

## 8. ECOLOGY AND NATURE CONSERVATION

### Introduction

- 8.1. This Chapter of the ES has been prepared by Ecology Solutions. It assesses the likely significant effects of the Proposed Development with respect to ecology and nature conservation. The Chapter describes the methods used to assess the effects and determines the baseline conditions currently existing at the Site. Mitigation measures are detailed, where required, to prevent, reduce or offset the effects. Enhancement measures are also identified, and the residual effects are set out.
- 8.2. Ecology Solutions was commissioned by Ridge and Partners LLP on behalf of OUFC to undertake ecological surveys in August 2022, and that has since been used to inform and produce this Chapter of this ES.
- 8.3. This assessment relies on habitat and faunal surveys carried out by Ecology Solutions between August 2022 and November 2023. The habitat surveys were based around extended Phase 1 survey methodology<sup>i</sup>, as recommended by Natural England. The habitat types present within the Site have been identified and mapped, providing an inventory of the basic habitat types present and allowing for the identification of areas of greater ecological value. Faunal activity, whether visually or by call was recorded during the course of the surveys and specific attention was paid to the potential presence of any protected, rare, notable or Priority Species.
- 8.4. Previous surveys have also been conducted by Ecological Planning & Research Ltd (EPR) in August 2021, and dedicated surveys carried out by Judith A Webb in 2023. These reports are referenced below wherever relevant.
- 8.5. This Chapter is supported by the following technical appendix:
- **Appendix 8.1** – Ecology Technical Appendix
- 8.6. This Chapter also takes into account, wherever relevant, points raised with regard to ecology from scoping responses received by Natural England, the Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust, the Friends of Stratfield Brake and Cherwell District Council.

### Legislation and Policy

#### **Legislative Context**

- 8.7. The following legislation is relevant to the assessment of effects on ecological receptors:
- Conservation of Habitats and Species Regulations (2017)<sup>ii</sup>;
  - Wildlife and Countryside Act (1981) (as amended)<sup>iii</sup>;

- Natural Environment and Rural Communities (NERC) Act (2006)<sup>iv</sup>;
- Countryside and Rights of Way (CROW) Act (2000)<sup>v</sup>; and
- The Protection of Badgers Act (1992)<sup>vi</sup>.

### **National Planning Policy Framework**

- 8.8. Guidance on national policy for biodiversity and geological conservation is provided by the National Planning Policy Framework (NPPF)<sup>vii</sup>, published in March 2012, revised on 24 July 2018, 19 February 2019, 20 July 2021, 5 September 2023 and again on 19 December 2023. It is noted that the NPPF continues to refer to further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system provided by Circular 06/05 (DEFRA / ODPM, 2005) accompanying the now-defunct Planning Policy Statement 9 (PPS9).
- 8.9. The key element of the NPPF is that there should be “a presumption in favour of sustainable development” (paragraphs 10 to 11). It is important to note that this presumption “does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site” (paragraph 188). ‘Habitats site’ has the same meaning as the term ‘European site’ as used in the Habitats Regulations 2017.
- 8.10. Hence, the direction of Government policy is clear. That is, the presumption in favour of sustainable development is to apply in circumstances where there is potential for an effect on a European site, if it has been shown that there will be no adverse effect on that designated site as a result of the development in prospect.
- 8.11. A number of policies in the NPPF are comparable to those in PPS9, including reference to minimisation of impacts to biodiversity and provision of net gains to biodiversity where possible (paragraph 180).
- 8.12. The NPPF also considers the strategic approach that Local Authorities should adopt with regard to the protection, maintenance and enhancement of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.
- 8.13. Paragraphs 185 to 187 of the NPPF comprise a number of principles that Local Authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments; provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for; applying the protection given to European sites to potential Special Protected Areas (SPA), possible Special Areas of Conservation (SAC), listed or proposed Ramsar sites and sites identified (or required) as compensatory measures for adverse effects on European sites; and the provision for the refusal for developments resulting in the loss or deterioration of ‘irreplaceable’

habitats – unless there are ‘wholly exceptional reasons’ (for instance, infrastructure projects where the public benefit would clearly outweigh the loss or deterioration of habitat) and a suitable compensation strategy exists.

- 8.14. National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist, and benefits can, in certain circumstances, be obtained.

### **Local Planning Policy**

- 8.15. The Development Plan for the area comprises Cherwell District Council’s (CDC) Local Plan 2011-2031 as adopted in December 2016 which sets out the spatial vision and strategic policies for future development in the District. The Local Plan is currently under review (Cherwell Local Plan Review 2040).

### **CDC Local Plan 2011-2031**

- 8.16. There are four policies within this document that relate in whole or in part to nature conservation; Policies ESD9, ESD10, ESD11 and ESD17. Policy ESD9 is concerned with the protection of Oxford Meadows SAC and Policy ESD10 aims to protect and enhance biodiversity and the natural environment. Policy ESD11 is concerned with achieving the aims of the Conservation Target Areas and Policy ESD17 relates to the maintenance and enhancement of the District’s Green Infrastructure.

### **CDC Local Plan Review 2040**

- 8.17. The planning policies of the Draft of the Cherwell Local Plan Review 2040 that will be of relevance to nature conservation once the review is adopted are policies CP10, CP11, CP12, CP13, CP14 and CP15.
- 8.18. Policy CP10 is concerned with the protection of Oxford Meadows SAC, whilst policy CB11 aims to protect and enhance biodiversity. Policy CP12 sets out the requirements for all new developments to achieve a minimum 10% biodiversity net gain. Policy CP13 is concerned with achieving the aims of the Conservation Target Areas whilst Policy CP14 is concerned with protecting areas with high value natural capital assets, and Policy CP15 is concerned with the protection and enhancement of sites which form part of the green and blue infrastructure network.

## **Technical Guidance**

- 8.19. Standards and guidance that have been used to define the assessment include:
- Conservation of Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial (2018)<sup>vii</sup>;
  - Handbook for Phase 1 Habitat Survey (2010)<sup>viii</sup>;
  - Good Practice Guidelines (2016)<sup>ix</sup>;
  - Good Practice Guidelines (2023)<sup>x</sup>
  - Bat Workers' Manual<sup>xi</sup>;
  - Bat Mitigation Guidelines (2004)<sup>xii</sup>;
  - Bat Mitigation Guidelines (2023)<sup>xiii</sup>;
  - Natural England Standing Advice (badger)<sup>xiv</sup>; and
  - Herpetofauna Workers Manual<sup>xv</sup> (1998).

## **Assessment Methodology and Significance Criteria**

### **Scoping and Consultation**

- 8.20. EIA scoping responses were received by Natural England (received 7th September 2023), the Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust (BBOWT) (received 8th September 2023), the Friends of Stratfield Brake (FoSB) (received 12th September 2023) and the Cherwell District Council's (CDC) Ecologist (received 29th September 2023). A formal Scoping Opinion was received by Cherwell District Council on 29<sup>th</sup> September 2023
- 8.21. A preliminary pre-application response was received from the CDC on 20<sup>th</sup> September 2023.
- 8.22. The points raised by consultees in regard to ecology have been addressed within **Appendix 8.1** (Ecology Technical Appendix) and the salient points contained within these scoping responses were used to inform the detailed assessments and analysis carried out in producing this ES Chapter.

### **Methodological Approach**

#### **Identifying the Zone of Influence**

- 8.23. The potential ecological impacts of the Proposed Development are largely confined to the Site itself, but given that a Priority Habitat Deciduous Woodland (also considered a District Wildlife Site) is located adjacent to the southern boundary and the continuity of agricultural land and open countryside outside the other boundaries, consideration has also been given to the following likely significant effects, which may extend beyond the Site:
- Disturbance to populations within hearing range during the construction phase;

- Fragmentation of 'dispersal corridors' utilised by adjacent populations;
- Disruption to habitats / populations within receiving range of dust etc during the construction phase; and
- Pollution to watercourses during the construction and operation phases.

### **Impact Assessment Methodology**

8.24. The evaluation and impact assessment method has been undertaken with due regard to the guidelines produced by the Chartered Institute of Ecology and Environmental Management<sup>xvi</sup>, which avoids the provision of definitions as to how to assign habitats and species, different levels of value, and relies on an approach that involves professional judgement and the use of available guidance and information.

8.25. The value of each resource should be determined within a defined geographical context:

- International;
- UK;
- National (England/Northern Ireland/Scotland/Wales);
- Regional;
- County (or Metropolitan – e.g. in London);
- District (or Unitary Authority, City or Borough);
- Local or Parish; or
- Within Zone of Influence (or Site) only.

8.26. A number of other key considerations include:

- Designated Sites and Features (e.g. Special Protection Areas, Sites of Special Scientific Interest, important hedgerows etc.);
- Biodiversity Value (Use of Biodiversity Action Plans, development plans and other published documents);
- Potential Value;
- Secondary or Supporting Value;
- Social or Economic Value; and
- Legal Issues.

