5.3 Of these, one statutory wildlife site is within 1 km of the Site: Rushy Meadows Site of Special Scientific Interest (SSSI). This site lies close to the north-east of the Site, separated from the site by a bridleway and double hedgerow. The citation for this site[4] notes that Rushy Meadows SSSI consists of a series of unimproved alluvial grasslands alongside the Oxford Canal, and that the low-intensity, traditional management of this site has produced rich meadow and fen communities containing several uncommon plant species such as pepper saxifrage *Silaum silaus*, devil's bit scabious *Succisa pratensis*, heath grass *Danthonia decumbens*, marsh valerian *Valeriana dioica*, betony *Stachys officinalis*, early marsh orchid *Dactylorhiza incarnata*, distant sedge *Carex distans* and water avens *Geum rivale*. It also notes that meadow habitats of this type are now both rare and under threat in Britain, particularly, in this district due to the pressures of agricultural improvement and urban development.

5.4 The next closest statutory wildlife site is Oxford Meadows Special Area of Conservation (SAC), ca. 1.8 km to the south of the site, beyond the A44 Woodstock Road, a railway line and the A40 road. This site supports unimproved lowland hay meadow and pasture, and is designated for the EU Annex I habitat Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) and the EU Annex II plant species creeping marshwort *Apium repens*. The SAC is made up of all or part of four SSSIs (specifically, Cassington Meadows SSSI, Pixey and Yarnton Meads SSSI, Wolvercote Meadows SSSI, and the majority of Portmeadow with Wolvercote Common and Green SSSI).

5.5 The Site is within the SSSI Impact Risk Zones for Rushy Meadow SSSI and Oxford Meadows SAC.

A□□□□□□□□ □□d□□□d□

5.6 The Site contains no sites listed on Natural England's Ancient Woodland Inventory (which includes ancient replanted woodland sites). There are six such sites within 3 km of the Site, listed in Table 7.

Table 7: Ancient Woodland within 5 km of the Site centre

□□□□N□□ □□	A□□r□□□□ □□□□ d□□□□□□□□□□d□ d□r□□□□□□
Begbroke Wood	0.60 km W
Bladon Heath	0.90 km W
Worton Heath	1.1 km W
Burleigh Wood	2.4 km W
Busby's Spinny	2.9 km N
Wytham Wood (including various sub-compartments)	3.6 km SW

□ □□□r□N□□□□□□□□□□r□□d□□□□□□□□d□□□□□□□

5.7 Non-statutory designated sites within 2 km of the Site are listed in Table 8. The Site contains one non-statutory designated site: Lower Cherwell Valley Conservation Target Area (CTA), part of which occupies an arable field and a pasture field in the north-east of the Site (within areas of proposed greenspace). This CTA also extends along the Oxford Canal adjacent to the eastern boundary of the Site. There are 11 Local Wildlife Sites (LWSs) within 2 km of the Site, two Potential Local Wildlife Sites (PLWSs), one Conservation Target Area (CTA) and one Woodland Trust Reserve. Of these, the Woodland Trust reserve at Stratfield Brake is the nearest to the Site, being located 80 m east beyond the Oxford Canal.

Table 8: Non-statutory wildlife sites within 2 km of the Site

D□□□□□□□□□□	□□□□N□□ □□□□d□ID□	D□□□r□□□□□	A□□r□□□□ D□□□□□□□□□□ D□r□□□□□□□ r□□ □□□□□
CTA	Lower Cherwell Valley	The Cherwell Valley from Lower Heyford to Kidlington and south of Kidlington along the Oxford Canal. Dominated by lowland meadows	Overlaps with north-eastern part of Site.

