Preliminary Ecological Assessment



Measures to enhance and manage existing woodlands and create new woodlands in west Northamptonshire will be supported. Opportunities will be sought to create new woodland to buffer, extend and relink areas of ancient woodland which have become fragmented. The protection of aged or veteran trees outside ancient woodlands will also be supported. Development that would lead to further fragmentation or result in a loss of ancient woodland, aged and veteran trees will not be permitted unless the need for, and benefits of, the development in that location clearly outweigh the loss. Woodland enhancement and creation along the Yardley whittle wood ridge from the village of Yardley hastings towards Towcester and Brackley will be prioritised in recognition of its importance to the character and biodiversity of west Northamptonshire

Milton Keynes City Council adopted their local plan in 2019, with the core strategy being for 2016-2030. The relevant policies from this plan are included below.

Policy NE2 - Protected Species And Priority Species And Habitats

- a. Where there is a reasonable likelihood of the presence of statutorily protected species or their habitats development will not be permitted unless it has been demonstrated that the proposed development will not result in a negative impact upon those species and habitats.
- b. Where the site contains priority species or habitats, development should wherever possible promote their preservation, restoration, expansion and/or re-creation in line with Policy NE3. Priority Habitats are shown on the Policies Map accompanying this plan

Policy NE3 - Biodiversity And Geological Enhancement

- a. Development proposals will be required to maintain and protect biodiversity and geological resources, and wherever possible result in a measurable net gain in biodiversity, enhance the structure and function of ecological networks and the ecological status of water bodies in accordance with the vision and principles set out by the Buckinghamshire and Milton Keynes NEP.
- b. If significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated or, as a last resort, compensated for then planning permission should be refused.
- c. Development proposals of 5 or more dwellings or non-residential floorspace in excess of 1,000 sq. m will be required to use the Defra metric or locally approved Biodiversity Impact Assessment Metric to demonstrate any loss or gain of biodiversity.
- d. Mitigation, compensation and enhancement measures must be secured and be maintained for the lifetime of the development. Enhancement and compensatory measures should seek opportunities for habitat protection, restoration and creation to meet the objectives of the UK and Bucks & Milton Keynes Biodiversity Action Plan and aims of the Biodiversity Opportunity Areas. These measures should also create and enhance habitats to help wildlife adapt to the impact of climate change.

Policy NE4 - Green Infrastructure

- a. The network of green infrastructure throughout the Borough will be protected, extended and enhanced for its biodiversity, recreational, accessibility, health and landscape value and for the contribution it makes towards combating climate change. This is in accordance with the vision and principles (and the large-scale zone maps of Green Infrastructure Opportunity(39)) set out by the Buckinghamshire and Milton Keynes NEP.
- b. Development proposals will provide new green infrastructure or, if it is not possible, will contribute to the enhancement and strengthening of existing green infrastructure to provide wellbeing benefits to people through access to nature.

Preliminary Ecological Assessment



- c. Development proposals will ensure that existing ecological networks are identified and wherever possible maintained to avoid habitat fragmentation, and that ecological corridors, including water courses, form an essential component of their green infrastructure provision to support habitat connectivity.
- d. Green infrastructure protection, improvements and creation must be prioritised in locations where it can deliver most benefits. It should be multi-functional to deliver as many ecosystem services as the site requires, for example flood mitigation, access to nature (wellbeing benefits), plants for pollinators, carbon sequestration, and habitat for wildlife.
- e. The existing network of linear parks and linked parks and green spaces will be extended into the urban extensions and along the Ouse and Ouzel Valleys to the north to provide a well-connected network of green infrastructure that:
- 1. Is strategically planned.
- 2. Is attractive and enhances the surrounding landscape.
- 3. Is safe and well used for recreation.
- 4. Meets the needs of existing and future residents.
- 5. Is designed to provide a range of ecosystem services e.g. manage flood risk
- or provide flower rich habitats that supports a diverse range of pollinators.
- 6. Is designed to support mitigation and adaptation to climate change e.g. through vegetation for carbon uptake (carbon sequestration).
- 7. Achieves a net gain in biodiversity.
- 8. Is managed into the long-term.
- 9. Where possible improves connectivity with other green infrastructure networks e.g. by linkages to the urban parks.
- 10. Where appropriate explores economic opportunities that will support the network's sustainability for example in conservation, agriculture, renewable energy or outdoor environmental education or recreation; such activity must not result in a negative impact to the integrity of the network, the ecosystem services provided or on biodiversity.
- 11. Where green infrastructure is provided outside the linear parks system, applicants should detail how it will address the above requirements.



