xii In summary, low numbers of common and widespread bat species have been recorded on site. The passes were quite evenly spread between both static locations.

xiii Full results are shown in Appendix 7.

4.4.7 Birds

ix The development Site falls within the Sherwood Forest ppSPA for honey buzzard, nightjar and woodlark, however the site was largely unsuitable for these species, being dominated by frequently cultivated arable land. In particular, woodlark and nightjar prefer heathland and conifer forest clearings, or more good quality farmland. Honey buzzard are summer visitors, with isolated populations, preferring open woodland glades and undisturbed woodlands.

x The scrub, treeline, arable and hedgerows on site are suitable for bird nesting sites. However, no suitable nesting habitat for Schedule 1 birds was recorded on site and these are considered likely absent.

4.4.8 Reptiles

xi No records of reptiles were returned during the desk study. Terrestrial habitats on site were dominated by arable field, providing low opportunities for foraging, refuge seeking and commuting reptiles, however some basking opportunity. The dense scrub, marshy and poor semi-improved grassland and hedgerows provide opportunity for commuting, refuge seeking and foraging reptiles.

xii As such, a suite of reptile surveys was undertaken following standard methodology as outlined in Surveying for Reptiles (Froglife, 2015).

xiii A mixture of artificial refugia formed of roofing felt and tin at a ration of 2:1 measuring 0.5m2 were laid out on the 20th June 2022 and left to 'bed in' for two weeks prior to the first survey. The refugia were placed in areas where the habitat was considered suitable for reptiles, such as along field margins in long grassland or the edge of scrub where they would receive sun. The density minimum for population monitoring of reptiles is 10 refugia/hectare. However, it is recommended to take a precautionary approach for presence/absence surveys as small populations are difficult to detect. Therefore, 33 refugia/hectare were deployed across the site in suitable habitat (grassland >10cm sward height with a dense thatch understory, scrub and marshy grassland).

xiv The refugia were checked during appropriate weather conditions (dry, calm and an ambient temperature 11-20°C). During each survey visit, all other parts of the Site were subject to a walkover survey looking for reptiles with visual search of natural refugia (log piles) as well as edge habitats. Refugia were removed following the completion of the surveys.

xv No reptiles were recorded during the surveys.

4.4.9 Water Vole, Otter and White Clawed Crayfish

xvi Habitats on site were deemed negligible for the above species to persist and it is therefore considered unlikely for riparian species to be present or affected by proposals.

4.4.12 Other Priority Fauna Species

xvii The habitats on site were suitable for hedgehogs *Erinaceus europaeus* and brown hare *Lepus europaeus* Records were identified for brown hare and hedgehog, and they could utilise the site. Some invertebrates such as the Wall moth could utilise the poor semi-improved grassland habitat which had some larval food plants present. However, this was an isolated habitat and it is not considered that the site would support large assemblages of any NERC invertebrate species.

xviii Due to a lack of suitable habitats, the site is not considered likely to support any other legally protected or Priority species.

4.4.13 Biodiversity

xix When assessed against the DEFRA Metric 3.1 for biodiversity, the site contains 45.84 baseline biodiversity units for habitat areas and 8.64 for linear feature (e.g. hedgerows). The most distinctive habitat within the site was the marshy grassland and scrub, with the arable field accounting for the majority of biodiversity units due to the extensiveness of this habitat.

5 IMPACTS AND MITIGATION (CUMULATIVE AND/OR IN ISOLATION)

5.1 Planning Application Search

i A search was conducted of planning applications within the vicinity of the proposed developments, using the Ashfield District Council Planning Application Viewer. The search was limited to the five year period preceding the date of issue of this report (due to the typical five-year lifetime of planning permission). Excluding retention applications (i.e. typically local-scale residential or commercial developments where an impact has already occurred), small scale applications and withdrawn and refused applications, the following applications were identified as having the greatest potential to act in-combination with one or more of the proposed developments:

- Planning Application V/2021/0089 - Land West Of, Beck Lane, Sutton In Ashfield, Nottinghamshire Reserved matters application of planning permission v/2016/0569 for 322 dwellings, public open space and associated infrastructure
- PENDING Planning Application V/2022/0562 Hamilton Hill Farm, Cauldwell Road, Sutton In Ashfield, Nottinghamshire, NG17 5LB Development of a solar farm with ancillary infrastructure, security fence, access and landscaping.
- Planning Application SCR/2020/0001 – Car Park Southbound, Sutton Parkway Station, Lowmoor Road, Kirkby In Ashfield, Nottinghamshire
- Planning Application V/2021/0792 - Land At Rushley Farm North Of Marr Route, Cauldwell Road, Mansfield, Nottinghamshire. Outline planning application with some matters reserved (reserved matter of access) for a residential development of up to 235 dwellings

ii The proposed residential developments impact upon similar habitats to this site, namely dominated by arable fields with boundary hedgerows, or grazed fields. The boundary vegetation within these developments are largely being retained and some mitigation proposed. Ecological enhancements are being made as part of these developments, with net gains being calculated from biodiversity impact assessments on 3 out of 4 sites. These projects will also result in increases to noise and lighting pollution during the construction and operational phase of these projects, with impacts to bats and other protected species which could act in-combination with the proposed development to elevate impact significance.