[4] https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1001685.pdf

		but with other habitats including wetlands and quarry workings.	
Woodland Trust Reserve	Stratfield Brake	A small area of mature woodland and larger areas of young planted woodland. Includes an extension area to the north.	80 m E
LWS	Meadows west of Oxford Canal 41V18	Two fields adjacent to Oxford Canal containing lowland meadow and fen.	0.35 km S
LWS	Begbroke Wood 41 R03	Oak woodland with abundant bluebells, silver-washed fritillary butterfly, damp areas and an area of calcareous grassland.	0.47 km W
LWS	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.	0.85 km N
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.	0.90 km E
LWS	Loop Farm Flood Meadows 41V02	Two wet species-rich floodplain fields with species-rich hedgerows and a small area of reedbed between the railway line and Oxford canal and adjacent to Duke's Cut Pond.	1.3 km S
LWS	Wet Wood and Swamp Near Yarnton 41V08	Two small borrow pits either side of the railway line, supporting wet woodland, tall wetland vegetation and sedges. Also some drier ash woodland.	1.3 km S
LWS	Wet Woodland and Swamp south west of Yarnton 41V08	Two small borrow pits containing tall wetland vegetation, wet willow woodland, and a bank of ash woodland.	1.4 km S
LWS	Cassington to Yarnton Gravel Pits 41Q11	A series of river terrace gravel pits, with areas of silt bed, developing reed beds, and young plantation woodland. It has considerable bird interest, particularly for wintering waterfowl.	1.4 km S
PLWS	Kidlington Meadows 41X02	A large site on the floodplain of the River Cherwell, containing former pasture on which scrub and young plantation woodland is developing. The site also has some local bird interest.	1.5 km NE
PLWS	Branson's Lake and Scrub	Lake with reedbed and adjacent woodland and scrub along the river Cherwell. Attracts wildfowl.	1.5 km NE
LWS	Duke's Lock Pond 41V13	A pond providing a substantial area of reedbed north of Duke's Lock on the Oxford Canal. Abundant sedge and reed warbler present, and reed bunting.	1.5 km S
LWS	Wolvercote Mead	Five meadows which support unimproved grassland including areas of lowland meadow. Dominated by great burnet and meadowsweet.	1.6km S
LWS	Thrupp Community Woodland	Broadleaved plantation woodland, dominated by ash, hazel, and crack willow, and smaller amounts of silver birch and wild cherry. A range of bird species recorded here such as long-tailed tit, willow warbler, starling, and chiffchaff, as well as previous reports of breeding kingfisher, willow tit, grey wagtail etc.	1.8km NE
BBOWT Reserve	Oxey Mead	A field forming part of Pixey and Yarnton Meads SSSI. Supports invertebrates, wet meadow plants, skylark and wading birds.	1.8 km S
Oxford City SLINC	Linkside Lake	Lake on the site of an old clay pit.	1.9 km SE
LWS	Canalside Meadow (Oxford Canal Marsh)	Wet meadow grading into sedge-dominated fen alongside the Oxford Canal. Important for birds.	2.0 km S

5.8 The Site is dominated by arable fields with an extensive network of hedgerows. A stream, the Rowel Brook, passes across the north of the site, flowing west to east. There is an associated corridor of woodland, and an inflowing stream. There is a small block of mixed plantation woodland around several barns (Parker's Farm), east of Begbroke Science Park. Small areas of species-poor semi-improved grassland and amenity grassland are present at the Science Park, and there are fields of damp semi-improved neutral grassland in the north-east of the Site, east of the railway line. Ditches are mainly present east of the railway line. Several buildings are present, including large modern buildings and an old stone farmhouse and associated buildings at Begbroke Science Park.

5.9 A Phase 1 habitat plan of the Site is provided in Figure 2. Habitats present at the Site are listed and described in Table 9. Photographs are provided in section 8. Related target notes are included in Appendix 3. Botanical survey data is provided in Appendix 4, and habitat condition assessment data is provided in Appendix 5. Habitats at the Site which are Habitats of Principal Importance in England (HPIs) are indicated, and include woodland, hedgerows and ponds.

Table 9: Phase 1 habitats at the Site.

Arable land	The Site is dominated by large arable fields which are of limited ecological value. See Photograph 1. Widespread arable weeds noted include field pansy *Viola arvensis*, field poppy *Papaver rhoeas,* hedge mustard *Sisymbrium officinale*, spear thistle *Cirsium vulgare*, prickly sow-thistle *Sonchus asper,* and mugwort *Artemisia vulgaris.* Two arable weeds with more restricted national distributions (corn marigold *Glebionis segetum* and common cudweed *Filago vulgaris*) were recorded) as present on arable field margins in the north-west and centre-south of the Site, respectively (see location on Figure 4) in 2018, but these species were not recorded in 2022. Field boundaries are formed by hedgerows (see below). There is also an area of public allotments in current use in the north-west of the Site adjacent to the A44 Woodstock Road (see Photograph 2). This habitat is not a HPI since it does not conform to the description of the Habitat of Principal Importance *Arable Field Margins* in BRIG (2011). Habitat condition assessment is not applicable to arable land.
Good semi-improved neutral grassland	Good semi-improved grassland (equivalent to Other neutral grassland under the UK Habitat Classification) is present in two fields at the east of the Site, the disused landfill and within a small triangular field in the south of the Site, and at Begbroke Science Park. Locations are shown on Figure 4. These areas were subject to detailed botanical survey to determine their habitat condition. Botanical data is provided in Appendix 4, and completed condition assessment sheets are provided in Appendix 5. Theses area do not support the Habitat of Principal Importance *Lowland Meadows*, or any other HPI, based on the descriptions in BRIG (2011). Field A in the north-east of the Site is dominated by the coarse grass false oat-grass *Arrhenatherum elatius,* and much of the margins are dominated with abundant ruderals (such as common nettle *Urtica dioica*) and *Rubus fruticosus* agg. scrub. See Photograph 3. These characteristics indicate a lack of recent management, and there was no evidence of mowing or other management on site visits in 2018, 2021 and 2022. The sward contains a number of other grass and forb species, including species such as tufted hair-grass *Deschampsia cespitosa*, abundant meadowsweet *Filipendula ulmaria,* and wild angelica *Angelica sylvestris,* that are indicative of damp conditions. Habitat condition assessment for grassland of medium (or higher) distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition. Field D in the east of the Site is dominated by a mix of false oat-grass and Yorkshire fog *Holcus lanatus*. See Photograph 4. Various other grasses are present including red fescue *Festuca rubra*, meadow foxtail *Alopecurus pratensis* and smooth meadow-grass *Poa pratensis*. A range of forbs is present, including hogweed *Heracleum sphondylium*, germander speedwell *Veronica chamaedrys*, common sorrel *Rumex acetosa*, creeping buttercup *Ranunculus repens*, and very occasional lesser stitchwort *Stellaria graminea* and greater burnet *Sanguisorba officinalis*. Several of these species are indicative of damp conditions. Most of these forbs are present at relatively low abundance, and much of the sward is grass-dominated and is not species-rich. Habitat condition assessment for grassland of medium (or higher)

	distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition. Field E in the south of the Site is dominated by scrub, but has grassland towards its edges. Ee Photograph 5. This is dominated by false oat-grass, with several other grasses and forb species present. Stands of common nettle ar abundant. Habitat condition assessment for grassland of medium (or higher) distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition. Field F is a former landfill site at the centre of the Site, apparently managed by one summer cut. It is dominated by the tall grasses false oat-grass and cock's-foot, with a few forbs present (especially hogweed *Heracleum sphondylium*). See Photograph 6. Common nettle is abundant in some areas. Habitat condition assessment for grassland of medium (or higher) distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition. Begbroke Science Park had a small area of good semi-improved neutral grassland in the north prior to 2022. This area was cleared in 2022 and is currently being developed, with offsite habitat creation proposed in a 0.8 ha part of an arable field in the north of the Site. This area is mapped as bare ground. Lawn at Begbroke Hill Farmhouse. Although closely-mown, this lawn contains a number of grass, forb and bryophyte species (e.g., smooth stalked meadow-grass *Poa pratensis*, common bent *Agrostis capillaris,* red fescue *Festuca rubra*, yarrow *Achillea millefolium* daisy *Bellis perennis*, common cat's-ear *Hypochaeris radicata* and springy turf-moss *Rhytidiadelphus squarrosus*). See Photograph 7. Habitat condition assessment for grassland of medium (or higher) distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition.
Poor semi-improved neutral grassland	Several areas of poor semi-improved grassland are present at the Site, including two field in the east of the Site. These have swards heavily dominated by grasses and are equivalent to Modified grassland under the UK Habitat Classification. The grassland in these areas is not a HPI, based on the descriptions in BRIG (2011). Field B supports a range of grass species, and some forbs, dominated by Yorkshire fog *Holcus lanatus*. See Photograph 8. The sward is more diverse than was noted in 2018 (when it was dominated by is dominated by Italian ryegrass *Lolium multiflorum* in most areas). This field was observed to be in a ploughed state during a visit by BSG Ecology in 2015, and it is assumed that it was sown to Italian ryegrass at or shortly after this time, and that this species has persisted for several years through self-seeding. It contains a large number of species of disturbed ground, rather than of permanent grassland. Habitat condition assessment for grassland of low distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition. Field C in the east of the Site has a sward that is heavily dominated by tall fescue *Schedonorus arundinaceus*. See Photograph 9. Some Yorkshire fog is also present, as are a few other grasses and forbs including creeping cinquefoil *Potentilla reptans*, creeping buttercup *Ranunculus repens* and a little wild angelica. This field was noted to be very wet during site visits early in the season. The dominance of tall fescue is likely to have resulted from seeding (this species is occasionally grown as a hay crop in damp situations). Ploughing is likely to have occurred following January 2015, since this field was observed (on a visit by BSG Ecology) to support a rough mixed grass sward at that time (BSG Ecology 2015). Habitat condition assessment for grassland of low distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition. Other small areas of poor semi-improved grassland are present at the site, including areas at the Science Park, the Science Park entrance roads, and on road verges on Sandy Lane. These areas are also considered to be in Poor condition.
Improved grassland	An area of improved grassland dominated by perennial rye-grass *Lolium perenne* with some creeping buttercup *Ranunculus repens* is present in the south-west of the site. This grassland has a short sward and is used for deer farming. This habitat is equivalent to Modified grassland under the UK Habitat Classification. The grassland in this area is not a HPI, based on the descriptions in BRIG (2011). Habitat condition assessment for grassland of low distinctiveness under Natural England (2023) guidance indicates that this grassland is in Moderate condition.

