



**Ecological survey:
Protected species and habitats.**

**Corner Farm,
Hoxne,
Suffolk.**

Final report: 30th June 2019.

Author: John Parden

Natural England Bats (All species) Licence No. 2015-14697-CLS-CLS

Natural England Great Crested Newt Licence No. 2016-20270-CLS-CLS

JP ecology

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1.0: Executive Summary:

Protected Species legislation is a consideration when determining the development proposals for Corner Farm, Hoxne, Suffolk.

The site was surveyed by John Parden of JP ecology on 8th April 2019 for protected species, Bats and Great crested newts. Further pond surveys were conducted from 8th April to 21st May.

The habitats within the defined development area were mostly built environment and traditional barns. Other habitats of consideration include an area of grassland that has become dominated by ruderals, and five ponds within 100m radius.

Desktop survey – A desktop survey, using data supplied by SBIS, identified no rare or protected species on the development site.

Bats - A survey of the buildings proposed to be developed found evidence to suggest bats have visited or are roosting within at least one of the buildings on site.

Sufficient surveys have been conducted to confirm the presence of bats on the site.

Further bat activity surveys are required to support the planning application and a European Protected Species Mitigation Licence (EPSM licence), the EPSM licence is applied for after planning permission has been granted and prior to works starting on site.

Great crested newts – One of the ponds close to the site was assessed as offering 'good' suitability for breeding newts, further surveys during the appropriate season were conducted to determine presence / population size. The pond surveys concluded that the ponds were not occupied by amphibians including newts. It is assumed the shallow water levels were compromising the ponds ecological value.

Other protected species. – Survey results determined that no other protected species are relevant to this site.

Birds – Nesting birds should not be disturbed during the bird nesting season.

Mitigation.

Further surveys:

Bats - Sufficient surveys have been conducted to determine that bats are using at least one of the buildings on site, building C.

Buildings B, D, E & F potentially offer limited bat roosting potential within their fabric.

Further bat activity surveys are required during the appropriate season to determine the size of the bat population, the species of bats using the site and the nature of the roosts. This information is required to support the mitigation proposals required to support the planning application and to support a European Protected Species Mitigation Licence (EPSM licence) application that will be required. The EPSM licence is applied for after planning permission has been granted and prior to works starting on site.

Mitigation – all species.

- Evidence of bats was found on the site within buildings C.
 - A Natural England European Protected Species Mitigation (EPSM) Licence will be required prior to works starting on site, the EPSM licence is applied for after planning has been granted and prior to works starting on site.
 - Typically one bat box per species is required of sufficient size to accommodate the peak number of bats observed within individual roosts, to be incorporated and permanently built into each structures that is occupied by bats.
- **Site clearance.**
 - The site should be cleared of rubble piles associated with derelict buildings, during the summer when reptiles, amphibians and small mammals are mobile and can relocate. Rubble piles should be cleared with care to ensure that any reptiles that may be using them as refuges are not injured or harmed and are relocated to safe refuges away from the development site.
 - Areas of ruderals and brambles should be cleared during the winter and once cleared should be maintained as bared ground or short mown vegetation.
- **Construction phase.**
 - Consideration should be given to small mammals and terrestrial vertebrates during the construction process, specifically hedgehogs. The method statement "Generic method statement to avoid harm to reptiles, amphibians and small mammals" attached in appendix 1 should be made available to all contractors.
- Nesting birds – Nesting birds must not be disturbed during the breeding / nesting season typically 1st March to 31st July (species dependant).
 - Ideally all site clearance and demolition works should be conducted outside these dates, alternatively the building and those areas of the site to be cleared should be searched for active nests by a suitably qualified ecologist and any active nests protected until the young have fledged.
- The contact details of a suitably licenced ecologist should be made available to the development contractors. In the unlikely event that any protected species are disturbed or found on the site then advice should be sought from a suitably licenced ecologist.

Enhancement.

- Detailed mitigation for bats will be determined by the results of the bat activity surveys and will be subject to agreement and approval by Nature England as part of the EPSM licence application.
- Bats. It is assumed that at least one bat box per species, of sufficient size to accommodate the maximum population of bats currently occupying the building, should be built into or incorporated on each of properties. Recommended bat box:
 - Schweglar 1FE bat box.
- Birds. 3 bird nesting opportunities (nest boxes) should be included on each of the new or renovated buildings on the site. Suggested nest boxes include:
 - Schweglar 1SP Sparrow Terrace.
 - Ipstock Eco-habitat for Swifts.
 - Schweglar Swallow Nest No10
- Amphibians, restoration of Pond 1 & 2 through clearance of encroaching and shading vegetation and dredging, would offer enhancement for amphibians. Suffolk Wildlife Trust guidance on pond restoration is attached in Appendix 2.

Clients responsibility towards protected species.

The site owner has a responsibility to ensure that protected species or their resting places are not killed, injured or disturbed as a consequence of their actions.

Whilst the results of the survey are considered to be conclusive at the time that the survey was conducted, there is always a possibility that protected species might occupy the site between the period of the survey and the commencement of any works on the site. If any protected species are discovered during any construction works a qualified ecologist should be contacted for advice or assistance.

Contact details of suitably qualified and licenced ecologist:

John Parden, Natural England licenced ecologist

JP ecology – Office: 01379 586830 Mobile:07908 748079

If conditions within the buildings or the development proposals are significantly altered prior to the planning application being submitted then further advice should be sought from an ecologist to ensure that the conclusions of the ecological survey remains valid.

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Appendix 1. Generic Method Statement to avoid harm to reptiles and small mammals.

Appendix 2. Pond Restoration Guidance.

2.0: Contact details:

Architect:

Roberts Molloy Architects.
3 Church Lane
Bressingham,
Diss
Norfolk
IP22 2AE

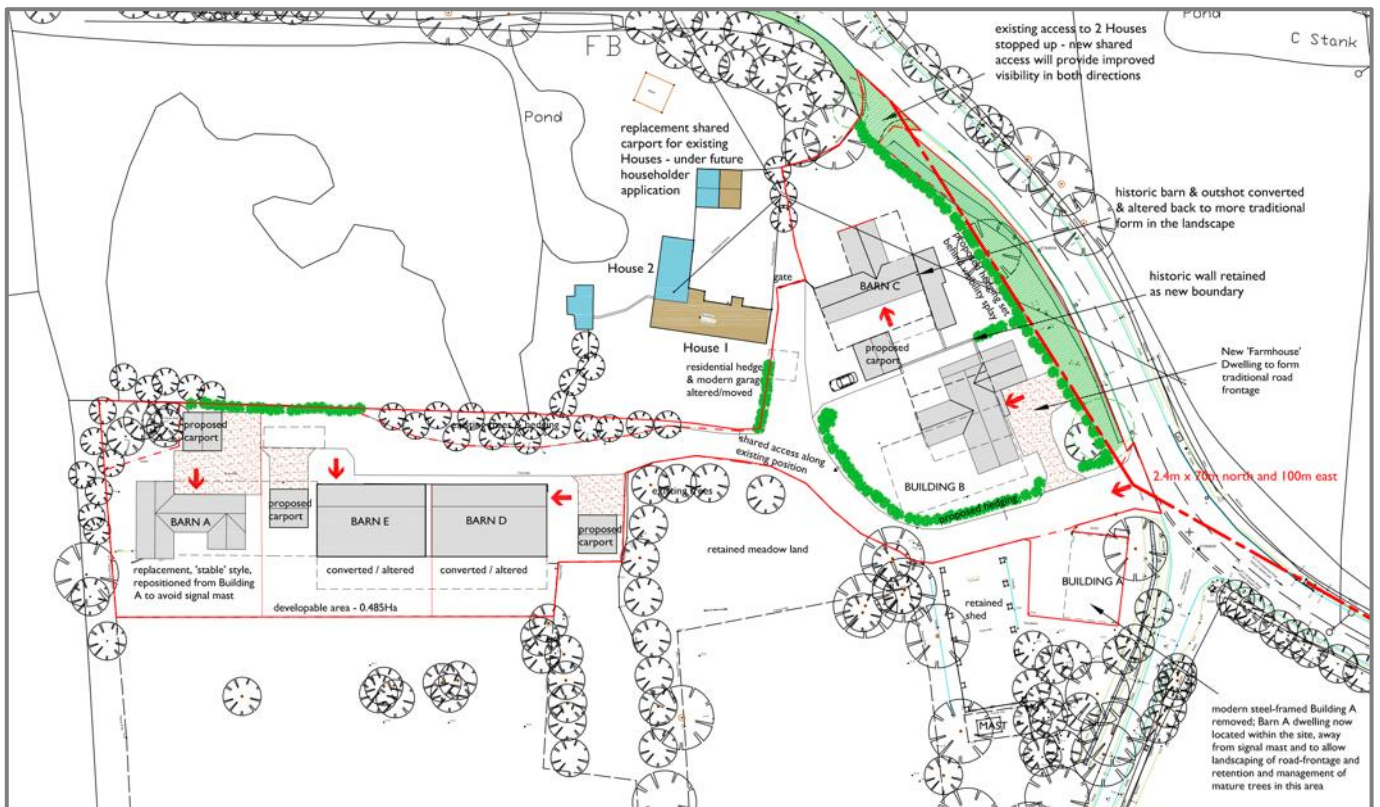
Ecological Surveyor:

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Plan 2. Showing Site plan.



