland Reserve LWS and includes records of gadwall, shoveler, teal and snipe. The habitats present within the Site may provide some supporting habitat for the species found at Bicester Wetland Reserve LWS. The bird assemblage present on-site is likely to be of **up to local ecological importance**.

Otter

7.4.38 There were 10 records of otter from within 2km of the Site, including four from the adjacent Bicester Wetland Reserve LWS.

7.4.39 The adjacent Langford Brook provides suitable habitat for otter which are generally increasing in population size due to water quality improvements in river basins and other factors. Although no otter holts were recorded during the Phase 1 habitat survey, it is likely that otter use the Langford Brook as a movement corridor and for foraging. The otter population present within the Langford Brook is likely to be of **up to County importance**.

Reptiles

7.4.40 Habitats present at the Site that are suitable for reptiles include parts of the grassland sward, as well as, the edges of the hedgerows which provide shelter foraging and basking opportunities. No reptile records were reported from within 2km of the Site from within the last 10 years.

7.4.41 The reptile surveys undertaken during 2019 confirmed that reptiles are absent from the Site and as such they are not considered further in the assessment.

Other Species

7.4.42 The on-site habitats are not considered suitable to support any other protected or notable species than those described above, and no other species are discussed within this report.

Summary of Receptors and Sensitivity

7.4.43 Table 7.6 provides a summary of the ecological receptors and their associated sensitivity.

Table 7.6: Summary of Receptor Sensitivity

Receptor	Ecological Importance	Sensitivity (Value)
Designated Sites		
Bicester Wetland Reserve LWS	County	Medium
Graven Hill LWS	County	Medium
Promised Land Farm DWS	District	Low

Receptor	Ecological Importance	Sensitivity (Value)
Habitats		
Buildings and Hardstanding	Negligible	Very Low
Grassland	Up to district	Low
Hedgerows	Local	Low
Ditches	Site	Very Low
Trees	Local	Low
Ponds	Site	Very Low
Langford Brook	Local	Low
Species		
Amphibians	Up to County	Medium
Badger	Negligible	Very Low
Bats	Local	Low
Birds	Local	Low
Otter	Up to County	Medium
Reptiles	Up to Local	Medium

7.5 Scheme Design and Management

7.5.1 The design of the Development has been iterative and, in accordance with policy and best practice guidance (NPPF paragraph 1188, bullet 1; and BS 42020:201313), has followed the 'mitigation hierarchy'. As such, the Development has been designed to avoid and retain the most important ecological features to ensure they can be managed long-term to maximise their biodiversity potential. Where this is not possible, new habitats are proposed to compensate for habitat losses, to deliver overall biodiversity gain.

7.5.2 Habitat creation and enhancement measures ensure the Development will be compliant with relevant policies under Bicester 10 and ESD10 of the CLP 2015 and to achieve biodiversity net gain. This includes:

Grassland / Wet Meadow

7.5.3 Approximately 5.4ha of grassland/wet meadow will be created as part of the works required for flood compensation and water storage (shown indicatively in Figure 7.2). This area will be re-profiled, providing a mosaic of wet and dry areas of grassland which will be seeded with native species of local provenance to increase the diversity of the species composition creating an area of higher value than that being lost.

7.5.4 This area of grassland/wet meadow is proposed to be managed as supporting habitat to the adjacent Bicester Wetland Reserve Local Wildlife Site. Details will be developed in line with the following principles:

- Provision of a 'wet' area in the north-eastern section which will be planted with reeds;
- Re-profiling of Ditch D2 (Figure 9) to create shallow fringes for aquatic plants and fauna;
- Creation of 'scrapes' to provide wetter areas of grassland;

- Retention and protection of the existing hedgerow H3 (Figure 9) and the majority of trees present at the southern and eastern boundaries (treeline associated with the Langford Brook) of the Site; and
- Public access will not be allowed to the wetland area (beyond the existing hedgerow to be retained in the eastern part of Site).

Other

- Replacement of trees to be lost with an equivalent number of native trees, as a minimum;
- Enhancement of hedgerows to be retained through planting with native species (ideally of local provenance);
- New hedgerow planting (totalling 370m) which will comprise native species (ideally of local provenance);
- Set back from areas planted with trees to protect root zones; and
- Provision of an artificial roost, to mitigate for the loss of the maternity roost for common pipistrelle in building B1 (Figure 9), at a suitable location nearby to the retained vegetation in the southern section of the Application 1 site.

7.5.5 A detailed Landscape and Habitats Management Plan ('LHMP') will be prepared and submitted to the Local Planning Authority prior to occupation of the Development.

7.5.6 It will describe measures to maximise the biodiversity potential of retained and newly created habitats through appropriate management, as well as, a programme of monitoring to provide a mechanism to modify the management prescriptions if required.

7.5.7 The impacts are described in the absence of further mitigation, which is described thereafter.

7.6 Construction - Assessment of Effects

Scenario 1: Application 1 – Employment Development Only

7.6.1 Assessment of construction phase effects of Application 1 alone, assuming employment development across the full extent of Application 1.

Designated Sites

7.6.2 Bicester Wetland Reserve LWS is located adjacent to the Application 1 site, separated from the eastern boundary by the Langford Brook. The Bicester Wetland Reserve LWS is designated for its wintering bird assemblage and wetland habitats. Although no direct impacts are considered likely, effects arising from construction may result in the degradation and disturbance of the features for which the Bicester Wetland Reserve LWS is designated. This includes the potential pollution of the wetland habitat through chemical spills or dust deposition and disturbance to the wintering bird assemblage through an increase in noise and vibration.