Amenity grassland	Various areas of amenity grassland (lawn) are present around the Science Park and on associated road verges. These are closely mown, and species-poor. equivalent to Modified grassland under the UK Habitat Classification. The grassland in these areas is not a HPI, based on the descriptions in BRIG (2011). Habitat condition assessment for grassland of Low distinctiveness Grassland under Natural England (2023) guidance indicates that this grassland is in Moderate condition.
Broad-leaved semi-natural woodland	This woodland contains oak *Quercus robur*, ash *Fraxinus excelsior*, abundant sycamore *Acer pseudoplatanus* in some areas, alder *Alnus glutinosa* and crack willow *Salix fragilis*). See Photographs 10 and 11. Where present, the shrub layer contains hazel *Corylus avellana*, goat willow *Salix caprea* and hawthorn *Crataegus monogyna*, and the field layer is dominated by bramble and ivy *Hedera helix*. This woodland is natural in character and has distinct shrub and field layers of native species. The non-native invasive plant species variegated yellow archangel *Lamiastrum galeobdolon* ssp. *argentatum* in present in the western part of this woodland, presumably having escaped from a garden at Begbroke (Target note 4). This habitat is considered to conform to the description of *Lowland Mixed Deciduous Woodland* in BRIG (2011) and therefore is a HPI. Habitat condition assessment for Woodland Natural England (2023) guidance indicates that this grassland is in Moderate condition.
Plantation woodland	A small area of planted woodland containing mixed mature (mainly non-native) trees is present around modern and old barns at Parker's Farm, east of the Science Park. See Photograph 12. There is also a belt of young deciduous planted woodland surrounding the Science Park. Due to its young age, lack of mature canopy or woodland ground flora, and dominance of non-native tree species, this habitat is not considered to conform to the description of *Lowland Mixed Deciduous Woodland* in BRIG (2011) and therefore is not a HPI. Habitat condition assessment for Woodland under Natural England (2023) guidance indicates that this grassland is in Moderate condition.
Hedgerows	There is a network of agricultural hedgerows across the site, mostly dominated by hawthorn but containing a rage of native shrub species (including blackthorn *Prunus spinosa*, spindle *Euonymus europaeus*, buckthorn *Rhamnus cathartica*, dogwood *Cornus sanguinea*, hazel, elder *Sambucus nigra*, English elm *Ulmus procera*, crab apple *Malus sylvestris*, and dog rose *Rosa canina*), and in some cases, trees (such as ash, crack willow *Salix fragilis*, pedunculate oak and (on the northern boundary of the Site) turkey oak *Quercus cerris.* See Photographs 1, 4, 6, 13, and 14. The majority of the hedgerows are species-rich, containing five or more woody species. Some are defunct (i.e., not stock-proof). Because they are all composed of 80% or more of native species, all of the hedgerows at the Site represent the HPI *Hedgerows*. For further details of hedgerows at the Site, including habitat condition assessments, see the section *Hedgerows* below. Habitat condition assessment for Hedgerows under Natural England (2023) guidance indicates that the majority of the hedgerows at the Site are in Good condition, with some in Moderate condition (see Hedgerows section below and Appendix 6).
Scrub	Several areas of the Site support areas of dense scrub, dominated by hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus* agg., with some blackthorn and other woody species. This habitat is equivalent to mixed scrub in the UK Habitat Classification. This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Habitat condition assessment under Natural England (2022) guidance for scrub indicates that this habitat is in Poor condition, due to a limited range of species being present and a uniform structure.
Introduced Shrub	Small areas of introduced ornamental shrubs are present within the Science Park. This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Condition assessment is not applicable to this habitat type.
Tall Ruderal vegetation	Tall ruderal vegetation is present as stands of common nettle in the north-east of the Site, and of hemlock *Conium maculatum* and other species on bunds just east of Parker's Farm. This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Habitat condition assessment under Natural England (2022) guidance for Urban habitat indicates that this habitat is in Poor condition, due to a limited range of plant species being present and a uniform structure.
Swamp	A small area of swamp surrounds part of pond P1 in the North of the Site, with abundant common reed *Phragmites australis*. This habitat is considered to be fen under the UK Habitat Classification. This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Habitat condition assessment under Natural England (2022) guidance for wetland habtiat indicates that this habitat is in Moderate condition, due to a limited range of species being present, and a high cover by crack willow *Salix fragilis*.
Running water	A small stream, the Rowel Brook, flows west to east across the north of the Site. See Photographs 10 and 11. The stream flows into the Oxford Canal on the north-eastern boundary

