

Otter

There are 15 records of otter *Lutra lutra* within 2 km of the Site, with the closest occurring 0.1 km north of the Site in 2022 at Stony Stratford Nature Reserve.

Water Vole

There are 16 records of water vole *Arvicola amphibius* within 2 km of the Site. The most recent of these records is dates from 2020 and is approximately 0.8 km southwest from the Site.

Other Mammals

There are 116 records of a hedgehog *Erinaceus europaeus* with the closest to Site occurring 0.1 km away in 2021. There are three record of a hare *Lepus europaeus* within 2 km of Site, with the closest located 0.7 km from the Site in 2013. Harvest mouse *Micromys minutus* holds two records, with the closest being 0.3 km away at Stony Stratford Nature Reserve in 1984.

Invertebrates

There were several invertebrate species returned in the data search, including 11 records of the white-letter hairstreak *Satyrrium w-album*. This species is protected under Section 41 species of principal importance under the 2006 NERC Act in England, Schedule 5 of the 1981 Wildlife and Countryside Act, UK BAP priority terrestrial invertebrate species 2007 and is listed as a locally important species. The most recent records are from 2018, with the closest of these pertaining to 11 adults occurring at Old Wolverton Church, 0.1 km away.

Invasive Species

There are no records of invasive plant species within 2 km of the Site.

4.2 Field Survey

The habitats recorded on and off-Site within the survey buffer are described below. Target notes (TN) are provided in Appendix A and illustrated in Figure 1.

4.2.1 On-Site Habitats

Other cereal crop (c1c7)

The solar Site is dominated by wheat fields all with thin field margins approximately 0.75m wide and containing species comprising barren brome *Bromus sterilis*, soft brome *Bromus hordeaceus*, *Geranium* species, false oat *Arrhenatherum elatius*, cock's-foot *Dactylis glomerata*, cleavers *Galium aparine*, rough chervil *Chaerophyllum temulum* and common knapweed *Centaurea nigra*.

Modified grassland (g4)

There were two fields of modified grassland to the south and west of the solar Site and modified grassland verges along the grid connection route. The grasslands within the Site had a varied sward with species consisting of false oat, cock's-foot, perennial rye grass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, common nettle *Urtica dioica*, common hogweed *Heracleum sphondylium*, creeping buttercup *Ranunculus repens*, willowherb *Epilobium* sp., common bindweed *Convolvulus arvensis*, ribwort plantain *Plantago lanceolata*, common mouse-ear *Cerastium fontanum* and white clover *Trifolium repens*.

Native hedgerows and native hedgerows with trees (h2a5, h2a5.11, h2a6 & h2a6.11)

The fields within the Site were bounded primarily by other native hedgerows (h26a) and a limited number of species-rich native hedgerows with trees (h2a5.11) and native hedgerows with trees (h26a.11). The hedgerows ranged from approximately 2-3.5m in height and 1.5-2.5m in width and varied from being gappy to fully stock proof. The species throughout the Site consisted of hawthorn *Crataegus monogyna*, sycamore *Acer pseudoplatanus*, bramble *Rubus* sp., elder *Sambucus nigra*, hazel *Corylus avellana*, blackthorn *Prunus spinosa*, dog rose *Rosa canina*, ash *Fraxinus excelsior*, and field maple *Acer campestre*. The tree species within the hedgerows consisted of sycamore and ash.

Line of trees (w1g.33 & w1g.33.50)

The fields were also bounded by a number of line of trees throughout the Site with many overgrown hedgerows wider than 5m at the base for the classification of a line of trees. The species consisting of hawthorn, ash, blackthorn, field maple, willow *Salix* sp. and elder.

Ditch (r1.50)

The ditch within the Site has a steep nearly vertical banks with a shallow water depth of approximately 5 cm with a sluggish flow. The ditch was swamped by vegetation consisting of D1 at base very hard to see very overgrown banks mainly nettles and willowherb,

Other rivers and streams (r2a & r2b)

The grid connection is proposed to cross two watercourses Dogsmouth Brook and the River Great Ouse. Dogsmouth Brook was from bank top to bank top approximately 7m wide, the water width 2 m wider and 30 cm deep. The banks were approximately 45° with the bankside vegetation consisting of willowherb, lesser celandine *Ficaria verna*, nettles and cock's-foot. The River Great Ouse was crossed by an existing road bridge and was approximately 18 m wide, 1 m deep with steep bank profile dominated by tree species.