iii In summary, potential cumulative impacts are predicted to elevate the geographic scale of impact significance for habitat losses from Negligible (for the proposed development alone) for bats to Local. In contrast, potential cumulative impacts are not predicted to elevate the geographic scale of impact significance for any other protected fauna species due to the retention of key commuting habitats, and the introduction of further terrestrial habitat as per proposals.

5.2 Japanese Knotweed

i Japanese Knotweed is a highly invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) which can result in structural damage and landowners are legally obliged to prevent its spread into the wild. Excavations within the vicinity of Japanese Knotweed root systems may risk spreading rhizomes and inadvertently spreading the knotweed to other areas of the site.

ii It is recommended that a minimum 7 metre exclusion zone be established on site around the known area prior to construction/site clearance works commencing on site with appropriate signage. The 7-metre exclusion zone should remain in place until the knotweed has been eradicated. Removal by a specialist contractor is recommended.

5.3 Habitats

i The hedgerow on site is the only habitat of value as they are Habitats of Principal Importance (HPI, NERC Act, 2006). The hedgerow does not qualify as an important hedgerow under the Hedgerow Regulations, 2007. However, in combination with above developments, impacts are elevated from negligible to local for bats. To mitigate potential impacts upon these habitats during construction:

- Retained habitats/trees to be protected through fencing; and
- Implementation of a robust pollution prevention strategy.

ii No other habitats of importance were recorded on site (dominated by arable).

5.4 Statutorily and Non-Statutorily Designated Sites

i No impacts upon designated sites are anticipated from the proposals as it is not within any IRZ. Furthermore, the site contains no suitable nesting or foraging habitat for any of the candidate species of the proposed Special Protection Area Sherwood Forest, which comprise of nightjar, woodlark and honey buzzard.

ii The development is unlikely to affect local LWSs, with the closest LWS, Hamilton Hill, being unconnected to the site terrestrially. However, given its proximity to the site, it is advised that mitigation measures such as dust suppression techniques and pollution prevention measures should be in place during site preparation and construction, to prevent indirect negative impacts .

5.5 Fauna

5.5.1 Great Crested Newts

i Despite a positive eDNA result on Ditch 1 in 2022, no GCN were found during the suite of presence/absence surveyed conducted in 2023.

ii The majority of the site was dominated by arable field which is considered sub-optimal for terrestrial GCN and so it is considered unlikely that a large population would be present within the site due to the availability and proximity of suitable aquatic and terrestrial habitats. Furthermore, ditches 2 and 5 and five other ponds within 500m of the site were considered to be separated by a barrier to dispersal through a main road. As well as this, ditches 3 and 4 were scoped out of GCN suitability.

iii It is therefore considered unlikely that GCN are present on site or in the immediate area, and it is highly likely that the eDNA survey result in 2022 was a false positive, given the results of the 2023 presence/absence surveys. As such, no further surveys or mitigation are required.

5.5.2 Bats

Bat Tree Roosts

iv No bat roosts were identified within T17 during the further nocturnal surveys. As such, bat roosts are considered to be likely absent from site and therefore the removal of this tree will not require further mitigation or a Protected Species Licence (PSL).

v In the event that any bats are encountered during felling works, all works will immediately cease and an ecologist should be contacted for further advice.

Bat Foraging Habitat

iii For the purposes of quantifying the data generated during the transect surveys and static monitoring the approach of Wray *et al* (2010) to determine the appropriate geographic frame of reference has been adopted. This approach takes into account the rarity of the species recorded, the approximate numbers of bats using the features based on survey data, the presence of nearby roosts and the potential commuting /foraging

features present. One score is then taken from each column depending on the most accurate representation it provides. These are then added together to determine the overall Geographic Frame of Reference score for that species of bat.