The property is subject to a planning application including:

- Conversion of a redundant farm buildings / workshops into domestic residence.

For the purposes of the ecological survey it is assumed that:

- No temporary access points or temporary hard standing areas outside of the curtilage of Corner Farm will be used for site access, construction traffic or storage of building materials.
- No ponds or watercourses will be disturbed or affected by the development works.
- There will be no loss of aquatic habitats on the site.
- All buildings to be converted will be confined to their existing external footprint.
- It is assumed that any additional structural supports required for the barn conversions will be supported on foundations sunk internally.
- There will be no mature trees within the development boundaries that require removal to facilitate the development.

3.3 Scope of the survey:

The survey includes:

- In accordance with the Planning validation requirements.
 - The development is classified as 'Minor' based upon:
 - The proposal is for the conversion of existing buildings.
 - The proposal is for less than 10 new domestic residence.
 - The development includes the following features that trigger the need for protected species surveys:
 - Agricultural building, traditional barn.
 - Ponds within 100m.
- The species triggered include:
 - All agricultural buildings (e.g. farmhouses and barns) particularly of traditional brick or stone construction and/or with exposed beams greater than 20cm thick.
 - Bats.
 - Barn owl.
 - Nesting birds.
 - Developments within 100m of a pond.
 - Great crested newts
 - Water vole
 - Amphibians
- Consideration was given to all other protected species that may be affected by the development.

3.4 Survey objectives:

The survey aimed to establish:

- Whether protected species were present on the site and would be impacted upon by the development.
- Whether the development was likely to have any long-term impact upon the local biodiversity.

3.5 Site & location:

Within the wider landscape: The site is located within a wider landscape that is of medium to high interest for biodiversity, whilst dominated by agricultural land used mainly for intensive arable crop production, a habitat of relatively low ecological interest, it does include features of high ecological interest including hedgerows, ditches, ancient woodland, grassland and meadows.

Significant barriers to migration.

- The public highways, B1118 'Green Street' forms the northern and eastern boundaries of the site and acts as a significant barrier to migration of terrestrial vertebrates.

Within the immediate vicinity of the site: The development site is mostly redundant agricultural buildings / workshop, located within the curtilage and grounds of the occupied domestic residence of Corner Farm, which includes associated hard standing areas, redundant and used outbuildings and areas of well maintained domestic gardens. The site includes an area of grassland that has become dominated by ruderals, thistle and docks. The surrounding area includes five ponds located within 100m of the site.

Natural or semi-natural habitats on the development site.

The development area is restricted to the redundant agricultural buildings / workshops and former farm yard, the majority of which is concrete hard standing or graveled hardcore. The only natural or semi natural habitats affected by the development are areas that have become overgrown with ruderals and brambles.

3.6 Desktop Survey

Sites designated for ecological interest:

Nationally designated sites, Sites of Special Scientific Interest (SSSI). See Fig 1 below. There are no SSSI's within a 2km radius of the site.

- The closest SSSI is Hoxne Brick Pit, designated for its geological interest.

Locally designated sites,

There are three locally designated County Wildlife Sites within a 2km radius. Fig 1 below.

- CWS 88. River Waveney. 700m to the north. Aquatic habitat.
- CWS 90 Hoxne Wood. 1.8km m to the south east. Woodland habitat.
- CWS 89 Hoxne Meadow. 2km to the south east. Grassland habitat.

Protected species:

A local records search was supplied by Suffolk Biological Information Service, the results are illustrated in Fig 1 below.

There are no records of protected species on the site.

Of those species triggered (section 3.3 above)

- Barn Owl - 13 records. The closest being approximately 500km to the north.
- Bats – Records 4 different species within a 2km radius.
 - Common pipistrelle 8 records
 - Soprano pipistrelle 6 records
 - Brown long eared bat 1 records
 - Noctule 2 records
 - Unidentified spp 1 records

There are one records of roost sites listed within a 2km radius.

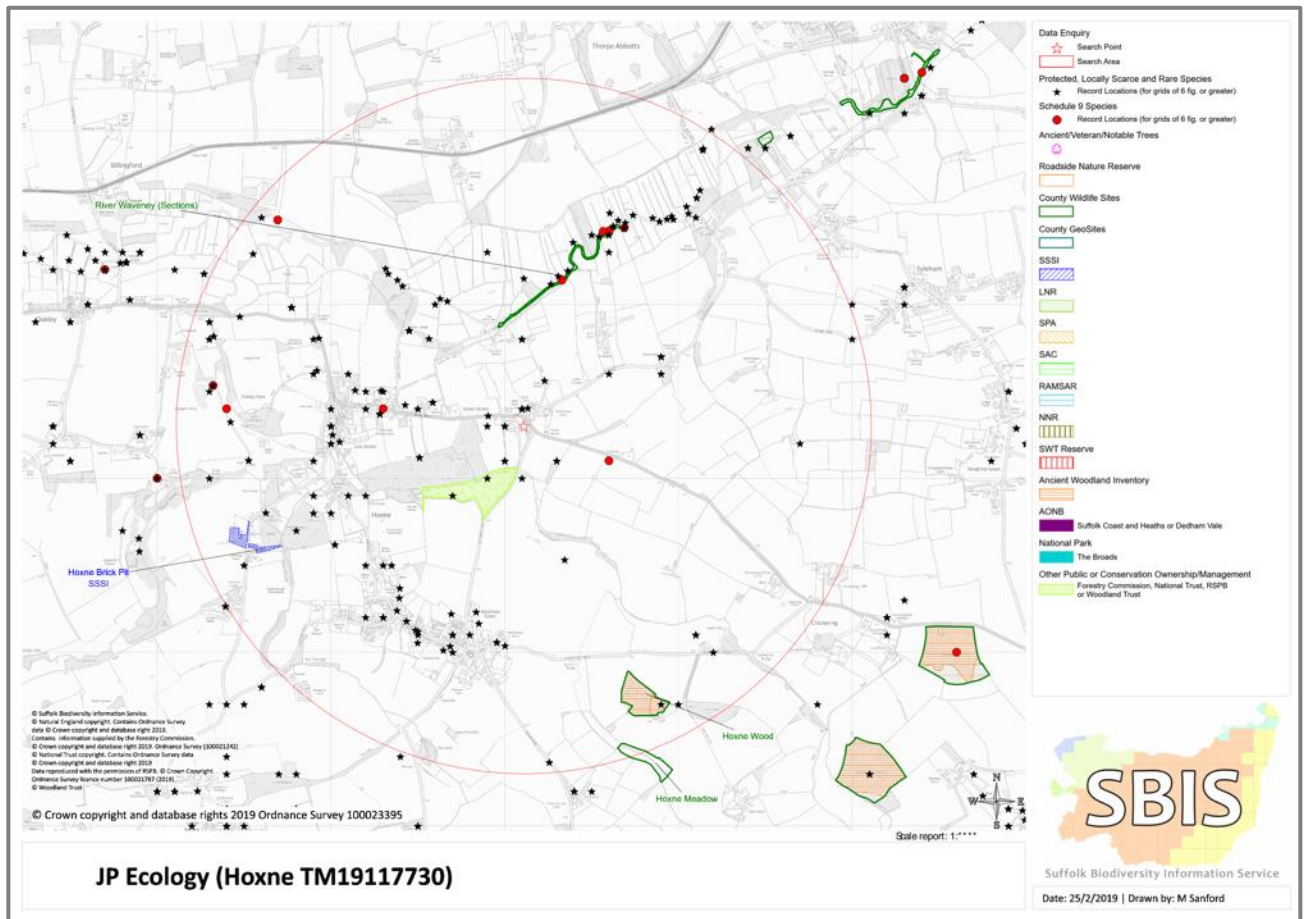
- Great Crested Newts – 2 records.
 - The closest is approx. 1km to the south west.
- Smooth Newts – 2 records.
 - The closest is approx. 500m to the north.
- Other amphibians – 0 records.
- Reptiles – 2 records common toad, 1 record of common frog
 - The closest is approx. 500m to the north.
- Water vole
 - 33 records of water vole associated with the river Waveney.
- Hedgehog
 - Hedgehog - 25 records of hedgehog, generally distributed through the local area.

Pond and waterbody survey:

A search for ponds within 100m and waterbodies within 200m was conducted using Ordnance Survey Data and publically available Environment Agency data.