4.2.2 Off-Site Habitats

The habitats surrounding the Site are similar to those within the Site, and comprise arable fields and hedgerows. In addition are pockets of woodlands and waterbodies, as well as urban areas.

4.2.3 UKHab and Biodiversity Net Gain Survey

The habitats within the Site were assigned a condition score (where appropriate) as illustrated on Figure 1 and summarised in Table 7.

Table 7: Condition assessment of habitats within Site

Map Label	UKHab habitats type	Condition Assessment	Justification
C1	Other cereal crop (c1c7)	N/A	N/A
C2	Other cereal crop (c1c7)	N/A	N/A
G1	Modified grassland (g4)	Poor	Fails condition A
G2	Modified grassland (g4)	Good	Passes a, b, c, d, f, g
G3	Modified grassland (g4)	Poor	Fails condition A
G4	Modified grassland (g4)	Poor	Fails condition A
G5	Modified grassland (g4)	Poor	Fails condition A
G6	Modified grassland (g4)	Good	Passes a, b, c, d, e, f, g
G7	Modified grassland (g4)	Good	Passes a, b, c, d, e, f, g

Map Label	UKhab habitats type	Condition Assessment	Justification
G8	Modified grassland (g4)	Poor	Fails condition A
H1	Native hedgerow (h2a)	Good	Passes a1, a2, b1, c1, d1, d2
H3	Native hedgerow (h2a)	Moderate	Passes a1, a2, c1, d1, d2
H4	Native hedgerow (h2a)	Good	Passes a1, a2, b1, b2, c1, c2, d1, d2
H5	Native hedgerow (h2a)	Good	Passes a1, a2, b1, b2, c1, d1, d2
H6	Native hedgerow (h2a)	Good	Passes a1, a2, b1, b2, c1, d1, d2
H7	Native hedgerow (h2a)	Good	Passes a1, a2, b1, b2, c1, d1, d2
H8	Native hedgerow (h2a)	Good	Passes a1, a2, b1, b2, c1, c2, d1, d2
H9	Native hedgerow (h2a)	Moderate	Passes a1, a2, b1, b2, c2, d1, d2
H11	Native hedgerow (h2a)	Moderate	Passes a1, a2, b1, b2, d1, d2
H12	Native hedgerow (h2a)	Moderate	Passes a1, a2, b1, b2, c1, d1
H13	Native hedgerow (h2a)	Good	Passes a1, a2, b1, b2, c1, c2, d1, d2
H14	Native hedgerow (h2a)	Good	Passes a1, a2, b1, b2, c1, c2, d1, d2
Ht3	Native hedgerow (h2a)	Moderate	Passes a1, a2, b1, b2, d1, d2, e2
Ltd2	Other broadleaf woodland (w1g)	Poor	Passes a, e

4.2.4 River Condition Assessment

A MoRPh5 survey (comprising of 5 contiguous MoRPH field surveys) was undertaken for Dogsmouth Brook and the River Great Ouse where the grid connection crossed the watercourses the results are presented in Table below.

Table 8: River Condition Assessment

River	Average of positive indicators	Average of negative indicators	River Type	Preliminary Condition Score	Final condition
Dogsmouth Brook	1.158	-0.154	F- K-Straight/sinuuous, coarset CO, average GP	1.004	Moderate
River Great Ouse	1.579	-1.154	K-Straight/sinuuous, coarset SA, average SI	0.425	Moderate

4.2.5 Protected Species

Amphibians

Habitat Suitability Index (HSI)

A total of nine ponds and one ditch which were assessed within the Site all of which were located within 250m of the grid connection route. A habitat suitability index survey (HIS) was undertaken on

these ponds to determine the habitats suitability to support GCN. A total of four ponds were classified as 'Excellent' suitability for GCN, three were classified as 'Good' suitability for GCN and the remaining three were classified as 'Average' suitability for GCN. Full pond descriptions and HSI results are presented in Appendix D and Appendix E