3. Methodology

3.1 Desk Study

A review of online data was undertaken in April 2024 to gather details of statutory nature conservation designations within 5 km of the Site, e.g. Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar Sites, Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs). A 10 km radius was used for sites designated for their international importance with birds as a qualifying feature.

NBRS, the Northamptonshire Biodiversity Records Centre, was contacted in May 2024 and March 2025 to obtain the following ecological data:

- Details of non-statutory designated Sites of nature conservation importance within 2 km of the Site, e.g. areas included on the Ancient Woodland Inventory (AWI), Sites of Nature Conservation Interest (SNCIs) and Local Wildlife Sites (LWSs); and
- Details of legally protected species or otherwise notable species within 2 km of the Site.

A search for relevant information was made on the following websites:

- MAGIC www.magic.gov.uk DEFRA's interactive, web-based database for statutory designations² (Accessed: 21/04/2025); and
- NBN Atlas https://nbnatlas.org/ for records of protected and notable species (Accessed: 21/04/2025)

The resolution of the data provided from NBIS varied such that for some records, it was only possible to attribute them to a 1 km grid square.

A review of Ordnance Survey maps and aerial imagery was undertaken to identify the presence of waterbodies within 500 m of the Site. Great crested newts, which are protected together with their habitats, can travel relatively large distances between breeding ponds and terrestrial habitat. Following guidance issued by Natural England (English Nature, 2001), land within 500 m of a great crested newt breeding pond should be treated as potential great crested newt terrestrial habitat and evaluated accordingly.

Information collated from great crested newt development licences and personal survey licence returns in England is also available on the Government's mapping portal 'magic'1. This indicates where ponds or areas have returned positive GCN survey results or have been licensed for GCN development mitigation. The data was reviewed to a 500 m - 1 km buffer surrounding the Site, depending on habitat connectivity and potential barriers to GCN movement.

3.2 Extended UKHab Survey

A UK Habitat (UKHAB) Classification survey of the solar Site was undertaken on 5th of June 2024 with the grid connection later surveyed on the 18th and 19th March 2025 (Figure 1). The habitat types were identified and mapped in compliance with the UKHab (2023) survey methodology and a small minimum mapping unit.

¹ Species listed within published red data lists or within national and local policies as being of conservation concern. These include species listed under the Northamptonshire Local Biodiversity Action Plan (LBAP) and Species of Principal Importance in England (NERC Act 2006).

¹ Using the MAGIC website (www.Magic.gov.uk) which provides authoritative geographic information about the natural environment from across government.



Table 1: UKHab Minimum Mapping Units.

MM Unit	MM Area	MM Length	MM Width	
	Minimum Mappable area feature (m²)	Minimum Mappable length of linear feature (m)	Minimum Mappable width of area feature and maximum width of linear feature (m)	
Small	25 (5x5)	5	1	
Standard	400 (20x20)	20	5	
Large	2500 (50x50)	20	5	

Source: UKHab (2023).

Secondary codes have been used on the UKHab Map (Figure 1) to further describe the primary habitat present. Dominant plant species were noted, as were any protected, uncommon, invasive species or species indicative of particular habitat types, but there was no attempt to compile exhaustive species lists for this element of the Site assessment. Botanical nomenclature in this report follows Stace (2019) for both scientific and English names.

The condition of the habitats present was assessed using the information collected during this survey to input into the statutory biodiversity calculator.

In addition to mapping out habitats, a series of target notes were produced to highlight features of ecological interest, or any other features that may present a potential constraint to the proposed development.

Whilst not a full protected species or botanical survey, the extended method enables a suitably experienced ecologist to undertake a baseline ecological appraisal of the Site that:

- Provides a preliminary evaluation of the nature conservation significance of the Site and assesses the potential for impacts on habitats/species likely to represent a material consideration in planning terms; and
- Determines the scope of further specialized surveys that may be required to inform an ecological assessment.

3.3 Modular River Physical (MoRPH) Survey

The baseline condition of the watercourses was assessed by undertaking a field-based survey and a desk-based survey. The field survey characterises the local physical structure of the river channel and its margins and was undertaken alongside the UKHab Survey in March 2025. The survey must cover a minimum of 20% of the length of the river extent within the red line.

The watercourse ran along the northern boundary and was 280 m in length; therefore a minimum of 56 m required to be surveyed. The river width was 5 m meaning the module length were 20 m totalling 100 m of the watercourse being surveyed.