- Ponds within 100m radius:
 - There are five ponds found within the grounds or within 100m of Corner Farm at OS grid ref:
 - TM19097734 Within grounds of Corner Farm.
 - TM19067733 Within grounds of Corner Farm.
 - TM19177735 Neighboring property to east.
 - TM19117741 Neighboring property to north.
 - TM19077739 Neighboring property to north.
- Watercourses within 200m radius:
 - There are no permanent or named watercourses within a 200m radius. The nearest named watercourse is the River Waveney 500m to the north at its closest.

Fig 1 Records of protected species. Suffolk data search.



4.0 Wildlife and the law

4.1 UK legislation:

LEGISLATIVE FRAMEWORK

Bat Legislation

All bat species are protected under Annex IV of the Conservation of Habitats and Species Regulations (2017) (The Habitats Directive), and have further protection in the UK by the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). This legislation offers protection to both the species, roost sites and feeding perches. It is an offence to kill, injure, capture, possess or otherwise disturb bats. Bat roosts are protected throughout the year (making it an offence to damage, destroy or obstruct access to bat roosts), regardless of whether bats are present at the time.

Licenses are issued to allow developments to commence once the level of bat usage has been determined. There are currently two main levels of licensing, the European Protected Species license (EPS) and the Bat Mitigation Class License (BMCL)

Great Crested Newt Legislation

The Great Crested Newt (GCN) is protected through the Wildlife and Countryside Act (1981), Habitat Regulations (1994) and Countryside Rights of Way Act (2000). In essence this legislation prohibits the following:

- *Intentional disturbance or harm.*
- *Reckless damage to a breeding site or resting place or a place used for shelter and protection.*
- *Intentionally obstructing a place used as shelter.*

Should suitable habitats be present then further surveys in line with the present guidelines may be necessary.

Bird Legislation

Most species of bird are protected under the Wildlife and Countryside Act 1981 (as amended) whilst at the nest against destruction of the nest and eggs. However, certain species such as Barn Owl achieve greater protection under Schedule 1 of the above act and species such as Spotted Flycatcher have attracted a Norfolk Biological Action Plan.

NERC Act 2006

Under the Natural Environment and Rural Communities Act 2006 biodiversity has to be taken into consideration at all levels of planning and this has been interpreted as a series of wildlife enhancements to protect or restore species or habitats. Reference has been made to S41 species such as hedgehogs under the above act.

5.0 Surveys.

5.1 Methodologies

Bat Survey – the bat survey was conducted in accordance with the guidance described in 'Bat Survey Good Practice Guidelines 3rd edition 2016.

Pond Survey - The pond survey was conducted following standard survey methodologies appropriate for Great crested newts, specifically the Great Crested Newt Habitat Suitability Index Assessment (HSI) (Oldham *et al.* 2000) and Natural England Standing Advice Sheet: Great crested newts. The results were interpreted in accordance with Natural England Guidance.

Other species were surveyed by looking for tracks, droppings, feeding evidence and field signs.

5.2 Scoping Survey Results.

The site was surveyed on 8th April 2019.

The weather on the day of the survey was clear and dry, and suitable to conduct a conclusive survey.

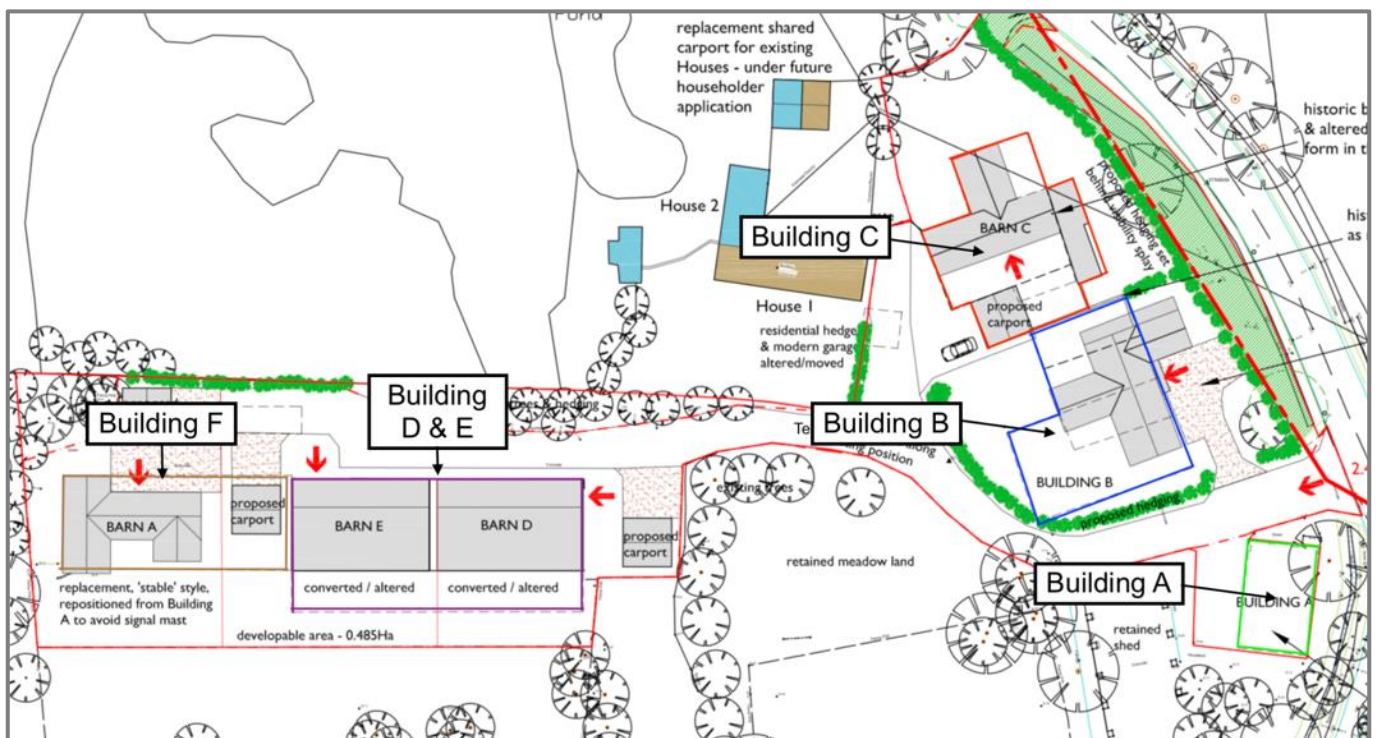
5.2.1 Bat survey.

The buildings on the wider site were described as buildings A to G (see plan 3 below).

Buildings A to G are to be retained and converted into domestic residence.

The former 'farm house' is currently occupied and is to be retained, it is not subject to conversion.

Plan 3. Showing the locations of structures A to G



5.2.1.1 Building A (see photos ,

Former agricultural building currently being used for storage.

The building is brick and block construction, the walls did include some cracks and open joints that could potentially be occupied by roosting bats. The walls include large openings down the eastern sides that are enclosed by panels clad with corrugated metal sheeting. Externally the building is clad with ivy which is young, closely adhered to the wall and unsuitable for roosting bats.

The roof is supported on a simple metal and timber frame without open joints behind which bats could roost.

The roof is clad with a combination of metal profile and cement fibre sheeting and does not have any voids or cavities within which bats can roost.

Internally the buildings do not have any enclosed voids or loft spaces favoured by roosting bats. The internal spaces within the buildings can be accessed by bats through open sided lean-to which is open to the main barn.

A thorough search of the building found no bats or evidence of bats in the form of droppings, urine splashes, scratch marks or polishing.

It is reasonable to assume the buildings are not supporting a significant bat roost within its internal spaces based upon:

- No evidence of bats was found within the buildings.



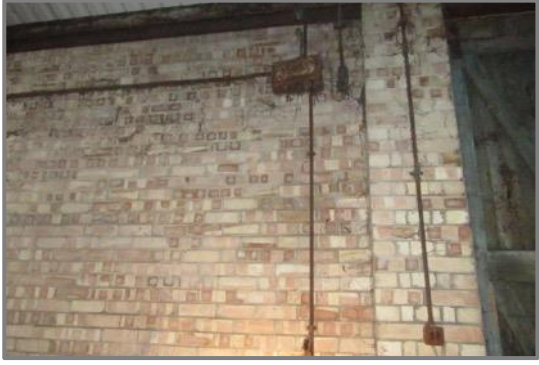

Table 1: Building A. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Image.	Notes.
Photo 1		Image showing building A, showing construction around steel portal frame with large doors and open canopy.
Photo 2		Image of the exterior of building A showing block gable end wall and metal sidewalls. Also showing ivy on gable end wall.
Photo 3		Internal image of building 1 showing solid brick walls.

