

PRELIMINARY ECOLOGICAL APPRAISAL

GRAVESHAM BOROUGH COUNCIL

CASCADES, GRAVESEND

CASCADES LEISURE CENTRE, THONG LANE, GRAVESEND DA12
4LG

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1. EXECUTIVE SUMMARY

- S.1 The application site comprises the leisure centre, carpark, local public house, Local Equipped Area for Play (LEAP), playing field and associated boundary plantings of both shrubs and trees. The application site is located within the settlement of Gravesend, with a golf course to the south, sports pitches to the east, driving range to the north and a residential area to the west.
- S.2 The proposed development comprises the demolition of the existing leisure centre, public house and construction of a new leisure centre and associated facilities.
- S.3 The main findings of this Preliminary Ecological Appraisal are: -
- There are two statutory designated sites of importance for nature conservation located within relevant distance of the application site;
 - The on-site hedgerow (H1) qualifies as a Habitat of Principal Importance;
 - The application site supports suitable habitat for common reptile species, nesting birds, foraging and roosting bats, badgers and hazel dormice;
 - A subsequent bat emergence survey of the leisure centre was completed in September 2022. The survey confirmed a likely absence of roosting bats. Full detail of the results of this survey are provided within the *Bat Report* (Lloyd Bore, 2022a);
 - A badger field sign survey found no evidence of use of the site by this species; and
 - To minimise the ecological impacts of the proposed development, and thereby minimise planning risks, development timeline risk and costs, impacts upon the on-site hedgerows and scrub habitats have been avoided and minimised by design.
- S.4 Impacts to hedgerows and scrub suitable for hazel dormice have been avoided by design, and so no further survey is necessary to inform the determination of the planning application. If, through the course of the planning process, changes to the scheme are required that result in a need for loss of suitable dormouse habitat, then further dormouse survey work would be required to determine the presence or likely absence of the species.
- S.5 Precautionary measures have been recommended in relation to nesting birds and vegetation clearance / building demolition.
- S.6 This report contains additional detail of preliminary recommendations for ecological impact avoidance, mitigation, and enhancement. As such, this report should be read in full.

2. INTRODUCTION

SCOPE OF WORKS

- 2.1 This Preliminary Ecological Appraisal (PEA) has been prepared by Lloyd Bore to accompany a full planning application for the redevelopment of the Cascades Leisure Centre site in Gravesend. The application is submitted on behalf of Gravesham Borough Council
- 2.2 This assessment was informed by a site visit and a biological records search. An evaluation of recent and historic aerial images, and available information regarding designated sites, was also undertaken as part of the desk study.
- 2.3 In accordance with the report writing guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2017a), this PEA report has been produced to inform the project team of potential ecological constraints, considerations and opportunities and the potential need for additional ecological survey work.
- 2.4 The scope of works did not include any additional protected species surveys, associated reports or production of mitigation documents.
- 2.5 This report provides an assessment of the likelihood of presence of relevant legally protected species and Species of Principal Importance on site. This is based on an assessment of the suitability of the on-site habitats for these species (based on a single initial site visit), consideration of other relevant factors - such as connectivity to wider off-site habitat networks and the results of the biological record search and review of the findings of the additional survey work already completed in relation to bats and badger (*Meles meles*).
- 2.6 Where this PEA indicates that the proposed development may result in adverse impacts upon ecologically important features (important species, habitats and/or designated sites), a brief outline of the requirement for further survey work (now completed; for bats and badger), assessment and/or impact avoidance measures is provided.
- 2.7 The PEA exercise does not include or constitute an invasive plant survey.
- 2.8 This report deals with matters of legal significance but does not constitute professional legal advice. The Client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document, which is summarised in Appendix 1.

ASSESSMENT OBJECTIVES

2.9 The objectives of this assessment and report are to: -

- Provide baseline habitat data for the site, to inform a preliminary assessment of the baseline ecological importance and general biodiversity value of on-site habitats;
- Confirm whether any Habitats of Principal Importance, or otherwise notable habitats - which are a material consideration for the development consenting process, are present within the Zone of Influence (Zol) of the proposed development;
- Assess the likelihood of presence of relevant legally protected species, Species of Principal Importance and otherwise notable species that are a material consideration for the development consenting process, and which may be affected by the proposed development;
- Make recommendations for any additional ecological surveys that are required to confirm the presence or likely absence of relevant important ecological features on or adjacent to the site and inform the determination of the planning application;
- Identify statutory and non-statutory designated sites located within the Zol of the proposed development; and
- Make outline recommendations for any ecological avoidance, mitigation, compensation and/or enhancement measures that can be identified at this early scoping stage - to inform the layout and design of the proposed development.

LIFESPAN OF THIS APPRAISAL

- 2.10 The lifespan of this appraisal and the ecological survey information contained herein has been determined based on CIEEM's *Advice Note: On the Lifespan of Ecological Reports and Surveys* (CIEEM, 2019), an assessment of the likelihood of presence of important ecological features on site and consideration of how the ecological status of these features on site may change over time.
- 2.11 If the commencement of site works is delayed beyond two years from the date of issue of this report, an update site walkover should be undertaken by a suitably experienced ecologist.
- 2.12 Following the update walkover, the ecologist will need to determine whether there have been any material changes to the ecological baseline, the potential impacts of the proposed development and/or the ecology-related legal risks associated with the proposed development.
- 2.13 If there have been any material changes in baseline ecological conditions, the potential ecological impacts of the proposed development and/or associated legal risks, or any material changes to relevant ecology-related legislation, standing advice, best practice and/or guidance, an updated PEA report should be produced by a suitably experienced ecologist.

3. STUDY AREA AND LOCATION

- 3.1 The location of the application site is shown in Figure 1.
- 3.2 The application site is located off Thong Lane, Gravesend, Kent DA12 4LG. The national grid reference for the approximate centre of the site is TQ 6708 7173.
- 3.3 The site comprises leisure centre, carpark, local public house, LEAP, playing field and associated boundary plantings of both shrubs and trees. The application site is located within the settlement of Gravesend with golf course to the south, sports pitches to the east, a driving range to the north and a residential area to the west.
- 3.4 The footprint of the proposed development predominantly covers the existing carpark and public house to the south of the existing leisure centre, and the works footprint also covers the existing leisure centre complex (B1).
- 3.5 The remainder of the site will be either retained in its current form or landscaped to provide formal and informal public outdoor space. There is some scope to improve retained habitats and/or create new habitats within in on-site areas that are located outside of the development footprint, within the red line boundary.

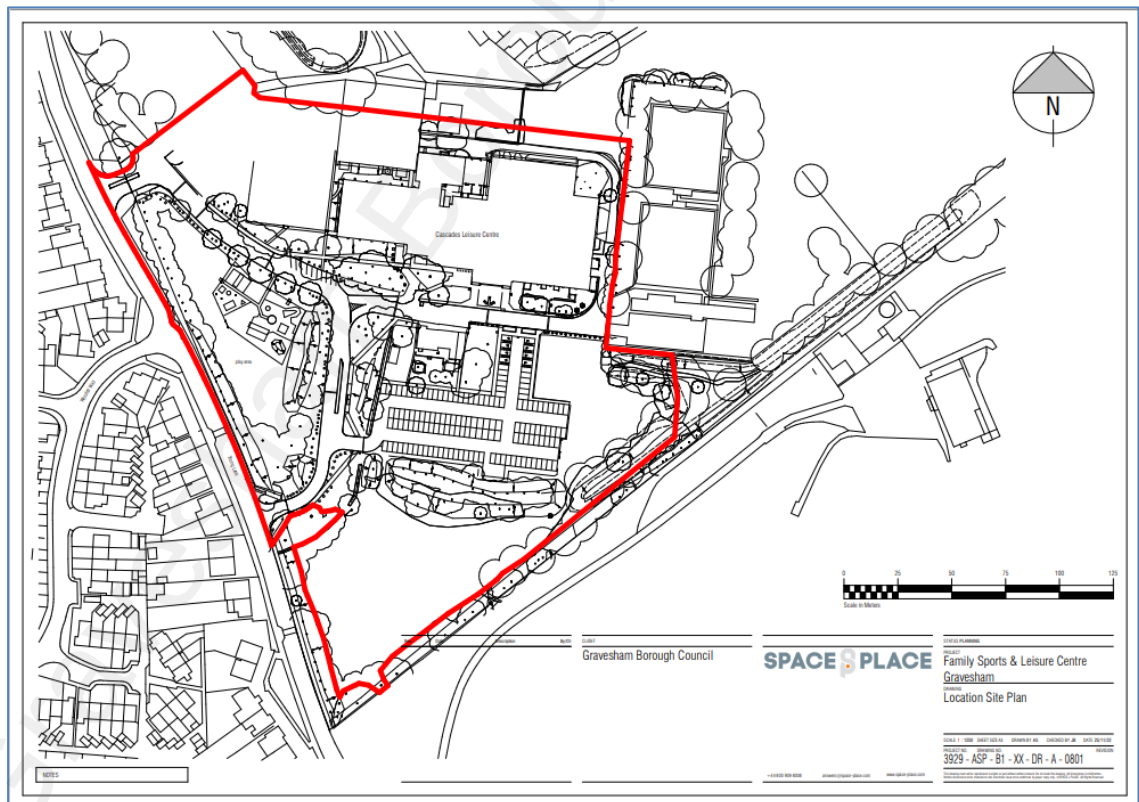


Figure 1 Site location plan (November 2022). Location of application site indicated by red boundary line. Courtesy of Space Place.

4. PROPOSED DEVELOPMENT

- 4.1 The development proposals for the site comprise the demolition of the existing leisure centre and public house and the construction of the new leisure centre facilities in the vicinity of the existing car park.
- 4.2 The proposals entail the demolition of the existing Cascades Leisure Centre and public house and redevelopment of the site to provide a new leisure centre with community pool, training pool, leisure water, café, soft play, 'clip n climb' facility, a six court sports hall, fitness suite, spin studio, 2 no. fitness studios and 2 no. squash courts
- 4.3 A plan showing the proposed layout of the proposed development is provided in Figure 2, below.



Figure 2 Plan of proposed development. 'Landscape Layout Plan,' by Colour, dated 25th November 2022.
Document ref: 'GCV_COL_XX_XX_DOC_L_0001_06'.

5. RELEVANT PLANNING POLICY

NATIONAL PLANNING POLICY FRAMEWORK

- 5.1 Paragraph 174(d) of the National Planning Policy Framework (NPPF) (MHCLG, 2021) states that: -

'Planning policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.'