This survey was undertaken by a surveyor who holds the MoRPH Certification.

3.4 Bats

An updated daytime survey was undertaken by a suitably experienced ecologist on 5th June 2024 following the Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition) (Collins, 2023). This updated the earlier survey that was done on 21st June 2021. The aim of this survey is to provide a detailed inspection of a tree/structure's exterior, to identify and record features that bats could use for roosting; Potential Roost Features (PRFs) as outlined in Table 2. The trees/structures on the Site were examined using direct observation and binoculars, where



necessary, to enable closer inspection of suitable features. For any trees/structures with PRFs the condition was recorded as well as the number and details of PRFs.

Table 2: PRFs commonly used by bats for roosting and shelter, and field signs that may indicate use of trees/structures by bats.

Features used as bat roosts	Signs indicating possible use by bats*
Tree PRFs	Bat droppings in, around or below a PRF
Woodpecker holes	Odour emanating from a PRF
Rot holes	Audible squeaking at dusk or in warm weather
Hazard Beams	Staining below the PRF
Other vertical or horizontal cracks and splits (such as frost cracks) in stems or branches	Tiny scratches around PRF Flies around entry point
Partially detached plate-like bark	Smoothing of surfaces around cavity/ cavity entrance
Knot holes arising from naturally shed branches, or branches previously pruned back to the branch collar	, ,
Man-made holes (e.g. cavities that have developed from flush cuts) or cavities created by branches tearing out from parent stems	
Cankers (caused by localised bark death) in which cavities have developed	
Other hollows or cavities, including butt-rots	
Double-leaders forming compression forks with included bark and potential cavities	
Gaps between overlapping stems or branches	
Partially detached ivy with stem diameters more than 50mm	
Structure PRFs	
Any potential access point beneath; windowsills, windowpanes, walls, behind peeling paintwork or lifted rendering, hanging tiles, weatherboarding, eaves, soffit boxes, fascias, lead flashing, gaps under felt (even including those of flat roofs), under tiles/slates and in existing bat boxes.	
Any gaps in brickwork or stonework should be identified and searched because they may allow access to cavity- or rubble-filled walls.	

^{*}Sometimes bats leave no visible sign of their presence on the outside of a building (and even when they do, wet weather can wash evidence away).

Each individual building/structure was assessed as having none, negligible, low, moderate, or high suitability for roosting bats, with any trees likely to be impacted by the proposed works assessed as containing either PRFs that likely support only individual bats (PRF-I) or multiple bats (PRF-M), according to the guidelines as summarised in Table 3 (Collins, 2023). Habitats with commuting, foraging and swarming suitability for bats were considered in conjunction with suitable roosting habitat.

Table 3: BCT Bat Roost Categories.

Potential suitability	Description of roosting habitats	Commuting and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.



Potential suitability	Description of roosting habitats	Commuting and foraging habitats
Low PRF-I	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation) A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in parkland situation) or a patch of scrub.
Moderate	A structure or with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High and PRF-M	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to know roosts.
Confirmed roost	A structure or tree supporting evidence of bat presence, such as droppings and feeding remains.	N/A

3.5 Badger

The Site was surveyed for badgers following the methodology outlined by Harris *et al.* (1991). The search covered all land within the Site, and up to 30 m potential impact zone beyond the boundaries. Any suitable habitat was target noted. Evidence of badger presence includes:

- Setts (which were classified as main, annex or outlier);
- Latrines or droppings;
- Paths, push-throughs or trackways;
- Hairs;
- Footprints;
- Snuffle pits;
- Scratching posts; and
- Feeding remains.

3.6 Habitat Suitability Index (HSI) Surveys

Ther were no ponds located within the Site but nine ponds and one ditch were located within 250 m from the grid connection route.



This followed published guidance³ which assigns a value to ten suitability indices including pond size, presence of aquatic plant species, fish and waterfowl. The overall value indicates the suitability of the pond for GCN, as follows:

- < 0.5 Poor</p>
- 0.5 0.59 Below average
- 0.6 0.69 Average
- 0.7 0.79 Good
- >0.8 Excellent

3.7 Great Crested Newt eDNA

Nine ponds were identified within 250m of the grid connection. These were surveyed 15th April 2025.

The eDNA survey was conducted following the appropriate methodology by two ecologists experienced in this survey method. Once the water samples were collected from each of the ponds, they were stored in a refrigerator before being couriered to a laboratory where the samples were subsequently analysed.