Table 1: Building A. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Image.	Notes.
Photo 4		Internal image of building A showing corrugated metal side walls and cement fibre roof supported on simple metal roof trusses.

5.2.1.2 Buildings B. Former livestock barn / possibly former piggery. (see photos 5 to 9 below)

Two structures adjoining each other and open throughout internally.

Structure B1

Traditional blockwork animal house, possibly former piggery with a low roof.

The walls are concrete block with openings that allow access to the internal spaces.

The roof is cement fibre supported on a simple timber and steel frame without complex joints within which bats could roost.

Internally the structure is lined creating a void between the roof sheeting and lining that could potentially offer roosting opportunities for bats.

Within the building there are a number of cladding sheets that have fallen from the ceiling, all appear to have been undisturbed recently and have collected dust over time, non have any signs of bats having used the building in the form of bat droppings or urine splashes.

The building had soffits and barge boards, these were close fitting and did not offer bat roosting opportunities behind them.

A thorough search of the building found no bats or evidence of bats in the form of droppings, urine splashes, scratch marks or polishing.

It is reasonable to assume the buildings are not supporting a significant bat roost within its internal spaces, but could potential be occupied by roosting bats within its fabric, based upon:

- No evidence of bats was found within the buildings.
- Low / medium favourability for roosting bat, voids in the roof.

Structure B2.

Former animal house / barn with a high pitched roof.

The walls are a combination of flint, brick, block and corrugated metal sheeting.

The roof was unlined with metal profile sheet roof cladding on timber trusses that were of simple construction without complex joints within which bats could roost.

There were no voids or cavities within the roof or its construction that were favourable for roosting bats.

A thorough search of the building found no bats or evidence of bats in the form of droppings, urine splashes, scratch marks or polishing.

It is reasonable to assume the buildings are not supporting a significant bat roost within its internal spaces based upon:

- No evidence of bats was found within the buildings.

- Low favourability for roosting bat.






Table 2: Building B1. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Image.	Notes.
Photo 5.		External image of building B1, a block wall construction with cement fibre roof.
Photo 6.		Interior of building B1 showing roof lining and metal frame.
Photo 7.		Image showing the cavity within building B1 with a cement fibre roof supported on a timber frame and clad with fibreboard.
Building B2		
Photo 8.		Exterior of building B2 showing the gable end wall constructed with corrugated metal sheet over brick and block walls.

Table 2: Building B2. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Image.	Notes.
Photo 9		Image to show the interior of building B2 showing roof construction with simple timber trusses supporting a metal profile sheet roof cladding.

5.2.1.3 Buildings C , Traditional barn. (See photo's 5 to 9 below)

A traditional barn built renovated and extended using block walls which are in good order and without cracks or crevices within which bat could roost, the walls are solid block and without internal cavities within which bats can roost.

The roof is a combination of traditional roof timbers with complex joints and modern steel supports, the barn extension has a roof that is supported on steel trusses.

The roof is clad with corrugated cement fibre sheets. The building has recently been used as an vehicle store and workshop.

Bat droppings under the open joints in the tie beam. Appear to be Brown Long Eared.

The gable end wall have windows and timber cladding with gaps between that give access for bats.

- Evidence of bats was found within the buildings in the form of feeding remains and bat droppings.
- The building includes features favourable for roosting bats such as an open joints in the timber frame.


Table 3: Building C. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Image.	Notes.
Photo 10		Image to show the exterior of building C showing roof cladding with cement fibre sheeting, and wall construction from solid concrete blocks with sections of timber cladding to the gables.






Table 3: Building C. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Image.	Notes.
Photo 11		Image of the interior of the barn, showing the combination of traditional timber frame and recent steel supporting frames.
Photo 12		Illustration of bat droppings below open joint in the timber frame.
Photo 13		Illustration of feeding remains found generally scattered throughout the interior of the building.
Photo 14		Illustration of open joint in the timber frame, clean and polished within suggesting that it has been used by roosting bats.

Table 3: Building C. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Photo No.	Photo No.
Photo 15		Illustration of timber clad gable end wall which offers easy access into the internal spaces of the barn for roosting bats.

5.2.1.4 Structures D,E & F, former barn, an extension to building 3. (see photo 16 to 20 below)

A former chicken shed, that only recently been vacated.

The building is of simple construction with walls constructed from brick, block and cement fibre over a timber frame.

The roof has been clad with a combination of corrugated cement fibre roof sheets and metal profile sheeting.

Internally the buildings has lined ceilings with a void between the roof cladding and internal lining.

The walls have been lined in places however most are bare block or brick.

The building is well illuminated internally through windows that are clad with mesh chicken wire which will prevent access for bats.

A thorough search of the main body of the building found no bats or evidence of bats in the form of droppings, urine splashes, scratch marks or polishing.

It is reasonable to assume the buildings are not supporting bats roosting within the interior or internal loft spaces based upon:

- No evidence of bats was found within the buildings.

The structure has cavities and bat roosting opportunities within its structure and fabric.

- The building offers potential bat roosting opportunities behind external timberwork, cladding, and within roof cladding and voids in the walls.






Table 4: Structures D,E & F. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Photo No.	Photo No.
Photo 16		Illustration showing the general construction of building D&E, showing brick and cement fibre walls and metal profile sheet cladding to the roof.

Table 4: Structures D,E & F. Illustrating survey results. Refer to plan 3 above.		
Photo No.	Photo No.	Photo No.
Photo 17		Illustrating the interior of the building and showing the roof lining and the internal space well illuminated by windows along the walls..
Photo 18		Illustration of the windows clad with mesh to prevent bats and birds entering the building.
Photo 19		Illustration of building F, showing exterior with timber cladding and cement fibre roof.
Photo 20		Showing internal space well illuminated by open windows (as photo 18 above), also showing lining to the roof and timber lining to the walls.

5.2.1.5 Discussion and Conclusions – summary of bat activity outlined in table below.

Table 6. Summary of bat roost potential and evidence of bats.		
Building number.	Bat roosting potential	Evidence of bats found
1. Building A	Low bat roosting potential.	<ul style="list-style-type: none"> No physical evidence of bats found.
2. Building B Livestock house / piggery	Low / medium bat roosting potential. Some potential roosting within cavity between roof cladding and internal roof lining.	<ul style="list-style-type: none"> No physical evidence of bats found.
3. Building C. Modified Traditional barn	Medium / high bat roosting potential, within open joints in the buildings timber frame.	<ul style="list-style-type: none"> Evidence of bats found in the form of polished joints, bat droppings and feeding remains.
4. Buildings D,E & F	Low / medium bat roosting potential restricted to the external fabric of the building.	<ul style="list-style-type: none"> No evidence of bats found.

NOTE: Sufficient surveys have been conducted to conclusively determine that bats of at least one species are using / roosting within the buildings on site.

Further surveys will be required to determine the size of the bat population using the site and the nature of the roosts.

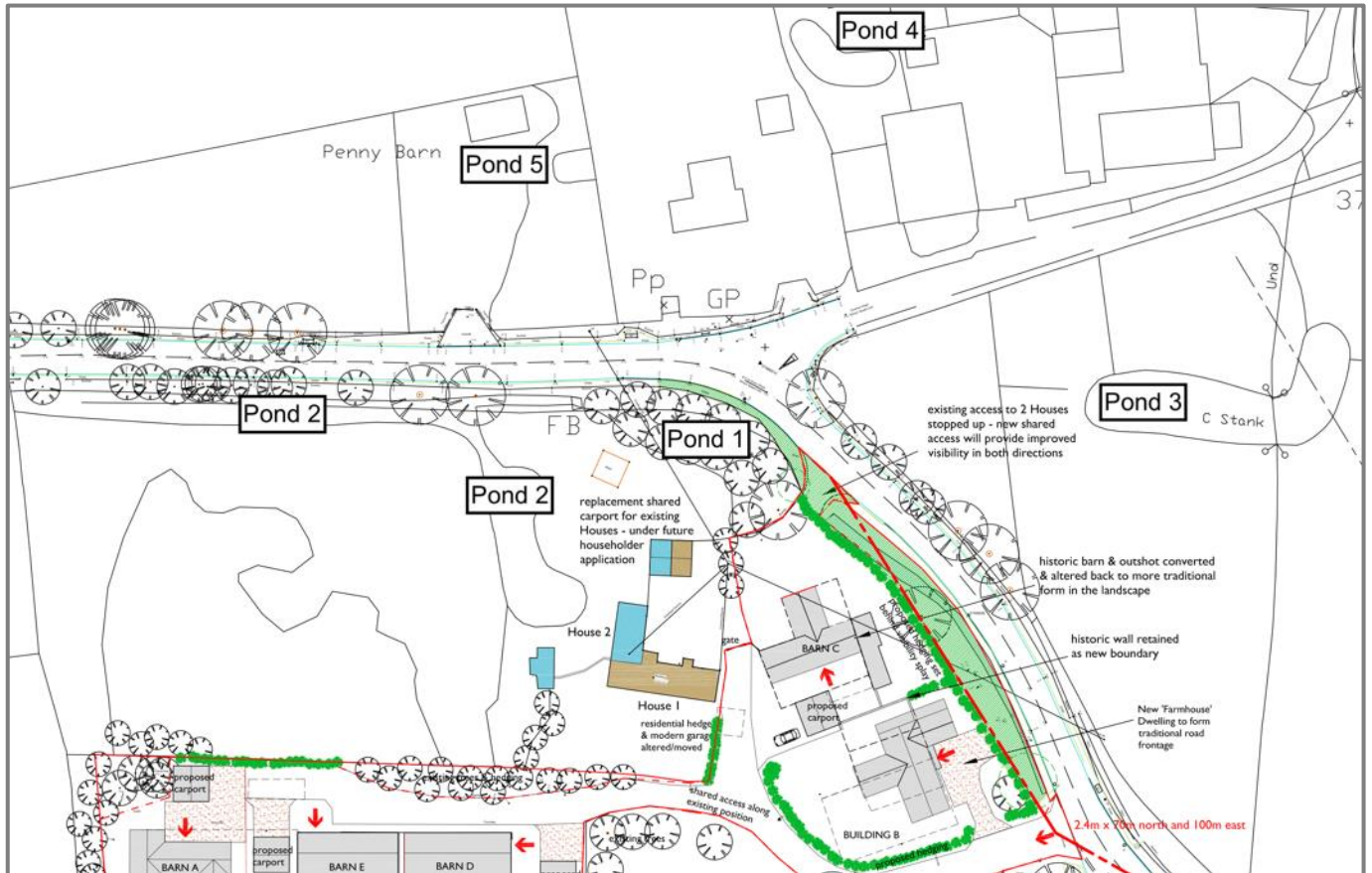
Surveys of the chicken sheds buildings D,E & F are required to discount their used by bats.