8.27. The Cherwell and Oxfordshire Biodiversity Action Plans are useful tools that has been used to assist in valuing features and developing mitigation strategies, where necessary. Further consideration has also been given to policies contained within the Local Plan.

8.28. Having identified the ecologically important features likely to be affected by the development proposals, the current guidance promotes a transparent approach in which an impact is determined to be significant or not on the basis of a discussion of the factors that categorise it. This includes

characterising the nature of the likely impacts on each important feature in terms of ecological structure and function, by considering the following parameters:

- Beneficial or adverse;
- Extent;
- Magnitude;
- Duration;
- Reversibility; and
- Timing and frequency.

8.29. Where it was concluded that there would be an impact (beneficial or adverse and including cumulative impacts) on a defined site or ecosystem(s) and / or habitats or species within a given geographical area, it was described as significant in the following terms: Major, Moderate, Minor and Negligible / none.

### **Survey Methodology**

8.30. The methodology utilised for the survey work has been split into three areas, namely desk study, habitat survey and faunal survey. These are discussed in more detail below, and full details of the methodology used for the surveys can be seen in the Chapter 8 Ecology Technical Appendix at **Appendix 8.1**.

#### Desk Study

8.31. In order to compile background information on the Site and the surrounding area, contact was undertaken with the Thames Valley Environmental Records Centre (TVERC).

8.32. Further information on designated sites from a wider search area was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)<sup>xvii</sup> database. This information is included within **Appendix 8.1** (Figure 8.1 and Annex 8.6).

#### Habitat Survey Methodology

8.33. The Site was subject to initial habitat surveys in August 2022 with subsequent check surveys intermittently during other surveys thereafter until July 2023. The habitat surveys were undertaken to ascertain the general ecological value of the land and to identify the main habitats and associated plant species, with notes taken on fauna utilising the Site.

8.34. The road verges along Frieze Way and Oxford Road, and the verge adjacent to the Oxford Parkway, which forms part of the highway works application, were surveyed in November 2023 to ascertain

the general ecological value of the land and to identify the main habitats and associated plant species. Notes were taken on any fauna observed within and near to these areas.

#### Extended Phase 1

- 8.35. Survey work was based around an extended Phase 1 Survey methodology<sup>xviii</sup> approved by Natural England, whereby the habitat types present are identified and mapped together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential value, which require further survey. Any such areas identified can then be examined in more detail.
- 8.36. The habitats present within the Site were classified into areas of similar botanical community types with a representative sample of those species present at the time of the Site survey being described where necessary.
- 8.37. Ecological Planning & Research Limited (EPR) carried out an ecological appraisal of the Site in July 2021 and Judith A Webb carried out botanical surveys of the Site between June - August 2023. These reports are referenced wherever relevant.

#### Faunal Surveys

- 8.38. General faunal activity, such as birds or mammals observed visually or by call during the course of the survey, was recorded. Specific attention was paid to any potential use of the Site by protected species, priority species, or other notable species.
- 8.39. In addition, specific surveys were undertaken for Badgers, bats, breeding birds, reptiles and Brown Hairstreak butterfly.
- 8.40. Experienced ecologists undertook the faunal surveys with regard to established best practice and guidance issued by Natural England. Full details of the methodologies employed can be seen in the Chapter 8 Ecology Technical Appendix at **Appendix 8.1**.

#### **Significance Criteria**

- 8.41. The scale attributed to each effect has been determined based on the sensitivity of the receptor and magnitude of impact arising as a result of the Proposed Development. Professional judgement and experience have been drawn upon to assess the scale and significance.

## Value/Sensitivity of Receptor

8.42. The sensitivity of each receptor was evaluated as being high, medium, low or negligible based on a review of the baseline position of each receptor and its performance against benchmark areas and with regard to guidelines produced by the Chartered Institute of Ecology and Environmental Management. The receptors and the definition of sensitivity of a receptor (High, Medium, Low, Negligible) is based on a scale set out in **Table 8.1**.

**Table 8.1: Receptor Sensitivity Descriptions**

Sensitivity	Criteria for Assessing Sensitivity
High	The receptor has little ability to absorb change without fundamentally altering its present character, is of high environmental value, or is of internal or national importance (e.g. SPA, AONB).
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is of low environmental value or is of low or local importance.
Negligible	The receptor is resistant to change or is of little environmental value.

## Magnitude of Impact

8.43. The magnitude of impact to a receptor has been determined by considering the estimated deviation from baseline conditions both before, and, if required, after mitigation. The scale used for determining the magnitude of an impact has been based on **Table 8.2**.

**Table 8.2: Magnitude**

Magnitude of Impact	Criteria for Assessing Impact
High	Total loss or major alteration to key elements or features of the baseline (predevelopment) conditions such that the post development character/composition will be fundamentally changed.
Medium	Loss or alteration to one or more key elements or features of the baseline conditions such that post development character/composition of the baseline will be materially changed.
Low	A minor shift away from the baseline conditions. Change arising will be detectable but not material. The underlying character/composition of the baseline condition will be similar to the baseline conditions.
Negligible	Very little change from the baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.



## Assessing Significance

8.44. **Table 8.3** provides a matrix for determining the significance of an effect based on the sensitivity of the receptor and the magnitude of impact.

**Table 8.3: Significance Matrix**

Magnitude	Sensitivity of Receptor			
	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate/Minor	Negligible
Medium	Major/Moderate	Moderate	Minor	Negligible
Low	Moderate/Minor	Minor	Minor/Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

8.45. Effects classified as Major or Moderate are considered 'significant'. Effects classified as Minor or Negligible in scale are considered 'not significant'.

## Baseline Conditions

8.46. The objectives of establishing the ecological baseline are twofold:

- To describe aspects of the natural environment and to identify important and protected habitats and species that could be adversely affected by the development proposals; and
- To characterise features that could be positively enhanced, created, restored or managed, by establishing the occurrence, distribution and extent of ecological features on site and in the surrounding area; and/or those species that could be positively managed to enhance their conservation status, distribution and abundance.

## Current Conditions

### Statutory Designated Sites

8.47. There are no statutory designated sites of nature conservation value located within or immediately adjacent to the Site. The closest statutory site is the Oxford Meadows Special Area of Conservation (SAC), which includes the constituent Site of Special Scientific Interest (SSSI) Pixey and Yarnton Meads SSSI, located approximately 1.9km southwest of the Site at its closest point. Other constituent SSSIs nearby include Port Meadow with Wolvercote Common & Green SSSI, which is located approximately 2km south at its closest point, and Wolvercote Meadows SSSI, located approximately 2.1km southwest.

8.48. The Natural England scoping response states that full assessment of potential impacts on Oxford Meadows SAC, its constituent SSSIs and also Hook Meadow & Trap Grounds SSSI, New Marston Meadows SSSI and Iffley Meadows SSSI is undertaken.

#### Oxford Meadows SAC and Constituent SSSIs

8.49. Legislation and relevant case law surrounding the Habitats Directive and Habitats Regulations is set out in further detail within the Technical **Appendix 8.1**.

#### *Conservation Objectives*

8.50. Natural England has produced a document that sets out the Conservation Objectives for the Oxford Meadows SAC (dated 27th November 2018 [Version 3]). This document sets out that the Conservation Objectives for the SAC are to *“Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*

- *The extent and distribution of qualifying natural habitats and habitats of qualifying species*
- *The structure and function (including typical species) of qualifying natural habitats*
- *The structure and function of the habitats of qualifying species*
- *The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely*
- *The populations of qualifying species, and,*
- *The distribution of qualifying species within the site.”*

8.51. The qualifying features of the SAC are set out as being:

*“H6510. Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)  
S1614. Apium repens; Creeping marshwort”*

8.52. This SAC is underpinned by a number of SSSIs; the Pixey and Yarnton Meads SSSI which is designated for its unimproved floodplain meadows on alluvium over calcareous gravel bordering the River Thames. Port Meadow with Wolvercote Common & Green SSSI is designated for its lowland wet neutral grassland and its population of Schedule 8 plant species Creeping Marshwort. Wolvercote Meadows SSSI is designated for its lowland neutral grassland which is managed traditionally for hay and pasture and shares characteristics of the ancient meadowland of Pixey Mead. These SSSIs are well separated from the site by major and minor roads, a canal and large bodies of water, as well as open countryside.