7.6.3 It should be possible to prevent these potential effects through the use of reasonable avoidance measures during construction to minimise adverse effects. These measures will form part of the CEMP and in summary will include the following:

- Sensitive construction measures to limit dust/other particulate pollution;
- Measures to prevent pollution to the Langford Brook caused by spillage/surface run-off; and,
- Screening to limit potential disturbance to the wintering bird assemblage.

- 7.6.4 Provided the above measures are implemented during construction, impacts on Bicester Wetland Reserve LWS would be of **negligible ecological significance (negligible effect in terminology used elsewhere in the ES)**.
- 7.6.5 Graven Hill LWS is located approximately 0.85km from the Development and is separated from the Site by an active railway line, roads and existing development. As such, no direct effects are likely. No indirect impact pathways have been identified due to the distance between the Application 1 site and the Graven Hill LWS, the lack of hydrological connectivity and the scale and nature of the development proposals. Construction will therefore not result in a significant adverse effect on the structure of function of Graven Hill LWS.
- 7.6.6 Promised Land Farm is a proposed DWS and would be directly impacted by construction of the Application 1 development. Earthworks required for construction of the development proposals would result in the loss of all habitats within the Application 1 site boundary. This would result in a permanent adverse effect on the structure and function of the proposed Promised Land Farm DWS which would be **significant at the district level (moderate adverse effect in terminology used elsewhere in the ES)**.

Habitats

Semi-improved Neutral Grassland

- 7.6.7 Earthworks required for the construction will result in the loss of approximately 6.3ha of good semi-improved neutral grassland and 3.6ha of improved grassland (negligible importance so no mitigation required). This impact would result in a permanent adverse effect on the conservation status of this habitat, which would be **significant at the local level (minor adverse effect in terminology used elsewhere in the ES)**.

Hedgerows

- 7.6.8 Construction will require the removal of hedgerow H2 and the partial removal of hedgerow H1. Factors important to the conservation status of hedgerows include the maintenance of their extent and connectivity with woodland and other hedgerows in the surrounding landscape. The remaining hedgerows will be retained during construction and protected through measures adhering to BS5837:2012 that will be detailed in the CEMP. The permanent but partial loss and fragmentation of hedgerows as a result of construction will result in an adverse effect which will be **significant at the local level (minor adverse effect in terminology used elsewhere in the ES)**.

Ditches

- 7.6.9 Construction will result in the partial, permanent loss of ditches D1 and D3. Factors important to the conservation status of ditches includes the maintenance of their extent, aquatic plant diversity and water levels. As described in the baseline section, ditches D1 and D3 on-site appeared to not have contained water in the recent past and supported no aquatic vegetation. They are therefore considered to be of limited ecological importance. Ditch D2 at the southern perimeter of the Application 1 site will be retained during construction and protected through measures contained in the CEMP. The partial and permanent loss of ditches as a result of construction will therefore result in a permanent adverse effect which will be of **negligible ecological significance (negligible effect in terminology used elsewhere in the ES)**.

Trees

- 7.6.10 Construction will result in the loss of trees with associated with hedgerows H1 and H2, which includes several mature oak and ash. These species are common and widespread in the area surrounding the

Application 1 site, and the majority of trees present at the southern and eastern boundaries of the site, including treeline T2, will be retained during construction and protected through measures adhering to BS5837:2012 that will be detailed in the CEMP. However, the permanent removal of trees as a result of construction will result in a permanent adverse effect that will be **significant at up to the Site level** (**minor adverse** effect in terminology used elsewhere in the ES).

Ponds

- 7.6.11 Construction will result in the loss of Pond P2. Factors important to the maintaining the conservation status of ponds includes the maintenance of their extent and water quality. The direct loss of Pond P2 will result in a permanent adverse effect on their conservation status which will be **significant at up to the Site level** (**minor adverse** effect in terminology used elsewhere in the ES).

Watercourses

- 7.6.12 Construction will not result in any direct effects on the adjacent Langford Brook, although it may be vulnerable to indirect effects such as pollution from siltation, chemical spills or dust deposition. It will be possible to prevent these potential effects through the use of reasonable avoidance measures during construction to ensure. These measures will form part of the CEMP and in summary will include the following:

- Measure to limit dust deposition during construction; and,
- Best practice pollution reduction measures to prevent pollution to the Langford Brook caused by spillage/surface run-off.

- 7.6.13 Provided the above measures are implemented during construction, impacts on the Langford Brook would be of **negligible ecological significance** (**negligible** effect in terminology used elsewhere in the ES).

Species

- 7.6.14 There are several species groups relevant to the assessment of potential construction phase effects which are described below.

Badger

- 7.6.15 No confirmed evidence of badgers was recorded during previous survey work but it is possible they forage and pass through the Application 1 site.
- 7.6.16 Construction would result in the loss of grassland and hedgerows which, although sub-optimal, may be of value to foraging badgers. The presence of higher value habitat in the wider landscape and the retention and replacement of hedgerows as part of the Application 1 development will maintain sufficient habitat for foraging badgers.
- 7.6.17 Although no setts were recorded during the surveys undertaken to inform this assessment, new setts may be dug during the period that elapses between planning permission being granted and site clearance work commencing. Additional pre-construction surveys will be undertaken to ensure that any new setts can be identified.
- 7.6.18 The CEMP will contain measures specific to the protection of badgers which will include the following:
- Pre-construction badger survey;

- Method statement to ensure disturbance and destruction of setts is avoided;
- Review of the need to apply for a mitigation licence if the above cannot be guaranteed;
- Construction works limited to daylight hours;
- Trenches or deep pits will be covered or a means of escape provided for badgers if left overnight; and,
- Careful storage of topsoil / regular inspections.