In the wider intermediate habitat zone, the majority of the ponds are surrounded by arable fields, with broadleaved woodland/hedgerow. Depending on the cropping regime, arable fields can be sub-optimal terrestrial habitat for great crested newt due to the lack of cover at ground level (for example crops which grow tall and shade out ground flora). A further four ponds were located within 250 m of the grid connection route which were separated by unsuitable habitat such as arable or residential areas or barriers to dispersal such as watercourse or roads were present and therefore scoped out.

eDNA surveys

The eDNA surveys for the nine ponds are presented in Appendix F with all ponds and ditch one returning negative results.

Reptiles

The arable habitats on Site are largely unsuitable for reptile species due to disturbance and the lack of vegetation cover at ground level. Some of the semi-natural habitats provide potential habitat, particularly hedgerows and ditches; however, these were generally isolated in the agricultural landscape. The only recorded reptile from the data search was a grass snake, a species which are typically found near water, therefore they could potentially be present in the ditch, which has good connectivity to the wider area.

Bats

The PBRA focused on the trees within the Site; no buildings lie within or adjacent to the Site boundary. All trees were assessed with three trees classed as moderate bat roost potential (T1, T4 and T5) and nine (T2, T3, T6, T7, T8, T9, T10 and T11) as low bat roost potential, as shown in Figure 1. Further details are presented in Appendix A.

The wider area with the mixture of arable fields, hedgerows and ditches is considered to provide good foraging habitat for bat species, although the large size of fields does lead to habitat fragmentation. There are numerous agricultural fields, trees, and hedgerows in the surrounding areas. These features create a mosaic of habitats, partially connected by linear features, providing suitable foraging, and commuting areas for bat species. The areas of standing water are also likely to provide suitable foraging due to the presence of aquatic invertebrates.

Badgers

A full survey of the Site and a buffer, where access permitted, was carried out. There were limited signs of badgers using the Site, with a possible pathway and snuffle hole to the east. A possible sett was identified 0.2 km south of the Site and it is therefore likely that the species will range onto Site. Mammal holes were identified above a ditch adjacent to the eastern boundary. Due to the size, it is assumed it is a rabbit warren.

Otter

There were no signs of otter recorded within the ditch on Site. The Site does not have suitable locations for couches or lay-up sites where otters may occasionally rest. The ditch on Site is connected to a larger series of ditches and therefore, it is possible they could utilise the ditch whilst ranging about the area.

Water Vole

There were no incidental signs of water vole recorded during the survey and no burrows in evidence along the ditch banks. The ditches are not considered suitable for water vole due to the lack of vegetation and regular management. There is a single record of water vole 0.8 km from the Site. Using aerial imagery, it appears that the record is connected to the Site via the same ditch network, although it is not known how suitable the ditch network is or if any barriers exist. If the ditch on Site were to be left unmanaged, it would become potentially suitable for water vole.

Other Mammals

The desk study returned results for hedgehog and hare within 2 km. Of these, hare are most likely to be present on the Site itself, which offers both suitable breeding habitat and feeding resources. The fields on Site are less suitable for hedgehog due to the lack of cover and shelter, as well as the fields potentially being lower in invertebrate diversity on which they feed. The hedges on Site and also the off-site woodlands are likely to be more suitable for the species.

Invertebrates

The Site has moderate suitability for a range of invertebrate species, due to the hedgerows and ditch that are present.

4.2.6 Breeding birds

2023 Survey Results

Table 8 shows the results of the breeding bird surveys from 2023, containing the total number of potential breeding locations across Site. Overall, forty-two species were recorded with thirty-one displaying behaviours linked to breeding activity. A full list of species present on Site including the confirmed, probable and possible breeding location totals is provided in Appendix C and illustrated in Figure 2.