	of the site. A smaller stream flows north-west and enters the Rowel Brook towards the north-east of the Site. A short artificial stream is present at the east of the Site flowing around a lock on the Oxford Canal. This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Invertebrate assessment indicates that the water quality is fair (see invertebrate survey results below). On a precautionary basis, this habitat is considered to be in Good condition.
Ditches	Ditches are present adjacent to many of the hedgerows at the Site, particularly in the east of the Site. Many of these ditches held water during survey visits early in the year, but all were dry by late spring in 2018, 2021 and 2022. This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Habitat condition assessment under Natural England (2022) guidance for Ditches indicates that this habitat is in poor condition, due to the absence of aquatic and marginal vegetation, dense shading by trees in most areas, and a lack of water in the summer.
Ponds	Six ponds are present within the Site. Of these, the presence of GCN makes the pond at Begbroke Science Park (pond 4; see Photograph 15) a HPI, despite the fact that is it is a formal pond with ornamental fish and heavy pumped un ultraviolet filtration. See Photograph 15. The other ponds within the Site do not conform to any of the habitat descriptions in BRIG (2011) and are therefore not HPIs. For photographs of other ponds, see Appendix 1. Habitat condition assessment under Natural England (2022) guidance for Ponds indicates that pond 4 is in Moderate condition (it fails Good condition due to the pumped filtration, ornamental fish, and lack of surrounding semi-natural habitats). Pond 3 is in Moderate condition (it fails Good condition due to insufficient surrounding semi-natural habitat, and extensive shading). Other ponds at the Site are also in Moderate condition, due to shading by trees and a lack of wetland vegetation.
Trees	In addition to the woodland described above, there are various mature and semi-mature trees at the Site. The Science Park itself has some mature trees and abundant semi-mature trees. There is also a line of mature poplars on the western boundary of the disused landfill site (see Photograph 16). In the remainder of the Site, mature trees are only present in woodland or hedgerows. Individual trees do not conform to any of the habitat descriptions in BRIG (2011) and are therefore not a HPI. However, in most cases, trees at the Site form part of woodland or hedgerow habitat which are HPIs. The habitat condition of trees varies across the Site.
Buildings and hard standing	A range of buildings is present at Begbroke Science Park; these include a stone farmhouse and associated buildings (see Photograph 7) and various modern buildings (see Photograph 18). The only buildings at the Site outside the Science Park are two large modern agricultural barns (see Photograph 18) and a low stone barn or animal shelter (see Photograph 12), all at Parker's Farm. This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Condition assessment is not applicable to this habitat type.

5.10 Hedgerows (some with accompanying ditches) separate the majority of the fields at the Site and are present adjacent to various roads and footpaths. These hedgerows comprise almost entirely native species and have varying species-richness. Many hedgerows in the east of the Site are somewhat overgrown, with sections that are defunct (i.e., no longer stock-proof). Hedgerows towards the centre and west of the Site are generally heavily managed by annual trimming. The locations of the hedgerows at the Site are shown on Figure 3.

5.11 A total of 54 hedgerows were identified within the Site. Of these, 38 are species-rich and the remainder are species-poor. A total of 31 may be classified as 'Important' under the criteria listed under 'Wildlife and Landscape' in Schedule 1 of the Hedgerow Regulations 1997. This is summarised in Table 10.

Table 10: Summary of hedgerow survey results.

	29	9	
	2	14	

5.12 The total number of woody species in each hedgerow varies between one (i.e., hawthorn only in Hedgerow H17) and 14 (in Hedgerow H46). The average number of woody species per hedgerow (based on one or more 30 m sample lengths) varies between 1 (for hedgerow H17) and 10 (for hedgerow H49. Hedgerows in the east of the Site, east of the railway line are particularly rich in woody species and trees. Hedgerow H39, which forms part of the southern boundary of the Site, also contains abundant trees. The dominant hedgerow shrub across the Site is hawthorn, and the dominant hedgerow tree is pedunculate oak. Other woody species present include ash, English elm, spindle, elder, honeysuckle *Lonicera periclymenum*, hazel, dog rose, crack willow, goat willow *Salix caprea*, wild privet *Ligustrum vulgare,* crab apple, blackthorn, guelder rose, dogwood, buckthorn, and holly *Ilex aquifolium*.

