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Begbroke Science Park - New Car Park

Ecological Assessment

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	Name	**Position**	**Date**
Originated	Tom Flynn	Principal Ecologist	11 August 2021
Reviewed	Steve Betts	Associate Director	12 August 2021
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Disclaimer

Contents

1 Summary

1.1 BSG Ecology was commissioned on 22 July 2021 by Burofour on behalf of Oxford University Development to undertake a site survey and produce an ecological assessment report in relation to a full planning application for a new surface car park and service building at Begbroke Science Park (the 'Site'). The car park will provide parking for two proposed buildings at the science park which have outline planning permission (Ref. 18/00803/OUT). This report aims to evaluate potential ecological impacts of the proposed development, based on a desk study and the results of recent surveys at and around the Science Park.

1.2 There are no designated wildlife sites within or adjacent to the Site. The closest designated wildlife site is Rushy Meadows Site of Special Scientific Interest, located 0.4 km to the north-east beyond arable land. The Lower Cherwell Valley Conservation Target Area is located 0.3 km to the north-east of the Site, beyond arable land.

1.3 Habitats at the Site include poor semi-improved grassland, semi-improved neutral grassland, hardstanding, amenity grassland and young trees. There is recent evidence of great crested newt in a pond in the southern part of the Science Park, located outside the Site. There is some potential for the Site to support this species, and to provide a local foraging and commuting resource for bats.

1.4 Potential adverse effects of the proposed development include a net loss of biodiversity, the loss or degradation of bat foraging and commuting habitat and impacts on individual great crested newts. There is potential for breach of wildlife legislation in relation to nesting birds and great crested newt.

1.5 Proposed mitigation includes compensatory habitat creation elsewhere at the Science Park or beyond, minimisation of light spill, a precautionary pre-construction badger survey, and measures to avoid impacts on nesting birds. It will be necessary to carry out the work under Natural England licence to avoid the risk of breaches of legislation relating to great crested newt. Subject to the results of further bat surveys, it may be necessary include measures to mitigate lighting impacts on sensitive habitats.

1.6 The results of biodiversity calculation (using the Biodiversity Metric 3.0) are included and indicate the extent of habitat creation required for the development to achieve a biodiversity gain. Achieving a 10% biodiversity net gain is feasible for the project; the applicant has committed to a 10% gain, with the details of this to be confirmed.

1.7 In order to confirm the value of the Site as a local foraging resource for bats, a bat activity survey is recommended.

2 Introduction

Background

2.1 BSG Ecology was commissioned on 22 July 2021 by Burofour on behalf of Oxford University Development to undertake a site survey and produce an ecological assessment report in relation to a full planning application for a new surface car park and service building at Begbroke Science Park (the 'Site').

Site description

2.2 Begbroke Science Park is located in the village of Begbroke, Oxfordshire, centred at Ordnance Survey National Grid Reference SP477135 (the 'Site'). It is managed by the University of Oxford for academic research and high-tech start-up companies. It is located off the A44 Woodstock Road, approximately 5 miles north of Oxford city centre. Close to the village of Begbroke, the main Science Park occupies approximately 4.8 hectares.

2.3 The building architecture comprises a mixture of large, modern office buildings; complemented by traditional buildings of historic value, such as the Jacobean farmhouse in the southern part of the Science Park. Landscaped gardens, including a walled garden, extensive lawns and a perimeter tree screen planted in 2001 along with associated grassland, provide green space within the park. The proposed new car park is to be located in the northern part of the Science Park campus, on an area currently dominated by grassland.

Description of project

2.4 The car park will provide parking for around 250 cars, associated with two proposed buildings at the Science Park which Oxford University Development are now progressing the detailed design of to enable a RMS pursuant to the approval of outline planning permission (Ref. 18/00803/OUT). It will also replace much of the existing parking at the Science Park, which is being lost to the new buildings.

2.5 BSG Ecology carried out ecological assessment for outline planning application reference18/00803/OUT, submitted in 2018, including an *Ecology Report* and a *Great Crested Newt and Reptile Report* (BSG Ecology, 2018a and 2018b). These were based on a Phase 1 habitat survey and a desk study, as well as on surveys for reptiles and great crested newt.

2.6 BSG Ecology has also been undertaking ecological surveys at the Science Park and adjacent land in connection with a separate mixed use development project relating to the Cherwell Local Plan PR8 allocation, which surrounds the Science Park.

2.7 The Site boundary is shown in Figure 1. The proposed landscape plan for the car park and surrounding areas is shown in Appendix 1.

Aims of study

2.8 This ecological assessment aims to evaluate the potential ecological impacts of the proposed development (and to propose appropriate ecology mitigation measures) based on the following:

- A review of updated ecological desk study data from the vicinity of the Site from the Thames Valley Environmental Records Centre.
- A walkover survey of the Site by a professional ecologist.
- Consideration of the location, nature and extent of the proposed development in relation to any ecological features within or near the Site.

3 Methods

Desk study

3.1 The desk study involved searching for internationally designated site wildlife sites within 5 km of the site and other statutory wildlife sites within 2 km of the Site using the Government's MAGIC[1] website. A search was also undertaken for all ponds within 0.5 km of the Site using the Ordnance Survey mapping data available on the MAGIC website.

3.2 It also involved reviewing data obtained on 28 July 2021 from the Thames Valley Environmental Records Centre (TVERC) for all records of non-statutory designated wildlife sites and protected or otherwise notable species within 2 km of the Site.

Field survey

3.3 A Phase 1 habitat survey of the Site and adjacent areas of the Science Park was carried out on 22 July 2021 by Dr Tom Flynn, Principal Ecologist at BSG Ecology.

3.4 Habitats present at the Science Park were noted by the surveyor, using the habitat categories in JNCC (2016). The potential for the Site to support protected species was also assessed at this time.

3.5 Previous Phase 1 habitat survey of the Science Park had been carried out by Tom Flynn in January 2015 and January 2018 and botanical monitoring of selected areas of grassland at the Science Park (including the area of the proposed car park) was carried out in 2014 and 2015 by Dr Jim Fairclough, Principal Ecologist at BSG Ecology and Dr Tom Flynn respectively.

3.6 Previous assessments of bat roosting potential at the Science Park have been carried out by BSG Ecology in 2018 (BSG Ecology, 2018), and updated in an assessment of the suitability of buildings at the Science Park for bats, for a separate project, carried out on 28 July 2021.

Personnel

3.7 The desk study and extended Phase 1 habitat survey were carried out, and the current report written by Dr Tom Flynn MCIEEM CEcol, Principal Ecologist at BSG Ecology. Tom has led various large and complex statutory and non-statutory Ecological Impact Assessments. Tom's specialist expertise is in habitat and botanical survey and assessment. He has carried out numerous Phase 1 and National Vegetation Classification surveys across the UK, including survey and monitoring of Sites of Special Scientific Interest.