5.2.2 Pond Surveys.

Five ponds were identified within 100m of the development site.

OS grid ref:

- TM19097734 Within grounds of Corner Farm.
- TM19067733 Within grounds of Corner Farm.
- TM19177735 Neighboring property to east.
- TM19117741 Neighboring property to north.
- TM19077739 Neighboring property to north.




Constraints.



There were no constraints to prevent a habitat suitability assessment for the ponds.

Pond 2 was identified as requiring further surveys. The pond was too shallow to conduct bottle trapping, therefore further surveys were restricted to egg search, torch search, netting.

5.2.2.1 Pond 1 survey results.

Table 7. Great Crested Newt Habitat Suitability Index (HSI)									
Background Information									
Pond Number	1		Survey date	8 th April 2019					
			Location	Corner Farm OS Grid ref: TM19097734					
Access	Good all round		Dist. from development	Within the development site					
			Surveyor	J Parden. NE licence: 2016-20270-CLS-CLS					
General description. A garden pond set within the grounds and managed garden of the domestic residence on the site. The pond is shaded by surrounding planting including tall trees and low shrubs and hedgerows with lower branches spreading over the surface. Beyond the shrubs the pond is surrounded by mown lawn and the adjacent public highway. The pond appeared to be a permanent feature, is choked with vegetation and is heavily silted.			Photo 22. Showing pond 1 						
Factor						Score			
Location	SI1	Zone 1				1			
Pond area	SI2	Area approx. 15m x 5m = 75 sq.m				0.1			
Permanence	SI3	Dries annually.				0.1			
Water quality	SI4	Poor – assumed. Too shallow and dries to frequently to support a diversity of invertebrates.				0.33			
Shading	SI5	90%				0.3			
Waterfowl	SI6	Assumed none – too shallow.				1			
Fish	SI7	Assumed none – dries annually				1			
Pond Density	SI8	13 ponds = score of 4				1			
Terrestrial Habitat	SI9	poor >25% surrounding habitat favourable for terrestrial amphibians. The majority of the site is mown lawn / domestic garden.				0.33			
Macrophytes	SI10	100% Mostly marginal reeds.				0.8			
						Total	0.43 Poor		
Great Crested Newt Absence / Presence survey									
Date	Water temp <5°C*	Ph <6**	Torch		Net	Bottle trap	Egg search	Other species	Comment
			M	F					
Conclusions.		See discussion below. Screen out – pond scored 'poor' suitability for Great Crested Newts.							
* Water temp		Water temperatures below 5°C result in low newt activity.							
** Ph		Acidic water with a Ph lower than 6 is unfavourable to breeding Great crested newts.							


5.2.2.2 Pond 2 survey results.

Table 8. Great Crested Newt Habitat Suitability Index (HSI)			
Background Information			
Pond Number	2	Survey date	8 th April 2019
		Location	Corner Farm, OS grid ref: TM19067733
Access	Good all round	Dist. from development	Within the development site
		Surveyor	J Parden. NE licence: 2016-20270-CLS-CLS
<p>General description. A pond located within a combination of garden and woodland setting. The pond was is a permanent water infrequently.</p> <p>The pond was 100% shaded within the woodland section and unshaded in the garden section.</p> <p>Evidence of wildfowl in the form of grazing and feathers was observed.</p>		<p>Photo 23. Showing pond 2.</p> 	
		<p>Photo 24. Showing pond 2 'woodland' section.</p> 	
Factor			Score
Location	SI1	Zone 1	1
Pond area	SI2	Area approx. 75m x 5m Average = 375sq/m	0.6
Permanence	SI3	Permanent	0.9
Water quality	SI4	Good (assumed), sustains a diverse invertebrate population.	1
Shading	SI5	50%	1
Waterfowl	SI6	Moderated.	0.67
Fish	SI7	Possible.	0.67
Pond Density	SI8	14 ponds = score of >4	1
Terrestrial Habitat	SI9	Moderate 25-75% surrounding habitat is favourable, unfavourable habitat include the adjoining road and mown garden lawns.	0.67
Macrophytes	SI10	10% – Appears to dry frequently and early in the season.	0.35
Total			0.75 Good

Great Crested Newt Absence / Presence survey. Pond number 2.

Date	Water temp <5°C*	Ph <6**	Torch		Net	Bottle trap	Egg search	Other species	Comment
			M	F					
8 th April 2019			0	0	0	N/A	0	none	No spawn, frogs, toads, tadpoles or newt larvae were observed.
7 th May 2019			0	0	0	N/A	0	none	
11 th May 2019			0	0	0	N/A	0	none	
21 st May 2019			0	0	0	N/A	0	none	
Conclusions.	<p>See discussion below. Given the favourable status and the good surrounding habitats further surveys were required to determine presence / absence.</p> <p>The surveys determined that no newts were present in the ponds. The water was clear throughout the survey period. The water depth was shallow (approx. 100-200mm) across the whole pond.</p> <p>Bottle trapping was not possible due to insufficient water depth.</p> <p>The water was clear throughout the survey period and other survey methods were sufficient to obtain a conclusive result.</p>								
* Water temp	Water temperatures below 5°C result in low newt activity.								
** Ph	Acidic water with a Ph lower than 6 is unfavourable to breeding Great crested newts.								

5.2.2.3 Pond 3 survey results.

Table 9. Great Crested Newt Habitat Suitability Index (HSI)									
Background Information									
Pond Number	2		Survey date	8 th April 2019					
			Location	OS grid ref: TM19177735					
Access	Good all round		Dist. from development	Within 70m of the development site separated by significant barrier, B1118					
			Surveyor	J Parden. NE licence: 2016-20270-CLS-CLS					
General description. A pond located within a wooded domestic garden setting. A former moat with fish and wildfowl present The pond was 90% shaded and frequent permanent. The pond had an absence of aquatic vegetation either as a consequence of grazing by wildfowl or the effects of shading.			Photo 25. Showing pond 3. 						
Factor									
Location	SI1	Zone 1		Score					
Pond area	SI2	Area approx. 40m x 6m = 240sq.m		1					
Permanence	SI3	permanent		0.4					
Water quality	SI4	Moderate (assumed), compromised by shading and wildfowl		0.9					
Shading	SI5	90%		0.67					
Waterfowl	SI6	Yes, assume minor		0.4					
Fish	SI7	Yes, assume minor		0.67					
Pond Density	SI8	14ponds = score of 4		0.33					
Terrestrial Habitat	SI9	Moderate 25-75% surrounding habitat woodland garden, compromised by mown lawns.		1					
Macrophytes	SI10	10% – Appears to dry frequently and early in the season.		0.67					
			Total			0.59 Below Average			
Great Crested Newt Absence / Presence survey									
Date	Water temp <5°C*	Ph <6**	Torch		Net	Bottle trap	Egg search	Other species	Comment
			M	F					
Conclusions. See discussion below. Screen out – scored below average, compromised by shading and wildfowl. Also separated from development site by significant barrier – road B1118.									
* Water temp Water temperatures below 5°C result in low newt activity.									
** Ph Acidic water with a Ph lower than 6 is unfavourable to breeding Great crested newts.									