### Other Statutory Designated Sites

- 8.53. Additional SSSIs that have been identified within the search radius and highlighted within consultee responses include the Hook Meadow & Trap Grounds SSSI, located approximately 2.7km south of the Site, which is designated for its series of unimproved neutral meadows which since have become increasingly rare. This SSSI runs along a railway and is separated from the Site by major and minor roads and an existing residential development.
- 8.54. New Marston Meadows SSSI is located approximately 3.9 km southwest of the Site and is designated for its series of agriculturally unimproved neutral meadows on the flood plain of the River Cherwell which forms a natural corridor through the centre of Oxford. This SSSI is also separated from the Site by major and minor roads and an existing residential development.
- 8.55. The Iffley Meadows SSSI, which is located 7.6km southwest of the Site, is designated for its alluvial flood meadows which are traditionally managed as hay meadow and permanent pasture. This SSSI is located south of Oxford City and is well separated from the Site by the major and minor roads and existing residential developments.
- 8.56. To the north, the Site also lies within proximity to Rushy Meadows SSSI, which is designated for its lowland mire grassland and rush pasture. However, this SSSI is located 2.3km northwest and is separated from the site by the Stratfield Brake Sports Ground, existing residential development and the Oxford Canal.
- 8.57. There are a number of other SSSIs within the search radius identified on Figure 8.1 within **Appendix 8.1**, of which are well separated from the Site by existing urban developments, major and minor transport channels and extensive open countryside.

### SSSI Impact Risk Zones

- 8.58. The SSSI Impact Risk Zones<sup>xix</sup> (IRZs) highlight that adverse impacts to the nearby SSSIs could arise from “Any discharge of water or liquid waste of more than 5m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream”.

- 8.59. The IRZs also highlight the following:

*Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m<sup>2</sup>, slurry lagoons & digestate stores > 750m<sup>2</sup>, manure stores > 3500t).*

## Non-Statutory Designated Sites

- 8.60. The woodland located off-site adjacent to the southern boundary, is listed on the MAGIC database as a Priority Deciduous Woodland which also forms part of the Stratfield Brake Cherwell District Wildlife Site (DWS). It is noted it does not form part of the Stratfield Brake Woodland Trust Reserve (which is also designated as part of the DWS) located to the west of the Site (it is isolated from the Reserve by the Frieze Way A4620 road). Stratfield Brake DWS is designated for its range of habitats including woodland, grassland, ponds and scrub.
- 8.61. The Meadows West of the Oxford Canal is an Oxfordshire Local Wildlife Site (LWS) which lies approximately 0.6km west of the site and is designated for lowland meadow habitats on the ridges, fen in the furrows that are bordered by species-rich hedges. This LWS is separated from the Site by Frieze Way, Stratfield Brake DWS and Oxford Canal.
- 8.62. A number of additional statutory and non-statutory sites are located in the vicinity and these are identified on Figure 8.1 within **Appendix 8.1**.

## Habitats

- 8.63. The following main habitat / vegetation types were identified within the Site:
- Arable - Willow Plantation;
  - Other Neutral Grassland;
  - Modified Grassland;
  - Hardstanding;
  - Trees;
  - Mixed Scrub; and
  - Hedgerows.
- 8.64. An area of broad-leaved woodland is also located adjacent to the south of the main Application Site (off-site).
- 8.65. Full details of these habitats can be seen within Section 8.5 of the Chapter 8 Ecology Technical Appendix at **Appendix 8.1**.
- 8.66. The TVERC returned a record of the Schedule 8 species (sale only) Bluebell *Hyacinthoides non-scripta* from within the offsite woodland in 2015. Other plant species were returned outside of the site boundary, between 0.01km to 0.2km west within the Stratfield Brake Wood and Fields, adjacent to the Frieze Way road. These include the Nationally Rare Jacob's-ladder *Polemonium caeruleum* and Red Listed Ragged Robin *Silene flos-cuculi* in 2015, and Nationally Scarce Large-leaved Lime *Tilia platyphyllos*, Locally Scarce Narrow-leaved Bird's-foot-trefoil *Lotus tenuis*, Red Listed and

Locally Rare Pale St John's-wort *Hypericum montanum*, and Red Listed Spiny Restharrow *Ononis spinosa* in 2011.

- 8.67. Judith A Webb recorded dead stalks of Bluebell plants within the offsite woodland during 2023 surveys. Narrow-leaved Bird's-foot-trefoil was also recorded by Webb along the southern margin of the triangle in 2023. None of the other listed species above were recorded within the Site during the habitat surveys, however Webb also recorded the Red Listed Corn Mint within the plantation in 2023 (along with Pyramidal Orchid and Common Spotted Orchid).

### Fauna

- 8.68. General observations were made during Ecology Solutions' surveys of any faunal use of The Site, with attention paid to the potential presence of protected species. In addition, specific surveys have been undertaken for Badgers, bats, breeding birds and reptiles.
- 8.69. Full details of the faunal survey results can be seen within Section 8.5 of the Chapter 8 Ecology Technical Appendix at **Appendix 8.1**.
- 8.70. A summary of the results is set out below.

### Badgers

- 8.71. No evidence of Badgers was recorded within the Site.
- 8.72. The TVERC returned a record of a Badger sett from a 1km grid square overlapping the site in 2017. There are also two separate records of an individual returned within the same grid square from 2016. The next closest record of a Badger sett is 0.7km northwest of the site, returned in 2019.
- 8.73. EPR recorded no evidence of Badger within their survey in 2021 however noted that this species may utilise the Site for foraging.

### Bats

- 8.74. There are two trees within the Site and a further three trees in the woodland off site to the south recorded as having developed features suitable to support roosting bats (see Figure 8.3, **Appendix 8.1**).
- 8.75. Overall, the vast majority of activity recorded on the automated detectors was from Common Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle *Pipistrellus pygmaeus* bats, with relatively consistent moderate activity along the woodland edge in the south and southwest corner of the

Site. *Myotis* sp. and *Barbastella barbastellus* were also recorded more frequently in this location, however, at generally very low occurrences. Moderate to high activity from Leisler's *Nyctalus leisleri* was recorded along H2 during September 2022, but which had relatively low activity recorded across other months. Very low levels of activity were recorded from Brown Long-eared *Plecotus auritus*, with very occasional activity recorded from Serotine *Eptesicus serotinus* and Nathusius' Pipistrelle *Pipistrellus nathusii*. Generally low bat activity was present along the northern patch of scrub, within the Willow plantation and hedgerows H1 and H2 with the woodland edge in the south being the most important area for bats within the Site.

- 8.76. The TVERC returned no records of bats from within the site itself. Common species were returned from within the search radius, including Soprano Pipistrelle approximately 0.64km north of the site in 2010, and Common Pipistrelle and Noctule approximately 0.86km southwest of the site in 2015.

### Birds

- 8.77. During the breeding bird surveys conducted in June 2023, Chiffchaff *Phylloscopus collybita* were observed to be probably breeding or likely to have bred within the Site (given the presence of a juvenile). Other species recorded as probably breeding include Song Thrush *Turdus philomelos* (Red List and Priority Species), Wren *Troglodytes troglodytes*, Rook *Corvus frugilegus*, Blackbird *Turdus merula* Blackcap *Sylvia atricapilla*, Robin *Erithacus rubecula*, Great Tit *Parus major* and Blue Tit *Cyanistes caeruleus*. Species recorded as possibly breeding include Woodpigeon, Long-tailed tit, Jackdaw, Kestrel and Schedule 1 Species Red Kite. Yellowhammer (Red Listed and Priority Species) was recorded externally to the Site, and Lesser Black-backed Gull was also recorded, however considered unlikely to be breeding within the Site. The most numerous species present within the Site is Wren, with a maximum of 14 potential territories recorded, followed by Chiffchaff, with 12 potential territories recorded.
- 8.78. The TVERC returned a record for Wren (Amber-listed) from within the Site in 2015 and Schedule 1 species Hobby Falco *subbuteo* within a 1km grid square that included the Site in 2013. Wren was recorded during dedicated surveys in 2023, however Hobby was not recorded and is unlikely to be reliant on the Site given the habitats present and is more likely to be associated with the off-site woodland and wider woodland and wetland of Stratfield Brake to the west.
- 8.79. Other bird species recorded externally to the site but within the western parcel of the Stratfield Brake woodland and fields include the Priority and Red Listed species House Sparrow *Passer domesticus* in 2015 and Schedule 1 species Barn Owl *Tyto alba* in 2013. Further afield, the Priority Species Bullfinch *Pyrrhula pyrrhula*, Reed Bunting *Emberiza schoeniclus* and Priority and Red Listed species Linnet *Linaria cannabina* was recorded approximately 0.5km west in 2013. Priority species Dunnock *Prunella modularis* was also recorded approximately 0.9km northwest of the site in 2020.