Table 9: 2023 Breeding Bird Survey Results

Species	Scientific Name	Conservation Status*	Total territories
Blackbird	<i>Turdus merula</i>	Green	21
Blackcap	<i>Sylvia atricapilla</i>	Green	10
Blue Tit	<i>Cyanistes caeruleus</i>	Green	6
Buzzard	<i>Buteo buteo</i>	Green	2
Chiffchaff	<i>Phylloscopus collybita</i>	Green	5
Collared Dove	<i>Streptopelia decaocto</i>	Green	1
Chaffinch	<i>Fringilla coelebs</i>	Green	10
Grey Wagtail	<i>Motacilla cinerea</i>	Amber	1
Goldfinch	<i>Carduelis carduelis</i>	Green	7
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Green	1
Great Tit	<i>Parus major</i>	Green	13
House Martin	<i>Delichon urbicum</i>	Red	1
House Sparrow	<i>Passer domesticus</i>	Red	20
Linnet	<i>Linaria cannabina</i>	Red	3
Mistle thrush	<i>Turdus viscivorus</i>	Red	1
Mallard	<i>Anas platyrhynchos</i>	Amber	1
Magpie	<i>Pica pica</i>	Green	1
Grey Partridge	<i>Perdix perdix</i>	Red	1

Species	Scientific Name	Conservation Status*	Total territories
Pheasant	<i>Phasianus colchius</i>	Green	1
Robin	<i>Erithacus rubecula</i>	Green	22
Reed Bunting	<i>Emberiza schoeniclus</i>	Amber	2
Rook	<i>Corvus frugilegus</i>	Amber	1
Skylark	<i>Alauda arvensis</i>	Red	68
Starling	<i>Sturnus vulgaris</i>	Red	2
Swift	<i>Apus apus</i>	Red	11
Swallow	<i>Hirundo rustica</i>	Green	3
Song Thrush	<i>Turdus philomelos</i>	Amber	1
Whitethroat	<i>Curruca communis</i>	Amber	17
Woodpigeon	<i>Columba palumbus</i>	Amber	14
Wren	<i>Troglodytes troglodytes</i>	Amber	23
Yellowhammer	<i>Emberiza citrinella</i>	Red	27

*Classified under the Birds of Conservation Concern (BoCC 5)

**Schedule 1 Species under the Wildlife and countryside Act 1981

17 species which are afforded additional protection as priority species in England and/or BoCC status (Red or Amber) were recorded as either possible, probable or confirmed breeders across the 2023 breeding bird surveys. No Annex 1 or Schedule 1 species were identified displaying breeding behaviour, but red kite *Milvus milvus* (Schedule 1) were recorded as being present on Site during the 2023 surveys.

The largest number of breeding territories went to BoCC Red listed species, skylark *Alauda arvensis*, having 68 confirmed, probable and possible breeding locations identified across Site. Yellowhammer *Emberiza citrinella* (BoCC Red listed species) held the second greatest number of breeding territories across Site with 27 confirmed, probable and possible territories.

BoCC red list species, house sparrow *Passer domesticus* held 20 territories, with 4 confirmed and 16 possible breeding territories across the Site. Starling *Sturnus vulgaris*, grey partridge *Perdix perdix*, mistle thrush *Turdus viscivorus*, linnet *Linaria cannabina* and house Martin *Delichon urbicum*, all BoCC red listed species, were identified as having 3 or less confirmed, probable and possible breeding territories across Site.

Several BoCC Amber listed species also exhibited breeding behaviour across Site; wren *Troglodytes troglodytes* held 23 territories, while whitethroat *Curruca communis* and woodpigeon *Columba palumbus* held 17 and 14 confirmed, probable and possible breeding locations respectively. Further Amber listed species include grey wagtail *Motacilla cinerea* and song thrush *Turdus philomelos* which both had one possible territory across Site.

Other notable species which were recorded on Site but where breeding behaviour was not observed were BoCC Red listed species greenfinch *Chloris chloris*, lapwing *Vanellus vanellus* and yellow wagtail *Motacilla flava* as well as, BoCC Amber listed species kestrel *Falco tinnunculus*.