3.8 This report was technically reviewed by Steve Betts MCIEEM CEcol, Associate Director at BSG Ecology. Steve has worked in ecology and nature conservation since 1997 and has a wide range of experience in the industry including extensive experience of habitat survey, protected species survey and ecological assessment.

Limitations to methods

3.9 The field survey was carried out in the optimal period for Phase 1 habitat surveys according to the guidance provided by JNCC (2010).

3.10 Whilst a search for signs of badger *Meles meles* was carried out at the Site, and on areas within 30 m of this, some areas of dense vegetation were present (e.g., parts of the adjacent woodland shelter belt, and some areas of tall grassland within the Site), which could have hidden field signs and sett entrances. For this reason, a precautionary approach to badgers is adopted in this assessment and a pre-construction check for badger setts is recommended.

[1] www.magic.gov.uk

4 Ecological Baseline

Designated Wildlife Sites

4.1 There are no designated wildlife sites within the Site itself. International sites within 5 km and all other designated wildlife sites within 2 km of the Site are listed in Table 1.

Table 1: Designated Wildlife Sites.

Designation	Site Name/Number	Description	Approx. Distance & Direction from Site
Special Area of Conservation (SAC)	Oxford Meadows	A series of meadows in the River Thames floodplain to the west and north-west of Oxford, including hay meadows and pasture, supporting the Annex I habitat Lowland Hay Meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) and the Annex II species creeping marshwort *Apium repens*.	2.6 km S
Site of Special Scientific Interest (SSSI)	Rushy Meadows	A series of unimproved alluvial grasslands alongside the Oxford Canal supporting rich meadow and fen communities containing several uncommon plant species.	0.4 km NE
Local Wildlife Site (LWS)	Bladon Heath 41L02	A former heath that has been planted with conifers but retains some of its distinctive plant and invertebrate species, and has areas of semi-natural woodland, and fragments of slightly acid open ground along its rides.	1.5 km W
	Begbroke Wood 41 R03	Oak woodland with abundant bluebells, silver-washed fritillary butterfly, damp areas and an area of calcareous grassland.	1.0 km W
	Langford Meadow 41S02	An area of tall herb fen, lowland meadow and rough grassland, supporting a range of plant species, and a locally important site for birds including reed bunting and snipe.	1.3 km N
	Meadows West of Oxford Canal 41V18	Two fields with ridge and furrow, supporting lowland meadow and fen habitats and with species-rich hedgerows.	1.7 km SE
Conservation Target Area (CTA)	Lower Cherwell Valley	The Cherwell Valley from Lower Heyford to Kidlington and south of Kidlington along the Oxford Canal. Dominated by lowland meadows but with other habitats including wetlands and quarry workings.	0.3 km NE
Woodland Trust Reserve	Stratfield Brake	A small area of mature woodland and larger areas of young planted woodland. Two large ponds are present.	1.7 km SE
Cherwell District Wildlife Sites	Frogwelldown Lane	A green lane to the west of Yarnton. It includes sections of species rich hedgerow, scrub and woodland. The path-side verges have rough grassland, tall herb and bramble. Woodland herbs	1.6 km SW

		include bluebell, primrose, goldilocks buttercup and three-nerved sandwort.	
Cherwell Proposed District Wildlife Site	Kidlington Copse	A small block of semi-natural woodland by Park hill recreation ground in Kidlington.	1.5k m NE

Habitats

4.2 Habitats at the Site are listed in Table 2 and shown on Figure 1. Habitat categories follow JNCC (2010).

Table 2: Habitats present within the Site.

Habitat	Description
Trees	Several young ash *Fraxinus excelsior* and silver birch *Betula pendula* trees are present at the Site.
Poor semi-improved grassland	The Site, and areas to the east and south, are dominated by poor semi-improved grassland. This is heavily dominated by grasses (mainly false oat-grass *Arrhenatherum elatius*, red fescue *Festuca rubra* and common bent *Agrostis capillaris).* A limited number of forbs are present, including ragwort *Senecio jacoabea*, common vetch *Vicia sativa*, dandelion *Taraxacum officinale* and white clover *Trifolium repens*. Forb cover is less than 10%. There is a mown picnic area towards the centre with benches and tables for staff use. The range of species present and the low cover and diversity of forb species clearly indicate that this grassland is poor semi-improved grassland, rather than any other category, such as good semi-improved grassland (JNCC 2010, Natural England 2010). Surveys of this area were carried out by BSG Ecology in 2015 and 2018. There has been no significant change in the habitat type since then.
Semi-improved neutral grassland	A mound in the western part of the Site, and some grassland immediately adjacent to it, supports grassland dominated by the grasses false oat-grass and cock's-foot *Dactylis glomerata,* with a higher diversity and cover of forb species than are present in the remainder of the Site. These forbs include yarrow *Achillea millefolium*, ribwort plantain *Plantago lanceolata*, ground ivy *Glechoma hederacea,* cut-leaved crane's-bill *Geranium dissectum* and field bindweed *Convolvulus arvensis*. Herb cover is over 30%, although heavily dominated by field bindweed and creeping cinquefoil *Potentilla reptans*. The abundance of coarse grasses and the range of forb species present indicate that this grassland is semi-improved neutral grassland. It does not have the range of species, or the presence of ancient grassland indicators that would suggest it was ancient or unimproved grassland (JNCC 2016, Natural England 2010). Surveys of this area were carried out by BSG Ecology in 2014, 2015 and 2018. There has been no significant change in the habitat type since then.
Amenity grassland	Amenity grassland is present on narrow strip at the western end of the Site. This is dominated mainly by perennial rye-grass *Lolium perenne*, common bent and red fescue *Festuca rubra*. Other species present include dandelion *Taraxacum* agg. and white clover.
Hardstanding	A concrete path is present towards the western end of the Site.
Adjacent shelter belt (offsite)	A shelter/screening belt of young trees is present adjacent to the north and west of the Site. This is understood to have been planted in 2001 (historical aerial images on Google Earth are consistent with this). This comprises a range of native species including wild cherry *Prunus avium*, ash, oak *Quercus robur*, dogwood *Cornus sanguinea* and blackthorn *Prunus spinosa*.

Species

4.3 Potential for protected or otherwise notable species at the Site is described in Table 3. This incorporates relevant information on protected or notable species received from TVERC. Legislative and policy protection afforded to these species is summarised in Appendix 1. No other significant potential for protected or notable species was noted at the Site.

Table 3: Potential for protected species at the Site.