### Great Crested Newts

- 8.80. No records of Great Crested Newts were returned by TVERC from within the Site. The closest record was returned from North Oxford Golf Club, located approximately 0.35km south of the main Site in 2014 (associated with P4 as shown on Figure 8.1 within **Appendix 8.1**). The next closest record returned is located west of the A44, Yarnton approximately 0.9km southwest of the main triangle Site in 2015. Both records are separated from the main triangle Site by dispersal barriers such as the railway line and major A-road
- 8.81. There are no ponds within the Site itself. OS maps indicate that there are a total of four ponds (P1-P4) located within 500m of the Site boundary, however all four ponds are separated from the main triangle Site by main roads (Frieze Way, A34 and a railway) which are considered to represent a significant dispersal barrier to Great Crested Newts.
- 8.82. Given the distances of the closest ponds to the triangle Site (and the major dispersal barriers) it is not considered that Great Crested Newts would likely be present within the triangle area of the Site.
- 8.83. The proposed highway works includes improvements to pedestrian access to and from the triangle Site, which results in three of the four ponds (**P2-P4**) falling within 250m of the proposed highway works. Ponds **P2** and **P3** are separated from the Site boundary by the existing car park and access road as part of the Oxford Parkway. Indeed, pond **P4**, located within the Oxford Golf Club where a background record of Great Crested Newt has been returned, is also separated from the proposed works by Oxford Road. Due to the separation barriers present, it is deemed unlikely that Great Crested Newts would be present within the proposed highway works area. Nevertheless, a precautionary approach with regard to Great Crested Newts is recommended during construction.

### Reptiles

- 8.84. Specific surveys for reptiles were commenced in August 2022 and carried out within the Site and within the adjacent Stratfield Brake Sports Ground between September and October 2022. No reptiles were recorded within the Site in 2022, however a single record of Common Lizard *Zootoca vivipara* was recorded within the Stratfield Brake Sports Ground – approximately 0.4km west of the Site boundary.
- 8.85. No records of reptiles were returned from within the Site. The closest record was of an adult Grass Snake *Natrix helvetica* located approximately 0.04km from the western site boundary in 2020. Two juvenile Slow Worms *Anguis fragilis* were recorded approximately 0.66km north of the Site in 2021 and three adult male Slow Worms were recorded 0.67km north of the Site in 2021.

### Other Mammals

- 8.86. A Roe Deer *Capreolus capreolus* was observed browsing in the woodland in July 2023.
- 8.87. No records were returned from TVERC from within the Site itself. A record of Priority Species Brown Hare *Lepus europaeus* was returned from Oxford Parkway, approximately 0.13km southwest of the Site in 2018. A record of a hibernating Hedgehog *Erinaceus europaeus*, also a Priority Species, was returned from approximately 0.15km south of the Site in 2012.

### Invertebrates

- 8.88. Given the habitats present, it is likely an assemblage of common invertebrate species would be present within the Site. The December 2023 winter egg search for Brown Hairstreak *Thecla betulae* confirmed presence of this species within hedgerow H2 within the Site.
- 8.89. The TVERC returned a record of the Priority species Brown Hairstreak from within a 1km grid square overlapping the Site in 2015. Four records of Brown Hairstreak eggs were recorded along the adjacent Stratfield Brake Sports Ground, approximately 0.03km west of the Site boundary in 2019. There are a further eight records of Brown Hairstreak returned further west of the Site boundary within the sports ground and nature reserve, ranging between 0.3 – 0.4km from the Site between 2015 and 2019.
- 8.90. The Friends of Stratfield Brake response also brought to light that their ecologist spotted a female Brown Hairstreak within the Site.
- 8.91. A summary of the receptors and levels of sensitivity are detailed in Table 8.4 below.

**Table 8.4: Summary of receptors and their sensitivity**

<b>Receptor</b>	<b>Sensitivity</b>
Oxford Meadows SAC and constituent SSSIs	High
Adjacent Priority Habitat woodland / DWS	Medium
Stratfield Brake DWS	Medium
Hedgerows and Trees	Medium
Willow Plantation, Modified Grassland and Neutral Grassland	Low
Mixed Scrub	Low
Hardstanding	Negligible
Badgers	Low
Bats	Medium
Birds	Low
Great Crested Newt	Low
Invertebrates	Low
Brown Hairstreak	Medium



## Potential Effects

### **During Construction**

#### **Statutory Designated Sites**

- 8.92. There are no statutory designated sites of nature conservation value located within or immediately adjacent to the Site.
- 8.93. The closest statutory site is the Oxford Meadows SAC, which includes its constituent SSSIs Pixey and Yarnton Meads SSSI, Wolvercote Meadows SSSI and Port Meadow with Wolvercote Common & Green SSSI and is located approximately 1.9km southwest of the site at its closest point. The SAC and constituent SSSIs are well separated from the site by major and minor roads, a canal and large bodies of water, as well as open countryside.
- 8.94. The Hook Meadow & Trap Grounds SSSI, New Marston Meadows SSSI and Iffley Meadows SSSI are all well separated from the Site by the A34, a railway, open countryside and existing residential developments. Indeed, the Rushy Meadows SSSI is also well separated from the Site by the Stratfield Brake Sports Ground.
- 8.95. Impacts: Potential hydrological and air pollution impacts on Oxford Meadows SAC and constituent SSSIs, as highlighted within the SSSI IRZs as set out above.
- 8.96. No direct or indirect impacts will occur on the Hook Meadow & Trap Grounds SSSI, New Marston Meadows SSSI, Iffley Meadows SSSI, Rushy Meadows SSSI or any other statutory designated sites as a result of the development.

*Prior to mitigation, impacts are adverse at the European (SAC) level and are of High sensitivity, Low to Medium magnitude (subject to the severity of pollution incident) and are of **Moderate/Major significance**.*

#### **Non-Statutory Sites**

- 8.97. The woodland located just off-site adjacent to the southern boundary, is listed on the MAGIC database as a Priority Deciduous Woodland which also forms part of the Stratfield Brake DWS. The adjacent parcel of the Stratfield Brake DWS located approximately 20m west of the Site boundary, is separated from the Site by Frieze Way road. The Meadows West of the Oxford Canal LWS is located approximately 0.65km west of the site and is separated from the Site by Frieze Way, Stratfield Brake DWS and Oxford Canal.

8.98. Impacts: There is potential for disturbance / damage and dust deposition (and potentially other pollution) to the adjacent DWS woodland and nearby Stratfield Brake DWS. No direct or indirect impacts will occur on the Meadows West of the Oxford Canal LWS or any other non-statutory site.

*Prior to mitigation, impacts are adverse at the Local (DWS) level and are of Medium sensitivity, Low magnitude and of **Minor significance**.*

## **Habitats**

### Hedgerows and Trees

8.99. Impacts: Temporary effects: potential damage to retained trees and sections of hedgerow during the construction phase, and dust deposition (and potentially other pollution) to retained trees and hedgerows during the construction phase.

*Prior to mitigation, impacts are adverse at the local level and are of Medium sensitivity, Low magnitude and of **Minor significance**.*

### Broad-leaved Woodland

8.100. Impacts: Temporary effects: potential damage to retained off-site woodland during the construction phase and dust deposition (and potentially other pollution) to retained woodland during construction phase. Light spill onto woodland from the development which has the potential to impact light-sensitive bat species.

*Prior to mitigation, impacts are adverse at the local level and are of Medium sensitivity, Low magnitude and of **Minor significance**.*

## **Fauna**

### Badger

8.101. Impacts: Potential construction effects on Badgers such as accidental trapping/injury.

*Prior to mitigation, impacts are adverse at the County level and are of Low sensitivity, Low magnitude and of **Negligible-Minor significance**.*

### Bats

- 8.102. Impacts: Potential disturbance from lighting on foraging and commuting routes during the construction phase. Possible loss of potential bat roosts – BP1 and BP2.

*Prior to mitigation, effects will be adverse at the European level and of Medium sensitivity, Medium magnitude and of **Moderate significance**.*

### Birds

- 8.103. Impacts: Potential for killing and injury of birds and / or damage or destruction of nests during clearance of vegetation.

*Prior to mitigation, impacts are adverse at the site-local level and of Low sensitivity, Medium magnitude and of **Minor significance**.*

### Great Crested Newt

- 8.104. Impacts: Small loss of scrub habitat between Oxford Parkway and Oxford Road. Potential for killing or injury during clearance works.

*Prior to mitigation, impacts are adverse at the European level and of Low sensitivity, Low magnitude and of **Minor/Negligible significance**.*

### Invertebrates

- 8.105. Impacts: Potential damage during construction caused to retained habitats that support assemblages of invertebrates and Priority Species Brown Hairstreak; potential pollution of the ditches from contaminated run-off during the construction phase.

*Prior to mitigation, impacts on invertebrates are adverse at the site level and of Low sensitivity, Medium magnitude and of **Minor significance**. Impacts on Brown Hairstreak are adverse at the site level and of Medium sensitivity, Medium magnitude and of **Moderate significance**.*

## **During Operation**

### **Statutory Designated Sites**

- 8.106. Impacts: Potential hydrological, air pollution and recreational impacts on Oxford Meadows SAC and constituent SSSIs.

- 8.107. No direct or indirect impacts will occur on the Hook Meadow & Trap Grounds SSSI, New Marston Meadows SSSI, Iffley Meadows SSSI, Rushy Meadows SSSI or any other statutory designated sites as a result of the development.