Table 3: Score Value for Foraging and Commuting Areas

Species	No of bats	Roost/ potential roost nearby	Type and complexity of linear features
Common (2)	Individuals (5)	None (1)	Industrial or other site without established vegetation (1)
		Small numbers (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small numbers (10)	Moderate number / not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
		Large numbers of roosts, or close to SSSI for species (5)	Larger or connected woodland blocks, mixed agriculture, and small village/hamlets (4)
Rarest (20)	Large numbers (20)	Close or within SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

iv Low levels of bat activity were recorded during the transect surveys, dominated by commonly occurring common pipistrelle bats. However, small amounts of rarer species such as *Myotis sp.* and *Nyctalus sp.* were recorded. As such Rarer bat species, in small numbers were selected. No roosts have been identified within the site's locality during the nocturnal bat surveys conducted on site, however, two bat roosts within 250m of the site were returned during the desk study data provided. As such, small numbers of roosts within the locality were selected. The site also lies within the town of Sutton-in-Ashfield with intensive arable land located on site, and therefore 'suburban areas' was selected for the type and complexity of linear features.

v These attributes total the value of foraging and commuting areas on site at 20 (as shown below). This score demonstrates the level of bat activity on site to be significant at the **district, local or parish level** (Table 7).

Rarer (5) + Small numbers (10) + Small numbers (3) + Suburban areas or intensive arable land (2) = 20

Table 4: Scoring System for Assessing Value of Foraging and Commuting Habitat for Bats

Geographic frame of reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30

District, Local or Parish	11-20
Not Important	1-10

vi The majority of bat activity was recorded along the site's boundaries and hedgerow networks. The boundary and internal hedgerows provide ecological commuting routes for a low number of bats.

vii The sites' internal hedgerows are for the most part being retained with small amounts lost to facilitate the proposals for infrastructure purposes. This will be compensated for with enhancement of hedgerows and other linear features. Furthermore, additional native hedgerow planting, with extensive tracts of new woodland planting proposed around the development peripheries. In addition to this, wildflower meadows will also be created throughout the site, forming part of the ecological buffer surrounding the residential development, as well as a series of ponds. The provision of these habitats will provide both suitable commuting habitat on site in the long term, as well as foraging areas for a variety of bat species by providing a broad variety of food sources for a diverse range of invertebrates. This will in turn, provide an ample food source for insectivores such as bats. As such, long term impacts to foraging and commuting bat species are considered to be negligible with the currently proposed habitat creation and enhancement throughout the site.

viii The boundary hedgerows on site also provide ecological commuting routes for bats and these are to be maintained within the proposals. As such, any retained hedgerows should be kept as dark corridors post development to maintain the ecological linkage to the wider landscape, particularly to the north of the site. Light spill onto the hedgerows should be minimised and should follow the guidance set out in Bats and Lighting in the UK (BCT and ILP, 2018). Therefore, associated site lighting proposals must consider the following:

- Avoid lighting where possible;
- Install lamps and the lowest permissible density;
- Lamps should be positioned to direct light to avoid upward spill onto any green corridors that could be used by commuting bats or features with bat roost potential;
- LED lighting – with no/low UV component is recommended;
- Lights with a warm colour temperature – 3000K or 2700K have significantly less impact on bats;
- Light sources that peak higher than 550nm also reduce impacts to bats; and
- The use of timers and dimmers to avoid lighting areas of the site all night is recommended.

5.5.3 Birds

vi The scrub, treeline, arable and hedgerows were all suitable for bird nesting sites. However, no suitable nesting habitat for Schedule 1 birds was recorded on site and these are considered likely absent. Furthermore, the majority of habitats of value to breeding bird (hedgerows and trees) are to be retained within proposals. As such impacts are deemed unlikely to extend beyond the local level.

vii Any tree management works or vegetation clearance should take place outside the bird nesting season to ensure compliance with the general protection afforded to wild birds under the Wildlife and Countryside Act 1981 (as amended). If this is unavoidable, the trees and hedgerows should be carefully checked, by a suitably qualified ecologist, prior to removal. Where active nests are found, working restrictions would be put in place until follow up survey can demonstrate that all chicks have fledged. The will reduce impacts to negligible.

5.5.4 Reptiles

viii The overall habitat quality of the site limits its suitability for reptiles, being largely dominated by an arable field. Furthermore, no reptiles were found during surveys. Persistence of reptiles on site is therefore considered unlikely and certainly this site will not form a core area for reptiles locally. However, as there remains the residual risk for reptile to pass through the site, utilising features such as the hedgerow boundaries and the marshy grassland, a careful works procedure with regard to reptiles is recommended for site vegetation clearance.

ix The actual need for such clearance will be minimal due to the retention of the hedgerow habitats etc, however, where this is required works should be conducted in temperatures above 11°C, ideally in the late morning to afternoon, when reptiles are most active. The habitats should first be cut to a height of 15-20cm by a tractor progressing at walking pace only. The area should be left for 24-48hrs and then cut to 5cm using the same method, working in the same direction as the previous cut. This will allow any reptiles present to disperse into the wider environment unharmed. In the extremely unlikely event a reptile is seen during these works, they should be allowed to escape unharmed at their own pace. Only a trained ecologist should attempt to move reptiles by hand. If multiple reptiles are encountered, works should cease, and the methodology be re-evaluated. Following this precautionary methodology reduces the likely impacts upon reptile to negligible.

