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Bat Roost and Pond Assessment

of

**Denning, 7 Marsh Lane, Burnham Norton,
Norfolk, PE31 8DS.**

Survey Commissioned by:	CowperGriffith on behalf of Mrs S Nieuwenhuys
Project Number:	REP20045.A
Report issued:	18 th January 2021 (RevA) (Draft issued: 30 th December 2020; Final issued: 15 th January 2021)
Date of survey:	30 th November 2020
Surveyor:	Dr Odette Robson BSc (Hons) PhD MCIEEM

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REP20045.A	Bat Roost and Pond Assessment of Denning, 7 Marsh Lane, Burnham Norton, Norfolk, PE31 8DS.	Rev A: Minor revisions following client comments, to clarify location of enhancement hedge-planting.	18 th January 2021

Disclaimer

The findings detailed in this report are based on evidence from thorough survey, where every effort has been taken to provide an accurate assessment of the site at the time of the survey. No liability can be assumed for omissions or changes after the survey has taken place.

This report was instructed by Mrs S Nieuwenhuys, and following the brief agreed. Robson Ecology has made every effort to meet the client's brief.

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Where roosting bats are recorded, a Protected Species Licence may be required: Natural England (the licensing authority in England) require data from the most recent survey season. Where a bat roost is not recorded, data will be valid for a maximum of 18 months from survey date.

Reports must not be submitted to the LPA for a planning application until outstanding invoices have been settled.

This report is valid for 12 months from the survey date and should not be relied upon after this date.

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Summary

Site:	Denning, 3/7 Marsh Lane, Burnham Norton, Norfolk, PE31 8DS.
Grid Reference:	TF 82638 44130
Report Commissioned by:	CowperGriffith on behalf of Mrs Sally Nieuwenhuys
Date of Survey:	30 th November 2020

	Impacts	Recommendations/Further Actions
Local Designated Sites	European and UK statutory designated sites	The site lies within the Zone of Influence for statutory sites (North Norfolk Coast), designated primarily for wintering birds and coastal habitat: No direct impacts from proposals (no supporting habitat will be impacted); and no indirect impacts (no increase in residential units/visitors to the sensitive areas).
Results and Further Actions/Survey Requirements	Roosting Bats – buildings.	The outbuilding (scheduled for demolition) and house had negligible risk of supporting roosting bats due to lack of access to voids or suitable crevices and roosting opportunities. No further surveys or precautions required.
	Roosting Bats – trees.	Three fruit trees, which will need to be removed to facilitate the extension, had negligible potential to support roosting bats. No further surveys or precautions required.
	Great Crested Newts <i>Triturus cristatus</i> .	A small, lined, ornamental garden pond had very low potential to support protected amphibians. Water bodies in the local landscape were not ecologically connected and/or within amphibian commuting distance of the site. Due to the small extent of the clearance zone, lack of direct connectivity and distance to other local water bodies, the risk of protected amphibians using the site was negligible/low and no further surveys are required. Precautions should be implemented during site clearance.
Impact Avoidance and Precautionary Measures	Foraging and commuting bats	A sensitive lighting scheme should be implemented to maintain dark corridors through the garden.
	Herptiles	To reduce the very low risk of harming amphibians, precautionary methods should be implemented during site clearance and the construction phase.
	Wildlife and Countryside Act (WCA) Schedule 9 invasive species.	Invasive non-native <i>Cotoneaster horizontalis</i> should be removed from site to an appropriate disposal facility which is licensed to process controlled waste.
	Nesting Birds	Demolition of lean-to (western elevation of House) and shed/outbuilding, and any vegetation clearance should be carried out outside the nesting bird season, or following a pre-start nesting bird survey.
Additional enhancement	Consider further enhancement by locating bird boxes in the garden and boundary native hedge planting.	