Species	Description
Badger	From previous survey work carried out by BSG Ecology in January 2018, badger is known to be present in the local area. Mammal paths, possibly resulting from badger, were found across the mound in the western part of the Site and leading into the adjacent shelter belt. Shallow diggings, possibly resulting from badger, were present within the northern part of the Site. No badger sett entrances were found with the Site, or within 30 m of the Site.
Roosting Bats	There is no suitable roosting habitat for bats at the Site (i.e., the trees that are present have no potential roost features, and no buildings are present). The adjacent shelterbelt has no potential to support roosting bats due to the young age (and small stem diameter) of its component trees. Previous survey work by BSG Ecology has found roosting bats (small numbers of common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*) in the farmhouse and an adjacent stone building in the southern part of the Science Park (BSG Ecology, 2018), both around 110 m from the Site, beyond large modern buildings. There are no buildings with any suitability for roosting bats within at least 90 m of the Site.
Foraging and commuting Bats	The grassland and shelterbelt at the Site have some potential to provide a local foraging resource for bats. The shelterbelt could provide very local habitat connectivity, although there are no strong connecting habitat features to other landscape features that are likely to be important for bats.
Nesting birds	The trees at the Site and in the adjacent shelterbelt are likely to support nesting birds. The limited size of the grassland, its dominance by tall grass (i.e., false oat-grass), the lack of shorter or more open areas (except for the mown picnic area) and the presence of a tall adjacent shelterbelt and tall buildings, mean that it is unlikely to provide suitable breeding habitat for skylark *Alauda arvensis* or other ground-nesting species.
Reptiles	The semi-improved grassland at the Site has some suitability as habitat for common reptile species such as slow-worm *Anguis fragilis* and common lizard *Zootoca vivipara*, although due to the lack of scrub cover, and poor connectivity to surrounding habitats, it is evaluated as being sub-optimal. The Site, and the grassland adjacent to the east of it were surveyed for reptiles by BSG Ecology in 2018. No reptiles were detected. Since this survey there has been no significant change in habitat at the Site, and therefore reptiles are considered unlikely to be present.
Great crested newt	Great crested newt *Triturus cristatus* breeds in ponds and uses suitable adjacent terrestrial habitats to forage and hibernate. No ponds are present within the Site. A formal pond is present in the southern part of the Science Park, around 120 m south of the Site. This pond is approximately 4 m × 10 m in extent and stocked within ornamental fish. The results of an environmental DNA survey and population assessment survey, carried out by BSG Ecology in 2018, indicate that great crested newt is present in this pond. A maximum count of two adults was obtained. A further survey carried out in June 2021 confirmed the continued presence for this species (by detecting eggs) and also confirmed breeding of this species. The pond and the Site are not close to (i.e., within 250 m of) any other ponds (see Figure 2).

	Grassland habitat at the Site provides suitable habitat for this species, as it is close enough to a known breeding pond to be utilised. However, the small size of the population and the fact that much of the intervening habitats (roads and buildings) are unsuitable mean that numbers of individual animals using the Site are likely to be very low.
Common toad	There is some potential for the Site to support common toad *Bufo bufo*, which is a Species of Principal Importance in England (see Appendix 1), but the limited extent of nearby breeding habitat (the formal pond described above has limited suitability due to its small size) means that it is unlikely to support significant numbers of this species.

5 Potential Ecological Impacts

Impacts of the development alone

5.1 Table 4 characterises potential ecological impacts and effects of the proposed development on the ecological features associated with the Site.

Table 4: Evaluation of ecological features.

Feature	Potential Impacts	Assessment of Ecological Effects	Significance
Oxford Meadows SAC	Aerial pollution	Natural England guidance (Natural England, 2018) on the assessment of road traffic emissions indicates that traffic levels under 1000 AADT (average annual daily trips) are unlikely to have significant adverse effect on designated sites. Given that the new car park will have around 250 parking spaces, a significant adverse effect on Oxford Meadows SAC is therefore considered unlikely.	No significant effect
	Increased recreational pressure	Due to limited public access to or use of parts of the SAC within 5 km of the Site, and the absence of a residential component to the proposed development, no increase in recreational pressure (and therefore no ecologically significant effect) on the SAC is anticipated.	
	Changes to hydrological regime	Due to the distance between the SAC and the Site (2.67 km), no ecologically significant effect is anticipated.	
Rushy Meadows SSSI	Aerial pollution	Due to a lack of significant emissions from the proposed development, and the distance between the SSSI and the Site (0.4 km), no ecologically significant effect is anticipated.	No significant effect
	Increased recreational pressure	Due to the lack of public access to the SSSI, and the absence of a residential component to the proposed development, no increase in recreational pressure (and therefore no ecologically significant effect) is anticipated.	
	Changes to hydrological regime	The Site's limited extent means this it is unlikely to provide a locally important level of rainwater infiltration. A hydrological and hydrogeological desk study (WYG, 2018) concluded that extensive development on land surrounding the Science Park had negligible risk of adversely affecting the SSSI. Therefore no ecologically significant effect on the SSSI is anticipated.	
Other designated sites	Aerial pollution	Due to the distance between these sites and the Site (0.26 km to 1.7 km), no ecologically significant effect is anticipated.	No significant effect
	Increased recreational pressure	Due to the distance between publicly accessible parts of these sites and the Site and the absence of a residential component to the proposed development, no increase in recreational pressure (and therefore no ecologically significant effect) is anticipated.	

	Changes to hydrological regime	Due to the distance between these sites and the Site (0.26 km to 1.7 km) and the limited extent of the Site, no ecologically significant effect is anticipated.	
Habitats	Damage or destruction during construction	Development at the Site would result in the loss of ca. 0.27 ha of semi-improved natural grassland and 0.29 ha of poor semi-improved grassland, with some additional losses of the latter for flood attenuation areas. Small number of young trees will be lost and there is potential for accidental damage to the adjacent shelterbelt.	Adverse effect at the Site level. Significant in terms of net biodiversity loss if not compensated for by habitat creation or enhancement.
Badger	Killing, injury or disturbance or damage to setts during construction work.	Since no badger setts were found within 30 m of the site, impacts are considered unlikely. However, taking into account the limitations of the precautionary measures are recommended to further minimise the risk of breaching wildlife legislation.	No significant adverse effect.
Roosting bats	Lighting	Given the proposed lighting scheme for the development (provided in Appendix 2) disturbance to roosting bats and degradation of bat roosts from new lighting is considered unlikely. Under the lighting scheme, lighting levels drop to less than 1 lux within the shelterbelt that surrounds the site to the west and north and around 100 m from the known roost to the south.	No significant adverse effect
Foraging bats	Lighting	Survey of the Site is recommended to fully determine the value of the grassland and the southern edge of the shelterbelt to the north as a foraging resource for bats.	Potential for a significant adverse effect at the local level
Commuting bats	Lighting	Survey of the Site is recommended to fully determine the value of the southern edge of the shelterbelt to the north as a commuting route for bats.	Potential for a significant adverse effect at the local level
Nesting birds	Loss of habitat during construction	The young trees to be removed in the development do not have potential to support significant populations of nesting birds due to their limited number and crown size.	No significant adverse effect.