6 SUMMARY OF POTENTIAL IMPACTS

Table 5: Table Summary of Impacts

Ecological Feature	Importance (Geographic Frame of Reference)	Potential Effect	Mitigation Proposed	Proposed Mechanism to Secure	Residual Impact
Statutory Designated Sites	County or above	None	No	N/A	N/A
Non-statutory designated sites	County	None	No	N/A	N/A
Invasive Species	N/A	Likely to be disturbed and spread on site as part of the proposals.	Removal of Japanese knotweed using licenced treatment prior to development on site.	Planning Condition – details within a CEMP	
Habitats including invasive and Priority flora	Local	Loss of habitats of low diversity and possible indirect effects as a result of construction.	Retention of hedgerow and trees in accordance with root protection areas	Planning Condition – details within a CEMP	Not significant
Reptiles	Local	Potential for killing/injury of individual animals during vegetation removal and construction.	Precautionary In relation to legislative protection of animals	Planning Condition – detail within a PMW	Not significant
Bats – Roosting	Local	None	No	N/A	N/A
Bats – Foraging/Commuting	Local	Site currently utilised by low numbers of commonly occurring and rarer bat species. Unlikely to be impacted by proposals as low quality habitat present on site and linear features being mostly retained.	Creation of woodland buffers, wildflower meadows, scrub, ponds and associated marginal planting. Replacement of vegetation with native tree species and maintenance of connective features such as hedgerows	Planning Condition – details within CEMP and LEMP	Not significant

Ecological Feature	Importance (Geographic Frame of Reference)	Potential Effect	Mitigation Proposed	Proposed Mechanism to Secure	Residual Impact
			and tree lines by adhering to root protection zones. Implementation of sensitive bat lighting scheme.		
Great crested newts	Local	None.	No.	N/A	N/A
Otter, Water vole and WCC	N/A	None	No	N/A	N/A
[redacted]					
Breeding birds	Negligible	Damage or destruction of nests	Precaution in relation to legislative protection of animals	Planning Condition - details within a CEMP	Not significant
Biodiversity	Local	Majority of removal of low diversity and common habitats that support only limited protected species.	Creation of multiple waterbodies, amphibian and reptile refugia, hedgerow enhancement and scrub. Introduction of bird and bat boxes within development.	Planning Condition – details within LEMP	Biodiversity Impact Assessment required to demonstrate net gain.

7 COMPENSATION & ENHANCEMENT RECOMMENDATIONS

7.1 Habitats

i The National Planning Policy Framework and local development plan requires ecological enhancement of sites subject to development proposals to the extent that they provide a net biodiversity gain. Where new landscape planting is proposed species commonly occurring locally could be used. Other species such as silver birch (*Betula pendula*), rowan (*Sorbus aucuparia*) and whitebeam (*Sorbus aria*) would make attractive additions to the Site. Ash and elm should currently be avoided due to the prevalence of 'Ash die-back' and 'Dutch elm disease', as stocks of these species cannot be guaranteed to be free from these afflictions. The use of native species in tree planting is also encouraged as these can harbour a high diversity of invertebrates. For example, English oak trees have over 400 associated invertebrate species (Kennedy & Southwood, 1984). Other suggested planting of benefit to invertebrates includes:

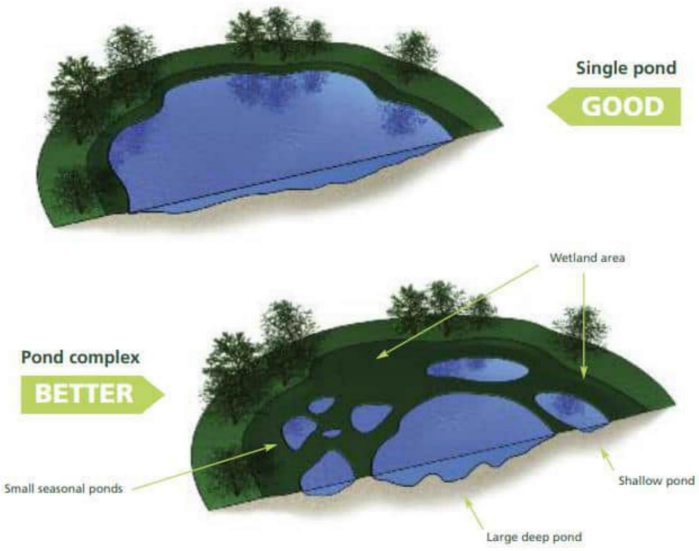
- Blackthorn (*Prunus spinosa*);
- Hazel (*Corylus avellana*); and
- Birch (*Betula sp.*).