Contents

1	Introduction	5
1.1	Background.....	5
1.2	Aims and Objectives.....	5
2	Survey Methodology.....	5
2.1	Site Survey.....	5
2.1.1	Bats.....	5
2.1.2	Ponds.....	6
2.2	Site Context and Proposals.....	6
3	Results.....	7
3.1	Desk Study.....	7
3.2	Suitability of Buildings for Roosting Bats	11
3.3	Foraging and Commuting Bats.....	11
3.4	Pond Assessment for Great Crested Newts	11
3.4.1	Assessment of Potential for Impact to Great Crested Newts	12
3.5	Nesting Birds.....	12
3.6	Invasive Flora and WCA Schedule 9 Species.....	13
3.7	Limitations and Assumptions.....	14
4	Key Recommendations and Precautions.....	15
4.1	Bats.....	15
4.1.1	Sensitive Lighting	15
4.2	Great Crested Newts.....	15
4.2.1	Precautionary Working Method Statement (Amphibians)	16
4.3	Nesting birds	17
4.4	Removal of Schedule 9 Invasive Plant Species.....	17
5	Ecological Enhancement.....	17
5.1	Native Hedge-planting.....	17
5.2	Bird Boxes.....	17
5.3	Hedgehog links	18
6	Conclusion	18
7	References.....	18
8	Appendix A - Ecological Features Plan.....	19

1 Introduction

1.1 Background

Robson Ecology Ltd was commissioned by Mrs Sally Nieuwenhuys, to undertake a Bat Roost and Pond Assessment of an unoccupied residential property, garden and outbuilding at Denning, Marsh Lane, Burnham Norton, Norfolk. The report is required to inform a planning application for an extension to the dwelling following demolition of an outbuilding and the single-storey lean-to extension on the western elevation of the house

1.2 Aims and Objectives

All UK species of bats and great crested newts are protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitat and Species Regulations, 2017. The surveys were therefore required to:

- Identify the presence, or potential presence, of any protected species, with particular reference to bats or great crested newts;
- assess the potential impact of the proposals on bats or great crested newts within the zone of impact;
- make recommendations for further surveys to inform the planning application and/or a European Protected Species Licence application (if required);
- detail any precautions required to protect bats and great crested newts from impact, and/or mitigation or compensation, where necessary.

2 Survey Methodology

2.1 Site Survey

The site survey was undertaken by Odette Robson BSc (Hons) PhD MCIEEM, a full member of the Chartered Institute of Ecology & Environmental Management (MCIEEM), subject to the CIEEM Professional Code of Conduct and licensed by Natural England to survey for bats (WML-CL18; Level 2), and great crested newts (2015-16945-CLS-CLS – Class licence Level 2).

During the survey, on 30th November 2020, the temperature was 8°C; the wind at Beaufort Scale 2-3, 100% cloud cover, occasional light rain showers and good/moderate visibility.

2.1.1 Bats

The survey was undertaken in accordance with *Bat Surveys for Professional Ecologists: Best Practice Guidelines* (Collins, 2016). The residential property to which the proposed extension would be attached, was assessed externally and internally, using binoculars, high-powered torch, ladder and a borescope inspection camera (Ridgid CA300) to enable investigation of deeper cavities, where necessary. Accessible cracks, holes, crevices and other potential bat roosting features were thoroughly inspected for bats themselves, or for signs (e.g., staining, droppings, scratch marks) of past bat presence.

Aerial photographs, available maps and survey of the area outside the immediate site boundary (where access was available) was used to identify any bat habitat in the wider

landscape which could be impacted by proposals. Any operational phase impacts to bats using the surrounding area (foraging and/or commuting) were also assessed.

2.1.2 Ponds

Ponds and waterbodies within 250m of the site were identified from available maps, and site survey. Those within impact distance of the property and ecologically connected were surveyed for potential to support great crested newts using the Habitat Suitability Index (HSI; Oldham *et al.*, 2000). The HSI is a numerical index which uses specific habitat factors to assess whether the water body would be likely to support great crested newts, based on preferences for breeding ponds (see Table 2.1).

Table 2.1: Habitat Suitability Index (HSI) indicating suitability of ponds for breeding great crested newt.

HSI Score	Pond Suitability
< 0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
> 0.8	Excellent

2.2 Site Context and Proposals

Denning, a residential dwelling (historically terraced cottages) with mature gardens and outbuildings, lies on the north-western edge of the small village of Burnham Norton, approximately 2km to the north-west of Burnham Market, and 2.5km to the south of the coastline at Holkham Bay.