7.6.19 Provided the measures described above are implemented, construction of the Development is **unlikely to result in a significant adverse effect** on the conservation status of badgers potentially associated with the Application 1 site (**negligible** effect in terminology used elsewhere in the ES).

Bats

7.6.20 Construction would result in the loss of foraging and commuting habitat, including hedgerow H2 as well as the partial removal of hedgerow H1. Hedgerows H1 and H2 are not considered likely to provide important commuting or foraging habitat for bats as other stronger linear habitat features that exist and connect to the surrounding landscape, however, they are likely to still have some value to the bat assemblage associated with the Application 1 site. Further surveys during the active season are being undertaken in autumn 2019 to determine the value of the hedgerows for roosting bats.

7.6.21 It is envisaged that the CEMP will contain measures specific to the protection of bats which will include the following:

- Requirement for further emergence/re surveys in advance of construction;
- Requirement to apply for an EPSML if; and,
- Sensitive working practices e.g. timing of works and no night-time working;

7.6.22 It is also assumed that hedgerows H1 and H2 are of some value to foraging and commuting bats. Overall, the partial and temporary removal of foraging and commuting habitat **is not considered likely to result in an adverse effect** on the conservation status of the bat assemblage (**negligible** effect in terminology used elsewhere in the ES).

Birds

7.6.23 Construction will result in the loss of semi-improved neutral grassland improved grassland, as well as the removal of hedgerow H2 and the partial removal of hedgerow H1. These habitats offer some nesting and foraging opportunities for the breeding bird assemblage and foraging opportunities for the wintering bird assemblage. Site clearance activities could result in the disturbance and destruction of nests and juvenile birds if carried out during the active breeding season which would trigger relevant legislation under the Wildlife and Countryside Act 1981 (as amended). It is envisaged that the CEMP will include measures to mitigate this risk including limiting vegetation clearance to outside of the nesting season or necessitating the supervision of clearance activity if this is unavoidable.

7.6.24 In the absence of mitigation, the loss of grassland and hedgerows would result in a permanent effect on the conservation status of the breeding and wintering bird assemblage present at the Site which would be **significant at the local level (minor adverse** in terminology used elsewhere in the ES).

Otter

- 7.6.25 Construction has the potential to affect otter using the Langford Brook. However, no holts were identified on-site, but it is likely that otter use the Lanford Brook for foraging and as a movement corridor. The eastern section of the Application 1 site will be maintained as wetland/inundation vegetation with a function as a flood compensation area. The Langford Brook will remain unaffected during construction. Best practice construction methods will form part of the CEMP, including a pre-construction survey to ensure no holt are present, and pollution control measures to prevent spillage into the Langford Brook, **no significant effects** on otter are expected (**negligible** effect in terminology used elsewhere in the ES).

Scenario 2: Application 1 – Employment & health and racquet club Development

- 7.6.26 All effects associated with Scenario 2 are considered to be comparable with Scenario 1, with the following exceptions:

Trees

- 7.6.27 Construction of the health and racquet club will result in the loss of additional trees associated with the north-eastern section of the Application 1 site in comparison with Scenario 1. The majority of trees present at the southern and eastern boundaries of the Site, including treeline T2, will be retained during construction and protected through measures adhering to BS5837:2012 that will be detailed in the CEMP. Although Scenario 2 will result in the loss of additional trees, the level of significance associated with this effect will remain the same as Scenario 1 (i.e. **significant at up to the Site level/minor adverse** effect in terminology used elsewhere in the ES).

Scenario 3: Application 1 – Employment Development & Application 2

- 7.6.28 All effects associated with Scenario 3 are considered to be comparable with Scenario 1, with the following exceptions:

Ponds

- 7.6.29 Construction will result in the loss of pond P1 in addition to pond P2. Factors important to maintaining the conservation status of ponds includes the maintenance of their extent and water quality. The direct loss of Ponds P1 and P2 will result in a permanent adverse effect on their conservation status which will be **significant at the local level (minor adverse** effect in terminology used elsewhere in the ES).

Bats

- 7.6.30 None of the trees that are due to be removed during construction were identified as having potential to support roosting bats. Construction will result in the loss of potential foraging and commuting habitat, including hedgerow H2 as well as the partial removal of hedgerow H1.
- 7.6.31 Building B1 requires demolition to facilitate Application 2. This will result in the loss of the maternity roost for *common pipistrelle* bats in building B1. Maternity roosts are important to the breeding cycle of bats. The loss of this roost would result in an adverse effect on the conservation status of *common pipistrelle* which would be **significant at the local level**. The removal of building B1 will result in relevant legislation (Wildlife and Countryside Act 1981 (as amended) and the Habitat Regulations) being triggered.
- 7.6.32 Hedgerows H1 and H2 are not considered likely to provide important commuting or foraging habitat for bats as other stronger linear habitat features exist that connect to the surrounding landscape, however, they are likely to still have some value to the bat assemblage associated with the Site.

- 7.6.33 It is envisaged that the CEMP will contain measures specific to the protection of bats which will include the following:
- Requirement for surveys in advance of construction;
 - Requirement to apply for an EPSML if the tree is found to contain a roost; and,
 - Sensitive working practices e.g. no night-time working.