7.1.2 Waterbodies

ii Areas of permanent wet waterbodies and associated vegetation can provide an important invertebrate habitat area and increasing the foraging capacity of the site for fauna, including these protected amphibian species. The value of these ponds for wildlife can be maximised by utilising the following principles, recommended from the Freshwater Habitats Trust:

- Creating complexes of ponds rather than single waterbodies
- Include both permanent and seasonal ponds
- Almost all pond slopes are at least 12° in gradient
- Create broad, undulating wetland areas around and between ponds
- Create underwater bars and shoals to benefit aquatic plant

Figure 4: Pond Complex Example



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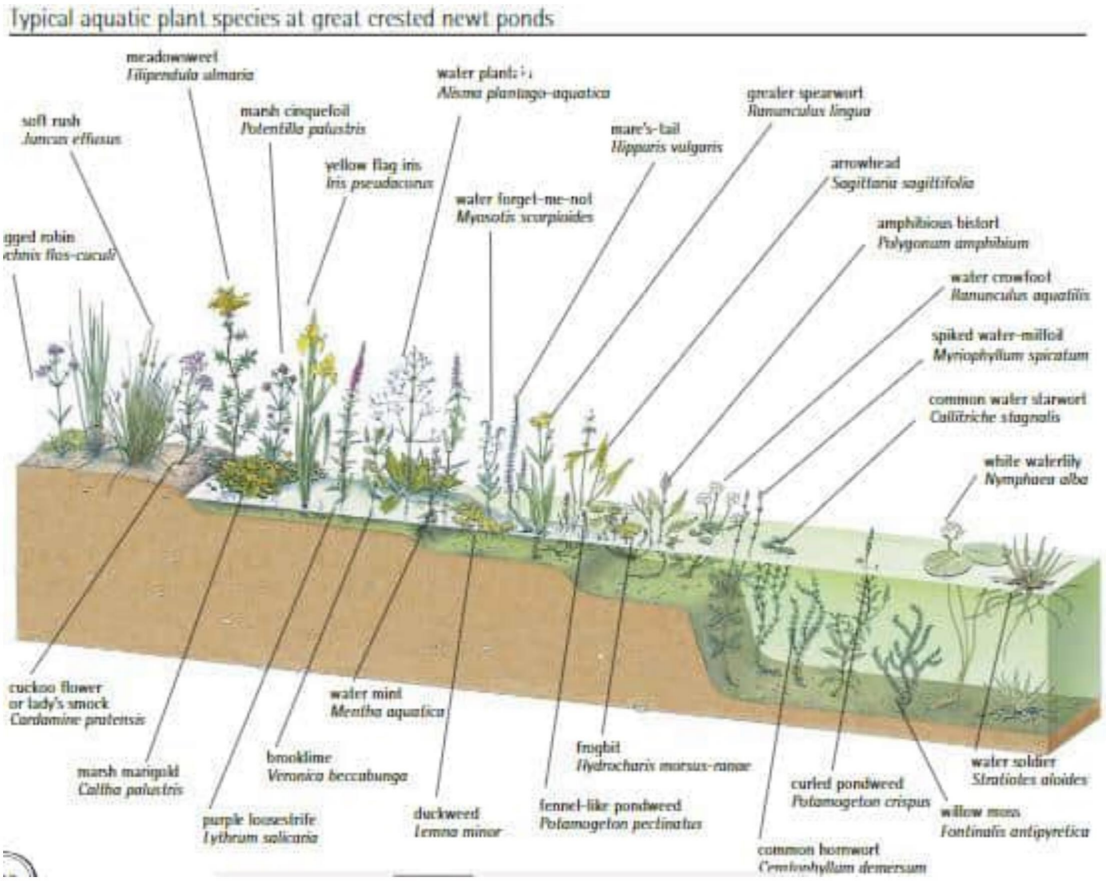
iii Where the ponds are designed to hold some degree of permanent standing water, they could be planted with native marginal plug plant species and with marginal vegetation, such as Naturescapes N8 Water's Edge Meadow Mixture is recommended. This comprises 24 wildflower species and 9 grass species. The species in this mix will tolerate flooding once established, and many would grow in the ponds themselves.

Figure 5: Typical Wildlife Pond planting and profile



7.1.3 Hedgerows

iv A minimum of 6 species should be planted, which may include blackthorn (*Prunus spinosa*), field maple (*Acer campestre*), alder (*Alnus glutinosa*), common dogwood (*Cornus sanguinea*), hazel (*Corylus avellane*) and guelder rose (*Viburnum opulus*), Standard trees such as English oak (*Quercus robur*) and wild cherry (*Prunus avium*) can also be planted at 50m intervals.

v Planting should be undertaken during early winter, providing the ground is not frozen. Planting up gaps can be done in conjunction with coppicing existing plants, to give new plants minimum competition. To further reduce competition and aid establishment of the planted-up sections, the bases of the plants would be kept weed free through spot treatment of herbicide for the first three years.