Houses with extensive, mature gardens lie to the east and west. To the north, beyond Marsh Lane is a further residential house and gardens, with managed arable land beyond. Beyond the southern boundary is an extensive arable field.

The northern elevation of Denning adjoins Marsh Lane. The property is surrounded by a well-maintained garden, laid mainly to lawn with mature tree and shrub planting. Removal of three mature fruit trees, a small ornamental pond and flower beds would be necessary to facilitate the proposals.

The wider landscape to the south is mainly agricultural, dominated by arable land with pockets of woodland. To the north, the land is dominated by salt marsh associated with the North Norfolk coast.

3 Results

3.1 Desk Study

A 2km radius search for statutory designated sites, including European designated sites: Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites was conducted using “MAGIC”, the Multi-Agency Geographic Information system for the Countryside. Results are shown in Table 3.1 below.

The MAGIC database was consulted (28.12.20) to ascertain if any European Protected Species (EPS) licences had been granted within 5km of the site:



- 3km NE – Natterjack Toad EPS licence was granted in 2011.
- A great crested newt record from 2km north in 2017 was listed in licence return data (MAGIC, 2020).




The site lies within an Impact Risk Zone (IRZ) for All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi-natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures.




Table 3.1: Statutory designated wildlife sites within 1km

Site Name	Designation	Distance from Site (approx.)	Description
North Norfolk Coast	SAC	700m E	<i>Designated for breeding and non-breeding (wintering) waders and waterbird assemblages.</i>
North Norfolk Coast	SPA and Ramsar	55m NE	<i>Designated for coastal habitats and vegetation communities (also otter and seal).</i>
North Norfolk Coast	SSSI	55m NE	<i>The North Norfolk marshland Coast consists primarily of intertidal sands and muds, saltmarshes, shingle banks and sand dunes. There are extensive areas of brackish lagoons, reedbeds and grazing marshes. The coast is of great physiographic interest and the shingle spit at Blakeney Point and the offshore shingle bank at Scott Head Island are of special importance. A wide range of coastal plant communities is represented and many rare or local species occur. The whole coast is of great ornithological interest with nationally and internationally important breeding colonies of several species. The geographical position of the North Norfolk Coast and its range of habitats make it especially valuable for migratory birds and wintering waterfowl, particularly brent and pink-footed geese. The area, much of which remains in its natural state, now constitutes one of the largest expanses of undeveloped coastal habitat of its type in Europe.</i>
Holkham	NNR	55m NE	<i>Eleven mile stretch of fragile windswept coastline, including a maze of creeks and marshes, unspoilt sand dunes and pine forests.</i>

Table 3.2: Target Notes (see Appendix A for location of Target Notes)

Target Note	Description	Photo
<p>1</p>	<p>Two-storey, gabled main house. Windows (metal-framed/single-glazed) were well-sealed into surrounds. Double-pitched pan-tiled roof with well-sealed roof and ridge tiles. Lead chimney aprons and parapet edges were well-sealed and flush with tiles.</p> <p>Roof void with simple, rough-sawn timbers. Open below ridge beam and floor lined with lagging insulation. Heavily cob-webbed beneath the ridge-beam, indicating that there had been no disturbance (such as flying bats) in the void for a significant period of time. No visible gaps to facilitate internal bat access. Plyboard and membrane roof lining. No notable crevices within the roof timbers. No bat droppings or other evidence of past bat presence.</p> <p>Overall risk of bat roost presence: Negligible.</p>	
<p>2</p>	<p>Lean-to extension: Single-storey mono-pitched roof with intact pan-tiles. Lead flashing secure and flush to tiles and flintwork. Parapet edge with concrete sealed gullies. Well-sealed flintwork on the gable above the mono-pitched roof, with no barge-boards or other potential roost features. Internally – no roof void and felt roof lining under tiles.</p> <p>Overall risk of bat roost presence: Negligible/Low.</p>	