5.2.2.4 Pond 4 survey results.

Table 10. Great Crested Newt Habitat Suitability Index (HSI)										
Background Information										
Pond Number	2		Survey date	8 th April 2019						
			Location	OS grid ref: TM19117741						
Access	Good all round		Dist. from development	Within 70m of the development site, separated by significant barrier.						
			Surveyor	J Parden. NE licence: 2016-20270-CLS-CLS						
General description. A holding pond within a livestock farm, water clearly polluted by runoff from animal houses and yard.			No photo.							
Factor									Score	
Location	SI1	Zone 1								1
Pond area	SI2	Area approx. 15m x 3m - 45 sq.m								0.1
Permanence	SI3	Permanent								0.9
Water quality	SI4	Polluted								0.01
Shading	SI5	0%								1
Waterfowl	SI6	no								1
Fish	SI7	no.								1
Pond Density	SI8	14 ponds = score of >4								1
Terrestrial Habitat	SI9	Poor – farmyard all round								0.01
Macrophytes	SI10	0%								0.3
								Total	0.27Poor.	
Great Crested Newt Absence / Presence survey										
Date	Water temp <5°C*	Ph <6**	Torch		Net	Bottle trap	Egg search	Other species	Comment	
			M	F						
Conclusions. See discussion below. Screen out – scored poor.										
* Water temp Water temperatures below 5°C result in low newt activity.										
** Ph Acidic water with a Ph lower than 6 is unfavourable to breeding Great crested newts.										

5.2.2.5 Pond 5 survey results.

Pond 5.

Permission to survey pond 5 could not be obtained. The pond is separated from the development site by a significant barrier, public highway, B1118.

5.2.2.6 Discussion and Conclusions ponds.

The results of the habitat suitability survey suggest the pond closest to the site could potentially support a sustainable population of great crested newts based upon:

- Ponds 2 scored 'good' suitability for Great crested newts.
- There are terrestrial habitats close to the site that could potentially support terrestrial Great crested newts.
- There are local records of Great crested newts within 2km of the site suggesting the local area supports a population of newts.

Absence / presence surveys were conducted on the pond.

The surveys determined that no amphibians were present in the ponds.

The water depth was observed to be shallow and clear throughout the survey period.

The water was clear with a dark silty bottom to the pond. It is likely that the shallow water will be subject to extremes of heating and cooling as a result of solar gain. The ponds do not have sufficient water depth to moderate and maintain favourable water temperatures for amphibians.

The development is confined to the redevelopment of a former farmyard and existing buildings, and will not impact on any natural or semi-natural habitats, ponds or watercourses on the site. Any potential impacts on a local population of newts will be minimal.

Restoration of pond 1 and pond 2 by clearing vegetation, removing some of the trees shading the pond and dredging the ponds to increase the depth and create more stable water

temperatures would offer the potential for significant enhancement. (see guidance in Appendix 2)

5.2.3 Other protected species including barn owl.

No evidence of any other protected species could be found on the site. The buildings are not favourable for barn owls without ledges, or easy / suitable entry / exit points.

5.2.4 Nesting Birds.

Birds nests were observed within the buildings.

Nesting bird legislation is described in section 4 above and precautionary mitigation offered in section 6 below.

5.2.5 Habitats (see photos 23 to 26 below)

The redevelopment of the properties on the site is mostly within built environment / redundant farm (see plan 2 above).

A small area of ruderals / former grassland will become occupied by gardens associated with the conversion of buildings D,E & F (see photo 29 with associated location plan). The area has become dominated by ruderals, principally nettles, docks and thistles. This area of ruderals could potentially be occupied by terrestrial reptiles, amphibians or small mammals during the summer. Mitigation is offered to prevent injury or harm to reptiles, amphibians or small mammals during the site clearance. (see section 6 below).

The surfaces in the immediate vicinity of the buildings were mostly concrete and hard standing / gravel. (see photo's 26 to 28)

The site includes some derelict buildings with rubble piles and general rubbish piles associated with the previous collapsed buildings (see photo 30). These rubble piles do not constitute permanent habitats but could offer potential refuge for amphibians, reptiles or small mammals. Mitigation is included to avoid causing injury or harm to any reptiles, amphibians or small mammals that may be using the rubble as refuge (see section 6 below).

Table 11. Habitats on the site.

Photo No.	Image	Description
Photo 26		Showing typical concrete and hardcore former farmyard surfaces throughout the site.




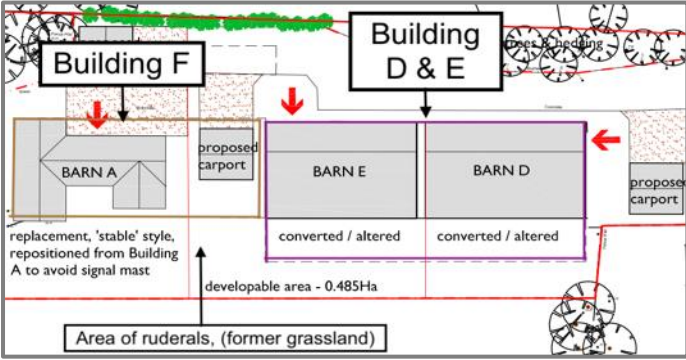
Table 11. Habitats on the site.		
Photo No.	Photo No.	Photo No.
Photo 27		Showing typical concrete and hardcore former farmyard surfaces throughout the site.
Photo 28		Showing typical concrete and hardcore former farmyard surfaces throughout the site.
Photo 29	 	<p>Showing the area of ruderals to the south of buildings D,E & F. This is currently part of grassland currently being lightly grazed by cattle. The grassland appears to be former improved grassland that has recently become managed by light grazing only and become locally dominated by thistle, nettle and docks.</p> <p>Also attached is a plan to locate the area on the site.</p>

Table 11. Habitats on the site.		
Photo No.	Photo No.	Photo No.
Photo 30		Photo to illustrate derelict building with associated rubble and rubbish piles.

6.0 Further surveys, mitigation and enhancement.

6.1 Further surveys:

Bats - Sufficient surveys have been conducted to determine that bats are using at least one of the buildings on site, building C.

Buildings B, D, E & F potentially offer limited bat roosting potential within their fabric.

Further bat activity surveys are required during the appropriate season to determine the size of the bat population, the species of bats using the site and the nature of the roosts. This information is required to support the mitigation proposals required to support the planning application and to support a European Protected Species Mitigation Licence (EPSM licence) application that will be required. The EPSM licence is applied for after planning permission has been granted and prior to works starting on site.

Great Crested newts. – Pond no 2 scores 'good' suitability for great crested newts, further surveys during the appropriate season were conducted to determine presence / population size.

The surveys concluded that no amphibians, including Great crested newts, were using the pond. No further pond surveys are required.

6.2 Mitigation – all species.

- Evidence of bats was found on the site within buildings C.
 - A Natural England European Protected Species Mitigation (EPSM) Licence will be required prior to works starting on site, the EPSM licence is applied for after planning has been granted and prior to works starting on site.
 - Typically one bat box per species is required of sufficient size to accommodate the peak number of bats observed within individual roosts, to be incorporated and permanently built into each structures that is occupied by bats.
- Site clearance.
 - The site should be cleared of rubble piles during the summer when reptiles, amphibians and small mammals are mobile. Rubble piles should be cleared with care to ensure that any reptiles that may be using them as refuges are not injured or harmed and are relocated to safe refuges away from the development site.
 - Areas of ruderals / former grassland should be cleared during the winter and once cleared should be maintained as bared ground or short mown vegetation.
- Construction phase.
 - Consideration should be given to small mammals and terrestrial vertebrates during the construction process, specifically hedgehogs. The method statement "Generic method statement to avoid harm to reptiles, amphibians and small mammals" attached in appendix 1 should be made available to all contractors to promote best practice.
- Nesting birds – Nesting birds must not be disturbed during the breeding / nesting season typically 1st March to 31st July (species dependant).
 - Ideally all site clearance and demolition works should be conducted outside these dates, alternatively the building and those areas of the site to be cleared should be searched for active nests by a suitably qualified ecologist and any active nests protected until the young have fledged.
- The contact details of a suitably licenced ecologist should be made available to the development contractors. In the unlikely event that any protected species are disturbed or found on the site then advice should be sought from a suitably licenced ecologist.

6.3 Enhancement.

- Detailed mitigation for bats will be determined by the results of the bat activity surveys and will be subject to agreement and approval by Nature England as part of the EPSM licence application.
- Bats. It is assumed that at least one bat box per species, of sufficient size to accommodate the maximum population of bats currently occupying the building, should be built into or incorporated on each of properties. Recommended bat box:
 - Schweglar FE1 bat box.