	Killing or injury of individual birds, or damage or destruction of nests	The removal of trees and any other woody vegetation at the Site has the potential to kill and injure individual birds (and damage or destroy nests).	No significant effect. Some limited potential for breach of wildlife legislation.
Reptiles	Loss of habitat during construction	Since reptiles are unlikely to be present at the site, a significant effect on these species is unlikely.	No significant adverse effect.
	Killing or injury of individuals during construction.	Since reptiles are unlikely to be present at the site, a significant effect on these species is unlikely.	
Great crested newt	Loss of habitat during construction	The limited connectivity of the Site to the known breeding pond, and the small population size present at that pond means that very limited numbers of this species are likely to be present at the Site. There is therefore only potential for an effect on its population at the local level.	Potential for an adverse effect at the local level. Not a significant effect. Some potential for breach of wildlife legislation from effects on individual animals.
	Killing or injury of individuals during construction	Given that this species is only likely to be present at the Site in limited numbers, the potential for killing or injury is also limited. However, based on Natural England's rapid risk assessment tool[2] unless the works proceed under a Natural England licence, there is potential for a breach of wildlife legislation.	

Cumulative Impacts with 18/00803/OUT Local Policy PR8

5.2 Outline permission 18/00803/OUT covers the construction of new buildings on land to the east and west of the proposed car park area (the Site) and includes various landscaping works. The areas to be affected are of limited biodiversity value, being dominated by hardstanding and amenity grassland with some trees. The LEMP and landscape plans for the combined schemes will create new wetland habitats in the form of a SUDS drainage basin, areas of wildflower grassland, new tree planting, amenity planting with pollinator friendly species, new bat and bird boxes and reptile and invertebrate banks. With further habitat creation, to ensure biodiversity net gain, there is unlikely to be a significant adverse cumulative effect from these developments, except regarding foraging and commuting bats, for which further survey is recommended in the following section.

5.3 Cherwell Local Plan Policy PR8 allocates the arable farmland which surrounds Begbroke Science Park for residential and employment use. The policy plan includes extensive areas of new habitat creation and greenspace. Potential for cumulative ecological effects has been considered for each of the ecological features listed above. There is unlikely to be potential for any significant cumulative effects to occur, except regarding foraging and commuting bats, for which further survey is recommended in the following section.

[2] The development will affect >0.5 ha of land between 100 and 250 m from a breeding pond; see lines 178 to 187 of: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879595/gcn-method-statement.xlsm [accessed 13/08/21].

6 Mitigation

6.1 Table 5 outlines appropriate avoidance, mitigation compensation and enhancement measures for the ecological features and effects identified in the previous section.

Table 5. Ecological mitigation.

Feature	Avoidance/Mitigation/Compensation/Enhancement
Designated Sites	None required
Grassland	Without appropriate compensatory habitat enhancement or creation, the loss of grassland at the Site will cause the development to result in a net loss in biodiversity. The extent of habitat creation required to achieve a net gain in biodiversity is set out in Appendix 4. Achieving a 10% biodiversity net gain is feasible for the project; the applicant has committed to a 10% gain, with the details of this to be confirmed.
Trees	Where trees are to be lost, replant an equivalent number of native or fruiting species in suitable locations within the Site or the wider Science Park. Fencing is recommended to avoid accidental damage to trees and shrubs comprising the adjacent shelterbelt during construction.
Badger	As a precautionary measure, because badgers are known to be present in the local area and can construct new setts over relatively short periods of time, a pre-construction badger survey is to be carried out not more than one month prior to the start of construction. In the event that badger setts are found to be present within 30 m of the Site, a sett closure under licence from Natural England may be required for development to proceed.
Bats	Minimisation of light spill on to retained, new and adjacent vegetation. New bat boxes are being provided under 18/00803/OUT. Additional boxes for the car park application are not considered necessary.
Nesting Birds	Impacts on nests will be avoided by avoiding clearance of trees (or any other woody vegetation) within the bird breeding season (which is March to August inclusive). Alternatively, clearance may proceed where vegetation has been subject to thorough checks for nesting birds by a professional ecologist, and they have been found to be absent of nesting birds. If present, further monitoring may be required and works in some areas of the Site may need to be delayed until any young have fledged. New tree planting (specified under *Trees* above) will provide some compensatory nesting habitat for birds. New bird boxes are being provided under 18/00803/OUT. Additional boxes for the car park application are not considered necessary.
Great crested newt	Works should proceed under a Natural England licence because of the risk of killing or injuring very limited numbers of great crested newt. For example, registration of the development under the Naturespace district level licence would be appropriate. Naturespace may require a level of on-site mitigation works under the terms of registration.

7 Further Survey and Assessment

Bat survey and assessment

7.1 A bat activity survey, using automated static bat detectors, is recommended to determine the level of use of the car park site, and the adjacent boundary of the shelter belt by foraging and commuting bats.

7.2 It is recommended that one deployment of one detector, in the centre north of the site, for five nights under suitable weather conditions would be proportionate, given the limited extent of the site.

7.3 Based on the information obtained in this additional survey, further assessment of the potential for the development to affect bats (through habitat loss and through lighting) should then be carried out.