- 5.2 Paragraph 180(d) of the NPPF states that: -

'...opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'

LOCAL POLICY

- 5.3 In addition to the requirements of the NPPF, Policy CS12 of the Gravesend Local Plan states that: -

'There will be no net loss of biodiversity in the Borough, and opportunities to enhance, restore, re-create and maintain habitats will be sought... within new development'.

'Where a negative impact on protected or priority habitats/species cannot be avoided on development sites and where the importance of the development is considered to outweigh the biodiversity impact, compensatory provision will be required either elsewhere on the site or off-site, including measures for ongoing maintenance.'

6. ECOLOGY DESIGN AND PLANNING PRINCIPLES

- 6.1 The advice provided in this report has been informed by ecology and wildlife-related legislation, planning policy and good practice guidelines.
- 6.2 Broad principles that should be used to inform project design are set out below.
- 6.3 A summary of relevant legislation and national planning policy is provided in Appendix 1.

THE ECOLOGICAL MITIGATION HIERARCHY

- 6.4 In accordance with paragraph 180(a) of the NPPF, the potential ecological impacts of any development project should be avoided and minimised by design wherever possible.
- 6.5 Impacts upon important habitats or habitats utilised by legally protected species can trigger a requirement for additional ecological survey work and can introduce legal, planning and timeline risks. To help minimise these risks and in accordance with Paragraph 180(a) of the 2021 NPPF, the ecological mitigation hierarchy should be followed during the project planning and design processes for all proposed development projects.
- 6.6 The ecological mitigation hierarchy comprises a staged process that starts with the avoidance of ecological impacts. The mitigation hierarchy can be summarised as follows: -
 - **Step 1: Avoidance:** Significant ecological impacts should be avoided in the first instance - through prioritising the development of sites of low ecological importance and/or through careful design work at the site level;
 - **Step 2: Mitigation:** Where significant ecological impacts cannot be totally avoided, measures should be introduced to reduce the significance of these predicted impacts; and
 - **Step 3: Compensation:** Where significant ecological impacts cannot be avoided or adequately mitigated, as a last resort, compensatory habitats should be delivered.

BIODIVERSITY NET GAIN

- 6.7 Currently Biodiversity Net Gain is not a mandatory obligation either legally or under planning policy.
- 6.8 The future requirement that will come into force under the Environment Act 2021 will introduce a legal requirement for development projects, with minor exceptions, to deliver a measurable net gain in biodiversity of at least 10%. This will become a legal requirement for development projects in November 2023.
- 6.9 Despite being no formal legal or planning obligation to follow Biodiversity Net Gain principles, the design team has sought to minimise habitat loss and maximise habitat retention, enhancement and creation opportunities as part of the proposals. Further exploration of opportunities to secure measurable Biodiversity Net Gain outcomes should be conducted as part of the post-consent detailed further design work.

7. METHOD

DESK STUDY

- 7.1 Recent and historic aerial images and Ordnance Survey maps were used to search for waterbodies located within 250m of the application site, and to assess the connectivity of on-site habitats to wider, off-site habitat networks.
- 7.2 A biological records search was undertaken by Kent and Medway Biological Records Centre (KMBRC) in October 2022. The data obtained through this search includes records of: -
- Legally protected species;
 - Species of Principal Importance;
 - Habitats of Principal Importance; and
 - Non-statutory designated sites.
- 7.3 The search radius was 1 km, measured from the application site boundary. This search radius was extended to 5 km for bats. Records obtained within the ten-year period prior to the date of the record search are considered 'recent.' Records older than this are considered 'historic.'
- 7.4 The Multi Agency Geographic Information for the Countryside (MAGIC) website was used to obtain information about: -
- Statutory designated sites of international, national, and local importance;
 - Proposed, possible and potential statutory designated sites of international importance;
 - Impact Risk Zones (IRZs) associated with Sites of Special Scientific Interest (SSSIs) and statutory designated sites of international importance;
 - Granted European Protected Species (EPS) licences;
 - Great crested newt Class Survey Licence returns (England) (records of great crested newt, *Triturus cristatus* presence); and
 - Ancient woodland.
- 7.5 The search radius for statutory designated sites of local importance and ancient woodland was 1 km, measured from the indicative application site boundary (as shown on the site location plan).
- 7.6 This search radius was extended to 2 km for statutory designated sites of national importance and 6 km for statutory designated sites of international importance.
- 7.7 Where a direct and obvious potential impact (e.g., pollution) pathway exists between the application site and designated site(s) that are located beyond these search radii, potential impacts upon these more distant designated sites are also considered where appropriate.
- 7.8 SSSIs that are designated for their geological interest only are not included within this appraisal. Only SSSIs that are designated on ecological grounds are considered.
- 7.9 The search radius for granted EPS mitigation licences was 5 km for bats, hazel dormouse and otter (*Lutra lutra*), and 1 km for great crested newt.

- 7.10 Information published online by the Joint Nature Conservation Committee (JNCC) has been used to identify relevant threats, pressures, activities and/or factors that have the potential to result in adverse effects upon the qualifying features / selection criteria for any statutory designated sites of international importance that are located within the Zone of Influence of the proposed project.
- 7.11 Information Sheets on Ramsar Wetlands provide detail of the factors that are likely to adversely affect a given Ramsar site. These information sheets also state whether the Ramsar site is subject to adverse ecological change.
- 7.12 Natura 2000 Standard Data Forms for Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) provide detail of the threats, pressures and activities that have the potential to adversely affect the qualifying features for a given SPA / SAC site.
- 7.13 The Natural England online profile for any SSSI located within the potential Zone of Influence of the proposed project has been reviewed - to identify relevant '*Operations likely to damage the special interest*' of the relevant SSSI(s).

SITE VISITS

PRELIMINARY ECOLOGICAL APPRAISAL

- 7.14 A site visit was undertaken by Philip Ames BSc (Hons) MCIEEM, on 21st September 2022.
- 7.15 Philip is a Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has over 15 years of experience of habitat survey and ecological appraisal.
- 7.16 Vegetation was classified and mapped using UK Habitat Classification ('UK Hab') habitat descriptions (UK HCWG, 2020).
- 7.17 This mapping method does not record very small-scale habitat features such as individual trees. Where these are considered to be of importance, they are described in this report's text and/or shown on the accompanying *Ecological Constraints and Opportunities Plan*.
- 7.18 Any Habitats of Principal Importance, or habitats that may support rare or scarce plant communities and/or invertebrate assemblages, were recorded during the initial site visit.
- 7.19 The suitability of the site for legally protected species and Species of Principal Importance was assessed during this initial site visit.
- 7.20 Habitat criteria listed in best practice guidelines for individual species or species groups, such as ARG UK (2010) and BCT (2016) were used during this initial in-field assessment.
- 7.21 Within this report the present tense is used when describing habitats and assessing their suitability for protected and priority species. These descriptions are based on the survey findings at the time of the site visit and, where applicable, the desk study.
- 7.22 Any evidence of plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) was recorded during the visit, but no specific invasive plant survey work was undertaken as this is beyond the scope of the PEA.
- 7.23 Photographs of on-site and relevant off-site habitats were taken during the site visit.

BADGER SURVEY

- 7.24 A badger field sign survey was conducted by an experienced ecologist, Jason Armstrong, on 8th November 2022.
- 7.25 The badger survey involved a search of the application site and a 30m radius around the site for evidence of badger presence. The survey methodology included mapping of the location of any evidence of badger presence, including badger setts (detailing the orientation of the sett entrances and any signs of current or recent use by badger). However, as no evidence of badger presence was identified during this survey, this mapping work was not required.

BAT SURVEYS

- 7.26 A Preliminary Roost Assessment (PRA) survey was undertaken by Samuel Durham BSc (Hons) MCIEEM on 1st September 2022. Samuel has over 13 years' experience of bat ecology and survey and is registered to use a class 2 licence for bats (licence registration number: 2017-31332-CLS-CLS).
- 7.27 The results of the PRA survey triggered the completion of a subsequent bat emergence survey for a low suitability building (B1). This survey was carried out on 21st September 2022.
- 7.28 The methods and results of both of these surveys are provided within the Bat Survey Report (Lloyd Bore, 2022a)
- 7.29 As a result of the emergence surveys, no evidence of roosting bats was found for building B1.

ASSESSMENT AND EVALUATION

- 7.30 This PEA has been produced in broad accordance with CIEEM's *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017b) and *Guidelines for Ecological Report Writing* (CIEEM, 2017a).
- 7.31 Where relevant and appropriate, the evaluation of ecological features and the potential ecological impacts of the proposals has followed CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).
- 7.32 Habitat suitability criteria, as detailed in relevant best practice guidelines for individual species or species groups - such as Oldham *et al.*, (2000), ARG UK (2010) and/or BCT (2016), have been used to assess the suitability of habitats for protected and/or priority species.
- 7.33 Where best practice guidelines are unavailable or unclear, experienced ecologists have used their judgement to assess and categorise the suitability of habitats for protected and/or priority species.
- 7.34 There is no published method for objective assessment of the quality of habitat for reptiles and hazel dormouse, or the likelihood of species presence within habitats.
- 7.35 Lloyd Bore have developed Habitat Suitability Criteria for both reptiles and hazel dormice based on the key factors and habitat requirements for the species groups, to assess the suitability of sites for the species and determine the likelihood of them being present. The criteria considered in these habitat suitability assessments are included in Appendix 2.
- 7.36 The need and scope for additional species surveys has been determined based on the suitability of the habitats for legally protected and/or priority species, the potential impacts of the proposed development and the nature of the legal protection afforded to the species most likely to be present.

- 7.37 The need and scope for any additional habitat, botanical and/or invertebrate survey work has been determined based on the broad habitat types recorded during the site visit, the potential ecological importance of these habitats and, where appropriate, the results of the desk study.
- 7.38 Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 has been used to identify habitats and species that are considered a national conservation priority. These are also called Habitats or Species of Principal Importance. The value of these habitats and species are recognised in the NPPF.
- 7.39 Although it does not afford any legal protection, *The Birds of Conservation Concern 5* (Stanbury *et al.*, 2021) provides guidance on the conservation status of UK bird species. Thus, it can be used to inform judgements on the ecological importance of bird populations and the habitats that they rely on, particularly at a local level. Red status species are those species of highest conservation concern and green status species are those of low or no conservation concern. Amber status species are those of some conservation concern.
- 7.40 A summary of relevant wildlife legislation and national planning policies can be found in Appendix 1.