- Birds. 3 bird nesting opportunities (nest boxes) should be included on each of the new or renovated buildings on the site. Suggested nest boxes include:
 - Schwegler 1SP Sparrow Terrace.
 - Ipstock Eco-habitat for Swifts.
 - Schweglar Swallow Nest No10
- Amphibians, restoration of Pond 1 and Pond 2 through clearance of encroaching and shading vegetation and dredging, would offer enhancement for amphibians. Suffolk Wildlife Trust guidance on pond restoration is attached in Appendix 2.

6.4 Clients responsibility towards protected species.

The site owner has a responsibility to ensure that protected species or their resting places are not killed, injured or disturbed as a consequence of their actions.

Whilst the results of the survey are considered to be conclusive at the time that the survey was conducted, there is always a possibility that protected species might occupy the site between the period of the survey and the commencement of any works on the site. If any protected species are discovered during any construction works a qualified ecologist should be contacted for advice or assistance.

Contact details of suitably qualified and licenced ecologist:

John Parden, Natural England licenced ecologist

JP ecology – Office: 01379 586830 Mobile:07908 748079

If conditions within the buildings or the development proposals are significantly altered prior to the planning application being submitted then further advice should be sought from an ecologist to ensure that the conclusions of the ecological survey remains valid.

Appendix 1.

Generic method statement to avoid harm to reptiles, amphibians and small mammals including hedgehogs and brown hare.

Timing:

- (a) Restrict works to the winter period (when amphibians are rarely active above ground) if the site is close to aquatic habitats or Amphibians are relevant to the site.
- (b) Keep duration of groundworks as short as possible.

Construction methods and special precautions:

- (a) Backfill trenches and other excavations before nightfall, or leave a ramp to allow newts to easily exit.
- (b) All open trenches, footings, and pipe runs should be covered with shuttering ply overnight and the edges sealed with damp sand.
- (c) Raise stored materials (that might act as temporary resting places) off the ground, eg on pallets.
- (c) For pipelines, use directional drilling to cross areas of core habitat and newt dispersal routes.
- (d) All caustic materials (cement, lime plaster etc) should be mixed on tarpaulin and folded at night or mixed on the floor of a sealed building.
- (c) No caustic material should be allowed to contaminate the adjacent ground or allowed to form run-off that may contaminate ponds or watercourses.
- (d) All piles of rubble and spoil should be removed from site and not left during late summer / winter to form hibernacula for Amphibians and reptiles.
- (e) All waste materials should be stored in skips resting on areas of shingle/bare or hard standing.
- (f) Keep vegetation around the developed site should be kept short to discourage use by reptiles and amphibians.
- (g) Fire sites should be in a designated area on shingle/bare ground and well away from the ponds/water bodies and should be burnt daily, they should always be checked for sheltering mammals eg. Hedgehogs.
- (f) Avoid installing structures that act as barriers close to ponds, or include gaps at ground level where walls or fences are unavoidable to prevent entrapment of reptiles, amphibians or small mammals within the construction area.
- (g) If any protected species (e.g. bats, great crested newts) are discovered during the redevelopment then work should stop immediately and advice sought from an ecological consultant.
- (h) If in any doubt contact a Natural England Licenced ecologist:
John Parden of JP ecology 01379 586830

Pond restoration & management for wildlife

A Suffolk pond in good health is an incredibly rich and varied habitat for wildlife. When the environmental conditions are right, an array of different plant species grow in abundance, creating a spectrum of aquatic zones in which a myriad of different creatures manage to find the right kinds of spaces to flourish.

Pond plants help clean the water by absorbing nutrients and even pollutants as they grow, and a host of filter-feeding invertebrates vacuum up tiny particles and break down rotting matter. Ponds in different situations vary enormously in the wildlife they support and even weather conditions can affect the dominance of certain pond plants in a given year, and therefore its appearance and associated wildlife.

However, the condition or health of a pond can be affected by a number of factors.. Water can become murky or smell foul, become shaded by surrounding trees or shrubs, or get taken over by invasive emergent vegetation which effectively dries out the open water. These changes will inevitably lead to a reduction in the wildlife – both population size and diversity of species.

To successfully restore a pond to a healthy state, it is important to establish what factors are affecting it.

Diagnosing pond problems

The primary indicator of pond health is an abundance of underwater vegetation composed of several different plant species. The most important single factor contributing to a pond's health is an abundance of varied plant cover, both underwater and growing out of it, but particularly under water. It is the plants that attract animal life and create favourable conditions for it. However improving the health of a pond is not a matter of planting more plants but of maintaining the right conditions for natural plant growth to thrive. The optimal amount of



Common newt
Bill Stevenson

plant cover in a pond during the summer is considered somewhere between 60 and 85% of the water volume. Plants naturally colonise ponds with clean, well-lit shallow water.

Nutrient build-up

Excess nutrients can cause imbalances in a pond. Good indicators of high nutrient status or a pond in poor health might be dominance by algae, duckweed or simply, rotting, oozing black mud with no plant growth.

Algae

Whilst unattractive and potentially harmful, algae are important members of a healthy, well-balanced pond

ecosystem, providing food for species at the lower end of the food-chain. There are many different types and species of algae which tend to present seasonal problems, depending on the pond type, but all indicate enriched water. Less than 5% algal cover should not have an adverse affect. There are three main algae types:

- Filamentous algae (multi-cellular 'blanket weed' which germinate in February and become established and dominate before other species can get a hold. As the algae plants mature they float to the surface forming unpleasant smelling algal mats of decaying algae.
- Planktonic algae (single-celled) which prefer organic, enriched turbid waters – such as those inhabited by duck or fish, making the water brown or green.
- Blue-green alga (single or multi-celled) which resemble spilt green paint on the pond surface.

Duckweed

Duckweeds are tiny free-floating plants consisting of one or two tiny leaves with little roots dangling off them. Like algae, they have their place in healthy well-balanced ponds. However, where they dominate, they tend to indicate heavily silted ponds or those with very deep leaf litter where higher plants cannot root – and often occur in very sheltered situations.

Sources of problems and nutrient build-up

Try to establish how an excess of nutrients have built up – a single pollution event or gradual build up? The source of the nutrients may be close to the pond (as in a septic tank overflow) or far away (as in agricultural rainwater run-off carried to the pond via a ditch). Investigate where the water which fills the pond comes from to see whether the water is picking up nutrients before it gets to the pond. A nutrient build-up may be associated with one of following factors:

Trees

Unless your pond is a long established woodland pond, trees can hinder plant growth in two ways:

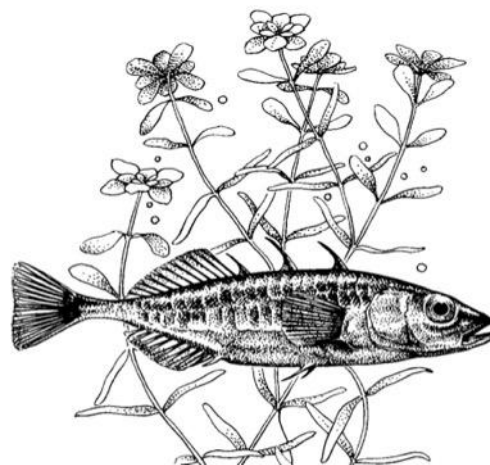
- Shading reduces available light for plant growth and makes the pond surroundings a colder habitat, making it a less attractive site for creatures such as frogs. As a guide, problems tend to occur if more than 20% of the southern side of the pond is overshadowed by trees, or if more than 50% of the total pond edge is overshadowed.
- Add to the nutrients in the pond, especially tannins released from rotting dead leaves which acidify pond water – some species, such as oak and sycamore, have a more adverse affect on the quality of the water than finer-leaved species such as willow.

Duck & geese

Whilst these birds have their place, they can create significantly impact on ponds and pond wildlife when present for long periods in any large numbers. They enrich the water with their droppings and stir up enriched sediment as they up-end and search for food, destroying plant communities and leading to algal blooms. Ponds are often left bare, murky and largely lifeless. Encouraging duck by feeding them should be avoided. (See factsheet on duck.)

Fish

Fish – even small numbers of tiny stickleback – can significantly reduce the wildlife value of a pond and effectively remove breeding great crested newt. Invertebrate-feeding fish (bream, carp, pike, perch, trout) can deplete insect populations, such as dragonflies and daphnia that feed on algae, and lead to an increase in algae. The cyprinids, especially the large carp, tench and bream, feed by sifting and stirring the bottom mud which causes turbidity which inhibits aquatic plant growth and destabilises the pond substrate to the point where the behaviour can completely eliminate aquatic plant growth. Short of really thoroughly draining and dredging a pond, total fish removal is virtually impossible. (See factsheet on fish.)