<p>3</p>	<p>Outbuilding/workshop: Timber shed with ship-lap walls, gables, and roof lining.</p> <p>Double-pitched roof with corrugated sheet (Coroline) covering – intact and sealed. No crevices or access for bats. Negligible risk of bat roost presence.</p>	
<p>4</p>	<p>Garden pond (approximately 2m x 2m and up to 50cm deep): Surrounded by paving slabs, and lawn/garden beyond. Heavily silted with leaf litter and high algal growth. Possible fish presence (green, cloudy water). No notable aquatic vegetation or invertebrates.</p>	
<p>5</p>	<p>Pear tree scheduled for removal. Minor flaking bark, small cavities and crevices: None extended to form potential roost features: All crevices either did not extend to form a cavity or were internally wet, with unsuitable roosting conditions.</p> <p>Negligible bat roosting potential.</p>	

<p>6</p>	<p>Declining Apple <i>Malus</i> spp. tree: Pruning cuts from past management were well-sealed though beginning to decay. Epicormic growth. No crevices or cavities extending into potential roost features.</p> <p>Negligible bat roosting potential.</p>	
<p>7</p>	<p>Declining Apple <i>Malus</i> spp. tree with two main stems: Well-managed in the past with evidence of numerous pruning cuts, most of which were well-sealed though some had early decay seam formation.</p> <p>All potential roost features were investigated with torch and endoscope (where necessary). Knot-holes and decay around pruning cuts formed small cavities, though none extended into dry cavities which could be used by roosting bats.</p> <p>Negligible bat roosting potential.</p>	
<p>8</p>	<p>Flower beds: Well-stocked with typical introduced garden planting. Weeds beginning to encroach: (Forget-me-not <i>Myosotis arvensis</i>, Cleavers <i>Galium aparine</i>, Creeping Buttercup <i>Ranunculus repens</i>, Annual Meadow Grass <i>Poa annua</i>, Sun Spurge <i>Euphorbia helioscopia</i>, Dandelion <i>Taraxacum officinale</i> agg., Chickweed <i>Stellaria media</i>, Common Poppy <i>Papaver rhoeas</i>, Common Nettle <i>Urtica dioica</i>).</p>	

3.2 Suitability of Buildings for Roosting Bats

An assessment was made under the criteria detailed in current Best Practice Guidelines (Collins, 2016). The results detailed below show the assessment of roost features for each building, with any further actions, based on level of risk.

Table 3.3: Summary of bat roosting potential.

Building	Roosting habitat suitability	Further survey requirements to ascertain roosting status
Main House (TN1)	Negligible roosting potential	No further surveys or precautions
Western Extension (TN2)	Negligible roosting potential	No further surveys or precautions
Outbuilding (TN3)	Negligible roosting potential	No further surveys or precautions

3.3 Foraging and Commuting Bats

It is likely that foraging and commuting bats could move through the site, or around the boundaries, due to dark, linear features (lanes and hedges), and good quality foraging habitat in mature gardens and wider landscape. No significant foraging habitat would be lost as a result of the extension works and commuting bats would not be impacted if a sensitive lighting scheme is implemented: If any new external lighting is proposed, this should follow the precautions detailed in Section 4.1.1.

3.4 Pond Assessment for Great Crested Newts

The HSI assessment was undertaken on 30th November 2020.

Table 3.4: Habitat Suitability Index (HSI) of ponds (SI = Suitability Index).

	Denning Garden Pond
SI1 - Location	1
SI2 - Pond area	0.05
SI3 - Pond drying	0.7
SI4 - Water quality	0.2
SI4 - Shade	1
SI6 - Fowl	0.5
SI7 - Fish	0.7
SI8 - Ponds	0.8
SI9 - Terrestrial habitat	0.6
SI10 - Macrophytes	0.3
HSI	0.45

3.4.1 Assessment of Potential for Impact to Great Crested Newts

A HSI of 0.45 relates to 'poor' suitability to support great crested newt breeding.