5. Evaluation and Potential Impacts

5.1 The Scheme

The proposals for the Yardley Road Site involve the construction of a solar farm, with associated access tracks, substation, battery storage, inverter, grid connection and 2 m high security fencing with small gaps for animal passage.

5.2 Statutory Designated Sites

There are two statutory designated sites within 2 km of the Site, **Whittlewood Forest SSSI** and **Mill Crook SSSI**. Both sites are located over 1 km from the Site, they do not support the same habitats as what is present on Site and there is no connectivity to these designated sites. Therefore, due to the nature of the proposed development and relatively localised nature of the construction works, it is not anticipated that there will be impacts on any internationally or nationally designated sites.

5.3 Non-statutory Designated Sites

There are no LWS located within the Site footprint the closest LWS is Manor Farm adjacent to the grid connection route which is designated for habitats. The remaining eight LWS are all designated for habitat features such as lowland grassland and riparian habitats.

Effects from the Proposed Development are considered unlikely due to the nature of work with the grid connection placed through directional drilling where necessary and given the lack of impact pathways due to the distance from the Site, which provides a buffer from potential impacts.

5.4 Habitats

Overall, the majority of the habitats on Site are intensively managed as arable fields and are of low intrinsic ecological value. The existing arable farming regime means that the Site as a whole is fairly disturbed, with fragmented pockets of semi-natural habitats. The proposed solar farm will be focused within these fields, avoiding the more sensitive hedgerow and ditch habitats.

Suitable recommendations are set out in Section 6 to ensure good practice measures are in place during construction and nature conservation legislation is adhered to.

5.5 Species

Amphibians

The Site is sub-optimal for terrestrial amphibians, with the intensively farmed arable fields providing little cover at ground level, and there being numerous areas of bare ground. There were no water bodies located within the Site and nine suitable water bodies located within 250m. All nine water bodies returned negative eDNA results this shows there is not a GCN population within the wider area of the Site. With no suitable breeding habitat within 250m of the Site and sub-optimal terrestrial habitat within the Site it is therefore it is considered unlikely this species group will be present on Site.

Details for habitat enhancements on Site for amphibians are included in Section 6.

Reptiles

The Site itself is limited in its suitability for reptiles, due to the areas of bare ground, disturbance caused by arable farming. The bases of the hedgerows provide some hibernation habitat and as these habitats are not affected by the solar farm, no significant impacts on reptiles are anticipated.

The enhancement and habitat creation measures set out in Section 6 will serve to improve the habitat on Site for reptiles in the medium to long term.

Breeding Birds

The breeding bird surveys demonstrated that the Site is well used by a variety of species during the breeding season. During the surveys, 44 birds species were observed using the Site, with 312 species demonstrating breeding behaviour.

Wildlife Site selection in Northamptonshire is based on the criteria identified by Ratcliffe (A Nature Conservation Review, ed D.A. Ratcliffe, CUP, 1977). With regards to birds, two criteria were relevant for this Site;

- Farmland, including field margins, hedgerows and neutral grassland site which supports a range of breeding birds with a value equal to or exceeding 24; and
- Localities with 50 breeding species.

Following a review, it was determined that whilst the Site supports good populations of breeding birds, these were not at a level such that they could potentially qualify as a Local Wildlife Site for Northamptonshire. This was due to the fact that the breeding species total was under 50 and the value of breeding birds within the Site was under 24, as shown in the Table below.

Table 10: Bird Species Qualifying under the LWS Criteria

Species	Scientific Name	LWS Index Value
Blackcap	<i>Sylvia atricapilla</i>	2
Linnet	<i>Linaria cannabina</i>	3
Grey partridge	<i>Perdix perdix</i>	3
Reed bunting	<i>Emberiza schoeniclus</i>	2
Whitethroat	<i>Curruca communis</i>	2
Yellowhammer	<i>Emberiza citrinella</i>	2.5
Total		14.4

To avoid effects on nesting birds during site clearance and construction, measures are included in Section 6.