ZONE OF INFLUENCE

- 7.41 The potential impacts of a development are not always limited to the boundaries of the site concerned. The area over which a development may impact ecologically important features is known as the Zone of Influence (Zoi).
- 7.42 The Zoi is determined by the source / type of impact, the presence of any potential pathways for that impact and the location and sensitivity of any ecologically important off-site features.
- 7.43 The establishment of a potential Zoi for a proposed project, including the identification of potential impact pathways that may extend the Zoi of the proposal beyond the site boundaries, is an important consideration at the PEA stage. These considerations are used to inform the scope of any further assessment and/or survey work that may be required to assess the ecological impacts of a proposed scheme and to inform a planning application.
- 7.44 Obvious impact pathways that could extend the general ecological Zoi of the proposed development beyond the site boundaries are: -
- Habitat corridors (hedgerows along the site boundaries) that link the on-site habitats to off-site habitat areas suitable for the same protected and/or priority species. The presence of these habitat corridors means that any protected and/or priority species that utilise on-site habitats are likely to form part of a wider local population. Therefore, impacts upon on-site habitats suitable for these species may have impacts upon wider local population(s).
- 7.45 The above potential impact pathways have been considered when establishing potential Zois for important ecological features.

LIMITATIONS

- 7.46 The grasslands at the time of the visit had been recently mown making identification of grasses difficult; and presence of rare or scarce plant communities and invasive plants can also go undetected during late summer surveys, particularly after long periods of drought as experienced

in the latter half of summer 2022. However, the application site supports common and widespread habitat types, and is not likely to support any rare or scarce plant communities.

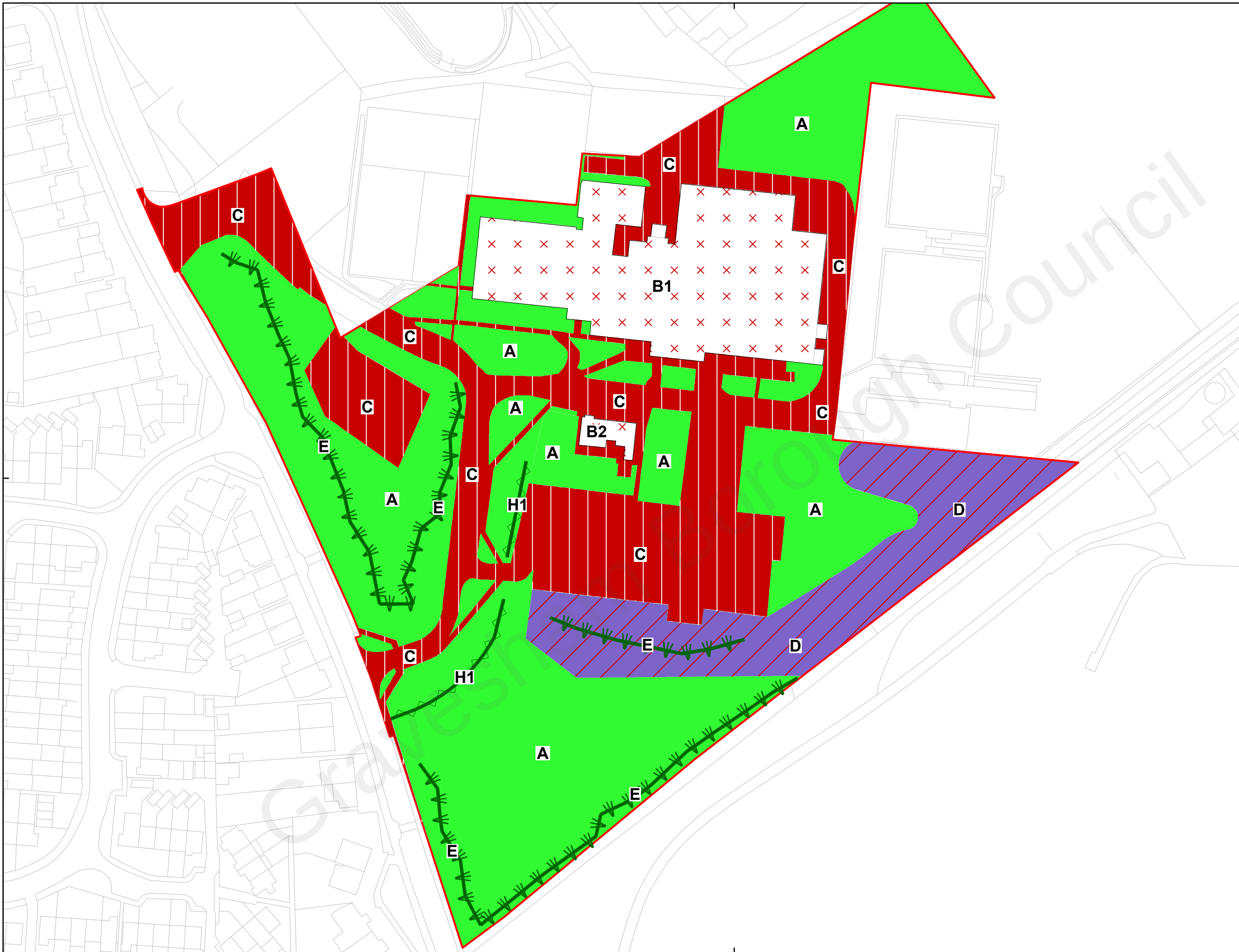
- 7.47 For the reasons cited above, there are no significant limitations to the survey or ecological appraisal. The survey and appraisal are therefore suitable to fulfil the objectives of this report.
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8. RESULTS AND RECOMMENDATIONS

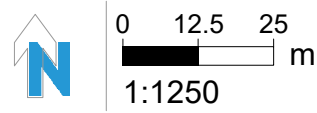
PRE-DEVELOPMENT HABITAT BASELINE

- 8.1 The *Habitat Prior to Development Plan* and Table 1, overleaf, provide detail of the habitats present on the application site at the time of survey (i.e., the pre-development habitat baseline).
- 8.2 Habitats have been mapped using the UK Habitat Classification system (UK HCWG, 2020).
- 8.3 The suitability of these habitats for relevant legally protected species, Species of Principal Importance and other notable species is addressed separately, in the *Important Ecological Features* section of this report.
- 8.4 Photographs of on-site and relevant adjacent habitats and habitat features are provided in Section 8 of this report.
- 8.5 See overleaf for a plan showing the habitats present on the application site.



Legend:

- g4 - Modified grassland
Total area approx: 2.237 ha.
- u1b5 - Building
Total area approx: 0.551 ha.
B1: 0.533 ha.
B2: 0.018 ha.
- u1b - Developed land, sealed surface
Total area approx: 1.179 ha.
- h3 - Dense scrub
Total area approx: 0.502 ha.
- w1g6 - Line of trees
Total length approx: 502.3 m.
- h2a - Priority hedgerow
Total length approx: 93.4 m.
- Application site boundary
Total area approx: 4.472 ha.



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P01	31.10.22	SD	Initial Issue
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rev.	rev. date	auth.	rev. note
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client. **Space Place**
project.
Cascades, Gravesend
Cascades Leisure Centre
Thong Lane, Gravesend DA12 4LG

drawing no. **6183-LLB-XX-XX-DR-Ec-0001** rev. **P02**
drawing title. **Habitat Prior to Development Plan** sub. **S4**
drawn. **UK Habitat**

rev. date	scale.	sheet.	checked
24/11/22	1:1250	A3	TB
			SD

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Table 1 Detail of habitats present on site, including UK Habitat Classification Codes. The Location Codes provided correspond with those shown on the above Habitat Prior to Development Plan and denote distinct blocks of habitat.

Location Code	UK Hab Primary Code	UK Hab Secondary Codes	Description
A	g4	66,210	Areas of modified grassland comprising formal regularly mown playing fields, and public spaces between paths. Species within the grassland included spotted meddic (<i>Medicago arabica</i>), dandelion (<i>Taraxicum officinale agg.</i>), daisy (<i>Bellis perennis</i>), white clover (<i>Trifolium repens</i>), ribwort plantain (<i>Plantago lanceolata</i>)
B	u1b5		Buildings comprising the current leisure centre and public house.
C	u1b		Developed land sealed surface. These are areas of hardstanding across the site comprising roads, pavements and car parks.
D	h3		Dense scrub comprised a mixture of trees and shrubs including field maple (<i>Acer campestre</i>), blackthorn (<i>Prunus spinosa</i>), cypress, rose (<i>Rosa canina</i>), ash (<i>Fraxinus excelsior</i>), hawthorn (<i>Crataegus monogyna</i>), cherry (<i>Prunus sp.</i>) and privet (<i>Ligustrum sp.</i>), dogwood (<i>Cornus sanguinea</i>), sycamore (<i>Acer pseudoplatanus</i>) and elder (<i>Sambucus nigra</i>).
H1	h2a	75	An actively managed hawthorn hedgerow with sycamore standards.
E	w1g6		Line of trees comprised of Ash, lime (<i>Tilia sp.</i>), sycamore, London plane (<i>Platanus x hispanica</i>), poplar (<i>Populus sp.</i>), holly (<i>Ilex aquifolium</i>), sloe, elder, bramble (<i>Rubus fruticosus agg.</i>), rose and privet.

IMPORTANT ECOLOGICAL FEATURES

8.6 Table 2, overleaf, provides: -

- Detail of the suitability of on-site and adjacent habitats for relevant legally protected species, Species of Principal Importance, and otherwise notable species;
- Detail of any on-site and adjacent Habitats of Principal Importance, and designated sites that are located within the known or potential ZOI of the proposed development; and
- Recommendations in relation to these important ecological features.