The HSI index is only a guide to the likely presence or absence of great crested newts and should be interpreted in conjunction with information on habitats/connectivity in the area and knowledge of great crested newt ecology. The survey results, in combination with information on local conditions, suggest that there is low to negligible risk of great crested newts using the proposed extension area at Denning. It is, therefore, likely that the proposed extension can proceed without impacting great crested newts (individuals or the local conservation status), for the following reasons:

- The pond that would be lost is a small ornamental garden pond with poor suitability to support breeding great crested newts;
- The nearest ponds in the local landscape are:
 - 85m north; an irrigation lagoon (not marked on all OS Maps and likely to be relatively recently created).
 - 280m north-west – separated from the site by arable land and Marsh Lane.
 - Drainage ditches – 90m north-east and 225m to the west.
- Sub-optimal foraging and commuting habitat within the clearance zone. The construction footprint was managed garden vegetation (short-mown lawn and planted beds).
- Construction of the new extension would not impact any ditches or hedges.
- The zone of impact lacks fallen deadwood, rabbit burrows or mature tree-root systems with cavities and access to suitable underground overwintering/hibernation conditions. However, the pond at TN4 was surrounded by paving slabs which could provide shelter and refuge opportunities for newts.

It is considered that the proposed extension is highly unlikely to impact amphibians. No further surveys are recommended, and a Protected Species licence will not be required to proceed with proposals due to the very low risk of impact to newts, and no loss of good-quality amphibian habitat. However, to reduce any residual risk of impact to zero (to all amphibians – including toads), precautionary clearance of the site should be carried out, and standard due-diligence precautions during the construction phase, as detailed in Section 4.2.1.

3.5 Nesting Birds

All nesting birds and their eggs are protected under the Wildlife & Countryside Act 1981.

Disused nests were recorded within the passageway (between TN1 and TN2). Further nesting opportunities were present in vegetation within the footprint of the extension (TN5, TN6 and TN7), and the outbuilding at TN3.

Timing of works, or a pre-start precautionary nesting bird survey would ensure compliance with legal obligations with regards nesting birds: The main breeding season is between March and August inclusive. Should any works be proposed (removal of any vegetation or demolition of TN2 or TN3) during the bird breeding season, a nesting bird survey should be undertaken

to confirm presence/absence of nests immediately prior to start of works. If nests are identified, there may be a delay to the start of the work until all young birds have fledged.

Between September and February (inclusive), risk of nesting is negligible, and works can proceed without a full nesting bird survey, if a cautious approach is adopted by contractors.

Plate 3.1: Disused nests in corridor between main house and single-storey western lean-to extension.



3.6 Invasive Flora and WCA Schedule 9 Species

Cotoneaster horizontalis, a non-native invasive species listed on Schedule 9 of the Wildlife and Countryside Act, was recorded within the area of impact. All plant parts and their growing medium should be removed from the site to a licensed disposal facility during site clearance.

Plate 3.2: *Cotoneaster horizontalis* (non-native invasive species) at front door (western end of property).



3.7 Limitations and Assumptions

The baseline conditions reported and assessed in this document represent those identified during a single site survey, on the 30th November 2020. A reasonable assessment of habitats can be made during a single survey however, seasonal variations cannot be observed. The survey provides an overview of the likelihood of presence of protected species, limited by the seasonality of some signs, such as the transient use of roosting opportunities by bats, and the short-lived nature of bat droppings. Where no evidence was found, this does not mean that bats do not use the buildings at some stage of the life-cycle. Further surveys are only recommended if there is a significant likelihood that bats/newts, or other protected species, may be present and impacted by the proposed extension, based on the suitability of the buildings, pond, surrounding habitat, and any direct evidence.

All areas of the site were accessible externally on the day of the survey. Internally, the loft void of the main house (TN1) and the shed (TN3) were both fully accessible. However, the western end of the lean-to extension at TN2 could not be internally accessed. However, the roof structure was open and accessible above the passageway (where the single storey extension adjoins the main house), and could be seen to continue into the accessible part: There was no roof-void and it is highly unlikely that there would be any ecological issues in the small inaccessible section.