The laboratory testing was conducted in two phases; first the sample was extracted. This involved pooling together all tubes from each pond to combine all the eDNA. The pooled sample then underwent real-time Polymerase Chain Reaction (q-PCR). This process amplified selected parts of the eDNA, allowing it to be detected and measured.

QPCR combines the PCR amplification and detection into a single step which eliminates the need to detect products using gel electrophoresis. With q-PCR, the florescent dyes specific to the target sequence were used to label PCR products during the thermal cycling. The accumulation of fluorescent signal during the exponential phase of the reaction was measured for fast and objective data analysis.

The primers used in this process were specific to a part of mitochondrial DNA only found in GCN ensuring no other DNA is amplified. Samples were tested in a clean laboratory and the different phases of testing were kept separate to reduce any risk of cross-contamination. Each pooled sample was replicated 12 times to ensure accurate results. If one of the 12 replicates would test positive the sample was declared positive. The sample was only declared negative if no replicates showed amplification.

3.7.1 Breeding bird surveys

The 2023 breeding bird surveys used a modified Common Bird Census (CBC) methodology. They comprised four visits between April – July spread at least 3 weeks apart and were undertaken by an experienced bird surveyor. The surveys were carried out for the entire Site, where accessible. Each survey commenced approximately one hour before sunrise and the survey route was walked in opposite directions each time to maximise detection across the Site.

Following each survey, the results were tabulated and a fair copy map created of registrations. These were then compiled in order to determine the number of confirmed, probable and possible territories present within the survey area using the following criteria.

 Confirmed breeding – active nest, bird seen carrying food/nest material (except raptors), fledglings;

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³ Habitat Suitability Index (Oldham et al., 2000)



- Probable breeding birds displaying some of these signs were observed in the same location on more than one visit - males singing, a pair of birds, birds defending a territory; and
- Possible breeding birds seen singing or displaying on one occasion, a pair in suitable habitat, birds reacting antagonistically on one occasion.

The survey dates and weather conditions are provided in Table 5 below. The results can be found in Section 4.2.5; Table 9 and a completed species list can be found in Appendix C.

Table 4: 2023 Breeding bird survey details

Dates (2022)	Surveyor	Weather conditions
4 th April	FM	1-13°C, Visibility 3, wind 1/2, dry
11 th May	NR	10-17°C, Visibility 3, Wind 1/2, wet
20 th June	NR	18-22°C, Visibility 3, Wind 1/2, dry
25 th July	ТВ	14-24°C, visibility 3, wind 2, dry

3.8 Limitations

The surveys were undertaken during of what is considered the optimum time for undertaking such surveys. All survey work was done in the optimum time or season. The entirety of the Site was fully accessible, and walked over by a suitably competent ecologist, no access issues on-site were encountered.

4. Results

4.1 Solar Farm Desk Study

4.1.1 Designated Sites

Statutory Designated Sites

There are two statutory designated sites within 2 km of Site, both are Sites of Special Scientific Interest (SSSI).

Whittlewood Forest SSSI

Whittlewood Forest SSSI is located approximately 1.4 km east from the Site. It is of interest for its cluster of broadleaved woods between Whittlebury and Potterspury and are the largest and least altered remnants of the once extensive Crown coppices of Whittlewood Forest. They comprise a discrete group of ancient semi-natural woodlands typical of the Midland clays, exhibiting a wide range of canopy structure. The relative abundance of mature and over- mature trees and the extent of 'self-grown' stands is notable within Northamptonshire. Included in the SSSI is an area of parkland notable for its beetle fauna.

Mill Crook SSSI

This designation is located approximately 1.8 km north of the Site. Mill Crook SSSI is a traditionally managed hay meadow situated on alluvial soils in the valley of the River Tove. The grassland is floristically diverse and an outstanding example of the meadow foxtail Alopecurus pratensis-great burnet Sanguisorba officinalis flood-meadow community type. Such neutral grassland is declining rapidly as a result of both agricultural changes and the extraction of river gravels present beneath alluvium and is now very rare at both a national and county level. This SSSI is the best of the few remaining species-rich hay meadows recorded from the Tove Valley.



Non-Statutory Designated Sites

No non-statutory designation overlaps with the Site itself. There were nine Local Wildlife Sites non-statutory designated sites identified within a 2 km buffer of the Site during the data search, the closest of which is Manor Farm LWS adjacent to grid connection. Details of each of these sites are shown in the Table below.