Table 2 Important ecological features: Likelihood of presence, likely and/or potential impacts and recommendations

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Statutory designated sites of international importance (e.g. SPAs, SACs, Ramsar sites): Internationally important and afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended). Search radius: 6 km. Number of sites present: 1. Application site located within IRZ for international site(s): Yes on MAGIC IRZ map.	Thames Estuary and Marshes Ramsar Distance and direction from application site: c.1.5 km North at closest point. Qualifying features: - Site fulfils criteria 2, 5 and 6 under Ramsar having; More than 20 British Red Data Book invertebrates, GB red book least lettuce (<i>Lactuca saligna</i>); and Internationally important assemblages of waterfowl. With black-tailed Godwit (<i>Limosa limosa islandica</i>). Dunlin (<i>Calidris alpina alpina</i>) Red Knot (<i>Calidris canutus islandica</i>).	Relevant threats, pressures, activities, factors that may adversely affect the site: - None identified. The proposed development will discharge wastewater to the public sewer. It will not discharge wastewater to ground or to surface water. Therefore, the 'discharges' risk category on the MAGIC IRZ tool does not apply to this scheme. The proposed development will be delivered to provide enhanced recreational facilities primarily for residents of Gravesend / Gravesham and is not seeking to attract users from outside of the district. For this reason, the proposed development is unlikely to attract additional people to site that may also utilise the Ramsar for recreation. In addition, based on the type of recreational facilities proposed (enhanced exercise and sports facilities), it is unlikely that the proposed development would result in additional visits to the Ramsar site. It is therefore unlikely that the development would result in any adverse recreational disturbance effects upon the wintering waterbirds that are qualifying features of the Ramsar.	No further survey, assessment or bespoke mitigation is required in relation to the Thames Estuary and Marshes Ramsar.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
	Thames Estuary and Marshes SPA Distance and direction from application site: c.2.8 km north east at closest point. Qualifying features: - Designated for its important bird assemblages, including significant numbers of wintering and breeding birds. In particular for dunlin (<i>Calidris alpina alpina</i>), red knot (<i>Calidris canutus</i>), Common ringed plover (<i>Charadrius hiaticula</i>), hen harrier (<i>Circus cyaneus</i>), black-tailed godwit (<i>Limosa limosa islandica</i>), grey plover (<i>Pluvialis squatarola</i>), avocet (<i>Recurvirostra avosetta</i>) and redshank (<i>Tringa totanus</i>)	The proposed development will be delivered to provide enhanced recreational facilities primarily for residents of Gravesend / Gravesham and is not seeking to attract users from outside of the district. For this reason, the proposed development is unlikely to attract additional people to site that may also utilise the SPA for recreation. In addition, based on the type of recreational facilities proposed (enhanced exercise and sports facilities), it is unlikely that the proposed development would result in additional visits to the SPA site. It is therefore unlikely that the development would result in any adverse recreational disturbance effects upon the wintering waterbirds that are qualifying features of the SPA.	No further survey, assessment or mitigation is required in relation to the Thames Estuary and Marshes SPA.
Statutory designated sites of national importance (e.g. SSSIs, National Nature Reserves (NNRs)): Nationally important and afforded legal protection by the Wildlife and Countryside Act 1981 (as amended). Search radius: 2 km. Number of sites present: 1. Application site located within IRZ for national site(s): No	Shorne & Ashenbank Woods SSSI Distance and direction from application site: c.0.67 km south east at closest point. Description of ecological features / Reasons for notification: - Supporting a complex of ancient woodland and plantation that supports an important and diverse invertebrate fauna.	Based on the development proposals none of the operations likely to affect the designated site are considered relevant.	No further survey or assessment required in relation to the SSSI.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Statutory designated sites of local importance: Local Nature Reserves (LNRs): Locally important and afforded legal protection by Wildlife and Countryside Act 1981 (as amended). Search radius: 1 km. Number of sites present: None.	There are no Local Nature Reserves within a relevant distance from the site.	None.	No further survey or assessment required in relation to the LNR.
Non-statutory designated sites: Local Wildlife Sites (LWS): Non-statutory designation. Material planning consideration. Search radius: 1 km. Number of sites present: None.	There are no Local Wildlife Sites within a relevant distance from the site.	None.	No further survey or assessment required in relation to the LWS.
Ancient woodland: Identified as an irreplaceable habitat type within NPPF. Search radius: 1 km. Number of sites present: two.	Distance and direction of closest ancient woodland(s) from application site: One additional area of ancient semi-natural woodland is found within a relevant distance from the site (the first being Shorne and Ashenbank Woods SSSI). This is Claylane Wood c. 0.99 km southwest of the site.	None.	The mature boundary hedgerows have poor functional connectivity to areas of semi-natural ancient woodland, being part of the end of a chain of thick hedgerows with trees to the north of these woodlands. Survey of the boundary features found no indications that these were either remnant sections of woodland, historic hedgerow features or habitat likely to support woodland ground flora, having more tall ruderal plant assemblages. In addition, since these habitats are being retained by design, no adverse effects upon ancient woodland (through e.g., a reduction in the extent of connecting hedgerow habitat) are anticipated.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Other notable habitats: e.g. Habitats of Principal Importance	The application site supports a hedgerow comprised of native species. Hence, H1 qualifies as a Habitat of Principal Importance.	Loss, damage and/or functional degradation during site clearance, construction and operational stages.	Current proposals allow for the retention of the existing hedgerows / treelines, with the exception of H1. H1 will be replaced with an at-least equal length of native hedgerow planting. Since the existing hedgerow H1 is a regularly cut and comprised solely of hawthorn with sycamore standards, replacement hedgerow will incorporate a wider range of native species with the hawthorn, providing a mixture of blackthorn, spindle (<i>Euonymus europaeus</i>), hazel (<i>Corylus avellana</i>), beech (<i>Fagus sylvatica</i>), wayfaring tree (<i>Viburnum lantana</i>), wild service tree (<i>Sorbus torminalis</i>), holly, rowan (<i>Sorbus aucuparia</i>) and elder. This will provide a suitable replacement for the hedgerow.
Site biodiversity (general): Policy CS12 of the Local Plan requires developments to deliver no net loss in biodiversity	See <i>Pre-Development Habitat Baseline</i> section (above) for descriptions of, and area measurements for on-site habitats.	Net loss of biodiversity at a site and/or district level as a consequence of loss, damage and/or functional degradation of habitats during site clearance, construction and operational stages.	To address the requirements of Policy CS12 of the Local Plan, the design team in conjunction with the project ecologist has sought to minimise habitat losses through the placement of the proposed design and incorporation of features to benefit biodiversity, both at a habitat and species level. Given the likely extent of site development, achievement of no net loss in biodiversity is likely to be achievable with sufficient ecological enhancement of retained habitats.
Notable plants: Species may be afforded legal protection by the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended) and/or be listed as Species of Principal Importance under the NERC Act 2006 and/or listed on the UK Red Data List.	No notable plant species was found on site. The site contains a range of common and widespread habitats that are unlikely to support rare plant species. The presence of rare plants on site is considered to be negligible.	Loss of plants and/or their supporting habitat during site clearance works; loss, damage and/or functional degradation of plants and their supporting habitats during construction and operational stages of development.	Where possible, mature trees found on site are proposed to be retained and protected during the construction phase of the proposed development. Further details on the location and protection measures of these trees is found within the associated Arboricultural Impact Assessment (Lloyd Bore, 2022b).