7.6.34 Overall, the potential removal of a single bat roost, as well as, the partial removal of foraging and commuting habitat would result in an adverse effect on the conservation status of the bat assemblage associated with the Site which will be **significant at up to the local level (minor adverse effect in terminology used elsewhere in the ES)**.

Scenario 4: Application 1 – Employment & health and racquet club & Application 2

7.6.35 All effects associated with Scenario 4 are considered to be comparable with Scenario 3, with the following exceptions:

Trees

7.6.36 Construction of the health and racquet club will result in the loss of additional trees associated with the north-eastern section of the Site in comparison with Scenario 3. The majority of trees present at the southern and eastern boundaries of the Site, including treeline T2, will be retained during construction and protected through measures adhering to BS5837:2012 that will be detailed in the CEMP. Although Scenario 4 will result in the loss of additional trees, the level of significance associated with this effect will remain the same as Scenario 3 (i.e. **significant at up to the Site level/minor adverse effect in terminology used elsewhere in the ES)**.

Mitigation, Monitoring and Residual Effects

- 7.6.37 The mitigation and compensation measures described below address those effects that are identified as being significant in the construction assessment. Where the likely construction effects are considered to be negligible, no mitigation is required, and they are therefore not considered further in the assessment.
- 7.6.38 A detailed Landscape and Habitats Management Plan ('LHMP') including a comprehensive ecological monitoring programme will be produced as part of subsequent Reserved Matters applications relating to the Site. It will set out objectives to minimise effects of disturbance once the construction is complete and the Development is occupied. It will also describe measures to maximise the biodiversity potential of retained and newly created habitats through appropriate management, as well as, a programme of monitoring to provide a mechanism to modify the management prescriptions if required.
- 7.6.39 The habitat creation and enhancement measures ensure the Development is compliant with relevant policies under Bicester 10 and ESD10 of the Local Plan. This includes the enhancement and creation of new habitats that will link up with adjacent habitats to form wildlife corridors.

Scenario 1: Application 1 – Employment Development Only Designated Sites

7.6.40 Habitat loss from the proposed Promised Land Farm DWS will be mitigated by habitat restoration and creation in the eastern section of the Site. Approximately 5.4ha of grassland/wet meadow will be created as part of the works required for flood compensation and water storage. This area will be re-profiled, providing a mosaic of wet and dry areas of grassland which will be seeded with native

species of local provenance to increase the diversity of the species composition creating an area of higher value than that being lost. This area will also be adjacent (via the Langford Brook) to a parcel of 'costal and floodplain grazing marsh', which is a habitat of principal importance²⁴, located within Bicester Wetland Reserve LWS to the east of the Site.

7.6.41 This area of grassland/wet meadow is proposed to be managed as supporting habitat to the adjacent Bicester Wetland Reserve LWS and will create an area of wet grassland that is connected to an existing parcel of similar habitat thus contributing to expanding the ecological network. The area will also provide additional habitat for the bird assemblage associated with Bicester Wetland Reserve LWS. Habitat creation measures were designed in conjunction with the Banbury Ornithological Society who manage the adjacent Bicester Wetland Reserve LWS and will include:

- The creation of a wet area in the north-eastern section where reeds will be planted;
- The reprofiling of Ditch D2 to create shallow fringes for aquatic plants and fauna; and,
- The creation of 'scrapes' to provide wetter areas of grassland.

7.6.42 It is proposed that management prescriptions for the Site will form part of the LHMP for the Site. This will include regular monitoring to ensure the management measures remain suitable and that the mitigation maintains its overall efficacy. Following the implementation of these measures, the residual effect on the structure and function of the Promised Land Farm proposed DWS will be reduced to a **level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Habitat

Grassland

7.6.43 The loss of approximately 3.8ha of semi-improved grassland as part of construction of the Site will also be mitigated by the habitat restoration/creation measures described for Promised Land Farm proposed DWS. The grassland will be managed to maximise the diversity of the sward and species composition which will be detailed in the LHMP for the Site. Following the implementation of these measures, the residual effect on the conservation status of semi-improved grassland at the Site will be reduced to a **level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Hedgerows

7.6.44 The partial loss of 250m of hedgerows H1 and H2 as a result of construction will be mitigated by the planting of new hedgerows. The retained hedgerows will be retained and enhanced during construction and will also be buffered from the Development as described above. New hedgerow planting (totalling 370m) will be provided as part of the planting strategy for the Development which will comprise species of local provenance. Both the retained and new hedgerows will be managed to maximise their value for biodiversity through measures that will be detailed in a LHMP. Following the implementation of these measures, the residual effect on the conservation status of hedgerows at the Site will be reduced to a **level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Trees

7.6.45 To mitigate the loss of trees associated with hedgerows H1 and H2, which includes several mature oak and ash, new tree planting is included as part of landscaping proposals for the Development. The majority of trees present at the southern and eastern boundaries of the Site, including treeline T2, will be retained during construction and protected through measures adhering to BS5837:2012 that will be detailed in the CEMP. Following the implementation of these measures, the residual effect

on the conservation status of trees at the Site will be reduced to a **level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Ponds

- 7.6.46 To mitigate for the loss of ponds P1 and P2, new wetland habitat is proposed as part of the flood compensation area in the eastern section of the Site, including a new swale. Following the creation of compensatory aquatic habitat, the residual effect on the conservation status of ponds at the Site will be reduced to a **level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Species