*Prior to mitigation, impacts are adverse at the European (SAC) level and are of High sensitivity, Low to Medium magnitude (subject to the severity of pollution incident) and are of **Moderate/Major significance**.*

### **Non-Statutory Sites**

- 8.108. Impacts: There is potential for disturbance / damage impacts to the adjacent DWS woodland and potential contaminated run-off (and potentially other pollution) impacts to the adjacent DWS woodland and nearby Stratfield Brake DWS. No direct or indirect impacts will occur on the Meadows West of the Oxford Canal LWS or any other non-statutory site.

*Prior to mitigation, impacts are adverse at the Local (DWS) level and are of Medium sensitivity, Low magnitude and of **Minor significance**.*

### **Habitats**

#### Willow Plantation, Modified Grassland and Neutral Grassland

- 8.109. Impacts: Loss of Willow plantation and neutral grassland within the triangle to the Proposed Development. Some losses proposed to modified grassland verges along Frieze Way and Oxford Road.

*Prior to mitigation, impacts are adverse at the site level and are of Low sensitivity, High magnitude and of **Moderate-Minor significance**.*

#### Mixed Scrub

- 8.110. Impacts: Partial loss of this habitat within the Triangle and a section of existing scrub adjacent to Oxford Road/Oxford Parkway to the Development..

*Prior to mitigation, impacts are adverse at the site level and are of Low sensitivity, High magnitude and of **Moderate-Minor significance**.*

### Hedgerows and Trees

8.111. Impacts: Losses to hedgerows H1,H2 and H3 to the Proposed Development.

*Prior to mitigation, impacts are adverse at the local level and are of Medium sensitivity, Medium magnitude and of **Moderate significance**.*

### Broad-leaved Woodland

8.112. The woodland is to be retained and safeguarded from the Proposed Development.

8.113. Impacts: Potential for disturbance / damage from people and contaminated run-off (and potentially other pollution).

*Prior to mitigation, impacts are adverse at the local level and are of Medium sensitivity, Low magnitude and of **Minor significance**.*

## **Fauna**

### Badgers

8.114. Impacts: The loss of some foraging grounds.

*Prior to mitigation, impacts are adverse at the County level and are of Low sensitivity, Low Magnitude and of **Negligible-Minor significance**.*

### Bats

8.115. Impacts: Losses to scrub and hedgerows H1 and H2 which offer suitable foraging and commuting opportunities for bats. Potential disturbance from lighting on foraging and commuting routes during the operational phase. Potential loss of potential bat roosts.

*Prior to mitigation, effects will be adverse at the European level and of Medium sensitivity, Medium magnitude and of **Moderate significance**.*

### Birds

8.116. Impacts: Loss of suitable foraging and nesting habitat for bird species.

Prior to mitigation, impacts are adverse at the site-local level and of Low sensitivity, Medium magnitude and of **Minor significance**.

Invertebrates

8.117. Impacts: Loss of suitable habitat for common invertebrates and Priority Species Brown Hairstreak; potential pollution of the ditches from contaminated run-off during the operational phase.

Prior to mitigation, impacts on invertebrates are adverse at the site level and of Low sensitivity, Medium magnitude and of **Minor significance**. Impacts on Brown Hairstreak are adverse at the site level and of Medium sensitivity, Low magnitude and **Minor significance**.

## Mitigation Measures and Residual Effects

8.118. A summary of mitigation measures are shown in **Table 8.5** below.

**Table 8.5: Summary of mitigation measures**

Effect	Receptor	Mitigation
<b>Construction Phase</b>		
Impacts on hydrology	Statutory sites – Oxford Meadows SAC and constituent SSSIs	Implementation of best practice methods and effective engineering solutions
Pollution from contaminated run-off and other pollution	Non-statutory sites – adjacent DWS woodland and Stratfield Brake DWS	Implementation of best practice methods and effective engineering solutions
Potential damage to retained hedgerows and adjacent woodland	Adjacent woodland and Hedgerows with Trees	Retained habitats fenced at canopy height, root protection zones
Potential dust deposition (and potentially other pollution) to retained hedgerows and adjacent woodland	Adjacent Woodland and Hedgerows with Trees	Appropriate safeguarding measures to prevent impacts arising from pollution
Accidental trapping/injury	Badgers	Precautionary construction measures
Potential disturbance from lighting on foraging and commuting routes	Bats	Lighting will be angled away from suitable habitat
Potential for killing and injury, and / or damage or destruction of nests	Birds	Vegetation clearance undertaken outside of nesting season or after appropriate checks
Potential for killing and injury during scrub clearance works	Great Crested Newt	Implementation of Reasonable Avoidance Measures (RAMS) during construction
Potential pollution of the ditches from contaminated run-off	Invertebrates	Appropriate safeguarding measures to prevent impacts arising from pollution
Potential damage caused to retained habitats	Brown Hairstreak	Retained habitats fenced at canopy height, root protection zones

Effect	Receptor	Mitigation
<b>Operational Phase</b>		
Impacts on hydrology	Statutory sites -Oxford Meadows SAC and constituent SSSIs	Implementation of best practice methods and effective engineering solutions to ensure that contaminated run-off is prevented
Potential contaminated run-off (and potentially other pollution)	Adjacent DWS woodland and Stratfield Brake DWS	Appropriate safeguarding measures to prevent impacts arising from pollution
Potential disturbance / damage to adjacent woodland	Non-statutory sites – Adjacent woodland	Creation of green corridor / buffer between development and woodland
Loss of habitat	Willow Plantation and Neutral Grassland	Creation of natural and semi-natural habitats
	Mixed Scrub	
Some losses of habitat	Hedgerows with Trees	New native tree and hedgerow planting of a length / area greater than that lost
Loss of foraging grounds / suitable habitat	Badgers	Creation of natural and semi-natural habitats
	Bats	Creation of natural and semi-natural habitats
Potential loss of trees with bat roosting potential	Bats	Further surveys, potential requirement to obtain Natural England EPS licence prior to felling of trees.

## **During Construction**

### **Statutory Designated Sites**

8.119. Hydrology impacts: Implementation of best practice methods and effective engineering solutions will be employed to ensure that contaminated run-off is prevented from entering ditches as well as new attenuation features and as such, it is considered that the Proposed Development within the Site will not result in any adverse impacts from the construction phase through water quality to the Oxford Meadows SAC, its constituent SSSIs, or any other statutory designated sites.

8.120. Air quality impacts: As detailed further within the Air Quality Chapter (Chapter 12), no significant effects on air quality will arise on statutory designated sites during the construction phase as a result of the proposals.

*Post mitigation, effects are negligible at the European level and are of High sensitivity, Negligible magnitude and **no significance (i.e. Negligible).***

### **Non-Statutory Designated Sites**

8.121. The offsite woodland (DWS) adjacent to the southern boundary will be retained and safeguarded during construction (see Impacts on Habitats – Broad-leaved Woodland below).

- 8.122. The adjacent parcel of the Stratfield Brake DWS located approximately 20m west of the Site boundary, is separated from the Site by Frieze Way road.
- 8.123. An increased level of dust may arise during construction, therefore, measures to mitigate dust emissions on the adjacent DWS will be implemented during the construction phase. Any potential effects would be easily minimised through use of standard mitigation techniques such that residual effects are of negligible significance. Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate the wet ditch that lies adjacent to the site.
- 8.124. Standard engineering practice in respect of pollution control, as part of the development would also be implemented to negate any potential runoff into the nearby DWS. For example, in order to prevent impacts of laden silts and surface runoff from the construction site entering the non-statutory site, it is recommended that standard engineering safeguards, such as interceptor fencing is installed to negate this low risk, where necessary. Such measures could be secured by way of a planning condition requiring a Construction Environmental Management Plan.
- 8.125. Regarding air quality impacts on designated sites, a worst-case scenario was applied by the Air Quality consultants which found that no significant effects would occur on any non-statutory designations due to traffic emissions during the construction phase.
- 8.126. The Meadows West of the Oxford Canal LWS, which is located approximately 0.65km west of the site, is separated from the Site by Frieze Way, Stratfield Brake DWS and Oxford Canal. As such, it is considered that the Proposed Development will not likely have any direct or indirect impact on this LWS.

*Post mitigation, effects are negligible at the Local level and are of High sensitivity, Negligible magnitude and of **no significance.(i.e. Negligible).***

## **Habitats**

### Hedgerows and Trees

- 8.127. It is recommended that all retained trees and hedgerows within the site be fenced at canopy height (as required) according to the current British Standards before construction work commences, to protect roots from compaction. Fences should remain in place until construction work is complete within the vicinity of these trees and hedgerows.
- 8.128. An increased level of dust may arise from the movement of construction traffic and earthworks. Deposition of this dust on the surrounding vegetation may lead to temporary declines in flora



associated with hedgerows and trees. Measures to mitigate dust emissions will be implemented during the construction phase. Any potential effects would be easily minimised through use of standard mitigation techniques such that residual effects are of negligible significance. Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate the ditches or stream. Even with these measures in place, there remains a slight risk that the hedgerow and trees might be affected by very occasional dust-soiling impacts. Any effects will be temporary and relatively short-lived and will only arise during dry weather with the wind blowing towards the receptor, at a time when dust is being generated. The overall impacts during the construction phase with mitigation measures in place are judged to be of negligible significance.