7.1.4 Scrub

vi Where areas of scrub is proposed to be planted, this should utilise a mixture of native species such as hazel, blackthorn, hawthorn, willow, box, dogwood, and buckthorn. These areas of scrub should also be managed sensitively for wildlife, with sections cleared on a rotational basis to produce clearings within this habitat. In addition, areas of scrub should be planted around the new ponds to provide suitable refugia for any herpetofauna (amphibians and reptiles) that may utilise these habitats. The provision of this scrub would

also provide suitable habitat for a variety of nesting bird species, as well as suitable habitat for sett establishment by badgers.

7.2 Protected/Principal Species

i Additional enhancements that could easily be met within the development scope include the incorporation of bat and bird nest boxes. Boxes could be placed on retained trees within the Site boundaries. The tree mounted bat boxes should face south (for additional warmth), and be positioned at least 4 metres from the ground, with the entrances being free of overhanging branches. It is also recommended that bird nest boxes be placed 1.5m below each bat box, to ensure that the birds have somewhere to nest and do not inhabit the bat boxes. Use of boxes such as the Vivara woodstone box provide a long-term nest box solution requiring limited replacement unlike wooden boxes which need regular replacement as a result of weathering. Suitable bat box dimensions are 430mm high X 270mm wide X 140mm deep. The boxes are designed to mimic natural roost sites and to provide a stable environment.

Figure 6: Bat Box Example

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Figure 7: Bird Box Example

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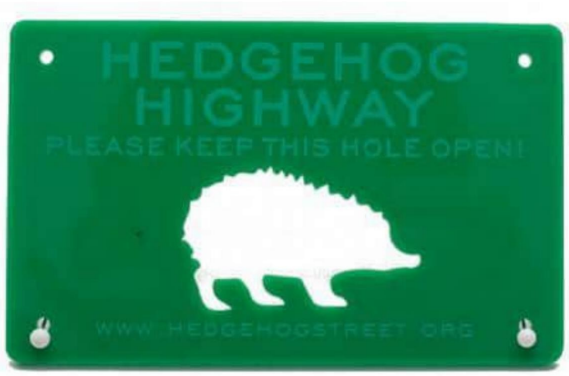
ii Where any permanent residential fencing is to be constructed, small 15x15cm mammal holes should be installed within these fences. 'Hedgehog Highway' signs (available from the British Hedgehog Preservation Society) could be installed above these holes to prevent them being filled in in the future. This will help to maintain their permanency and so the connectivity for mammals, such as hedgehogs, to the site and the surrounding landscape

Figure 8: Hedgehog Highway



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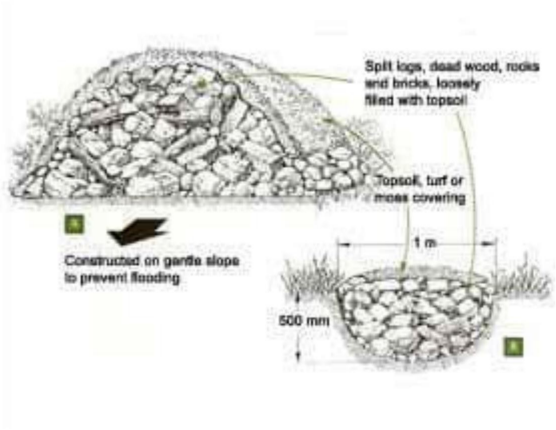
1.1.1 Hibernacula

iii Log piles, rocks and dead wood under dense ground cover could also be created across the Site for amphibian hibernacula. These will provide important places for amphibians to rest during the day or during cold or dry weather. Hibernacula should be c. 2m² long, a minimum of 0.5m wide and c.1m in height and comprise log or debris piles with a cap composed of topsoil and a turf covering.

Figure 9: Hibernacula Example



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8 MONITORING

i No monitoring is required for this project to be compliant with legislation and policy.

9 REFERENCES

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10 LEGISLATION AND PLANNING POLICY

10.1 General & Regionally Specific Policies

i Articles of British legislation, policy guidance and both Local Biodiversity Action Plans (BAPs) and the NERC Act, 2006 are referred to throughout this report. Their context and application is explained in the relevant sections of this report. The relevant articles of legislation are:

- The Environment Act (2021)
- The National Planning Policy Framework (2021)
- ODPM Circular 06/2005 (retained as Technical Guidance on NPPF 2021)
- Local planning policies EV1 & EV2 (Ashfield District Council)
- The Conservation of Habitats & Species (Amendment) (EU Exit) Regulations 2019 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- EC Council Directive on the Conservation of Wild Birds 79/409/EEC;
- National Parks and Access to the Countryside Act 1949;
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000;
- The Hedgerow Regulations 1997;
- The Natural Environment and Rural Communities (NERC) Act 2006;
- Local Biodiversity Action Plan for Nottinghamshire.