Bats

- 7.6.47 To mitigate the effect of removing foraging and commuting habitat associated with the bat assemblage associated with the Site, habitat creation measures form part of the landscaping proposals for the Development. This includes the restoration and creation of wet grassland in the eastern section of the Site which will increase its value to foraging bats, the retention and enhancement of hedgerows and treelines and the planting of replacement hedgerows and scattered trees. The Development will include the provision of new artificial roosting features in the form of bat boxes and bat bricks to increase the overall number of potential roost sites across the Development. This would also be a key requirement of any EPSML application that would be required if a bat roost is found to be present.
- 7.6.48 Following the implementation of these measures, the adverse effect on the conservation status of the bat assemblage potentially associated with the Site to a **level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Birds

- 7.6.49 To mitigate the effect of removing nesting and foraging habitat associated with breeding and wintering bird assemblage associated with the Site, habitat creation measures form part of the landscaping proposals for the Development. This includes the restoration and creation of wet grassland in the eastern section of the Site which will increase its potential for nesting waders such as lapwing, new reedbed creation within the expanded ditch to attract nesting species such as reed warbler and sedge warbler, and new hedgerow creation. The grassland will also be managed to provide a mosaic of wet and dry areas increasing the diversity of the available foraging opportunities.
- 7.6.50 The Development will also include the provision of new nesting opportunities in the form of bird boxes to be erected on retained trees throughout the eastern section of the Site. Following the implementation of these measures, the effect on the conservation status of the breeding and wintering bird assemblage at the Site will be reduced **to a level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Scenario 2: Application 1 – Employment & Health and racquet club Development

- 7.6.51 The additional mitigation measures for Scenario 1 would also be appropriate for Scenario 2.

Scenario 3: Application 1 - Employment Development & Application 2

- 7.6.52 The additional mitigation measures for Scenario 1 would also be appropriate for Scenario 3, with the following exceptions:

Bats

- 7.6.53 To mitigate for the loss of the maternity roost for *common pipistrelle* in building B1, an artificial roost would be provided at a suitable location nearby to the retained vegetation in the southern section of the Application 1 site to ensure that the bat population can access the adjacent commuting and foraging habitat. Following the implementation of these measures, the adverse effect on the conservation status of the bat assemblage potentially associated with the Site to a **level that is not significant (negligible effect in terminology used elsewhere in the ES)**.

Scenario 4: Application 1 - Employment & Health and racquet club & Application 2

- 7.6.54 The additional mitigation measures for Scenario 1 and Scenario 3 would also be appropriate for Scenario 4.

7.7 Completed Development - Assessment of Effects

- 7.7.1 Where relevant to the assessment, a summary of measures that will be included in the LHMP are provided. The potential effects are considered in the absence of mitigation measures which are provided separately below. Only ecological features that are assessed as potentially being subject to significant effects as a result of the Completed Development are described.

Scenario 1: Application 1 – Employment Development Only

Designated Sites

- 7.7.2 Bicester Wetland Reserve LWS is located directly adjacent to the Application 1 site, separated from the eastern boundary by the Langford Brook. No public access to the Bicester Wetland Reserve LWS is possible, although the additional movement of people associated with the development of the Application 1 site has potential to increase the risk of disturbance to the wintering bird assemblage for which the Bicester Wetland Reserve LWS is designated. However, given the presence of an established treeline along the Langford Brook that provides screening between the Application 1 site and the Bicester Wetland Reserve LWS, this potential effect is **not considered to be significant (negligible effect in terminology used elsewhere in the ES)**.
- 7.7.3 Due to the employment nature of the Application 1 development proposals and the distances involved, the likelihood of the degree of increased recreational pressure adversely impacting Graven Hill LWS is **negligible (negligible effect in terminology used elsewhere in the ES)**.
- 7.7.4 No other pathways for direct or indirect impacts have been identified due to their distance from the Application 1 site, therefore no significant adverse effects are expected.

Species

Bats

- 7.7.5 Lighting associated with the completed development on the Application 1 site has the potential to result in the potential disturbance to the bat assemblage association with the Application 1 site. This could include bats being dissuaded from using the newly created roost sites and or retained/newly created foraging and commuting habitat. In the absence of mitigation, this could result in an adverse effect on the conservation status of the bat assemblage associated with the Application 1 site, which would be **significant at the local level (minor adverse effect in terminology used elsewhere in the ES)**.

Scenario 2: Application 1 – Employment & health and racquet club

- 7.7.6 The potential effects of Scenario 2 would be consistent with Scenario 1. The development of part of the Application 1 site as a David Lloyd Club is unlikely to increase the number of people that may use the ecological mitigation/recreation area in the eastern section of the Application 1 site in comparison with the employment use (Class B1). In the absence of mitigation, the potential effects on the bat assemblage as a result of increased light disturbance would also be comparable with Scenario 1 (i.e. **significant at the local level/minor adverse** effect in terminology used elsewhere in the ES).

Scenario 3: Application 1 - Employment Development & Application 2

- 7.7.7 The potential effects of Scenario 3 would be consistent with Scenario 1 for the same reasons as stated above for Scenario 2.

Scenario 4: Application 1 - Employment & health and racquet club & Application 2

- 7.7.8 The potential effects of Scenario 4 would be consistent with Scenario 1 for the same reasons as stated above for Scenario 2.

Mitigation, Monitoring and Residual Effects

Bats

- 7.7.9 To mitigate the potential adverse effects resulting from the illumination of the retained and newly created habitat, as well as, the artificial roost sites, a sensitive lighting scheme will be developed to ensure areas of value to bats are not excessively lit. Following implementation of these measures, the potential effects will be **reduced to a level that is not significant (negligible** effect in terminology used elsewhere in the ES).