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Invasive, non-native flora and fauna: Controlled by Schedule 9 of Wildlife and Countryside Act (as amended) and/or Environmental Protection Act 1990.	No evidence of any invasive non-native species was found during the ecological walkover of the site. The likelihood of a non-native species being present on site is low.	None.	No further survey or assessment required.
Important invertebrate species / assemblages: Individual species may be afforded legal protection by the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended) and/or be listed as Species of Principal Importance under the NERC Act 2006 and/or listed in UK Red Data Book.	Records of important invertebrate species within 1 km of site: None. Preliminary assessment of habitat importance for invertebrates: The habitats within the proposed development site are relatively common and widespread. Therefore, no important invertebrate assemblages are likely to be present. Likelihood of presence on site: Assessed as likely absent.	Loss and/or degradation of important invertebrate assemblages and/or their supporting habitat during site clearance works; loss, damage and/or functional degradation of habitats during construction and operational stages of development.	No further survey, assessment or mitigation is required in relation to important invertebrate species or assemblages. However, efforts should be made to enhance and increase suitable habitats for invertebrates on site. This can be done through additional planting of shrubs and trees as described for replacement hedging above. In addition to additional planting, arisings from habitat management will be used to create habitat piles; twigs, leaves (not grass clippings) and organic debris piled up in a discrete corner to provide sheltering locations for insects during poor weather and additional habitat for species associated with deadwood. Areas of grassland separate from sports surfaces should also be cut rotationally over winter and allowed to grow tall during the growing season to create a variety of grassland sward heights that will encourage common meadow invertebrate species which are currently missing from the modified grassland areas due to regular mowing throughout the growing season.
White-clawed crayfish (WCC) (<i>Austropotamobius pallipes</i>) Afforded legal protection by the Wildlife and Countryside Act 1981 (as amended)	Suitability of on-site and adjacent habitats for WCC: No suitable aquatic habitat exists within 1 km of site. Records of WCC presence within 1 km of site: None. Likelihood of WCC presence on / adjacent to site: Assessed as likely absent.	No impacts predicted.	No further survey, assessment or mitigation is required in relation to white clawed crayfish.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Amphibians: Great crested newt (GCN) and common toad (<i>Bufo bufo</i>): GCN are afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) (as amended) and Wildlife and Countryside Act 1981 (as amended). GCN and common toad are also listed as Species of Principal Importance under the NERC Act 2006.	Suitability of on-site terrestrial habitats for GCN: On-site terrestrial habitats (grassland, scrub) are of potentially suitable quality for GCN outside of their breeding season. However, research suggests that GCN are rarely found in terrestrial habitats located more than 250 m from suitable waterbodies (Natural England, 2013). Number of standing waterbodies present on site and within 250 m of site: None. Closest standing water body to site: c.1.1 km southeast of application site boundary. Records of GCN presence within 1 km of site: The KMBRC data search returned no recent records. The closest historic record was c.0.9 km east of site, recorded in 1988. The MAGIC search returned no granted EPSM licences for GCN within 1 km of site. Likelihood of GCN presence on site: Assessed as likely absent. Common toad: The KMBRC data search returned no recent records of common toad. On-site habitats (grassland, scrub) are potentially suitable for foraging and hibernating common toad.	Killing, injury and/or disturbance of common toad during site clearance works, loss of common toad habitat, obstruction of access to habitat features.	No further surveys, assessment, or measures in relation to great crested newt are required. Maintain a precautionary watching brief for common toad when clearing any patches of dense vegetation or piles of debris. Any toads found should be carefully moved out of harm's way (with gloves) into suitable vegetation cover away from roads and vehicle access.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Reptiles: All UK reptile species are afforded legal protection by the Wildlife and Countryside Act 1981 (as amended) and are also listed as Species of Principal Importance under the NERC Act 2006.	Suitability of on-site habitats for reptiles: The combination of modified grassland, frequent public use and regular mowing provide poor quality habitat for common reptile species. The scrubby edges to the east of the site bounding the off-site adjacent golf course provide some suitable habitat. Connectivity of on-site habitats to wider suitable habitat network: Areas of longer grassland and scrub within the golf course provide some limited suitable habitat for common reptile species such as common lizard (<i>Zootoca vivipara</i>) and slow worm (<i>Anguis fragillis</i>). Records of reptile presence within 1 km of site: Three recent records for slow worm. All three records are from c.947m north of the site, within a residential garden. Likelihood of reptile presence on site: Low. The areas of modified grassland provide low suitability in terms of habitat, providing no cover, limited foraging and shelter for thermoregulation. Only the south-eastern boundary provides some poor quality suitable habitat, which is being retained as part of the proposals.	Killing, injury and/or disturbance of reptiles, during site clearance works; loss of habitat.	No further survey, assessment or mitigation is required in relation to reptiles. In the unlikely event a reptile is found on site prior to or during works, all site works that may result in damage to habitats suitable for reptiles must cease immediately because of the nature of the legal protection afforded to reptiles. In this instance, a suitably qualified ecologist should be contacted for advice.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Birds: All nesting birds are afforded legal protection by the Wildlife and Countryside Act 1981 (as amended). Species listed on Schedule 1 of the Act are also afforded protection from disturbance whilst nesting. Some species are also listed as Species of Principal Importance under the NERC Act 2006 and/or on the RSPB's Birds of Conservation Concern list.	Suitability of on-site and immediately adjacent habitats for nesting birds: The scrub and trees across the site provide foraging and shelter for a range of common garden and woodland bird species. Similarly, the leisure centre and pub contain features exploitable by nesting birds.	Killing / injury of birds, their eggs or young; destruction of active nests during site clearance works.	Impacts upon hedgerows and scrub should be avoided and minimised by design. To effectively minimise risks to nesting birds, vegetation clearance and building demolition should be undertaken in the period mid-September to February (inclusive). This is outside of the typical bird nesting season. If vegetation clearance / building demolition is required within the period March to mid-September (inclusive), a check for nesting birds must be conducted before clearance / demolition commences. The check should be undertaken by a suitably experienced ecologist. Any active nests will need to be retained and protected <i>in situ</i> until birds have stopped using them.
Water vole (<i>Arvicola amphibius</i>): Afforded full legal protection by the Wildlife and Countryside Act 1981 (as amended). Also listed as Species of Principal Importance under the NERC Act 2006.	Suitability of on-site and adjacent habitats for water vole: No suitable aquatic habitat exists within 1 km of site. Records of water vole presence within 1 km of site: The KMBRC data search returned no recent records. The closest historic record was c.0.9 km east of site, recorded in 1991. Likelihood of water vole presence on site: Assessed as likely absent.	No impacts predicted.	No further survey, assessment or mitigation is required in relation to water vole.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Hazel dormouse: Afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) and Wildlife and Countryside Act 1981 (as amended). Also listed as Species of Principal Importance under the NERC Act 2006.	Suitability of on-site and adjacent habitats for hazel dormouse: The areas of trees / boundary hedgerow and scrub on site provide suitable habitat for hazel dormouse. H1 is intensively managed, subject to high levels of close-proximity recreational activity and does not provide a connecting link between areas of suitable habitat. Therefore, H1 is assessed as not suitable for hazel dormouse. Connectivity of on-site habitats to wider suitable habitat network: The site maintains limited connectivity to and area of woodland to the south only via a hedgerow, suitable offsite habitats between the site and the wood contain several large breaks forming a series of habitat islands between the two. Records of hazel dormouse presence within 5 km of site: The KMBRC data search returned no records of hazel dormouse within 1 km of site. The MAGIC search returned one granted EPSM licence for hazel or common dormouse at c.1.4 km southwest of site. This EPSM record indicates the presence of hazel or common dormouse at this location in 2021. Likelihood of hazel dormouse presence on site: Low.	Killing, injury and/or disturbance of hazel dormice during site clearance works; loss of suitable habitat	Impacts upon hedgerows and scrub suitable for this species have been avoided and minimised by design. Therefore, no further survey for this species is required to inform the determination of the planning application. If, through the course of the planning process, changes to the scheme are required that result in a need for loss of suitable dormouse habitat, a hazel dormouse presence / likely absence survey will need to be undertaken by a suitably experienced ecologist across the period April / May to September / October (inclusive), to determine the presence or likely absence of the species. The survey will need to be set up approximately one month before the survey commencement of the survey.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Badger: Afforded legal protection by the Protection of Badgers Act 1992.	Records of badger presence within 1 km of site: The KMBRC data search returned no recent records. The nearest historic record was c.770 m south of site, recorded in 2003. Badger setts recorded on site and/or within 30 m of site: One possible sett was located along the southeastern boundary. Further investigation as part of a dedicated survey conducted on 8th November 2022 revealed this to be one of three a fox (<i>Vulpes vulpes</i>) earths within the scrub. Access to full 30 m buffer zone around site possible: Yes. Other badger field signs recorded on or near site: No Suitability of on-site habitats for badger foraging and/or sett establishment: Good, the short grassland, scrub and trees provide good foraging habitats for badger. The shelter of the site boundaries provide suitable locations for building setts. Likelihood of badger presence on site and within 30 m of site: low. Although suitable habitat for the species is present on site, no evidence was found of the species being active on site or within the immediate environs.	Killing, injury of badgers; damage / destruction of setts; disturbance of badgers in setts; obstruction of access to setts during site clearance works; loss of suitable foraging habitat	No further survey, assessment or mitigation is required in relation to badger. In the event a badger sett is found on site or within 30m of the works footprint - prior to or during works, all works within 30m of the potential badger sett must cease immediately because of the nature of the legal protection afforded to this species. In this instance, a suitably experienced ecologist should be contacted for advice. If any large mammal burrows are identified on site, and the site team are unsure whether these burrows comprise a badger sett, as a precaution, works within 30m of the relevant burrow should cease immediately and a suitably experienced ecologist should be contacted for advice. Prior to commencement of site works, a precautionary badger walkover survey should be undertaken by a suitably experienced ecologist. If a badger sett is located within 30m of the proposed development areas, further sett survey and/or mitigation under licence from Natural England may be required.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Otter: Afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) (as amended) and Wildlife and Countryside Act 1981 (as amended). Also listed as Species of Principal Importance under the NERC Act 2006.	Suitability of on-site and adjacent habitats for otter: No suitable aquatic habitat exists within 1 km of site. Records of otter presence within 5 km of site: None. Likelihood of otter presence on site: Assessed as likely absent.	No impacts predicted.	No further survey, assessment or mitigation is required in relation to otter.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Bats: All UK bat species are afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) (as amended) and the Wildlife and Countryside Act 1981 (as amended). Some species are also listed as Species of Principal Importance under the NERC Act 2006.	Suitability of on-site and adjacent habitats for roosting bats: A bat dusk emergence survey of the one suitable on-site structure (B1), comprising one survey visit, was undertaken in September 2022. No bats were seen emerging from any part of the building. Full details of the survey conducted are provided in the associated <i>Bat Report</i> (Lloyd Bore Ltd, 2022). None of the trees on site were found to provide features suitable for roosting bats. Suitability of on-site and adjacent habitats for foraging and commuting bats: Confirmed presence of foraging Common Pipistrelle (<i>Pipistrellus pipistrellus</i>) on site, and presence of commuting Soprano Pipistrelle (<i>P. pygmaeus</i>) and Noctule (<i>Nyctalus noctula</i>) bats, evidenced by sound analysis following the September 2022 dusk emergence survey. Records of bat presence within 5 km of site: The KMBRC record search returned recent and historic records of Whiskered / Brandt's / Alcahoie bat (<i>Myotis sp.</i>), Serotine bat (<i>Eptesicus serotinus</i>), Pipistrelle bat (<i>Pipistrellus sp.</i>), Noctule bat, Natterer's bat (<i>M. nattereri</i>), Brown Long-eared bat (<i>Plecotus auritus</i>), Leisler's bat (<i>N. leisleri</i>) and Daubenton's bat (<i>M. daubentonii</i>) within 5 km of the application site. Records indicated the recent presence of a maternity roost of Pipistrelle bat located 4.5 km southeast of the site, recorded in 2014. Likelihood of bat presence on site:	Loss / degradation of suitable foraging and commuting habitat.	A bat-sensitive lighting scheme will need to be delivered on the application site. External lighting should be minimised across the entire site, particularly adjacent to the south-eastern boundaries. Additional hedgerow planting along the edge of the site is recommended to provide additional sheltered foraging and commuting habitat. Species used for the planting would be as per those described for replacement hedgerows (see 'Other Notable Habitats' above) In order to enhance the site for roosting bats, a minimum of six additional roost boxes (Kent bat boxes are similar equivalent) are recommended. These are to be placed on mature trees along the boundaries of the site in sheltered locations. The boxes should be at least three meters from the ground and entrances clear from surrounding clutter and/or direct illumination. Only the minimum level of lighting required for site security / health and safety should be installed on site. Use of narrow spectrum lighting with no UV content, or 'warm white' LED lighting (ideally <2700 Kelvin, with peak wavelengths higher than 550nm) is recommended. All lighting should be directed to ground and light spill should be minimised through use of hoods, shields and/or cowls to maintain an upward light ratio of 0%. Subject to health and safety and safe-by-design considerations, motion sensors and/or timers should be used to limit the duration of nocturnal lighting (ideally to short illuminance periods of 1 minute or less). Tall lighting columns should generally be avoided. Low-level external lighting (if any is required) would help to minimise site illumination. In general, lighting should follow the principles outlined in Section 3 of the Bat Conservation Trust and Institution of Lighting Professionals <i>Guidance Note 08/18: Bats and artificial lighting in the UK</i> (BCT and ILP, 2018), and should only be used where necessary. As a precaution, an experienced ecologist should review the detailed lighting proposals for the scheme and will provide advice on minimising light spill and illumination of boundary habitats.

Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
	Roosting bats: Likely absence confirmed through bat emergence survey. Foraging / commuting bats: Presence confirmed during emergence survey (low levels of foraging activity recorded).		
Hedgehog (<i>Erinaceus europaeus</i>): Listed as a Species of Principal Importance under the NERC Act 2006.	Suitability of on-site and adjacent habitats for hedgehog: High. The short grassland provides suitable foraging habitat for the species. Records of hedgehog presence within 1 km of site: No recent records for hedgehog found within the search radius of the site. Likelihood of hedgehog presence on site: High. Despite the lack of recent records, the habitats present in conjunction with nearby residential gardens off site make the incidental presence of hedgehog highly likely.	Risk of crushing, asphyxiation, killing and/or injury of hedgehogs during site clearance works.	Maintain a precautionary watching brief for hedgehogs when clearing any patches of dense vegetation or piles of debris. Any hedgehogs found should be carefully moved out of harm's way (with thick gloves) into suitable vegetation cover away from roads and vehicle access. No trenches or pits should be left open overnight unless they are fitted with a means of escape for mammals (e.g., a scaffold plank positioned to form a ramp). On-site habitats can be improved for hedgehogs by installing piles of logs and/or brushwood for shelter, which can be left in place to gradually decompose and thus provide invertebrate prey and nesting opportunities.