The pond assessment was carried out during the newt hibernation season, when newt-eggs would not be present. However, as an initial inspection for suitability of a water body, the assessment was sufficient and appropriate. A HIS calculation taken at this time of year should be used with caution, and as a guide only.

All constraints were within normal limits and have been taken into consideration on drawing conclusions and recommendations from the survey.

4 Key Recommendations and Precautions

4.1 Bats

There was no evidence of bats having used the main loft-void of the house (TN1) or outbuilding (TN3), potential roosting opportunities were not recorded in any part of the buildings (TN1, TN2 or TN3) or trees scheduled for felling (TN5, TN6 and TN7). Risk of impact to roosting bats was negligible. No further surveys or precautions for roosting bats are recommended.

4.1.1 Sensitive Lighting

Lighting at the site should be minimized to encourage bats to use the site, both during the construction works, and on completion. Guidance from the Institute of Lighting Professionals and the Bat Conservation Trust (IPL 2018; ILE 2012, BCT 2009) has been used to inform the following considerations:

- Garden boundaries should be maintained as dark corridors. Lighting should be appropriately directed to avoid illuminating hedges at the garden boundaries and retained mature trees.
- LED luminaires should be used where possible (No UV elements: Metal halide, fluorescent sources should not be used).
- A warm white spectrum (ideally <2700Kelvin) should be used to reduce the blue light component.
- Peak wavelengths higher than 550nm should be used to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered (where this is feasible and meets safety standards).
- Column heights should be as low as functionally feasible to minimise light spill.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used (See ILP 2011).
- Luminaires should be mounted on the horizontal to avoid upward tilt.
- Any external security lighting should be set on motion-sensors sensitive to large moving objects only, and short (<1 minute) timers.
- All external lighting should be kept to the minimal feasible level and be directed downward: Baffles, hoods or louvres can be used to reduce light spill and direct it only to where needed.
- Construction works should only be undertaken during daylight hours and task lighting should not be used during the construction of the extension.

4.2 Great Crested Newts

Distance from a potentially suitable water body and terrestrial connectivity is a major factor in the potential for a site being used by great crested newts during their terrestrial phase. Small numbers of great crested newts have been known to range significant distances (1km) to colonise new ponds. However, research undertaken by English Nature (2006) has shown that it is most common to encounter them within 50m of a breeding pond, with few moving further than 100m unless significant linear features or suitable terrestrial habitat is involved, when great crested newts can be encountered at distances of between 150m – 200m. At distances, greater than 200-250m great crested newts are hardly ever encountered.

No further survey to establish great crested newt presence in the pond is necessary, however, a non-licensed mitigation strategy (Section 4.2.1) should be implemented to reduce the very low risk of impact to individual amphibians (e.g., toads, newts) during the construction phase.

4.2.1 Precautionary Working Method Statement (Amphibians)

- All Contractors should be briefed, prior to works starting, on the protected species issues at the site, including the low risk of protected amphibian presence, and working methods to ensure that the risk of harming protected species is minimized.
- All site-workers must sign an attendance sheet confirming that they have been briefed on protected species issues and understand the legal obligations with regards protected species.
- The signed attendance sheet, along with a copy of this report, should be available within the site office at all times during the construction phase.
- If the specification of work changes at any stage of the project, the Project Ecologist must be consulted to ensure that amphibians will not be impacted.
- Any tall vegetation (grass or ruderals) should be strimmed by an ecologist (or under ecological supervision) immediately prior to start of works, to encourage any amphibians (or hedgehog, reptiles) to leave the area which will be cleared. This should start at the road (northern) side of the site, working in a southerly direction. Once strimmed to a height of 10cm, arisings should be raked off the site and the area then left for 24 hours before work starts to enable any animals present to leave the construction zone into safe adjacent habitat. Ground should then be cleared of all vegetation and kept clear for the duration of the construction works.
- All paving slabs surrounding the pond should be lifted by hand, under supervision of an ecologist licensed to handle great crested newts.
- Ground clearance and pond drainage should be programmed outside the sensitive hibernation period (which is usually November to February inclusive – depending on weather and temperatures), and during daylight hours only. The optimal time for works to proceed is between September and end of October.
- Site clearance should be carried out when the minimum overnight temperature is above 5 degrees.
- Storage of materials (such as piles of building materials, skips or debris), should be raised above the ground on pallets or similar. No rubble piles should be left on the site: These should be removed directly to a skip to cart away or stored in areas raised from the ground. No storage of materials outside the designated area.
- No temporary pools of water (such as in foundation trenches) should be allowed to form. A plank (or similar) should be secured within any deep trenches or puts, to enable any animals to escape should they become trapped.