7.8 Cumulative Effects

- 7.8.1 As with the Development considered by this assessment, the following developments will be required to mitigate potential effects upon important ecological receptors and deliver a net gain in biodiversity in-line with the Adopted Cherwell Local Plan. They are also required to adhere to the legislative framework and both national and local policy with regards to biodiversity. Information relating to anticipated impacts and enhancements have been added, where known:

- OS Parcel 2200 Adjoining Oxford Road North of Promised Land Farm Oxford Road Bicester (Policy Bicester 4) (16/02586/OUT & 17/02557/REM) – The ecological assessment concludes that habitat losses will be offset, with the potential for overall enhancement as part of the landscaping proposals. It also concludes that with the implementation of mitigation, opportunities for bats and birds would be retained;
- Tesco Pingle Drive (15/0082/F) – No information available, but the site largely comprises buildings and hardstanding so there is limited scope for impacts to important ecological receptors;
- Land North of Bicester Avenue Garden Centre Oxford Road Bicester (17/02534/OUT) – There are short-term residual effects of ditches, as well as temporary loss of habitat for breeding birds and there is the potential for a limited reduction in foraging habitat for serotine and Nycatlus bats;
- Land South of and Adjoining Bicester Services Oxford Road Bicester (16/02505/OUT) – The ecological appraisal concludes that provided the recommended mitigation measures set out in the report are followed, all identified ecological receptors would be safeguarded;

- Land South West of Bicester Adjoining Oxford Road and Middleton Stoney Road Bicester (06/00967/OUT) - no detailed information available, though the Planning Statement states that the proposals include mitigation measures to ensure that the development will not have any significant adverse effect on the environment;
- Kingsmere Phase 2 (13/00847/OUT) - The proposed development will result in a number of changes to the local environment, but a range of measures will be put in place to minimise potential significant adverse effects and enhance beneficial effects;
- Himley Village (14/02121/OUT) – The ES states that with the implementation of a CEMP, there will be negligible adverse effects resulting from construction and a minor beneficial effect resulting from habitat creation measures;
- Residential Application at Howes Lane (17/00455/HYBRID) – The ES concludes that no adverse residual effects will occur on important ecological receptors;
- OS Parcel 4200 Adjoining and North East Of A4095 And Adjoining And South West Of Howes Lane Bicester (17/01090/OUT) - The ES concludes that no adverse residual effects will occur on important ecological receptors; and,
- Graven Hill (11/01494/OUT) – The ecological assessment states that provided the mitigation measures set out in the report are followed, the site will be compliant with relevant legislation and policy with respect to flora and fauna and deliver a net gain for biodiversity.

Construction

- 7.8.2 The Development will for most features not itself result in any significant residual adverse effects that could interact with those resulting from other developments in the Bicester area. It is, therefore, reasonable to assume that there are sufficient planning and legislative controls to ensure that, in combination with the proposed Development, potential significant effects would be mitigated. Therefore, **no significant adverse cumulative effects are expected (negligible** in terminology used elsewhere in the ES).

Completed Development

- 7.8.3 As described in the above assessment, the completed Development will not result in any significant residual adverse effects and will therefore not result in any cumulative effects in combination with the Developments listed above. Therefore, **no significant cumulative effects are expected**. Also, beneficial cumulative effects will be dependent on successful implementation of the commitments made so far.

Effect	Receptor (Sensitivity)	Geographic Scale	Temporal Scale	Magnitude	Mitigation and Monitoring	Residual Effect
Scenario 1: Application 1 – Employment Development						
Construction						
Promised Land Farm Proposed DWS	Low	District	Permanent	Loss of grassland habitat associated with the entire Site	c. 5.4ha of wet grassland/inundation vegetation creation. Implementation of LHMP.	Negligible
Loss of semi- improved and improved grassland	Low	Local	Permanent	6.3ha semi- improved grassland/3.6ha improved grassland	c. 5.4ha of wet grassland/inundation vegetation creation. Implementation of LHMP.	Negligible
Partial loss of hedgerows	Low	Local	Permanent	c. 250m of hedgerow	c. 370m of new hedgerow planting. Implementation of LHMP.	Negligible
Partial loss of mature trees	Low	Local	Permanent	Loss of trees associated with hedgerows H1 and H2	New tree planting as part of landscaping proposals. Implementation of LHMP.	Negligible
Loss of ponds	Very Low	Site	Permanent	Loss of one pond	Creation of swales/new waterbodies. Implementation of LHMP.	Negligible
Disturbance to Bats	Low	Local	Permanent	Loss of foraging and commuting habitat.	c. 5.4ha of wet grassland/inundation	Negligible
Disturbance to Birds	Low	Local	Permanent	Loss of foraging and nesting habitat.	vegetation creation c. 370m of new hedgerow planting	Negligible

Effect	Receptor (Sensitivity)	Geographic Scale	Temporal Scale	Magnitude	Mitigation and Monitoring	Residual Effect
					New tree planting as part of landscaping proposals. Creation of swales/new waterbodies. Implementation of LHMP.	
Completed Development						
Lighting disturbance	Low	Local	Permanent	Disturbance to bat assemblage using retained and newly created habitats	Implementation of a sensitive lighting scheme.	Negligible
Scenario 2: Application 1 – Employment & health and racquet club Development						
Construction						
Partial loss of mature trees	Low	Local	Permanent	Additional loss of trees associated with hedgerows H1 and H2 in comparison with Scenario 1.	New tree planting as part of landscaping proposals.	Negligible
Completed Development						
Effects are consistent with Scenario 1						
Scenario 3: Application 1 – Employment Development & Application 2						
Construction						
Loss of ponds	Very Low	Site	Permanent	Loss of two ponds	Creation of swales/new waterbodies.	Negligible

Effect	Receptor (Sensitivity)	Geographic Scale	Temporal Scale	Magnitude	Mitigation and Monitoring	Residual Effect
					Implementation of LHMP.	