5.13 Woodland ground flora species noted growing in hedgerow bases, particularly towards the east of the Site include dog's mercury *Mercurialis perennis*, lords-and-ladies *Arum maculatum*, and herb Robert *Geranium robertianum*.

5.14 A summary of the criteria under 'Wildlife and Landscape' in Schedule 1 of the Hedgerow Regulations which are met by Important hedgerows at the Application is provided in Table 11.

Table 11: Summary of Important hedgerows.

□r□□r□□□□r□l□ □□r□□□□□d□□r□□ □□	□ □□□□□□□□□d□□r□□ □□
Average of seven woody species.	H1, H4, H9, H16, H25, H31, H34, H35, H36, H42, H44, H45, H46, H47, H48, H49, H50, H51
Average of six woody species plus three additional features (as defined in Section 6 of Schedule 1 of the Hedgerow Regulations).	H33, H37, H39, H40, H41, H43, H54
Average of five woody species plus four or more additional features.	H8, H52
Present adjacent to a public road or other right of way and with an average of four woody species plus two or more additional features.	H5, H10 H23, H24

5.15 Further details of all of the hedgerows at the Site are included in Appendix 6.

□□□d□□

5.16 Six ponds are present within the Site, these are indicated as Ponds 1–6 on Figure 10. Descriptions of these ponds are provided in Table 10, along with all other ponds within 250 m of the Site. Ponds P10, P11, P12 and P13 were not accessed: the information presented for these was obtained from Ordnance Survey mapping and aerial photographs. Significant changes from the 2018 results for these ponds are noted in the table.

Table 10: Description of Ponds. Details for ponds within the Site are highlighted in grey.

□□□d□ ID□	D□□□r□□□□□□	A□□r□□□□ □□□□ D□□□□□□□□ □□d□ D□r□□□□□□□ □r□□ □□□□□	A□□r□□□□ □□□□ d□□□□□□□□r□□ □ □r□□□□□d□ □□□□□ d□□□□□□□ □□□□
1	Onsite. Shaded pond with some lesser duckweed *Lemna minor*, and abundant leaf litter and some dead wood. Margins support areas of swamp dominated by common reed and lesser pond sedge. Concrete dam and weir fitted, with metal outlet pipe. Size ca. 9 m × 6 m, with channel extending north-east. Depth to ca. 35 cm. The facilities manager at Begbroke Science Park mentioned that this pond was created as a water source for irrigation at the Weeds Research Organization which formerly occupied the Science Park. Heavily dominated by common reed *Phragmites australis*. Little open water present.	Within Site	80 m
2	Onsite. Series of four artificial rectangular ponds separated by narrow earth dams. Total size ca. 10 m × 4 m. Shaded by trees with abundant leaf litter. No vegetation. Maximum water depth noted. 25 cm. Dry by May 2018 and June 2021 and 2022..	Within Site	80 m

3	Onsite. Series of three artificial rectangular ponds separated by narrow earth dams. Total size ca. 10 m × 4 m. Shaded by trees with abundant leaf- litter. No marginal or aquatic plants visible. Maximum water depth noted ca. 25 cm. Dry by May 2018 and June 2021 and 2022..	Within Site	60 m
4	Onsite. Formal pond within Begbroke Science Park. Paved margins. Abundant marginal plants at southern end, including reedmace *Typha latifolia*, unbranched bur-reed *Sparganium erectum*, bogbean *Menyanthes trifoliata*, water horsetail *Equisetum fluviatile*, lesser duckweed *Lemna minor*, and water mint *Mentha aquatica*. Abundant aquatic plants, including hornwort *Ceratophyllum demersum* and Canadian pondweed *Elodea canadensis*. Large external filter system with UV unit. Ornamental fish present (many goldfish *Carassius auratus* and one large carp *Cyprinus carpio*). Size ca. 5 m × 15 m. See Photograph 15.	Within Site	20 m
5	Onsite. Pond under large multi-stemmed crack willow. Leaf litter present. Minimal wetland vegetation present. Shaded. Depth to ca. 25 cm. Size ca. 11 × 6 m. Dry by late May 2018 and June 2022.	Within Site	220 m
6	Onsite. Pond forming part of ditch network, adjacent to canal towpath. Bramble scrub adjacent. Minimal wetland vegetation noted. Shaded. Size ca. 12 × 4 m. Dry by mid-June 2018 and 2022.	Within Site	320 m
7	Offsite. No longer present. Large pond identified within grounds of the Ley Community residential centre in Yarnton in 2018. Turbid water and no aquatic plants noted. Banks steep/engineered in places. Population of large koi carp present. Ca. 35 × 15 m. This site had been redeveloped by June 2021, and the pond filled in.	80 m W	80 m
8	Offsite. Large naturalistic landscape pond surrounded by mature crack willows within a modern housing development. Various marginal vegetation present, including water mint. Ca. 80 m x 18 m.	10 m W	40 m
9	Offsite. Farm field pond surrounded by mature crack willows. Ca. 22 × 10 m. Located beyond the A44 duel carriageway which is considered a significant barrier to GCN connectivity with the Site. Accessed in 2018 but not considered necessary to survey in 2021/2022 due to A44.	50 m W	80 m
10	Offsite. Large pond in school grounds. Ca 85 × 20 m. Rowel Book flows through this pond. Not accessed. Located beyond the A44 duel carriageway which is considered a significant barrier to GCN connectivity with the Site.	260 m N	260 m
11	Offsite. Presumed to be a defunct settlement pond or similar, located at a defunct water treatment works. Now supports willow woodland. Ca 70 m × 10 m. Not accessed.	40 m E	40 m
12	Offsite. Presumed to be a defunct settlement pond or similar, located at a defunct water treatment works. Now supports willow woodland. Ca 70 m × 10 m. Not accessed.	60 m E	60 m
13	Offsite. Small farm field pond associated with field ditch network. Visible from the Site. Not accessed. Ca. 10 m × 8 m.	10 m S	530 m