*Post mitigation, effects are negligible at the Site level and are of Medium sensitivity, Negligible magnitude and **Negligible significance**.*

#### Broad-leaved Woodland

- 8.129. Measures will be put in place to ensure that the offsite woodland is safeguarded from direct impacts during the construction phase, e.g. fenced-off during construction to prevent encroachment into this area by construction machinery. No construction machinery or materials will be stored within this area at any point during the development.
- 8.130. An increased level of dust may arise from the passage of construction traffic. Deposition of this dust on the surrounding vegetation may lead to temporary declines in woodland flora. Measures to mitigate dust emissions will be implemented during the construction phase. Any potential effects on woodland habitats would be easily minimised through use of standard mitigation techniques such that residual effects are of negligible significance. Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. Even with these measures in place, there remains a slight risk that the woodland might be affected by very occasional dust-soiling impacts. Any effects will be temporary and relatively short lived and will only arise during dry weather with the wind blowing towards the receptor, at a time when dust is being generated and mitigation measures are not being fully effective. The overall impacts during the construction phase with mitigation measures in place are judged to be of negligible significance.

*Post mitigation, effects are negligible at the local level and are of Medium sensitivity, Negligible magnitude and **no significance (i.e. Negligible)**.*

## Fauna

### Badgers

- 8.131. During the construction phase of development it is often necessary to undertake a number of additional measures to safeguard any Badgers present on a site.
- 8.132. All contractors working on the Site will be briefed regarding the presence of Badgers in the local area and of the types of activities that would not be permissible on site, with all measures included as part of a Construction Environmental Management Plan (CEMP).
- 8.133. Any trenches or deep pits that are to be left open overnight will be provided with a means of escape should a Badger enter. This could simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water.
- 8.134. Any trenches/pits will be inspected each morning to ensure no Badgers have become trapped overnight. Should a Badger get stuck in a trench it will likely attempt to dig itself into the side of the trench, by forming a temporary sett. Should a trapped Badger be encountered, the project ecologist should be contacted immediately for further advice.
- 8.135. The storage of topsoil or other 'soft' building materials within the Site will be given careful consideration. Badgers will readily adopt such mounds as setts, which would then be afforded the same protection as established setts. So as to avoid the adoption of any mounds, they would be subject to daily inspections (or nightly patrols if 24-hour security is present on site) or consideration given to fencing them with Badger proof fencing.
- 8.136. During the development the storage of any chemicals required for the building construction will be well away from any Badger activity and contained in such a way that they cannot be accessed or knocked over by any roaming Badgers.

*Post mitigation, effects are at the County level and are of Low sensitivity, Negligible magnitude and **no significance (i.e. Negligible).***

### Bats

- 8.137. Where lighting is necessary during construction, any potential light spillage will be reduced by directing light below the horizontal plane, preferably at an angle less than 70 degrees away from features that offer suitable foraging opportunities for bats, e.g. the woodland, hedgerows and trees.
- 8.138. In the event that losses are proposed to any trees identified as having potential to support roosting bats, these would be subject to further surveys. If any bats or evidence of bats is recorded, a Natural

England European Protected Species licence may be required prior to any felling works commencing and appropriate mitigation would need to be provided. This would be based around bat boxes (hollow and crevice types) that mimic tree roost features.

*Post mitigation, effects are negligible at the European level and are of Medium sensitivity, Negligible magnitude and of **no significance (i.e. Negligible).***

### Birds

- 8.139. In order to safeguard any nesting bird species within the Site, the clearance of any scrub, hedgerows and trees will be undertaken outside of the bird breeding season (March-August inclusive). Should this not be possible potential nesting habitat is subject to a check survey immediately prior to its removal by an experienced ecologist. Should any nesting birds be identified then the nest should be fully safeguarded *in situ* and subject to a disturbance buffer of at least 5 metres and only removed once it has been confirmed any fledglings have left the nest.

*Post mitigation, effects are negligible at the site-local level and are of Low sensitivity, Low magnitude and of **Minor-Negligible significance.***

### Great Crested Newt

- 8.140. Removal of a section of the scrub adjacent to Oxford Parkway will be carried out under a Reasonable Avoidance Measures (RAMs) method statement to ensure Great Crested Newts are not impacted. If necessary, the habitat to be cleared will be subject to a thorough search by a suitably qualified ecologist prior to removal, to ensure Great Crested Newts are not present. If a Great Crested Newt is recorded during the search, all works will stop within suitable habitat and a licence will be obtained from Natural England, or district licensing will be obtained by NatureSpace, before works can continue.

*Post mitigation, effects are negligible at the European level and are of Low sensitivity, Low magnitude and of **Minor-Negligible significance.***

### Invertebrates

- 8.141. Implementation of best practice methods and effective engineering solutions will ensure that contaminated run-off is prevented from entering the wet ditches during the construction phase of development.
- 8.142. Areas of suitable habitat for Brown Hairstreak will be retained and safeguarded during construction (see Hedgerows and Trees above).

*Post mitigation and enhancements, effects on invertebrates are negligible at the site level and are of Low sensitivity, Negligible magnitude and of **Negligible significance**. Effects on Brown Hairstreak are negligible at the site level and are of Medium sensitivity, Negligible magnitude and of **Negligible significance**.*

## **During Operation**

### **Statutory Designated Sites**

- 8.143. Hydrology impacts: Implementation of best practice methods and effective engineering solutions will be employed to ensure that contaminated run-off is prevented from entering ditches as well as new attenuation features and as such, it is considered that the Proposed Development within the Site will not result in any adverse impacts from the operational phase through water quality to the Oxford Meadows SAC, its constituent SSSIs, or any other statutory designated sites.
- 8.144. Air quality impacts: A worst-case scenario was applied by the Air Quality consultants which found that no significant effects will occur on any of the statutory designated sites listed, including Oxford Meadows SAC and its constituent SSSIs during the operational phase. Further information can be viewed in Chapter 12 (Air Quality) of the ES Chapter.
- 8.145. Recreational impacts: Recreational impacts are unlikely to occur as a result of the proposals due to primary focus of the development being a football stadium. The primary reason for the majority of visitors visiting the Site would be for Oxford United matchdays, on-site hospitality events and other football-related occasions and it is deemed unlikely that visitors would frequent Oxford Meadows SAC and its constituent SSSIs, which is based nearly 2km southwest from the Site. Hotel users may utilise local green spaces for recreational use, however based on the distance between the Site and the SAC and the number of alternative recreational resources that are closer to the Site, it is not considered that there would be any likely significant effects on any statutory designated sites as a result of the proposals. Indeed, the IRZs that apply to the Site do not suggest any such recreational impacts as likely to arise from development of the site in any event.
- 8.146. The Hook Meadow & Trap Grounds SSSI, New Marston Meadows SSSI and Iffley Meadows SSSI are all well separated from the Site by the A34, a railway, open countryside and existing residential developments. As such, it is not considered that the Proposed Development would have any adverse impacts on these SSSIs either alone or in combination with other plans or projects.
- 8.147. Indeed, the Rushy Meadows SSSI is also well separated from the Site by the Stratfield Brake Sports Ground, existing residential development and the Oxford Canal and as such, it is not considered that the Proposed Development would have any adverse impacts on this SSSI or any other statutory site not mentioned in this report.

- 8.148. With the proposed measures outlined above the Development would not affect the integrity of the Oxford SAC either alone or in combination with other plans or projects and thus meets the test of the Habitats Regulations 2017 (as amended). Based on the information above and the measures proposed it is also considered that the proposals would not result in any other adverse effects on any other statutory or non-statutory site designated for its nature conservation interest.