Table 5: Non Statutory Designated Sites within 2 km of the Site

Site name	Approx. distance from Site (km)	Description	
Manor Farm	0.00	Lowland meadow; extensive wetland habitats, particularly flowing water and swamp.	
Stony Stratford Nature Reserve	0.01	Lowland Meadows (GN1), Standing open water (AS0)	
River Ouse at Wolverton	0.42	Large River, River corridor, riverine species	
Yardley Gobion 0.65 Ponds		Two over-shaded ponds, one of which forms the moat of the former moorend castle and the other a fishpond. From a wildlife point of view these provide a useful water source and cover for wildlife in this part of the County and qualify as a Wildlife Site with 16 aquatic, submerged and marginal indicators	
Grand Union Canal - 0.90 Navigation Inn		A fairly open stretch of canal with a good variety of species and a well-kept hedge. A useful corridor of habitat which is also currently acting as a potential seed source for less diverse areas of this length of canal.	
Blue Bridge North	1.00	Lowland Meadows (GN1)	
Lincoln Lodge Meadow	1.00	A wet grassland of importance to curlew, which have attempted to breed here.	
Old Limestone Quarry	1.65	Calcareous Grassland (GC0)	
Linford Wood 1.73		Broadleaved, mixed, and yew woodland (WB0)	

4.1.2 Species of Conservation Interest

Amphibians

There are 50 records of great crested newt within 2km of the Site. The closest of these records is 0.03 km west of the Site in 2020. There are 31 records of smooth newt *Lissotriton vulgaris* with the closest occurring 0.03 km southeast from the Site at Bradwell Abbey in 2021. Common frog has 22 records with the closest to Site being *Rana temporaria* again, southeast 0.03 km from the Site at Bradwell Abbey in 2021. There are ten records of common toad *Bufo bufo*, with the nearest to Site occurring 0.1 km away at Bradwell Abbey in 2003.

There are 32 great crested newt class survey licence returns between 2015 and 2017 within 2km of the Site. There is one (Grid ref: SP 80000 40700) located 0.2km south from the centre of the grid connection with the survey date from 2017 with Great Crested newt present.

There are 14 ponds within a 250m buffer of the grid connection.

Reptiles

There are 23 record of grass snake *Natrix natrix*, with the closest record being 0.05 km southwest of the Site in 2010. There are two records of common lizard *Zootoca vivipara* from 2010, with the nearest being 1.0 km east of the Site. The data search also returned five records of slow worm *Anguis fragilis* with the most recent being in 2010, 0.05 km southwest of the Site.



Birds

Numerous notable species records were returned in the data search, with most of the records originating from the Yardley Gobion Ponds LWS and Stony Stratford Nature Reserve. The most recent record is a record of hen harrier *Circus cyaneus* dating from 2018 and located adjacent to the Site boundary.

A total of 32 records of skylark *Alauda arvensis* within 2 km of the Site were returned between 1971 and 2020.

Barn owl *Tyto alba* have also been recorded within the 2 km buffer but not on Site. This includes a record of three adults, 1.2 km from the Site in 2012.

A hoopoe *Upupa epops* was recorded approximately 1 km west from the Site dating from 2003. A full list of bird species within 2 km of the Site are detailed in Appendix D.

Bats

There were no bat records from within the Site itself, but eight species were recorded within 2 km of the Site, along with three species which were identified down to genus level. Details of these records can be found in Table 7, below.

Table 6: Bat records within 2km of the Solar Site

Species	No. of records	Most recent record	Distance of most recent record from site centre (km)	Roost records within 2km of site centre
Nyctalus noctula Noctule bat	18	2020	0.02	0
Pipistrellus pipistrellus Common pipistrelle	219	2020	0.02	2
Pipistrellus nathusii Nathusius' pipistrelle	1	2020	0.04	0
Plecotus auritus Brown long-eared bat	20	2019	0.1	7
Myotis sp. Myotis bat species	3	2019	0.1	0
Pipistrellus pygmaeus Soprano pipistrelle	10	2020	0.1	0
Myotis daubentonii Daubenton's bat	12	2020	0.2	0
Myotis nattereri Natterer's bat	1	1997	0.3	0
Pipistrellus sp. Pipistrellus bat species	20	2013	0.8	9
Plecotus sp. Long-eared bat species	2	2016	0.8	0
Myotis mystacinus Whiskered bat	1	2020	1.1	1

Badgers

There are seventeen records of badger *Meles meles*, with the nearest to Site pertaining to 3 adults, 0.2 km east of the Site boundary dating from 2014.