8 References

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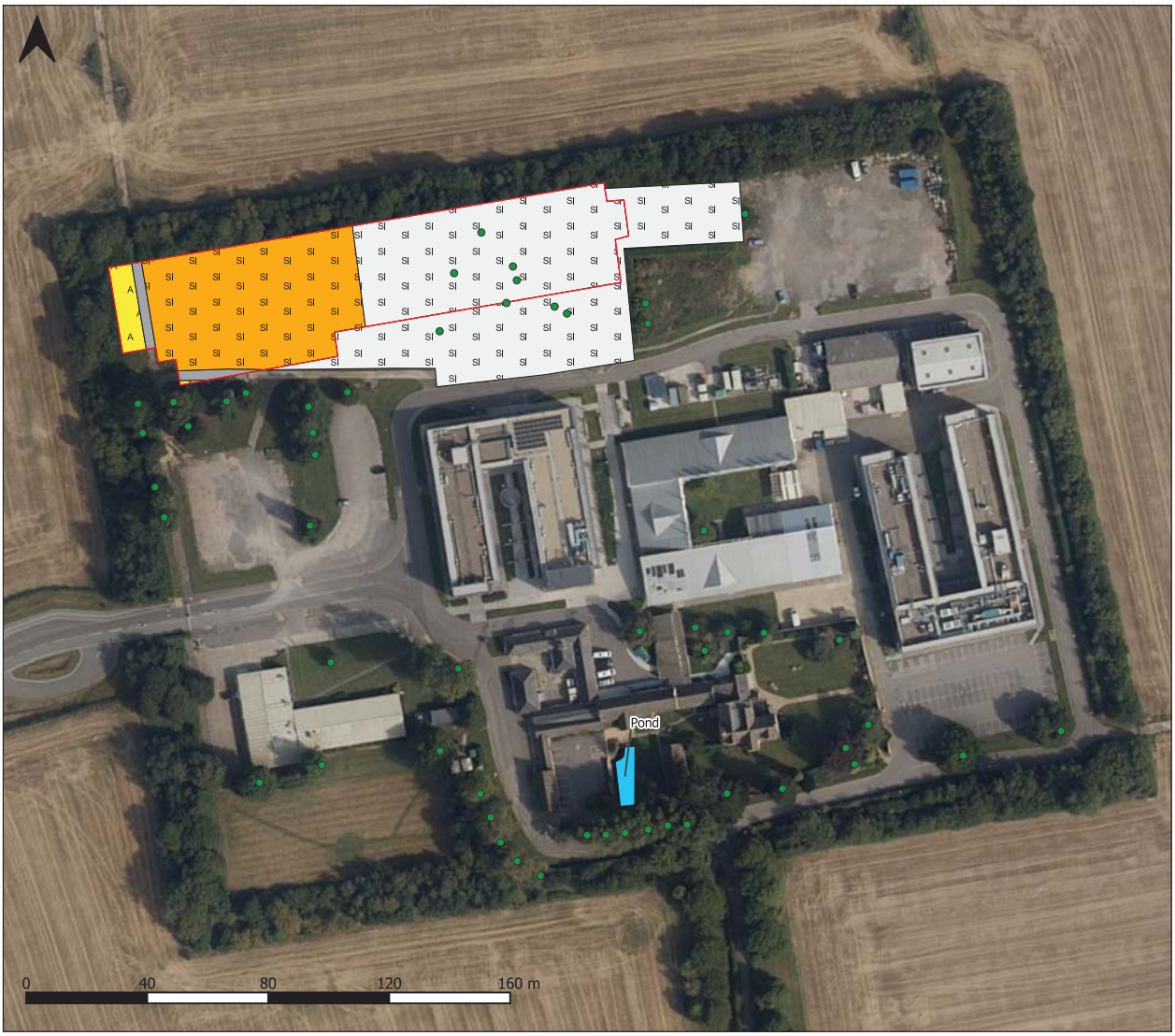
9 Figures



Legend

- Tree

Phase 1 Habitat

- Neutral grassland - semi-improved
- Poor semi-improved grassland
- Pond
- Cultivated/disturbed land - amenity grassland
- Hardstanding
- Site boundary

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PROJECT TITLE

BEGBROKE SCIENCE PARK – NEW CAR PARK

DRAWING TITLE

Figure 1: Phase 1 habitat plan

DATE: 12/08/2021 CHECKED: TF SCALE: 1:1,200

DRAWN: LA APPROVED: SB VERSION: 1.1

Sources: BSG Ecology survey data

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JOB REF: P21-724

PROJECT TITLE
BEGBROKE SCIENCE PARK – NEW CAR PARK

DRAWING TITLE
Figure 2: Ponds within 500m of the Site

DATE: 12/08/2021 CHECKED: TF SCALE: 1:5,000
DRAWN: LA APPROVED: SB VERSION: 1.0

LEGEND

- Site boundary
- 500 m radius from Site boundary
- P1 Ponds surveyed for great crested

10 Photographs

Photograph 1. Eastern part of site (showing poor semi-improved grassland and young trees), looking west.

Photograph 2. Western part of site (showing semi-improved neutral grassland) looking north-east.

Photograph 3. Centre part of site (showing picnic area and young trees), looking west.

Appendix 1: Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

National Planning Policy Framework (England)

The Government issued the National Planning Policy Framework (NPPF) in July 2021. Text excerpts from the NPPF are shown where they may be relevant to planning applications and biodiversity including protected sites, habitats and species.

The Government sets out the three objectives for sustainable development (economy, social and environmental) at paragraphs 8-10 to be delivered through the plan preparation and implementation level and 'are not criteria against which every decision can or should be judged' (paragraph 9). The planning system's environmental objective is 'to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity…'(paragraph 8c).

In conserving and enhancing the natural environment, the NPPF (Paragraph 174) states that 'planning policies and decisions should contribute to and enhance the natural and local environment' by:

- Protecting and enhancing...sites of biodiversity value... '(in a manner commensurate with their statutory status or identified quality in the development plan)'.
- Recognising the wider benefits from natural capital and ecosystem services including trees and woodland.
- Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

In respect of protected sites, at paragraph 175, the NPPF requires local planning authorities to distinguish, at the plan level, '…between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value...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.' A footnote to paragraph 175 refers to the preferred use of agricultural land of poorer quality if significant development of agricultural land is to take place.

Paragraph 179 refers to how plans should aim to protect and enhance biodiversity. 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 [a footnote refers to ODPM Circular 06/2005 for further guidance in respect of statutory obligations for biodiversity in the planning system], wildlife corridors and stepping stones that connect them and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation;' and to 'promote the conservation, restoration and re-creation 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 180 advises that, when determining planning applications, '…local planning authorities should apply the following principles:

- 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;
- 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;

- 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
- 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.'

In paragraph 181, the following should be given the same protection as habitats sites:

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and
- 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.'

In paragraph 182 the NPPF refers back to sustainable development in relation to appropriate assessment and states: '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'.

In paragraph 183, the NPPF refers to planning policies and decisions taking account of ground conditions and risks arising from land instability and contamination at sites. In relation to risks associated with land remediation account is to be taken of 'potential impacts on the natural environment' that arise from land remediation.

In paragraph 185 the NPPF states that planning policies and decisions should ensure that development is appropriate to the location and take into account likely effects (including cumulative) on the natural environment and, in doing so, they 'should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation' (paragraph 185c).

Government Circular ODPM 06/2005 Biodiversity and Geological Conservation (England only)

Paragraph 98 of Government Circular 06/2005 advises that "the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned..."

Paragraph 99 of Government Circular 06/2005[3] advises that "it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted".

Standing Advice (GOV.UK - England only)

The GOV.UK website provides information regarding protected species and sites in relation to development proposals: 'Local planning authorities should take advice from Natural England or the Environment Agency

[3] *ODPM Circular 06/2005. Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.

about planning applications for developments that may affect protected species.' GOV.UK advises that 'some species have standing advice which you can use to help with planning decisions. For others you should contact Natural England or the Environment Agency for an individual response.'

The standing advice (originally from Natural England and now held and updated on GOV.UK[4]) provides advice to planners on deciding if there is a 'reasonable likelihood' of protected species being present. It also provides advice on survey and mitigation requirements.