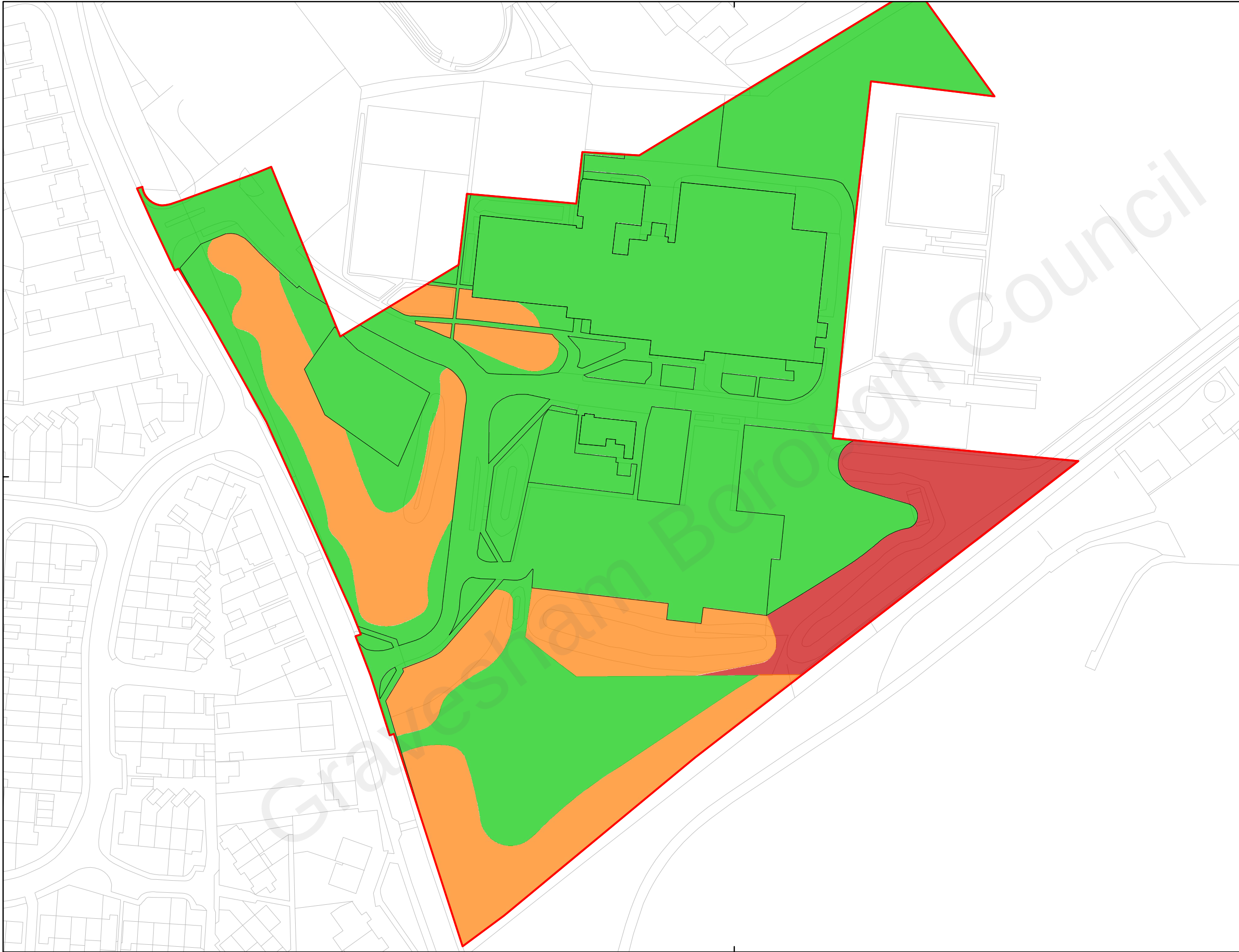
Ecological feature and status (see Section 2)	Likelihood of presence on site and/or within ZOI (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
Other animals All wild mammals are afforded some legal protection under the Wild Mammals (Protection) Act 1996 (as amended). The Animal Welfare Act 2006 (as amended) imposes a duty of care on anyone responsible for an animal to take reasonable steps to ensure that the animal's needs are met.	Evidence of fox was found on site during the badger survey.	Crushing, asphyxiation, killing and/or injury of mammals and other vertebrates during site clearance works.	If any animal burrows (excluding badger setts) are identified on site and need to be removed to facilitate development, these will need to be carefully excavated in a manner that allows animals (e.g., rabbits or foxes) to safely escape before works commence. Implementation of this approach should be sufficient to avoid an offence. If site contractors are not confident undertaking these excavation works, direct ecological supervision can be provided. To reduce the risk of harm to animals that may enter the site, the following is recommended: - Any holes that are excavated on site are covered overnight to prevent animals from falling in; Alternatively, a broad wooden plank or similar can be placed in the excavation to allow animals to escape. A scaffolding board pitched at a maximum 45° angle would be ideal; and Excavations should be checked first thing each morning, prior to the start of works that day. Any animals found within excavations should be allowed to escape and move off, or carefully removed and placed within suitable habitat cover, before site works commence.

ECOLOGICAL CONSTRAINTS PLAN (ECP)

- 8.7 The ECP (overleaf) provides a spatial representation of the conclusions and recommendations set out in Table 2, and summarises ecological constraints applicable to different on-site habitats.
- 8.8 The ECP has been used to inform design and was used, in combination with the *Timetable for Recommended Ecological Survey Work* provided below, to better understand the relative planning and construction significance of clearance of different on-site habitats to facilitate development.
- 8.9 Habitats and habitat features mapped as red on the ECP are of high (or potentially high) ecological importance and impacts upon these habitats have been avoided by design wherever possible. 'Red' habitats / features can include areas where presence of legally protected species has been confirmed, habitats of high ecological distinctiveness and/or irreplaceable habitats.
- 8.10 Should development proposals change and impacts upon 'red' habitats be required, additional ecological survey work may be required to inform the determination of the planning application, mitigation may be required and/or compensation for any loss of these habitats / features is likely to be required.
- 8.11 Habitats mapped in orange are of some known or potential ecological importance and impacts upon these habitats have been avoided and minimised where feasible. Should development proposals change and impacts upon 'orange' habitats be required, this may trigger the need for additional ecological survey work, mitigation and/or compensation.
- 8.12 Habitats mapped in green are of the lowest ecological importance (including B1, for which a likely absence of roosting bats has now been confirmed). Development has been prioritised within these areas wherever practicable.

TIMETABLE FOR RECOMMENDED ECOLOGICAL SURVEY WORK (COMPLETED)

- 8.13 The below timetable sets out the periods within which the recommended additional ecological survey work was undertaken.
- 8.14 Optimal and sub-optimal survey periods are provided within the timetable.



Legend:

- Habitat of high ecological value / identified protected species constraint
- Habitat of moderate ecological value / nesting bird suitability
- Habitat of low ecological value. No ecological constraint
- Application site boundary
Total area approx: 4.472 ha.



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rev.	rev. date	auth.	rev. note
P01	31.10.22	SD	Initial Issue

rev.	rev. date	auth.	rev. note
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client. **Space Place**
project.
Cascades, Gravesend
Cascades Leisure Centre
Thong Lane, Gravesend DA12 4LG

drawing no. **6183-LLB-XX-XX-DR-Ec-0002** rev. **P01**
drawing title. **Ecological Constraints Plan** sub. **S4**

rev date. **31/10/22**
scale. **1:1250**
sheet. **A3**
drawn. **DM**
checked. **SD**

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- 8.15 Optimal survey periods are indicated by green cells.
- 8.16 Sub-optimal survey periods are indicated by blue cells.
- 8.17 Periods during which surveys for the relevant ecological feature are not possible, or are unlikely to be acceptable, useful and/or robust, are left blank.

Gravesham Borough Council

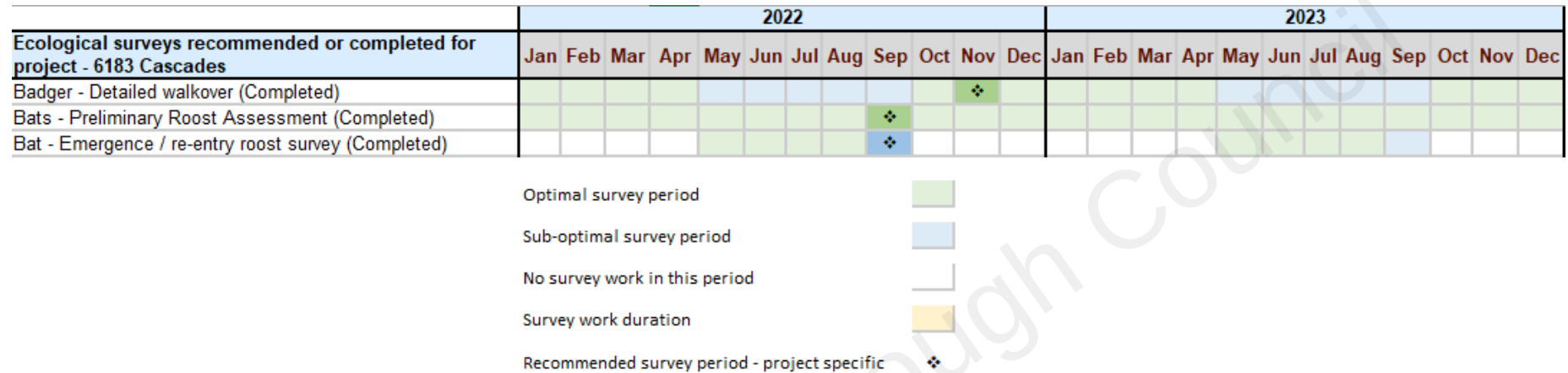


Figure 3 Timetable for ecological survey work required (and now completed) to inform a planning application. Survey periods are only shown for relevant ecological features (i.e., those that have not been scoped out within Table 2 and may, if present, be adversely affected by site development). Standard optimal (green) and sub-optimal (blue) survey periods are provided for each feature. Recommended survey periods for this project are indicated by the diamond-shaped markers and bold green / blue. These project-specific survey periods have been determined based on a range of site and project-specific considerations, with the aim of providing robust ecological survey data to inform the determination of a planning application as soon as practically possible.