*Post mitigation, effects are negligible at the European level and of High sensitivity, Negligible magnitude and of **no significance (i.e. Negligible)**.*

### **Non-Statutory Designated Sites**

- 8.149. The offsite woodland (DWS) adjacent to the southern boundary will be buffered by a green corridor separating the Development from the woodland during the operational phase.
- 8.150. Through the implementation of safeguarding measures in regard to pollution control on the Stratfield Brake DWS and the adjacent woodland (also part of the DWS), it is not considered that the Development will have a direct or impact on this non-statutory site or any other non-statutory designated sites of nature conservation interest.
- 8.151. The adjacent parcel of the Stratfield Brake DWS located approximately 20m west of the Site boundary, is separated from the Site by Frieze Way road. The DWS is specifically managed by the Woodland Trust and is promoted for public access. As such, it is very unlikely that any adverse effects arising from recreational pressures would result from the development.
- 8.152. Regarding air quality impacts on designated sites, a worst-case scenario was applied by the Air Quality consultants which found that potentially significant effects may occur on Stratfield Brake LWS due to traffic emissions during the operational phase. Further information can be viewed in Chapter 12 (Air Quality) of the EIA and within **Appendix 8.1** (Ecology Technical Appendix).
- 8.153. However, the air quality assessment identified that Stratfield Brake LWS is already exceeding thresholds for nitrogen deposition (with ammonia) up to a distance of circa 20-30m east of the A4260 Frieze Way (see Air Quality Chapter and Appendix). Based on the worst-case scenario assessment the thresholds for nitrogen deposition would be exceeded at a distance of 30-40m east and 10-20m west of the A4260 (see Air Quality Chapter and Appendix). At these points the habitats within the LWS comprises mature woodland. As set out in the assessment at **Appendix 8.1**, in this case, despite the woodland currently exceeding thresholds for nitrogen deposition there is no apparent detriment to woodland function/ground flora composition and the small increase predicted (in the worst-case and with the potential for improvement from the predicted worst-case due to technological advancement) is not deemed to be significant for the LWS in that context and given the extent of the wider LWS that would not be affected at all (i.e. not exceed thresholds).

- 8.154. The Meadows West of the Oxford Canal LWS, which is located approximately 0.65km west of the site, is separated from the Site by Frieze Way, Stratfield Brake DWS and Oxford Canal. As such, it is considered that the Proposed Development will not likely have any direct or indirect impact on this LWS.

*Post mitigation, effects are negligible at the Local level and of Medium sensitivity, Negligible magnitude and of **no significance (i.e. Negligible)**.*

## **Habitats**

### Willow Plantation, Modified Grassland and Neutral Grassland

- 8.155. Some areas of Willow plantation and neutral grassland will be replaced with species-rich wildflower grassland mixture (such as Emorsgate's Standard General Purpose Meadow Mixture EM2 or similar) and be subject to a suitable management regime to increase its floristic diversity accordingly. Where areas of amenity grassland are proposed outside of the proposed stadium, a native species-rich seed mixture that is tolerant of regular mowing (such as Emorsgate's Flowering Lawn Mixture EL1) will be sown which will also serve as an enhancement on the floristic diversity of the site.
- 8.156. If deemed necessary, a transplantation exercise will be conducted which will involve moving the plants that are of greater conservation value (e.g. Narrow-leaved Bird's-foot-trefoil, Corn Mint, Pyramidal Orchid and Two-spotted Orchid) to dedicated areas left for biodiversity. These areas will be managed appropriately in perpetuity as part of the grassland management regime which will serve to increase the Sites' floristic diversity.
- 8.157. The planting of new native hedgerows and trees, a biodiverse green roof and wall, rain gardens and, to an extent, amenity planting, as part of the Proposed Development, will also serve to enhance the floristic diversity of the Site.
- 8.158. A new pond will be created within the northern tip of the Site and attenuation basins will be created in the south of the Site, which and will be planted with native aquatic and marginal vegetation where wet, and with a species-rich grassland seed mixture tolerant of wet / damp conditions (such as Emorsgate's Meadow Mixture for Wetlands EM8) where dry.

*Post mitigation and enhancements, effects are beneficial at the site level and are of Low sensitivity, High magnitude and of **Minor-Moderate significance**.*

### Mixed Scrub

- 8.159. The planting of new native scrub, hedgerows and trees as part of the Proposed Development will more than offset losses to this habitat.

*Post mitigation and enhancements, effects are beneficial at the site level and are of Low sensitivity, Medium magnitude and of **Minor significance**.*

### Hedgerows and Trees

- 8.160. New hedgerow planting of a length / area greater than that lost is to be included within the Development. The new hedgerow planting will be based around native species of local provenance and will include standard trees. New trees will also be included within the landscape proposals, which will be based around native species of local provenance. The planting of new hedgerows and trees will mitigate the loss of hedgerows to the development proposals.

*Post mitigation and enhancements, effects are negligible at the local level and are of Medium sensitivity, Negligible magnitude and of **no significance (i.e. Negligible)**.*

### Broad-leaved Woodland

- 8.161. As set out above, the Proposed Development also includes the planting of new trees throughout the Site which will comprise native species of local provenance, and which will serve to enhance the tree coverage across the Site.

- 8.162. The woodland will also be buffered from the development by a native hedgerow, scrub planting and the creation of attenuation basins, which will deter visitors from entering the woodland and will also provide a green corridor for wildlife, which will serve as an enhancement over the existing situation.

*Post mitigation, effects are negligible at the local level and are of Medium sensitivity, Negligible magnitude and of **no significance (i.e. Negligible)**.*

## **Fauna**

### Badgers

- 8.163. The retention of the woodland and associated buffer, provision of other open space and creation of new areas of species-rich wildflower grassland will maintain foraging opportunities for Badgers. In addition, the planting of new scrub, hedgerows and trees throughout the Site will provide additional

foraging opportunities and cover for Badgers, with the provision of fruit/berry-bearing trees providing a seasonal resource.

*Post mitigation and enhancements, effects are beneficial at the County level and are of Low sensitivity, Medium magnitude and of **Minor significance**.*

### Bats

- 8.164. The losses of scrub and hedgerows will be offset by new scrub and hedgerow planting of a length / area greater than that lost is to be included within the Development in order to retain suitable navigation opportunities post-development. The southern woodland will be buffered by an area of natural open space that includes hedgerow/native scrub, trees and wetland (attenuation) features. This will enhance the woodland edge for foraging and navigation by bats.
- 8.165. In addition, an area of open space will be created within the northern section of the Site, which will have a greater diversity of habitats of value to bats (and thus of greater value to this group). There will be areas of native, species-rich wildflower grassland, which will provide an invertebrate food source for foraging bats. The Site will also be subject to new native tree planting, and new attenuation features and wildlife pond created, which will provide enhanced foraging opportunities for bats.
- 8.166. During the operational phase, although there is lighting already present along hedgerow H2 (as it is bordered by Oxford Road which is lit by street lighting) there is likely to be an increase in lighting within the Site. The lighting report illustrates that the lighting levels at the two access points at maximum will be a maximum of 1 lux – 2/2.5 lux. This modelling does not account for interception of light spill by trees etc which would further reduce lux levels. Notwithstanding, the maximum level of lighting is within the tolerances of the less light sensitive bat species, such as Pipistrelle and Noctule, which make up the majority of the assemblage recorded at the Site. The lux levels along the southern woodland edge will be further reduced and levels at around 0.5 lux will be achieved and so suitable conditions for the more light-sensitive species such as *Myotis* sp., Barbastelle and Brown Long-eared that have also been recorded within the Site will be maintained in this key area of the Site (where the majority of bat activity was recorded).

*Post mitigation and enhancements, effects are beneficial at the European level and are of Medium sensitivity, Low-Medium magnitude and of **Minor-Moderate significance**.*

### Birds

- 8.167. The provision of scrub, new native trees and hedgerows throughout the areas of open space will provide suitable new nesting opportunities for a range of bird species including Song Thrush, while



the creation of new areas of wildflower grassland, a pond and attenuation features will provide new and enhanced foraging opportunities. The wildflower grassland within area of open space will provide some suitable nesting opportunities for ground-nesting species.

- 8.168. As an enhancement, new bird nest boxes will be provided on suitable retained trees within the Site (e.g. along the woodland edge / buffer in the south of the Site). These will provide new nesting opportunities for a range of birds. Using nest boxes of varying designs would maximise the species complement attracted to the Site and, where possible, could be tailored to provide opportunities for Red Listed / Priority Species that are known from the local area.

*Post mitigation and enhancements, effects are beneficial at the site-local level and are of Low sensitivity, Medium magnitude and of **Minor significance**.*

#### Great Crested Newts

- 8.169. Areas of wildflower grasslands and scrub suitable for Great Crested Newts will be created and maintained within the main Application Site. In addition, the creation of new attenuation features, planted with native aquatic and marginal vegetation, will provide suitable new aquatic habitat for this species and will be seen as an enhancement over the existing situation.
- 8.170. The creation of log piles / hibernacula within the Site, associated with the new attenuation features, will also provide new suitable new hibernation opportunities for amphibians.

*Post mitigation and enhancements, effects are beneficial at the European level and are of Low sensitivity, Medium magnitude and of **Minor significance**.*

#### Invertebrates

- 8.171. The planting of new native trees, hedgerows and the creation of new areas of species-rich grassland, within the Site, as well as the creation of new attenuation features, will provide enhanced habitat for a range of invertebrates.
- 8.172. The creation of new scrub habitat and hedgerows which will include Blackthorn, along with the retention of woodland and parts of hedgerows where Blackthorn is present, will maintain existing opportunities for Brown Hairstreak within the Site.
- 8.173. The creation of log piles within areas of open space would benefit a range of saproxylic species (as well as providing refuge for reptiles and amphibians). The implementation of other measures recommended above would also likely provide knock-on benefits for invertebrates, e.g. through tree planting, creation of a wildlife pond and attenuation features and use of planting of wildlife benefit.