xix In relation to these proposals relevant sections of the NPPF, 2021 are:

"promote the conservation restoration and enhancement of priority habitats and ecological networks and the protection and recovery of priority species…identify and pursue opportunities for securing measurable net gains for biodiversity (174b)"

"minimising impacts on and providing net gains for biodiversity (170d)"

"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 (175)"

10.2 Bats and Great Crested Newts

i Great crested newt and species of British bats are fully protected within UK Law under *Wildlife and Countryside Act 1981* (as amended) through their inclusion in Schedule 5. Under the Act, they are protected from:

- Intentional or reckless killing, injury, taking;
- Damage to or destruction of or, obstruction of access to any place of shelter, breeding or rest;
- Disturbance of an animal occupying a structure or place;
- Possession or control (live or dead animals);
- Selling, bartering or exchange of these species, or parts of.

ii This law is reinforced by the UK's transposition of the EU Habitats Regulations under *The Conservation of Habitats & Species (Amendment) (EU Exit) Regulations 2019 (as amended)*. These Regulations also prohibit:

- the deliberate killing, injuring or taking of great crested newt or bats;
- the deliberate disturbance of any great crested newt or bat species in such a way as to be significantly likely to affect:
- their ability to survive, hibernate, migrate, breed, or rear or nurture their young; or
- the local distribution or abundance of that species.
- damage or destruction of a breeding site or resting place;

- the possession or transport of great crested newt or bats or any other part of.

iii Under certain circumstances a licence may be granted by Natural England to permit activities that would otherwise constitute an offence. In relation to development, a scheme must have full planning permission before a licence application can be made.

iv In addition, seven British bat species are listed as Species of Principal Importance (SPI) under the Natural Environment and Rural Communities (NERC) Act, 2006. These are barbastelle (*Barbastellus barbastellus)*, Bechstein's (*Myotis bechsteinii)*, noctule (*Nyctalus noctula)*, soprano pipistrelle (*Pipistrellus pygmaeus)*, brown long-eared (*Plecotus auritus)*, greater horseshoe (*Rhinolophus ferrumequinum)* and lesser horseshoe (*Rhinolophus hipposideros)*.

v Under the National Planning Policy Framework 2019 the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible or adequately mitigated/compensated for and that opportunities for ecological enhancement should be sought.

1.1.1 Activity Surveys

i **Habitat Suitability**

ii The value of the site for commuting and foraging bats was assessed with regard to habitat features present on site and within the surrounding landscape suitability for use by commuting and foraging bats in accordance with BCT Guidelines (2016). Value is assessed according to the criteria detailed in the table below

Table 6: Assessing Value of Foraging and Commuting Habitat

Suitability	Commuting and Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e., not very well connected to surrounding landscape by other habitats. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	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 bas for foraging such as, trees, scrub grassland or water.
High	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 known roosts.

iii The site-wide bat activity surveys were based on guidance given within good practice guidelines published by the Bat Conservation Trust (Collins, J. Eds. 2016). Two techniques were used: walked transects and fixed point (static detector) surveys. Surveys were undertaken during June - September 2022.

Walked Transects

iv The Site was studied using available aerial photography and ordnance survey maps to assess potential flight lines within the site, including commuting corridors and foraging areas. The route focussed on those features offering the highest potential for bat foraging, commuting or roosting, but covered all areas due to the view across the open pasture fields.

v During walked transects of the site, surveyors walked the transect route, making 2-5-minute stops at predetermined intervals throughout the route. The starting point of the transect for each survey was altered to ensure coverage of different parts of the transect at different times of the night. This approach was adopted to remove any sampling bias that could be introduced into the survey data if each survey had started at the same point on the transect.

vi Each transect survey covered the period of peak bat activity, which is considered to be from sunset until around 2 hours after sunset (dusk transect). For all surveys, surveyors used an EM Touch bat detector and iPad, which logged GPS locations and recorded the calls of all bats encountered. This equipment allowed surveyors to listen to, identify and record calls during the survey. Notes were made by the surveyor during the survey on the time of bat observations, species heard and, where possible, direction of flight and behavioural notes regarding their activity (e.g. feeding, commuting, passing, social calling).

vii A qualitative assessment was made of bat activity highlighting areas where bats were seen to:

- Forage - Either occasionally or regularly: Occasional meaning one or two foraging episodes across the transect period, regular meaning foraging behaviour noted on three or more occasions during the transect survey.
- Commute - Commuting activity would be characterised by a number of bats entering the site and flying purposefully in a direct line: e.g. following a hedge or flying across open areas.
- Interact - These behaviours could include regular chasing, 'lekking' or bats recorded making regular
- social calls

Static Surveys

viii In addition to manually walked transects, two automated bat detectors (SM2s) were installed on Site.