Following construction of the solar farm, ground-based habitats will remain present and could continue to be used by ground nesting birds. However, there is a likelihood that the reduced lines of sight, caused by the panels, combined with their potential use as predator perches (as well as the 2 m security fencing), could mean some species are deterred from nesting within the immediate vicinity of the panels. However, this effect could be off-set by the presence of security fencing meaning some ground-based predators such as fox *Vulpes vulpes* will be less likely to range on to Site.

The hedgerows are to be retained which provide good nesting habitat for species such as yellow hammer and grey partridge. The cessation of agricultural practices combined with the creation and enhancement of habitats, will result in no adverse effects for the species using these habitats.

The species that is most likely to be affected by the proposed development would be skylark, as this species is ground nesting in open areas and are less likely to nest between the solar arrays, however, will still use the Site for foraging. Furthermore, the cessation of agricultural practices combined with

the creation and enhancement of habitats to provide suitable ground nesting resources is considered to result in a net positive effect.

Mitigation and enhancement measures are detailed in Section 6 to ensure there is no significant impact on the local populations and increase in suitable nesting and foraging habitat on Site.

Bats

There were numerous trees on Site with bat roost potential. These trees are within hedgerows or woodland blocks and are all being retained in the design of the Proposed Development. The most recent record of bats was over 1 km from Site and dating from 2016.

The open habitats, ponds and woodland edges are also likely to support other foraging bats including pipistrelle species, which favour habitat features, and larger noctule bats which fly at height over open habitats to reach foraging grounds.

The substation may include a motion sensor operated security light to illuminate the area and facilitate any work required in the event of an emergency. There will be no other lighting required during the operation of the solar farm. Provided the lighting is designed in such a way to be bat friendly and is not directed towards the woodland edge to the east of the substation, no effects on bats are anticipated. Further details are provided in Section 6.

Therefore, proposed solar farm will not adversely affect the foraging habitat or availability of invertebrate prey on the Site. As a result, no adverse effects on bats are anticipated.

Habitat creation and enhancement measures are proposed in Section 6 to improve the habitat connectivity of habitat features on and off-site which will both increase the availability of foraging habitat for bats and the prey resource.

Badgers

The nearest record of badger activity was 0.8 km east from the Site boundary, one pathway and one snuffle hole were identified in the eastern part of the Site. This shows that badgers are using the Site but in very small numbers. recorded on the eastern part of the Site. The security fencing proposed around the Site may prevent badgers' access to the Site, which could restrict their range in the area. However, the surrounding landscape provides more suitable foraging habitat for the species and it is not considered that lack of access to the Site would be detrimental to the local population of badgers, especially as it does not appear to be well-used.

There will be no adverse effects on badger setts however good practice construction measures are proposed to reduce effects on foraging badgers, as well as recommendations for some access points in the fencing, as set out in Section 6.

Otter

There were no holts or potential holt sites noted on the Site during this survey visit. However, the ditch on site does provide connectivity to the wider area which would provide a potential route onto Site, should otters be present. The nearest record is 1.5 km east with limited connectivity to the Site. Therefore, it cannot be ruled out that otters may range onto Site for commuting purposes.

As otter are largely nocturnal it is considered unlikely that the construction works would have an impact on the species. During the operation of the solar farm, it is not considered to result in any adverse effects on otter.

Good practice measures are covered in Section 6 to prevent any impacts on otter.

Water Vole

There were no signs of water vole identified during the survey and the nearest record is located 0.8 km from the Site. Although there is good connectivity to the record, the ditch on Site is not considered suitable for the species due to the lack of vegetation and regular management of the ditch banks. Once the solar farm is operational, it is unlikely the management methods will continue, meaning this area in time will become suitable for water vole.

Therefore, it is not considered the species will be impacted during the construction phase or during the operational phase.

Good practice measures are included in Section 6 to avoid significant effects on water vole.

Invertebrates

The Site is considered to have limited suitability for invertebrates due to the Site comprising mostly of intensively managed arable land. The hedgerows and ditches do provide some suitable habitat for a range of invertebrates.

The arable habitats will be lost as a result of the proposed development. However, Section 6 includes recommendations to enhance the habitats on Site to include improvements in water quality and planting of nectar rich plants which would benefit invertebrates, therefore no significant effects are anticipated on invertebrates.