When determining an application for development that is covered by standing advice, in accordance with guidance in Government Circular 06/2005, Local planning authorities are required to take the standing advice into account. In paragraph 82 of the aforementioned Circular, it is stated that: 'The standing advice will be a material consideration in the determination of the planning application in the same way as any advice received from a statutory consultee…it is up to the planning authority to decide the weight to be attached to the standing advice, in the same way as it would decide the weight to be attached to a response from a statutory consultee.'

Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance (England)

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act require 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 list has been drawn up in consultation with Natural England as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England.

The S41 list is used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'

Guidance for public authorities on implementing the Biodiversity Duty[5] has been published by Defra. One of the key messages in this document is that 'conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.' In England the administration of the planning system and licensing schemes are highlighted as having a 'profound influence on biodiversity conservation.' Local authorities are required to take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that 'the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.'

In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework[6], which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England.

In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

European protected species (Animals)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidates various amendments that have been made to the original (1994) Regulations which transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

"European protected species" (EPS) of animal are those which are shown on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). They are subject to the provisions of Regulation 43

[4] https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications#standing-advice-for-protected-species
[5] Defra, 2007. *Guidance for Public Authorities on Implementing The Biodiversity Duty*. (http://www.defra.gov.uk/publications/files/pb12585-pa-guid-english-070516.pdf)
[6] JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. *UK Post-2010 Biodiversity Framework*. July 2012. (http://jncc.defra.gov.uk/page-6189)

of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a. Intentionally or deliberately capture, injure or kill any wild animal included amongst these species

b. Possess or control any live or dead specimens or any part of, or anything derived from a these species

c. deliberately disturb wild animals of any such species

d. deliberately take or destroy the eggs of such an animal, or

e. intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a. to impair their ability—

   i. to survive, to breed or reproduce, or to rear or nurture their young, or

   ii. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

b. to affect significantly the local distribution or abundance of the species to which they belong.

Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works and by Natural Resources Wales in Wales. In accordance with the requirements of the Regulations (2017, as amended), a licence can only be issued where the following requirements are satisfied:

a. The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'

b. 'There is no satisfactory alternative'

c. The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Definition of breeding sites and resting places

Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and of breeding and resting places is provided by The European Council (EC) which has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive.[7] Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that 'The provision in Article 12(1)(d) [of the EC Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.' Further the guidance states: 'It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.'

[7] Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.

Competent authorities

Under Regulation 7 of the Conservation of Habitats and Species Regulations 2017 (as amended) a "competent authority" includes "any Minister of the Crown…, government department, statutory undertaker, public body of any description or person holding a public office.

In accordance with Regulation 9, "a competent authority must exercise their functions which are relevant to nature conservation, including marine conservation, so as to secure compliance with the requirements of the [Habitats and Birds] Directives. This means for instance that when considering development proposals a competent authority should consider whether EPS or European Protected Sites are to be affected by those works and, if so, must show that they have given consideration as to whether derogation requirements can be met.

Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

The Conservation of Habitats and Species Regulations 2017 (as amended) places duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, 'Birds Directive'[8]) (Regulation 10 (3)) requires that the objective is the 'preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive…' Regulation 10 (7) states: 'In considering which measures may be appropriate for the purpose of security or contributing to the objective in [Regulation 10 (3)] Paragraph 3, appropriate account must be taken of economic and recreational requirements'.

In relation to the duties placed on competent authorities under the 2017 Regulations, Regulation 10 (8) states: 'So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).'

Badger

Badger is protected under the Protection of Badgers Act 1992. It is not permitted to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as "a structure or place, which displays signs indicating current use by a badger".

ODPM Circular 06/2005[9] provides further guidance on statutory obligations towards badger within the planning system. Of particular note is paragraph 124, which states that "The likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions."

Natural England provides Standing Advice[10], which is capable of being a material consideration in planning decisions. Natural England recommends mitigation to avoid impacts on badger setts, which includes maintaining or creating new foraging areas and maintaining or creating access (commuting routes) between setts and foraging/watering areas.

[8] 2009/147/EC Birds Directive (30 November 2009. European Parliament and the Council of the European Union.
[9] *ODPM Circular 06/2005. Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.
[10] http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/specieslinks.aspx

Reptiles

All native reptile species receive legal protection in Great Britain under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Viviparous lizard, slow-worm, grass snake and adder are protected against killing, injuring and unlicensed trade only. Sand lizard and smooth snake receive additional protection as "European Protected species" under the provisions of the Conservation of Habitats and Species Regulations 2017 (as amended) and are fully protected under the Wildlife and Countryside Act 1981 (as amended).

All six native species of reptile are included as 'species of principal importance' for the purpose of conserving biodiversity under Section 41 (England) of the NERC Act 2006 and Section 7 of the Environment (Wales) Act 2016.

Current Natural England Guidelines for Developers[11] states that 'where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.' Further the guidance states: 'Normally prohibited activities may not be illegal if 'the act was the incidental result of a lawful operation and could not reasonably have been avoided'. Natural England 'would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.'

The Natural England Guidelines for Developers state that 'planning must incorporate two aims where reptiles are present:

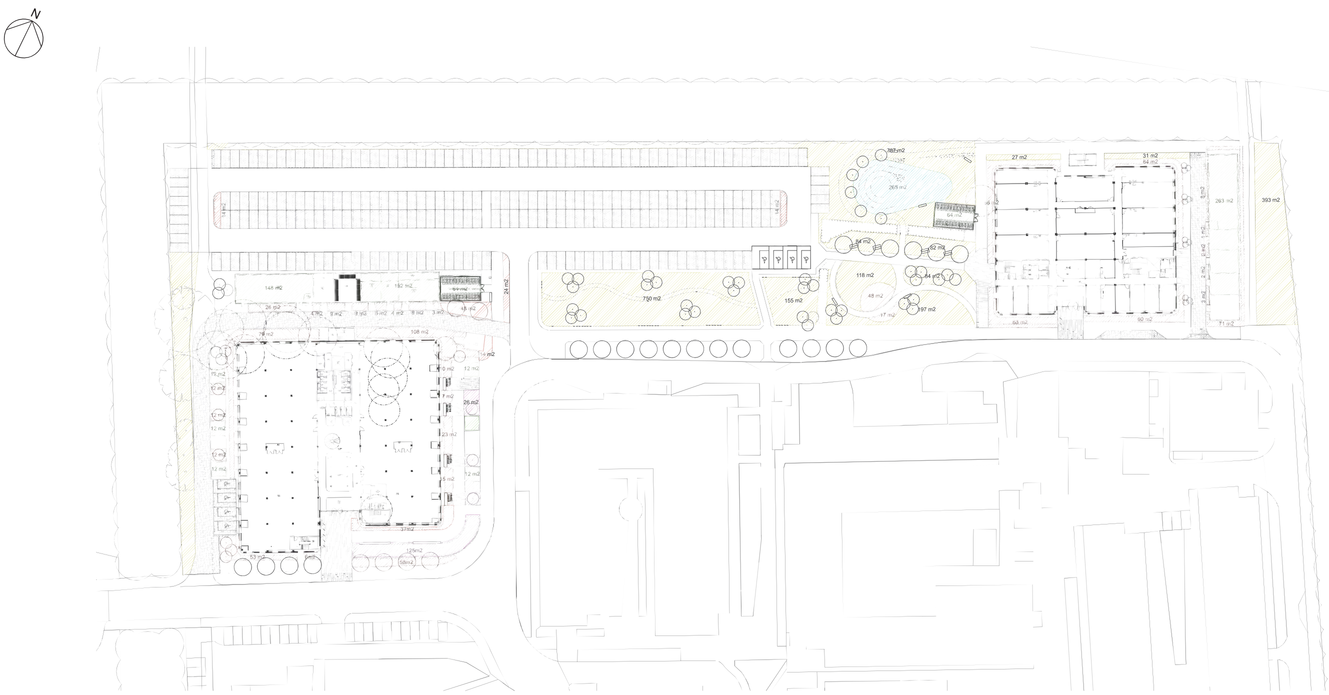
- To protect reptiles from any harm that might arise during development work;
- To ensure that sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternative site, with no net loss of local reptile conservation status.'