Completed Development

Loss of potential maternity roost for common pipistrelle	Low	Local	Permanent	Loss of potential maternity roost for common pipistrelle associated with building B1.	Implementation of EPSML, sensitive timing of works, provision of replacement roost.	Negligible
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Scenario 4: Application 1 – Employment & health and racquet club & Application 2

Construction

Partial loss of mature trees	Low	Local	Permanent	Additional loss of trees associated with hedgerows H1 and H2 in comparison with Scenario 1.	New tree planting as part of landscaping proposals.	Negligible
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Completed Development

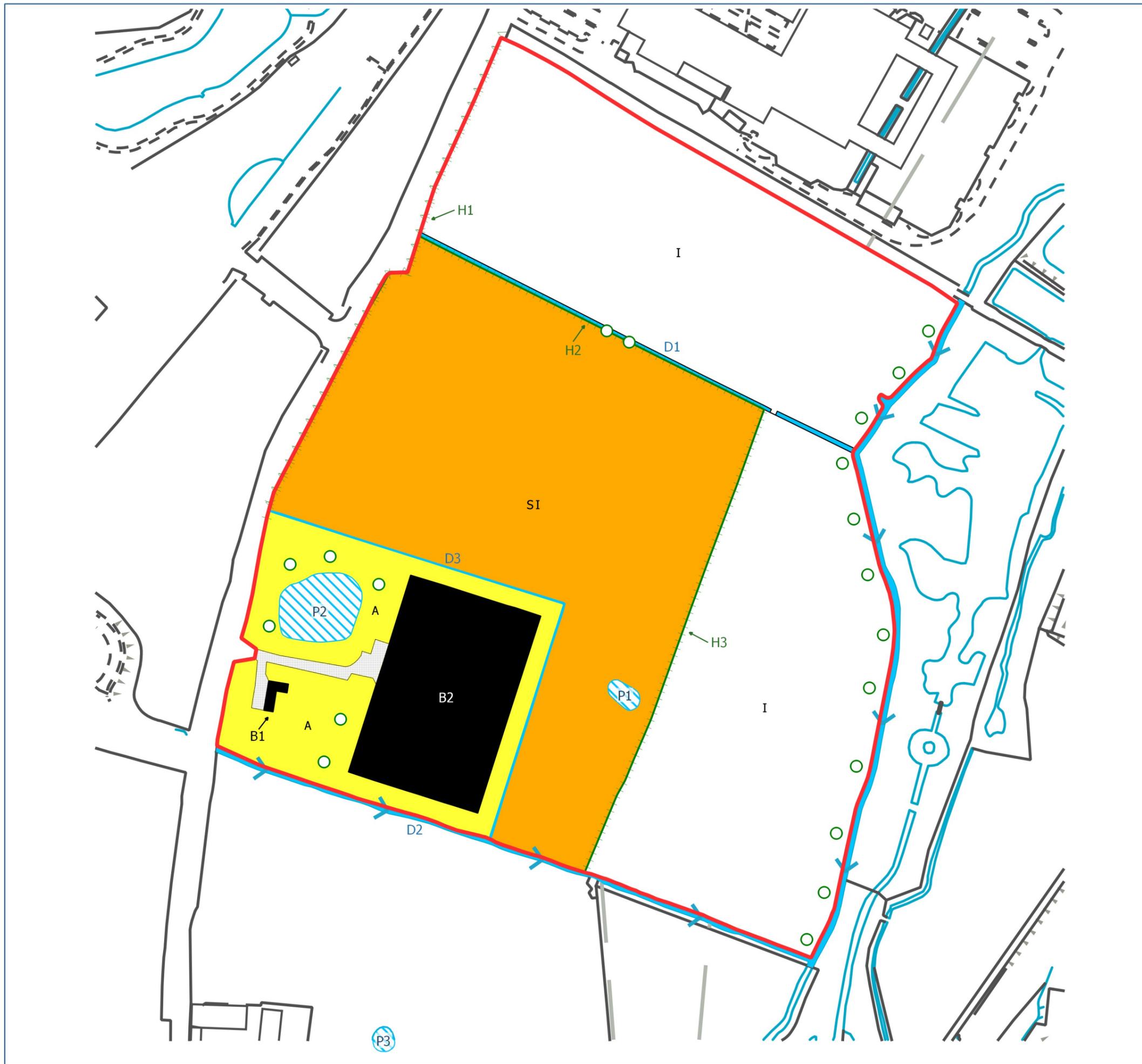
Effects are consistent with Scenario 1

Cumulative Effects

None

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- ²¹ Natural England Habitats of Principle Importance. <https://webarchive.nationalarchives.gov.uk/20140605093420/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx>
- ²² http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf
- ²³ <http://www.legislation.gov.uk/uksi/1997/1160/contents/made>
- ²⁴ <https://webarchive.nationalarchives.gov.uk/20140605093420/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx>