9. PHOTOGRAPHS

	
Photo 1 <i>View of Building B1. The building was found to not be used by roosting bats</i>	Photo 2 <i>View of the public house, found to have negligible bat roost suitability.</i>
	
Photo 3 <i>View of the boundary treeline suitable for hazel dormice (to be retained).</i>	Photo 4 <i>View of H1 suitable for nesting birds only.</i>
	
Photo 5 <i>View of one of three fox earths found during the badger survey.</i>	

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APPENDIX 1: DETAILED SUMMARY OF LEGISLATION AND NATIONAL PLANNING POLICY

- 10.1 The level of protection afforded to protected species and designated sites varies dependent on the associated legislation.
- 10.2 A full list of protected species and their specific legal protection is provided within the Schedules and/or Sections of the associated legislation.
- 10.3 Case law may further clarify the nature of the legal protection afforded to species and designated sites.
- 10.4 The legal protection afforded to protected species and designated sites overrides all planning decisions.

ENVIRONMENT ACT 2021

- 10.5 This Act introduces a requirement for new developments to deliver a measurable 10% net gain in biodiversity, normally measured in 'biodiversity units' under Defra/Natural England methodology. This legal duty will come into force in November 2023. The Act intends to encourage developers to avoid the most important existing habitat and focus habitat creation and enhancement where it will be most ecologically appropriate in helping to halt and reverse biodiversity decline.
- 10.6 The Act also: introduces a new system of strategic Local Nature Recovery Strategies; places a new general duty on public bodies to conserve and enhance biodiversity; introduces Conservation Covenants as a new alternative mechanism to Section 106 Agreements for securing off-site habitat provision and other conservation measures that deliver public good; and introduces a framework for Natural England to develop Protected Site and Species Conservation Strategies.
- 10.7 Secondary legislation is due to be published 2023 and will provide further detail of legal duties in relation to biodiversity net gain and other sections of the Act.

WILDLIFE & COUNTRYSIDE ACT 1981 (AS AMENDED)

- 10.8 This legislation provides for designation and protection of Sites of Special Scientific Interest (SSSIs). SSSIs are areas that are of scientific interest due to the species and/or habitats present. These sites support habitats considered valuable in the UK for the purposes of nature conservation.
- 10.9 The level of protection afforded to species listed on the Wildlife and Countryside Act 1981 (as amended) varies considerably.
- 10.10 'Fully protected species', such as water vole (*Arvicola amphibius*), are afforded the highest level of protection. Any person who intentionally kills, injures, or takes 'fully protected species', or who intentionally or recklessly damages or destroys a structure or place used for shelter and/or protection, disturbs the animal whilst occupying a structure and/or place used for shelter and protection, or obstructs access to any structure and/or place used for shelter or protection is likely to have committed an offence.
- 10.11 Other species, such as common reptiles, are afforded less protection and for these species it may only be an offence to intentionally or recklessly kill or injure animals.
- 10.12 All active bird nests, eggs and young are protected from intentional destruction. Schedule 1 listed birds are also protected from intentional and reckless disturbance whilst nesting.

- 10.13 Schedule 9 of The Wildlife and Countryside Act lists plant species for which it is an offence for a person to plant, or otherwise cause to grow in the wild. Schedule 9 also lists animals for which it is an offence to release into the wild. In accordance with current Government guidance, this may include any failure to act to contain the spread of a Schedule 9 species.
- 10.14 Certain methods of killing, injuring, or taking wild animals listed in Schedule 6.
- 10.15 The Act also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017 (AS AMENDED)

- 10.16 This is the principal means by which the European Habitats Directive is transposed into law in England and Wales. The Regulations provide for the designation and protection of a network of 'European Sites' (also termed 'Natura 2000' sites), including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).
- 10.17 European Protected Species (EPS) are afforded the highest level of protection through the Conservation of Habitats and Species Regulations 2017 (as amended). EPS are also afforded legal protection by parts of the Wildlife and Countryside Act 1981 (as amended).
- 10.18 There are a number of relatively common and widespread EPS. These include great crested newt (*Triturus cristatus*), all species of UK bat, hazel dormouse (*Muscardinus avellanarius*) and otter (*Lutra lutra*).
- 10.19 Under Regulation 43 of the Regulations, in general, any person and/or activity that: -
- Damages or destroys a breeding or resting place of an EPS. (This is sometimes referred to as the strict liability or absolute offence);
 - Deliberately captures, injures or kills an EPS (including their eggs);
 - Deliberately disturbs an EPS, and in particular disturbance likely to impair animals ability to survive, breed or nurture young, their ability to hibernate and migrate and disturbance likely to have a significant effect on local distribution and abundance;
 - Intentionally or recklessly disturbs an EPS while occupying a structure or place used for shelter and/or protection (Wildlife and Countryside Act 1981 (as amended)); and
 - Intentionally or recklessly obstructs access to any structure or place that an EPS uses for shelter or protection (Wildlife and Countryside Act 1981 (as amended)).
- ...may be guilty of an offence.
- 10.20 The legislation applies to the egg, larval and adult life stages of great crested newts and to bat roosts even when they are not occupied.
- 10.21 Actions affecting multiple animals can be construed as separate offences and therefore penalties can be applied per animal impacted.
- 10.22 Under certain circumstances licences can be granted by the Statutory Nature Conservation Organisation (Natural England in England) to permit actions that would otherwise be unlawful.

- 10.23** There are some very specific defences associated with the Conservation of Habitats and Species Regulations 2017 (as amended). However, these are unlikely to apply to construction related projects. The Sections of the Regulations provide further details of these defences.
- 10.24** The Wildlife and Countryside Act (1981) includes defence for those aspects of the legislation that apply to an EPS. These defences are unlikely to apply to construction related projects and do not apply to those acts included in the Conservation of Habitats and Species Regulations 2017 (as amended). The Schedules of the Act provide further details of defences.
- 10.25** Local authorities have obligations under sections 40 and 41 of the Natural Environment and Rural Communities Act (NERC) 2006 to have regard to the purpose of conserving biodiversity in carrying out their duties. The majority of EPS are listed on Section 41 the NERC Act.

NATURAL ENVIRONMENT & RURAL COMMUNITIES (NERC) ACT 2006

- 10.26** Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers, including local and regional authorities, in implementing their duty under Section 40 of the act to have regard to the conservation of biodiversity in England when carrying out their normal functions.
- 10.27** S41 lists 56 habitats and 943 Species of Principal Importance.
- 10.28** Section 42 of the NERC Act relates to Wales.

PROTECTION OF BADGERS ACT 1992

- 10.29** This Act makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger (*Meles meles*), or to attempt to do so. The Act also makes it an offence to intentionally or recklessly interfere with a badger sett (den / burrow). Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it.
- 10.30** Under Section 10 (1)(d) of the Protection of Badgers Act 1992, a licence may be granted by Natural England to interfere with a badger sett for the purpose of development, as defined by Section 55(1) of the Town & Country Planning Act 1990.

PROTECTION OF MAMMALS ACT 1996 (AS AMENDED)

- 10.31** This Act provides protection for all wild mammals against certain cruel acts with the intention of causing unnecessary suffering, including crushing and asphyxiation. With regards to development, this may have implications for site clearance works.

ANIMAL WELFARE ACT 2006

- 10.32** This Act imposes a duty of care on anyone responsible for an animal to take reasonable steps to ensure that the animal's needs are met. With regards to development, this may have implications when capture and translocations of animals are proposed.

ENVIRONMENTAL PROTECTION ACT 1990 (AS AMENDED)

- 10.33 Japanese Knotweed is classed as 'controlled waste' and, if taken off site, it must be disposed of safely at a licensed landfill site. Soil containing Japanese knotweed material should also be regarded as controlled waste and treated accordingly.

NON-STATUTORY DESIGNATED SITES

- 10.34 Non-statutory sites may be given various titles, including Local Wildlife Sites (LWS), Sites of Importance for Nature Conservation (SINCs), Sites of Nature Conservation Importance (SNICIs) and County Wildlife Sites (CWS).
- 10.35 These sites are not normally legally protected but are recognised in the planning system and are afforded some protection through planning policy.

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

- 10.36 In addition to primary legislation, the government published the National Planning Policy Framework on 20th July 2021. Within the NPPF, Chapter 15 is headed *Conserving and enhancing the natural environment* (Paragraphs 174 to 182).
- 10.37 Of relevance are the following statements: -
- 'Planning policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures (Paragraph 174d).*
- 10.38 Paragraph 175 states that: -
- 'Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.'*
- 10.39 To protect and enhance biodiversity and geodiversity, plans should: -
- 'Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including: the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation (Paragraph 179a); and*
- 'promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.'* (Paragraph 179b).
- 10.40 When determining planning applications, local planning authorities should apply the following principles (Paragraph 180): -
- 'a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'

10.41 In addition to the above, Paragraph 181 confirms that the following should be afforded the same protection as sites that are included within the definition at Regulation 8 of the Conservation of Habitats and Species Regulations 2017 (as amended) (Special Areas of Conservation, Sites of Community Importance, Special Protection Areas and any relevant Marine Sites (which are collectively referred to as 'habitats sites' in the NPPF)): -

a) potential Special Protection Areas and possible Special Areas of Conservation;

b) listed or proposed Ramsar sites; and

c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.'

10.42 Paragraph 182 states that: -

'The presumption in favour of sustainable development 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.'

10.43 This statement applies to the assessment of effects in relation to all confirmed, possible, potential and/or proposed designated sites of international importance, as identified in paragraph 9.38 of this Appendix (above).

STANDING ADVICE

10.44 Natural England Standing Advice states that *'For Ancient Woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone'* (NE, 2018).