Stickleback

Arable field edges

Pesticide and fertilizer often drift from field margins during application affecting delicate pond plants and invertebrates. Grass buffer strips that can protect ponds are now an option for farmers under agri-environment schemes.

Invasive non-native plants

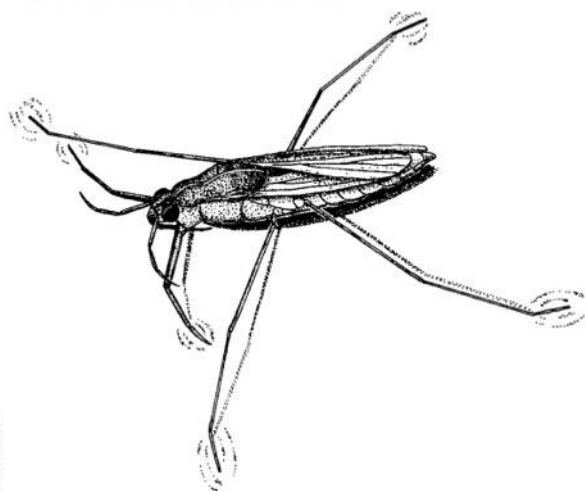
Several non-native plants, such as parrots' feather, fairy moss, Canadian pondweed, floating marsh pennywort and New Zealand pygmyweed, are sold at garden centres

as oxygenating plants (or have inadvertently got into pots of others) but can be extremely invasive, out-competing our native plants and providing little habitat for wildlife. Avoid introducing plants to ponds – they will soon colonise – by wind or long dormant seeds in the substrate. (See factsheet on invasive plant control.)

Ponds which dry out or have fluctuating water levels

Some old Suffolk ponds appear to dry up whenever there is a dry summer and others have water levels which drop steeply downwards every year and a great empty and unattractive muddy “beach” is left. Some insect species especially need this beach area and others, such as amphibians, beetles and plant communities can actually benefit from ponds drying out occasionally because their main predators are reduced, although amphibian larvae need a pond to hold some water until at least halfway through the summer. Restoring some naturally fluctuating ponds by deepening may not be the best management option.

A shallow pond with an average depth of 1m may lose 0.5m depth due to a dry summer - it may be good for the “beach margin species”, but in nutrient-rich waters this does effectively double the concentration of the remaining nutrients in the water and may lead to other problems such as excessive algal growth and unsuitable conditions for many desirable aquatic species. (See factsheet on ponds with fluctuating water levels.)



English Nature

Pondskater

Deep and shallow water

Very shallow water, ie less than 30cm deep, is where most of the wildlife is found. Plants tend to thrive in warm shallow water and aquatic species such as amphibians develop faster and survive into adulthood better when compared to deep ponds. However, they do become choked with aquatic or emergent vegetation or dry out annually.

Deep water, >1m deep, does not allow light to penetrate as well and remains cooler meaning that amphibians take considerably longer to develop to adulthood. However, the cooler water can help minimise algal growth in hot, droughty years, and provides a watering hole for lots of wildlife in dry weather.

Many ancient farm ponds are historically important as clay pits and changing their shape, water depths and bank profiles with heavy machinery can compromise their historic integrity. If in any doubt about restoration methods, advice should be sought from Suffolk County Council Archaeology Unit before embarking on pond work.

Pond restoration

Pond restoration for wildlife might involve

- Simple, subtle, slow and gentle changes in management such as changing the inflow to reduce nutrients entering the pond
- Coppicing, pollarding, tree felling, stump treatment or removal to let light into a pond
- Use of heavy machinery to de-silt, removing some or all of the nutrient build-up in a pond
- Ongoing gentle management to prevent problems re-occurring such as regular coppicing or regular removal of invasive vegetation

Manage trees and shrubs to maintain an open and sunny pond

Pond size will influence how many trees and shrubs can be left around a pond. Aim to keep 90% of the pond edges open and sunny to allow plenty of sun into the pond and for emergent plants such as water mint to grow in the shallow margins of the pond.

Avoid felling or removing old, historically important or landscape feature trees to open up a pond. It may be better to concentrate efforts on another nearby pond than to harm an ancient tree. Alternatively consider pruning just a few lower branches that cast the most shade and accept that regular leaf removal may be required to avoid the build up of leaf litter if the tree remains.

Coppicing pond margins in late winter could be done on a rotation of several years (say, one third every two years) on a large pond to ensure there is always some shrub growth, but on a small pond the edges may need flailing every other year to keep the pond open and minimise leaf litter.

To reduce the amount of coppicing required, yet provide some standing dead wood and useful system of tree roots next to the pond, consider treating stumps with a herbicide to prevent regrowth. Elsewhere, for young trees

and shrubs only, consider removing stumps when de-silting the pond.

Reduce aquatic vegetation

Regular, gentle thinning out of excess aquatic vegetation in nutrient-rich farm ponds every autumn might be valuable to reducing the progressive build up of nutrients such as nitrates and phosphates. By raking out submerged plants and leaving them on the pond edge overnight for small creatures to crawl back into the water, nutrients can effectively be removed from the water and avoids leaving the aquatic vegetation to rot down over winter, releasing nutrients back into the water to encourage blanketweed or other forms of algae. Aim to leave 25% of the pond dense with plants.

Vegetation should eventually be removed away from the pond to avoid the nutrients seeping back into the pond when it rots. Avoid dumping it on species-rich vegetation nearby.

Reduce invasive, emergent vegetation

Occasional removal of invasive, dominant species in the winter such as reedmace on an opportunistic or little-and-often basis is a good idea and will reduce the need to return for a bigger, more drastic restoration job later. If a digger is employed on the farm elsewhere for winter ditching, it is worth asking the operator to remove a couple of accessible bucketfuls of reedmace stands as this makes way for other less competitive emergent plants that provide good egg-laying opportunities for other creatures such as great crested newt.

Remove excess algae and duckweed

Algal blooms often come and go without management, and certainly in a new or recently restored pond, other plants will establish and often out-compete the algae. However some can get worse over time. Duckweeds/algae absorb phosphates as they grow, so removing some phosphates from the pond system, thereby reducing their regrowth unless more phosphates are regularly coming in. Consider the following:

- Net duckweed with a fine-meshed sampling net. This can be particularly effective in heavy wind when most of the duckweed is swept to one side of a pond.
- Grab, or twist a stick amongst and drag blanketweed when it is in its growing stages to remove large sheaths of it in one go. Avoid removing algae where great crested newt are breeding as their larvae live in the blanketweed. Rest the blanketweed overnight on the pond edge to allow creatures to return to the pond before removing it well away from the pond.

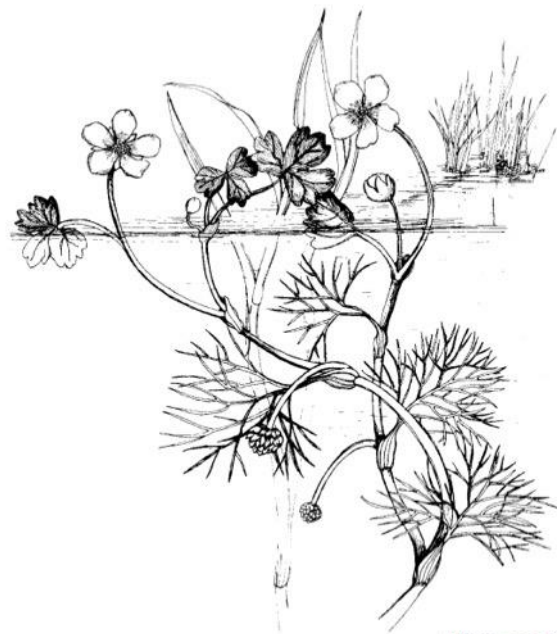
- Consider the barley straw technique to lock up the phosphates and nitrates in the water. (See factsheet on algae as this technique is quite critical to avoid worsening a problem!)

Dredge the pond bottom

The silt at the bottom of a pond is sometimes a lingering store of accumulated pollution or naturally occurring substances, which may prevent aquatic vegetation from establishing and lower the water quality. Usually the only practical solution on a farm pond scale is to de-silt in one phase. Consider timing to minimise damage to any wildlife in the pond:

- Post harvest/September for arable field edge ponds which are effectively dry or completely silted and shaded with little wildlife interest
- Between November and February for ponds where great crested newt might be present to ensure most have left the pond

To minimise damage to surrounding habitat and overwintering wildlife such as newts, aim to work with heavy machinery from as few places as possible. Silt should be removed carefully to avoid smothering species-rich vegetation nearby – ideally off-site onto arable stubbles, or spread thinly over recently coppiced scrub areas where the regrowth will quickly grow through the spoil.



Water crowfoot

English Nature

**For further advice, contact Suffolk Wildlife Trust on:
01473 890089
wildline@suffolkwildlifetrust.org**