- Site boundary
- Scattered mature trees
- ✚ Hedgerow and trees (species rich)
- ✚ Hedgerow and trees (species poor)
- Standing water
- Running water
- ↘ Direction of water flow
- Buildings
- Hardstanding
- Amenity grassland
- Semi-improved grassland
- Improved grassland

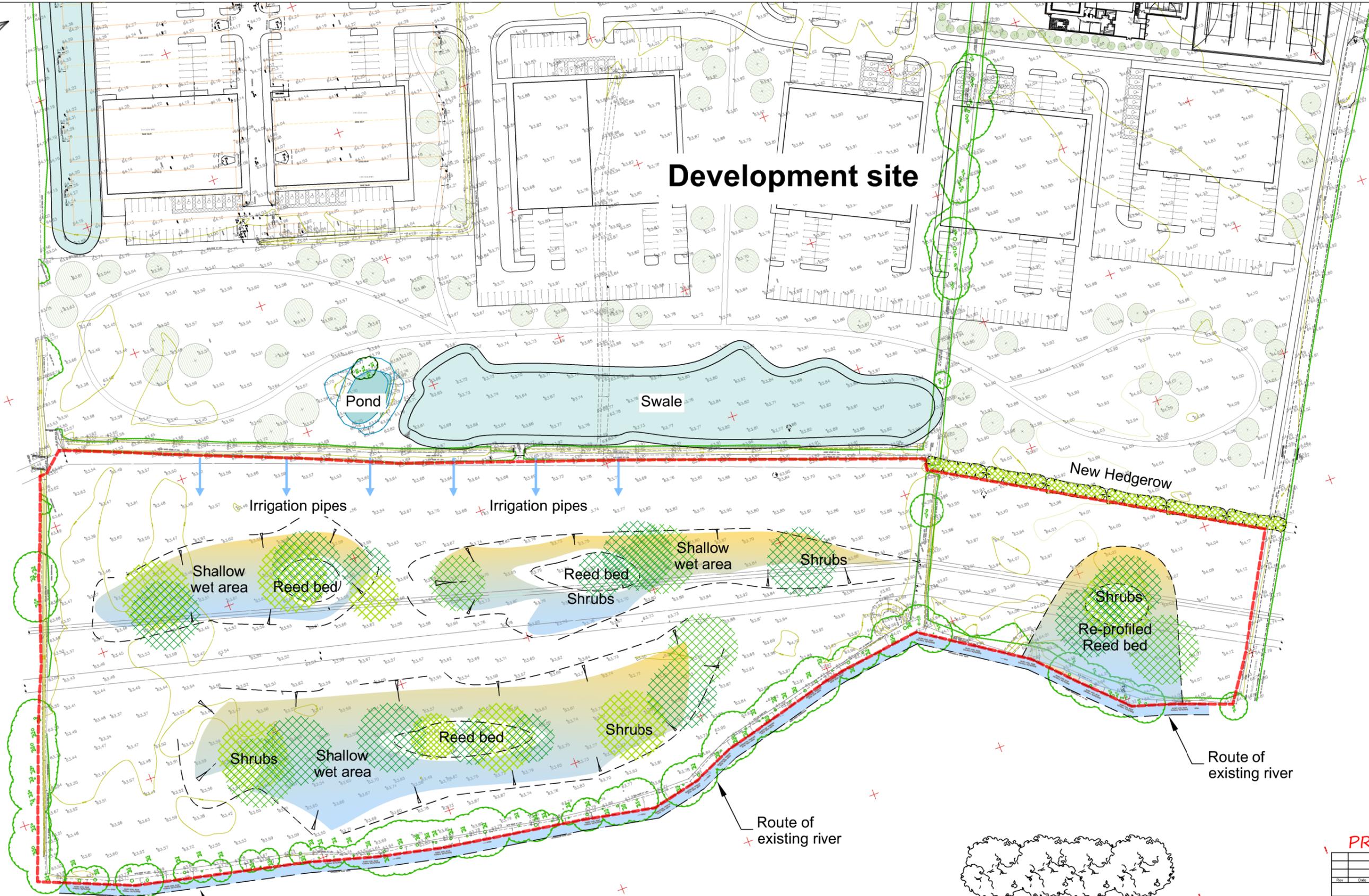


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Drawing Title	Habitat Features Plan
Scale	As Shown (Approximate)
Drawing No.	11920/P01
Date	July 2019
Checked	AG

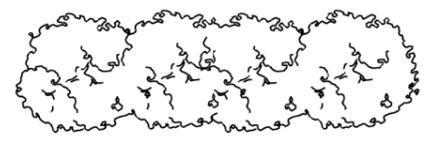
TG Tyler Grange
 South Bank Central Vivo Tower, 30 Stamford Street
 London, SE1 9PY



Development site



ZONE DEDICATED TO CONSERVATION 1:500



Hedgerow



Reed bed

PRELIMINARY

Rev	Date	Revision Description

Revision Schedule
Catalyst Bicester
 Wendlebury Road, Bicester

Client:
Albion Land Plc.

CONSERVATION ZONE

BAILEY JOHNSON HAYES
 Consulting Engineers
 ST ALBANS: Suite 4, Phoenix House, 63 Campbell Rd, ST ALBANS, Herts AL1 5PL
 MANCHESTER: Grange House, John Dalton Street, MANCHESTER, M2 6FW

Scale: 1:500 @A0
 Date: 15.07.19
 Drawn: DC
S1358-Ext-37