Wild mammals in general

The Wild Mammals (Protection) Act 1996 (as amended) makes provision for the protection of wild mammals from certain cruel acts, making it an offence for any person to intentionally cause suffering to any wild mammal. In the context of development sites, for example, this may apply to rabbits in their burrows.

[11] English Nature, 2004. *Reptiles: guidelines for developers.* English Nature, Peterborough. https://webarchive.nationalarchives.gov.uk/20150303064706/http://publications.naturalengland.org.uk/publication/76006

Appendix 2: Proposed Layout



Do not scale this drawing
Landscape Architects to be notified of discrepancies in figured dimensions from site
This drawing is copyright

amendements

Rev

Number key

1. TBC

Species rich grassland - em3 – special general purpose meadow mixture or similar and approved = 3080 SQM

Semi dry wetland meadows - em8 – meadow mixture for wetlands = 265 SQM

Biodiverse roof = Total Area 771 SQM

Rain Garden = Total Area 324 SQM

Ornamental Planting 60% RHS Plants for pollinators = Total Area 1215 SQM

DRAFT FOR PLANNING

project:

Begbroke Science Park

job number:

LP2246

drawing title:

Ecology Mitigation Landscape Overlay

drawing number:

LP2246-FIR-00-ZZ-DR-L-0006

revision	scale	date
00	1:500 @ A1	04/08/21

	drawn	auth	date
for information	RS	VP	04/08/21
for construction			

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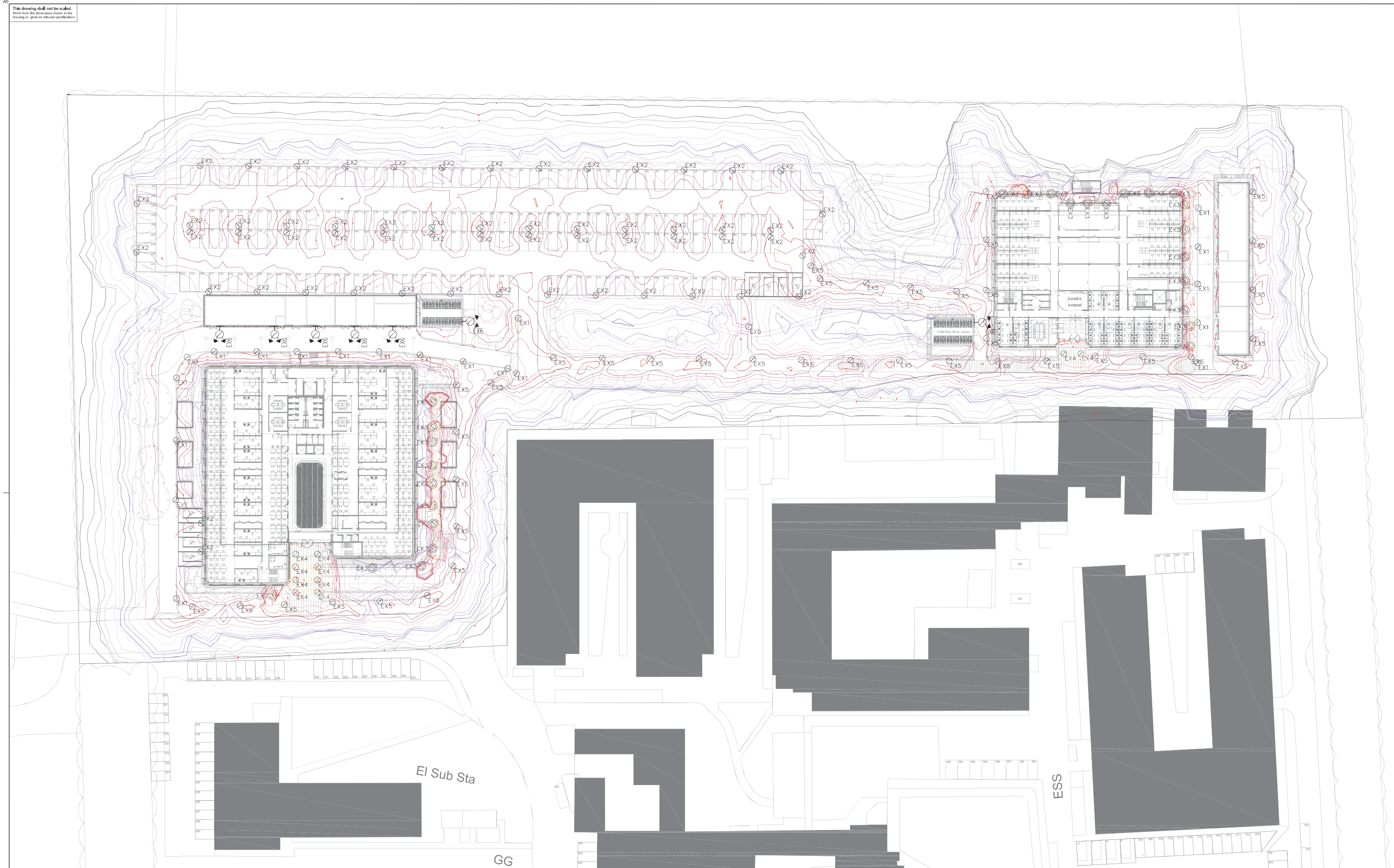
Tel: 0121 523 1033
Fax: 0121 523 1034
fira landscape architecture and urban design

Appendix 3: Proposed Lighting Scheme

A0

This drawing shall not be scaled.
Work from the dimensions shown in the drawing or given in relevant specifications



Index	Description	Designed	Reviewed	Authorised	Date

REVISIONS:

CDM Regulations:

In addition to any information included in this drawing or the model from which it is derived, refer also to the project CDM Risk Register for information on residual risks.