5.17 The desk study returned records of 42 species of higher plants from the search area, within the last 10 years.

5.18 Two of these were form within the site: corn marigold *Glebionis segetum*, was recorded from an arable field in the north of the Site in 2017, this species was also recorded from the Site during surveys by BSG Ecology (see below); snakehead fritillary was recorded form from woodland adjacent to the Rowel Brook and gardens in the north of the Site, this species was listed as Nationally Scarce by Stewart et al (1994), although is now regarded as non-native (Stroh et al 2020). Field scabious *Knautia arvensis*, a species listed as *Near Threatened* in *A Vascular Plant Red List for England* (Stroh et al (2014) was recorded from 2017 from the verge of the A44 just outside the south-western boundary of the Site.

5.19 The desk study records include two Species of Principal Importance in England (SPI): tubular water-dropwort *Oenanthe fistulosa* (three records, 2017, 2019, and 2020, from meadows north-east of Oxford, ca. 2 km south-west of the Site) and white helleborine *Cephalanthera damasonium*, recorded multiple times (2018 to 2021, from Cassington quarry, ca. 1.4 km southwest of the Site). Neither of these species were recorded from the Site during the survey work carried out by BSG Ecology.

5.20 During the habitat and hedgerow surveys, corn marigold and common cudweed were recorded in the margins of arable fields at the Site. Their locations are shown in Figure 4. Corn marigold is listed as *Vulnerable* in the England Red List. It is listed as "*not scarce in Oxfordshire"* and is described as "*still widely found in Oxfordshire on non-calcareous soils*" in *Oxfordshire's Threatened Plants* (Erskine et al, 2018). Common cudweed is listed as *Near Threatened* in the England Red List. In *Oxfordshire's Threatened Plants* it is listed as "*not scarce in Oxfordshire"* but "*scarce in vice county 23*" (vice county 23 covers Northern and Eastern Oxfordshire and includes the Site), the description reads *"In vice county 23 there is not much suitable habitat and it has declined here steadily".*

Badger

5.21 A total of 41 records of badger were obtained in the desk study from 2013 onwards.

5.22 The Site provides suitable habitat for badger, and the desk study clearly indicates that this species is present in the local area.

The 2022 badger survey identified a very large active main sett towards the centre of the Site. There is an associated large annex to the west of the main sett, and several outlier sett / individual holes in the vicinity.

5.23 As second main sett is present on the Site boundary in the north-west of the Site, which has multiple entrance holes and nearby outlier setts.

5.24 Outlier setts are also present in the south-west, the south-east and the north of the Site. Various badger signs (including snuffle holes, runs, latrines, and hairs) were identified across the Site.

5.25 Sett locations are shown on confidential Figure 5.

Bats

5.26 The desk study returned 206 records of bats from the search area from 2013 to 2023. These included two records of bats from within the Site (a common pipistrelle *Pipistrellus pipistrellus* and a noctule *Nyctalus noctula*). They did not include any records of bat roosts within the Site.

5.27 Most of the records were from around Kidlington and Yarnton. They included records of *Myotis* species, Natterer's bat *Myotis natteri*, noctule *Nyctalus noctula*, common pipistrelle, brown long-eared bat *Plecotus auritus,* and soprano pipistrelle *Pipistrellus pygmaeus.* Roosts mentioned in the data include roosts of common pipistrelle in North Oxford.