ix Detectors were housed in waterproof containers with an unobstructed opening for the microphone. Static detectors units were installed in areas which were considered to be most impacted by the proposals.

x The units were set to commence recording any bat echolocation calls from 30 minutes before sunset until 30 minutes after sunrise, i.e. throughout the night. This supporting data increases the robustness of the data collected by the transect surveys as it increases coverage of the Site.

xi The results section in this report refers to 'passes' as the number of AnaLook sound files containing bat calls. A sound file is created when bat echolocation calls are detected by the AnaBat detector. A sound file does not necessarily correspond with the number of bats recorded but can indicate the level of bat activity. For example, if a higher number of sound files have been recorded in a given length of time, or for a given area, compared with any other then this indicates a greater level of bat activity in that time-frame and/or area. Similarly, the number of sound files per species can allow comparison of the level of activity between the different species of bats detected but does not necessarily represent a higher number of actual individuals (for example, because a single bat may fly past the bat detector more than once).

Table 7: Automated Static Detector Survey Timings and Locations

	Location 1		Location 2
Area Covered	Hedgerow and Marshy Grassland		Trees on South–eastern corner
Survey 1	27/06/2022 – 01/07/2022		
Number of Nights	5		5
Survey 2	01/08/2022 – 06/08/2022		
Number of Nights	5		5
Survey 3	21/09/2022 – 26/09/2022		
Number of Nights	5	5	

10.3 Birds

i The Wildlife and Countryside Act 1981 (as amended) is the Priority legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is in use or being built;
- Take or destroy the egg of any wild bird.

ii For birds listed on Schedule 1 of the Act, it is an offence to disturb any bird while it is building a nest, is at or near a nest with young; or disturb the dependant young of such a bird.

iii Species listed in Annex 1 of the EU Birds Directive 1994 (e.g. barn owl) are required to have special conservation measures taken to preserve their habitats and sites to be classified as Special Protection Areas (SPAs) where appropriate.

10.4 GCN Environmental (eDNA) Analysis

i This technique has been approved by Natural England as an acceptable means of determining GCN presence within a waterbody provided it is undertaken at an appropriate time of year following the prescribed protocols. The technique is based on the principal that should GCN be present then genetic material such as skin cells, eggs and excretion will be present within the water column. The survey involves one visit during the day taking a series of 20 water samples from at least 80% of the pond perimeter decanting into sample bottles containing a primer which is a short section of DNA. The samples are then sent to a lab for analysis, providing a positive or negative result (occasionally samples come back inconclusive where the sample has been corrupted). In the laboratory, a process called Polymerase Chain Reaction (PCR) is undertaken, if present this results in the synthesis of new DNA of the target species (GCN). This amplifies the amount of DNA present within the sample to detectable levels.

i There are a number of limitations associated with this technique, however provided it is undertaken by trained surveyors following the protocols at an appropriate time of year it is an acceptable means of determining GCN presence/absence.

i Should GCN be identified it may still be necessary to undertake a population survey to gain an estimate of the size of any population present. Population estimates would also be required for a mitigation licence application and to inform the implementation of appropriate and proportional mitigation measures should they be required.

10.5 Reptiles

i All reptile species are partially protected under Schedule 5 (Sections 9(1) and 9(5)) of the Wildlife and Countryside Act 1981 (as amended). This legislation protects these animals from:

- Reckless or intentional killing and injury;
- Selling, offering for sale, possessing or transporting for the purpose of the sale or publishing advertisements to buy or sell a protected species.

ii In addition to the above legislation, UK rare reptiles; sand lizards (*Lacerta agilis*) and smooth snakes (*Coronella austriaca*), are listed under The Conservation of Habitats & Species (Amendment) (EU Exit) Regulations 2019 (as amended). This makes it an offence to;

- Capture, kill, injure and disturb;
- Take or destroying eggs;
- Damage or destroy breeding/resting places;
- Obstruct access to resting places; and
- Possess, advertise for sale, sell or transport for sale, live or dead (part or derivative).

iii Where these animals are confirmed as present on land that is to be affected by development guidance recommends that:

- The animals should be protected from injury or killing during construction operations;
- Mitigation should be provided to maintain the conservation status of the species locally;
- Under the National Planning Policy Framework 2019 the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible or adequately mitigated/compensated for and that opportunities for ecological enhancement should be sought.

10.7 Hedgehogs and Common Toads

i Under the NERC Act 2006, the hedgehog (*Erinaceus europaeus*) and common toad (*Bufo bufo*) are categorised as a 'Species of Principal Importance' for biodiversity. Furthermore, both are local biodiversity action plan species (LBAP) for Nottinghamshire. Listing as SPI reflects concerns that populations have suffered a rapid and sustained decline in the UK. As such, they are a material consideration during planning.