General Notes:

- The drawing does not necessarily show all the information needed to interpret the design intent or the construction details.
- The drawing contains information from more than one source and must be read in conjunction with all relevant specifications.
- Any apparent drafting errors and differences between other drawings and specifications shall be brought to our attention.

Project Notes:

1. Final quantities and locations to be confirmed with architect, landscape architect and client, and coordinated with final building and landscaping layout.
2. This drawing is to be read in conjunction with Hoare Lea luminaire schedule.
3. All external lighting served from DB/EXT/01.
4. All external lighting to be controlled and grouped as outlined in the External Lighting Report.

Legend	
EX1	Column mounted luminaire
EX2	Column mounted luminaire
EX3	Bollard luminaire
EX4	Pole mounted luminaire
EX5	Column mounted luminaire
EX6	Wall mounted luminaire
	Photocell, soffit mounted
50 lx	5 lx
30 lx	3 lx
20 lx	2 lx
15 lx	1.5 lx
10 lx	1 lx
7.5 lx	0.75 lx

ARCHITECT:
NBBJ

PROJECT TITLE:
Begbroke Science Park

CLIENT:
Oxford University Developments

DRAWING TITLE:
Electrical Engineering Systems
External Lighting Layout

HOARE LEA

Preliminary Issue

PERSON RESPONSIBLE FOR:

Design:	Review:	Authorising Issue:
	LS	MSJ
Project No:	**Date:**	**Scale @ A0:**
3103719	August 2021	1:7500

DRAWING NUMBER: BBSP-HLEA-XX-XX-DR-E-708-001
Revision: P1

Y:\Oxford\Projects\3103719 - Begbroke Development\07 BIM & CAD\B - CAD\3 - Elec\630 - Lighting\BBSP-HLEA-XX-XX-DR-E-708-001.dwg,Jessica Keates,06/08/2021 10:09:02

Appendix 4: Biodiversity Calculation

10.1 The biodiversity value of the Site has been determined using Natural England's Biodiversity Metric 3.0[12].

Current habitats

10.2 The calculation of the current habitat biodiversity value of the Site is based on the habitat listed in Table A4-1. Phase 1 habitats were converted to Biodiversity Metric 3.0 habitats via the translation table provided in the metric. Also included are areas of Poor semi-improved grassland adjacent to the east and south of the site which will be used in the construction of a SUDS area and wildflower grassland. Condition assessment is based on the guidance sheets[13] provided by Natural England.

Table A4-1: Habitat present prior to development

Phase 1 habitat	Biodiversity Metric 3.0 Habitat	Condition	Area (ha)
Areas within the red line			
Poor semi-improved grassland	Modified grassland	Moderate (<9 species per m^2)	0.292
Semi-improved neutral grassland	Other neutral grassland	Moderate (due to lack of variability in sward height)	0.273
Amenity grassland	Modified grassland	Moderate (<9 species per m^2)	0.023
Hardstanding	Developed land; sealed surface	N/A	0.016
Total Site Area			**0.604**
Habitat creation areas adjacent to the red line			
Poor semi-improved grassland	Modified grassland	Moderate (<9 species per m^2)	0.200
Total Area			**0.804**

Habitats after development

10.3 The calculation of the future habitat biodiversity value of the Site after the proposed development assumes the following:

- All of the area within the site boundary will be converted to hardstanding.
- The 0.200 ha of Poor semi-improved grassland adjacent to the south and east of the Site will be used for the creation of wildflower meadow (e.g., based on sowing Emorsgate EM5 Meadow Mixture for Loamy Soils) and for a SUDS attenuation basin (e.g. sown to Emoresgate Emorsgate EM8 Meadow Mixture for Wetlands), as shown on the LEMP and landscape plan for 18/00803/OUT.
- Moderate condition will be achieved for these new habitat based on the grassland having: (1) bare ground < 5%, (2) scrub cover <5% , (3) absence of non-native species, and (4) cover of undesirable species and physical damage <5%; and the SUDS having: (1) a diverse range of

[12] http://publications.naturalengland.org.uk/file/6242570327031808 [accessed 13/08/21].
[13] http://publications.naturalengland.org.uk/file/6101399382523904 [accessed 13/08/21].

flowering plant species providing nectar sources for insects and (2) invasive non-native species cover <5% (as per the Natural England guidance referenced o the previous page).

10.4 The areas of the post-development habitats are set out in the following table.

Table A4-2: Habitat post-development

Habitat shown on landscape plan	Biodiversity Metric 3.0 Habitat	Target condition	Area (ha)
Areas within the red line			
Car park	Developed land; sealed surface	N/A	0.604
Total Site Area			**0.604**
Habitat creation areas adjacent to the red line			
Wildflower grassland	Other neutral grassland	Moderate	0.123
SUDS basin	SUDS	Moderate	0.077
Total adjacent area			0.200
Total Area			**0.804**

Change in habitat biodiversity

10.5 Using the Biodiversity Metric 3.0, the 0.604 ha Site plus 0.200 ha of adjacent land has a baseline score of 4.24 habitat units. Post-development, this area will have a score of 1.01 habitat units. This yields a net loss of 3.23 habitat units, representing a biodiversity loss of 76%.

Habitat creation required to achieve biodiversity gain

10.6 In order to achieve a 1% gain in biodiversity, an additional 3.27 habitat units are required, this could be achieved, for example, by converting ca. 0.70 ha of offsite arable land to wildflower grassland (i.e., Other neutral grassland habitat) in moderate condition.

10.7 In order to achieve a 10% gain in biodiversity, an additional 3.65 habitat units are required, this could be achieved, for example, by converting ca .0.78 ha of offsite arable land into wildflower grassland (i.e., Other neutral grassland habitat) in moderate condition.

10.8 There are several options for achieving habitat creation or enhancements, for example, through works on other land at Begbroke Science Park, on other land owned by the University, through habitat creation funded through the Trust for Oxfordshire's Environment, or a combination of these.

10.9 For example, if 0.11ha of Poor semi-improved grassland in the southwest of the Science Park is enhanced to wildflower grassland (i.e., Other neutral grassland) then ca. 0.73 ha of offsite arable land would be required to achieve a 10% biodiversity gain for this project.

10.10 Achieving a 10% biodiversity net gain is feasible for the project; the applicant has committed to a 10% gain, with the details of this to be confirmed.