APPENDIX 2: SPECIES HABITAT SUITABILITY CRITERIA

REPTILES

- 10.45 For the purpose of this report, habitat suitability criteria developed by Lloyd Bore have been used to assess and categorise on site habitats for reptiles.
- 10.46 Suitable reptile habitats include the following habitat types: -
- Heathland;
 - Moorland;
 - Grasslands;
 - Scrub;
 - Woodland;
 - Wetlands;
 - Sand dune;
 - Hard and soft cliffs;
 - Vegetated shingle;
 - Open mosaic habitats; and
 - Coastal lagoon.
- 10.47 These habitats can be found within a broad range of land use types, including: -
- Farmland;
 - Brownfield sites;
 - Gardens and allotments;
 - Parks and grounds;
 - Churchyards;
 - Mineral sites;
 - Road and rail embankments; and
 - River and sea walls.
- 10.48 Other habitat and land use types may be utilised by reptiles, if their basic ecological requirements (foraging, shelter, protection, basking, breeding and/or hibernation) are met by the habitat. It is therefore imperative that all sites / habitats are assessed based on their ecological functionality for reptiles, rather than making hard and fast judgements based on broad habitat and/or land use type.
- 10.49 The below suitability criteria have been devised to provide a structured way of assessing ecological functionality for reptiles, which can be applied by suitably experienced ecologists.

- 10.50** Reptiles require large areas, or closely spaced patches, of suitable habitat to support viable population in the long term. Therefore, habitat connectivity is important on a landscape level but also within a site.
- 10.51** The below has been adapted from the *Reptile Habitat Management Handbook* and details the habitat requirements of reptiles (Edgar, Foster and Baker, 2010).
- 10.52** The factors cited in the first table (below) have been used to develop the suitability criteria that are set out in the second table (also below).

Table 3 Reptile habitat requirements (Edgar, Foster and Baker, 2010)

Requirement	Description
Insolation (exposure to sun)	Reptiles bask openly in direct sunlight or seek warm sites under cover (in vegetation or under object) or partially exposed amidst dense vegetation (mosaic basking). Varied topography (south-facing slopes are particularly favoured by reptiles) and a mosaic of open, sunny areas and dense cover provide the best range of basking opportunities.
Shelter from the elements (heat, dry weather and wind), predators	Reptiles need vegetation cover and open areas in close proximity to each other. The best habitats are structurally diverse habitats, or mosaics of vegetation of differing heights, ages or types. Thorny or prickly plants such as gorse and bramble can provide particularly good refuge from predators and may be used as sheltered basking sites.
Hibernation opportunities (shelter during the winter)	- Hibernation sites must be climatically stable, frost-free, humid (but not wet) and safe from flooding and predators. - Typical hibernation sites include mammal burrows, rotted tree stumps and root holes, fissures in soil / substrate, large grass tussocks, anthills, old walls and building foundations, piles of rubble and other debris and under large logs and fallen trees. - Sand lizard, grass snake, smooth snake and adder usually make seasonal movements to hibernation sites. - Slow worm and common lizard may also make shorter distance migrations to hibernation features, but the location of hibernation features normally corresponds with the areas used during the active season.

Requirement	Description
Food	• Legged lizard (common lizard and sand lizard): Main prey items are insects and other invertebrates such as spiders. • Legless lizard (slow worm): Main prey items are soft-bodied invertebrates such as slugs and worms. • Smooth snake: Main prey items are reptiles and small mammals. • Grass snake: Main prey items are amphibians and fish. • Adder: Main prey items are small mammals and occasionally lizards.
Breeding habitat	Breeding sites are more likely to be found where structurally diverse habitats encourage high population densities. Reptiles require secluded areas close to, or under, secure cover for courting and mating. Grass snakes need access to decomposing material to lay their eggs. Typical egg-laying sites include manure heaps, compost heaps, piles of grass clippings, sawdust, cut reed and, in coastal areas, seaweed heaps. Sand lizards require areas of exposed sand (or similar loose substrate) with good sun exposure in which to lay their eggs.

10.53 The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of reptiles (as described above).

Table 4 Reptile Habitat Suitability Criteria

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category*
High	Provides significant opportunities for: - • foraging; • shelter / protection; • basking; • breeding; and • hibernation.	• Heterogenous habitat (e.g. grassland, scrub, woodland edges). • Structurally diverse habitats, mosaics of vegetation of differing heights, ages or types (e.g. tussocky grassland, dense scrub/islands). • Extensive landscape connectivity to suitable off-site reptile habitat.

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category*
Medium	Provides significant opportunities for two or three of the above key ecological functions.	• Homogenous / slightly heterogenous habitat (one to two dominant habitats e.g. grassland and scrub). • Habitat structure is diverse, but habitat type is uniform (e.g. tussocky grassland only). • Sub-optimal landscape connectivity to suitable off-site reptile habitat.
Low	Provides significant opportunities for one of the above key ecological functions or some limited (minimal) opportunities for two or more of these functions.	• Uniform habitat composition (e.g. grassland). • Limited vegetative structure (e.g. closely mown or grazed grassland). • Possess limited landscape connectivity to suitable off-site habitat.
Negligible	Does not provide any opportunities for reptiles.	• Unvegetated areas, such as bare ground and buildings.
<i>*Note that the characteristics given in Column 3 of this Table are typical characteristics of high, medium, low and negligible suitability habitats, and are provided for illustrative purposes to aid the assignment of a habitat suitability category. They are not absolute criteria or universal rules that will always dictate the suitability category that the habitat within a given survey site must fall within.</i>		

Note:

- 10.54 It is important to note that a holistic view of site / habitat suitability for reptiles should be taken when attributing suitability categories to areas of habitat. Consideration of habitat continuity and connectivity within a site is key to determining habitat suitability.
- 10.55 For instance, a block of on-site woodland may provide significant hibernation opportunities, whilst an immediately adjacent on-site belt of structurally diverse grassland with debris piles may provide significant basking, foraging, shelter and breeding opportunities.
- 10.56 Taken as a whole (i.e. as a functional habitat unit), these habitats are likely to be correctly assigned a habitat suitability level that is higher than if they were assessed individually.

- 10.57** If however, these habitats (the woodland and grassland in this example) were separated by a substantial area of bare ground that would prevent or severely limit reptile dispersal between the two, then these habitat areas should correctly be assessed as separate habitat units and categorised based on their individual ecological functionality for reptiles.
- 10.58** The categorisation of habitats must therefore consider what constitutes a 'functional habitat unit' for reptiles on a given site.
- 10.59** Professional judgement and knowledge of species ecology can and should be used during habitat assessment, but the above criteria and guidance are used as tools to ensure that a structured and evidence-based assessment is conducted and that the criteria used are as objective as possible.

HAZEL DORMOUSE

- 10.60** For the purpose of this report, habitat suitability criteria developed by Lloyd Bore have been used to assess and categorise on site habitats for hazel dormouse.
- 10.61** The content of the below Table has been taken from the Hazel Dormouse Conservation Handbook and details trees and shrubs of value to dormice (Bright et al., 2006). The presence and percentage cover of tree and shrub species listed in this Table informs the suitability criteria that are set out within the following 'Hazel Dormouse Habitat Suitability Criteria' Table.

Table 5 Trees and shrubs of value to dormice

Species	Description
Hazel	Where present, this is the principal source of food (nuts) for fattening up prior to hibernation. Hazel also supports many insects, including caterpillars, which are potential dormouse food. Hazel forms a continuous understorey of sprawling poles, easy for arboreal activity and is a very valuable (but not essential) species for the dormouse.
Oak	An important source of insect food (including caterpillars). Dormice also eat oak flowers, but acorns are of little value
Honeysuckle	The plant's finely shredded bark is the preferred nesting material used by dormice. Honeysuckle flowers also provide food at a time when few other things are available, with berries later. The climbing strands also offer convenient routes into the trees and provide dense shelter in which to nest.
Bramble	Its flowers and fruits are very important dormouse foods and tend to be available for a long period (especially where the site has slopes which vary the amounts of sunlight on the shrubs) and the thorns provide good protection for nests. Bramble often flowers late, when many other species are over, and dormice also eat the berries and seeds in autumn. Dormice seem to thrive where blackberries are abundant, even in the absence of hazel. Bramble is best if scattered among hazels and trees.

Species	Description
Sycamore	A valuable source of insect food and pollen. A useful tree: dormice can survive in habitats with many sycamores. However, sycamores cast a dense shade which reduces the understorey. Thus sycamores should be kept few and scattered, perhaps coppiced to prevent seeding and to reduce the extent of shading.
Ash	Ripening seeds ('keys') are eaten whilst they are still on the tree, but ash supports few food insects. The canopy does not cast a dense shade, but generally ash woodlands are not good habitat.
Wayfaring tree	Fruits in late summer when little else may be available. Dormice eat the seeds and probably also the flowers.
Yew	The fruits are a favoured food and dormice will make special excursions to reach them, but the seeds are not eaten.
Hornbeam	Seeds are small and hard, but dormice eat them. The advantage is that they are too small to be attractive to squirrels, so they may form an alternative food where squirrels have taken most of the hazel nuts. Fruiting is erratic.
Broom	Flowers are eaten in early summer.
Sallow	Unripe seeds are eaten from the flowers in early summer. Sallow also supports many insects
Birch	The catkins are over too early in the year to be much use to dormice, but they can eat the seeds. These are too small to attract squirrels and may provide support where squirrels compete for hazel nuts.
Sweet chestnut	Chestnuts are an excellent food source and dormice may also eat the flowers.
Blackthorn	Fruits (kernels) are eaten but the flowers come too early in the year. Dense blackthorn thickets tend to be avoided where alternative shrubs are available.
Hawthorn	Flowers are an important food in the spring. The fruits are eaten occasionally.
Conifers	Little is known about the use made of these trees by dormice, but they often support many aphids and caterpillars – potential dormouse food. The trees may also provide shelter from the wind and rain in exposed sites.

Species	Description
Other species such as cherry, crab apple, holly, ivy.	Little is known about the value of these trees to dormice, but it is likely that they will eat the pollen (stamens) and perhaps fruits. Ivy is a useful source of food insects and its evergreen tangles among tree branches are often used for summer nesting sites.

- 10.62 The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of this hazel dormice.

Table 6 Hazel Dormouse Habitat Suitability Criteria

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category
High	Provides significant opportunities for: - - foraging; - shelter / protection; - breeding; and - hibernation.	• 5 or more native tree and/or shrub species of value to dormice present (as per list provided in Table 8). • Dense canopy, understorey and/or shrub layer (as present) with good aerial connectivity.
Medium	Provides opportunities for two or three of the above ecological functions.	• Between 2 and 4 native tree and/or shrub species of value to dormice present. • Sub-optimal aerial connectivity (non-continuous / 'gappy' canopy, understorey and/or shrub layer (as present)).
Low	Provides opportunities for one of the above ecological functions.	• 0 or 1 native tree or shrub species of value to dormice present. • Canopy, understorey and/or shrub layer (as present) are 'sparse,' with poor / infrequent aerial connectivity.
Negligible	Does not provide any opportunities for hazel dormouse.	• Un-vegetated areas, includes bare ground and buildings.