5.28 The above records indicate that several species of bat are present in the local area of the Site. BSG Ecology has also confirmed the presence of at least 11 species of bats from the Woodstock area during surveys at other sites, including roosts of pipistrelle, soprano pipistrelle, Nathusius' pipistrelle *Pipistrellus nathusii*, barbastelle bat *Barbastella barbastellus*, Natterer's bat, Daubenton's bat *Myotis daubentonii*, noctule, brown long-eared bat, and lesser horseshoe *Rhinolophus hipposideros*.

5.29 All bat species in the UK are European Protected Species. Seven species (barbastelle, Bechstein's bat, noctule, soprano pipistrelle, brown long-eared bat, and greater and lesser horseshoe) are also Species of Principal Importance (SPIs).

5.30 The Site is located adjacent to the Oxford Canal, which is likely to provide important local foraging and commuting habitat for bats. Wet grassland at Rushy Meadows SSSI to the north of the Site may also provide valuable foraging habitat, and woodland at Bladon Heath and Begbroke Wood to the west, and Blenheim Park to the north is likely to provide valuable foraging and roosting habitat. Buildings at Yarnton, Begbroke, and Kidlington may provide roosting sites.

5.31 The Site provides habitat suitable for foraging bats, particularly the woodland along Rowel brook in the north of the Site and areas of damp grassland in the east of the Site. The network of hedgerows provides potential commuting routes across the Site, between the above foraging areas and may link roosting sites within and around the Site with foraging areas within and near the Site. The double hedgerows along Sandy Lane (east-west across the centre of the Site) and along a green lane south of Sandy Lane in the east of the Site may provide particularly valuable routes for bats due to their width and the shelter they provide shelter. The Site is currently not subject to a high level of lighting, except around Begbroke Science Park which has several floodlights.

5.32 The results of bat surveys presented below are broadly similar to those obtained in the 2018 survey work (see Appendix 1).

Bat Roost Potential of Buildings

5.33 Two clusters of buildings are present within the Site (Begbroke Science Park and Parkers Farm). These were subject to bat roost potential assessment along with several other buildings that are in close proximity to the Site. Together these constitute 19 separate buildings, listed in Table 11 and indicated on Figures 6ci and 6cii. Their suitability for roosting bats ranges from negligible to high.

Table 11: Potential of buildings to support roosting bats

L□□□□□□□	□□□d□□□□ N□□ □□r□	D□□□r□□□□□□	□□□□ □□□□□□□□□□
Parkers Farm (on-Site)	A1	Large agricultural barn. Concrete block lower walls and corrugated metal upper walls and roof.	Negligible
	A2	Large agricultural barn. Concrete block lower walls and corrugated asbestos upper walls and roof.	Negligible
	A3	Low stone barn/animal shelter with corrugated metal roof. Open side to south.	Moderate
Begbroke Science Park (on-site)	B1	Single-storey office building. 20th Century. Block and wood cladding walls and corrugated metal pitched roof. Some gaps under fascia on northern elevation. Building comprises offices on the eastern side with suspended ceilings throughout and offices on the western side with only a small area of suspended ceiling, the rest of the roof space is open. A boiler room is present in the southern side of the building. Various potential access points around the eaves and under fascias of the building. Presence of a roof void on the eastern side and possible cavity wall on the western side	Moderate
	B2a	Single storey brick and stone farm outbuildings, refurbished to offices. Pitched roof with slate tiles. Small gaps present under ridge tiles.	Low
	B2b	Single-storey stone farm outbuildings, refurbished to offices. Pitched roof with slate tiles. Gaps under some roof tiles, potential for access at eaves.	High
	B2c	Two storey stone farm outbuildings, refurbished to offices/reception. Pitched roof with uneven limestone slate tiles. Multiple potential bat access points. Also gaps under fascia and under soffit box.	High
	B2d	Small single-storey stone and brick building. Date plaque indicates 17th century. Pitched roof with stone tiles. Gaps behind fascia on both gable ends. Moss on roof limits access under tiles.	High
	B2e	Begbroke Hill Farmhouse. Large three-storey 17th century farmhouse. Gaps under fascia on west elevation. Some gaps under tiles.	High
	B2f	Single-storey stone building with slanted and pitched roof. With concrete tiles. Gaps behind fascia and soffit box into roof space on North-west elevation.	Moderate
	B3	Large modern two storey office building. 21st century. Clad with wood and metal.	Negligible
	B4	Hirsch Building. Late 20th century office building of brick, metal, glass and stone. Metal roof.	Negligible
	B5	Institute of Advanced Technology. 21st century. Metal and wood cladding.	Negligible