- 8.174. Implementation of best practice methods and effective engineering solutions will ensure that contaminated run-off is prevented from entering the wet ditches during the operational phase of development.

*Post mitigation and enhancements, effects on invertebrates are beneficial at the site level and are of Low sensitivity, Medium magnitude and of **Minor significance**. Effects on Brown Hairstreak are beneficial at the site level and are of Medium sensitivity, Medium magnitude and of **Moderate significance**.*

### **Future Conditions**

- 8.175. In the absence of the Proposed Development, it is assumed that the designated sites listed within this chapter would remain in their current condition as they would likely be subject to the same recreational, hydrological and air quality emission pressures.
- 8.176. It is assumed that the majority of the habitats would remain in their current condition as they would likely be subject to the same agricultural management. Change would arise through natural processes (e.g. the maturity of the offsite woodland) and natural systems, climate change, or, as is often the case, occurs as a result of human activity, land use, management, or neglect.

## Cumulative Effects

There are not deemed to be any significant cumulative impacts resulting from the development of the Proposed Development in combination with any other committed developments, therefore cumulative effects are negligible. Measures for the Development have been designed to offset any potential impacts such that there are no adverse residual effects both during the construction phase and the operational phase and thus negating any accumulation of significant adverse effects.

## Conclusions

- 8.177. A summary of effects is presented within **Table 8.6**.
- 8.178. This assessment has been undertaken with regard to the CIEEM guidance. All relevant policies from the NPPF and CDC have been considered as part of the assessment, whole all survey work has been undertaken with regard to the relevant survey guidance. As such, it is considered that an accurate and robust assessment has been made.
- 8.179. A suite of Protected Species surveys has been undertaken throughout the Site including Badger, bats, breeding birds and reptiles. Mitigation measures have been specifically designed to ensure no adverse effects arise to any Protected Species as a result of the Development.

8.180. Phase 1 Habitat surveys have identified the majority of existing habitats within The Site as having relatively limited intrinsic ecological value, however, features of relatively greater ecological interest include hedgerows and the adjacent (off-site) broad-leaved woodland. Proposed habitats of much greater ecological value will more than offset any losses to existing habitats within The Site.

8.181. Following mitigation and enhancement measures, overall impacts are considered to be positive at the local level and will ensure no net loss in biodiversity terms.

**Table 8.6: Summary of residual effects for ecology and nature conservation**

Effect	Receptor (Sensitivity)	Magnitude	Nature/Level of Effect	Mitigation	Residual Effect
<b>Construction Phase</b>					
Impacts on hydrology	Statutory sites - Oxford Meadows SAC and constituent SSSIs (high)	Low to medium	Short-term, temporary	Implementation of best practice methods and effective engineering solutions	Negligible, not significant
Pollution from contaminated run-off and other pollution	Non-statutory sites - adjacent DWS woodland and Stratfield Brake DWS (medium)	Low	Short-term, temporary	Implementation of best practice methods and effective engineering solutions	Negligible, not significant
Potential damage to retained hedgerows, trees and adjacent woodland	Adjacent woodland and Hedgerows and Trees (medium)	Low	Temporary	Retained habitats fenced at canopy height, root protection zones	Negligible, not significant
Potential dust deposition (and potentially other pollution) to retained hedgerows, trees and adjacent woodland	Adjacent Woodland and Hedgerows and Trees (medium)	Low	Temporary	Appropriate safeguarding measures to prevent impacts arising from pollution	Negligible, not significant
Accidental trapping/injury	Badgers (low)	Low	Temporary	Precautionary construction measures	Negligible, not significant
Potential disturbance from lighting on foraging and commuting routes	Bats (medium)	Low	Temporary	Lighting will be angled away from suitable habitat	Negligible, not significant
Potential loss of trees with		Medium	Permanent	Further surveys, potential	Negligible, not significant

bat roosting potential				requirement to obtain Natural England EPS licence prior to felling of trees  Bat boxes on retained trees / adjacent woodland	
Potential for killing and injury, and / or damage or destruction of nests	Birds (low)	Medium	Temporary	Vegetation clearance undertaken outside of nesting season or after appropriate checks	Negligible, not significant
Potential for killing and injury	Great Crested Newts (low)	Low	Temporary	Implementation of RAMs	Negligible, not significant
Potential pollution of the ditches from contaminated run-off	Invertebrates (low), Brown Hairstreak (medium)	Medium	Temporary	Appropriate safeguarding measures to prevent impacts arising from pollution	Negligible, not significant
Potential damage caused to retained habitats	Invertebrates (low), Brown Hairstreak (medium)	Medium	Temporary	Retained habitats fenced at canopy height, root protection zones	Negligible, not significant
<b>Operational Phase</b>					
Impacts on hydrology	Statutory sites - Oxford Meadows SAC and constituent SSSIs (high)	Low to medium	Long-term	Implementation of best practice methods and effective engineering solutions to ensure that contaminated run-off is prevented	Negligible, not significant
Potential contaminated run-off (and potentially other pollution)	Adjacent DWS woodland and Stratfield Brake DWS (medium)	Low	Intermittent, long-term	Appropriate safeguarding measures to prevent impacts arising from pollution	Negligible, not significant
Potential disturbance / damage to adjacent woodland	Adjacent woodland (medium)	Low	Intermittent, long-term	Creation of green corridor / buffer between development and woodland	Negligible, not significant
Loss of habitat	Willow Plantation, modified grassland and Neutral Grassland (low)	High	Permanent	Creation of natural and semi-natural habitats, plant	Minor-Moderate beneficial, significant

	Mixed Scrub (low)	High	Permanent	translocation (if deemed necessary)	Minor beneficial, not significant
Some losses of habitat	Hedgerows with Trees (medium)	Medium	Permanent	New native tree and hedgerow planting of a length / area greater than that lost	Negligible, not significant
Loss of foraging grounds / suitable habitat	Badgers (low)	Low	Permanent	Creation of natural and semi-natural habitats	Minor beneficial, not significant
	Bats (medium)	Medium	Permanent	Creation of natural and semi-natural habitats  Bat boxes on retained trees / adjacent woodland	Minor-Moderate beneficial, significant
	Birds (low)	Medium	Permanent	Creation of natural and semi-natural habitats  Bird boxes on retained trees / adjacent woodland	Minor beneficial, not significant
	Great Crested Newts (low)	Low	Permanent	Creation of new breeding (SuDS) and hibernation (log piles) habitats on Site	Minor beneficial, not significant
	Invertebrates (low), Brown Hairstreak (medium)	Medium	Permanent	Creation of natural and semi-natural habitats  Creation of log piles  Inclusion of Blackthorn planting	Minor beneficial (invertebrates), not significant Moderate beneficial (Brown Hairstreak), significant
Loss of nesting habitat	Birds (low)	Medium	Permanent	Creation of natural and semi-natural habitats	Minor beneficial, not significant
Potential pollution of ditches from contaminated run-off	Invertebrates (low)	Medium	Intermittent, long-term	Appropriate safeguarding measures to prevent impacts arising from pollution	Negligible, not significant
<b>Cumulative Effects</b>					
N/A	N/A	N/A	N/A	N/A	N/A

## References

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- <sup>i</sup> Joint Nature Conservation Committee (1993). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.
- <sup>iii</sup> <https://www.legislation.gov.uk/uksi/2017/1012/>
- <sup>iii</sup> <https://www.legislation.gov.uk/ukpga/1981/69>
- <sup>iv</sup> <https://www.legislation.gov.uk/ukpga/2006/16/>
- <sup>v</sup> <https://www.legislation.gov.uk/ukpga/2000/37/>
- <sup>vi</sup> <https://www.legislation.gov.uk/ukpga/1992/51/>
- <sup>vii</sup> CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester
- <sup>viii</sup> JNCC. (2010) Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit. Joint Nature Conservation Committee, Peterborough.
- <sup>ix</sup> Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3<sup>rd</sup> edition. Bat Conservation Trust, London
- <sup>x</sup> Collins, J. (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 4<sup>th</sup> edition. Bat Conservation Trust, London
- <sup>xi</sup> Mitchell-Jones, A.J. & McLeish, A.P. (2012) The Bat Workers' Manual. Pelagic Publishing, Exeter.
- <sup>xii</sup> Mitchell-Jones, A.J. (2004) Bat Mitigation Guidelines English Nature, Peterborough
- <sup>xiii</sup> Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.
- <sup>xiv</sup> <https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects>
- <sup>xv</sup> Gent, A.H. and Gibson, S.D. (1998) *Herpetofauna workers' manual*. Joint Nature Conservation Committee, Peterborough.
- <sup>xvi</sup> CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester
- <sup>xvii</sup> <http://MAGIC.gov.uk>
- <sup>xviii</sup> Joint Nature Conservation Committee (1993) Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit. Peterborough. 1993.
- <sup>xix</sup> The Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.