4.3 Nesting birds

Nesting birds could use the buildings scheduled for demolition: Swallow cups (old and disused) were present in the corridor between the main house and the western lean-to extension – however, there was no obvious means of birds accessing this part of the building (the property was unoccupied and locked-up at the time of the survey). Shrubs and trees which would need to be cleared to facilitate the extension could also support small nesting birds.

If demolition or vegetation clearance is scheduled during the nesting season (March to August inclusive), then a nesting bird survey should be carried out immediately before site works start. If active nests are recorded, there may be a delay until all young birds have fledged. Outside the nesting season, demolition can proceed without a pre-start survey if a cautious approach is adopted by the contractors.

4.4 Removal of Schedule 9 Invasive Plant Species

Cotoneaster horizontalis is listed under Schedule 9 of the Wildlife and Countryside Act. All plants parts and growing medium should be treated as controlled waste and removed to a licensed waste disposal facility by an appropriately qualified contractor.

5 Ecological Enhancement

There is scope to increase the value of the site for wildlife if additional ecological enhancements are implemented, as encouraged through the NPPF, and to help achieve Norfolk BAP targets.

5.1 Native Hedge-planting

New hedge-planting along any part of the western boundary which separates the garden from the neighbouring property, should be considered, to strengthen this boundary as a wildlife corridor. This would be particularly beneficial at the southern end of the garden (beyond the new extension), which adjoins farmland and the wider hedgerow network to the south. The following native fruit and berry bearing species could be used: Dog Rose *Rosa canina*, Hazel *Corylus avellana*, Guelder Rose *Viburnum opulus*, Crab Apple *Malus sylvestris*, Hawthorn *Crataegus monogyna* and Spindle *Euonymus europaeus*. Tree-standards within the hedgerow should be appropriate for the proximity to the extension (as advised by a Landscape Architect). As well as enhancing ecological connectivity through the site, this would also provide foraging and refuge opportunities for birds, small mammals, invertebrates and other wildlife.

5.2 Bird Boxes

Bird boxes could be provided within retained garden trees in a sheltered, less disturbed part of the site. These should be installed at 2m to 4m above the ground (below eaves height) and should avoid prevailing wind, direct sunlight (not directly south-facing) and be out of reach of cats and other predators. The following would be appropriate:

- Two smaller, open-fronted boxes made to BTO dimensions (for spotted flycatcher and song thrush).
- Three hole-type nest boxes (e.g., Schwegler 1B) could be added to trees within the garden. Entrance hole-diameter of 26mm for blue-tits; and a 32mm entrance for house sparrow or larger tit-species. Tree Sparrows (farmland birds) may be attracted to use

nest boxes with 28mm holes – these should be sited close to the boundary of the arable land (to the south). Sparrow boxes should be located together in groups of at least three – for this colonial nesting species.

5.3 Hedgehog links

On completion, any new solid fences (such as close-board) surrounding the property should include 'hedgehog links' to maintain connectivity through the local landscape and facilitate movement of wildlife. A single gap at the base of each length of fence, approximately 12cm x 12cm, is sufficient to allow hedgehogs to move between the site and adjacent gardens/farmland.

6 Conclusion

There was no indication of protected or locally rare habitats or species within the zone of impact from the proposed extension.

No further surveys are recommended to inform any mitigation or wildlife legislation compliance. However, the precautionary methods, as detailed in Section 4, should be implemented to enable the proposed extension to proceed with minimal impact on protected or locally rare species or habitats.

There is scope to further enhance the site if some, or all, of the additional recommendations in Section 5 are implemented.

7 References

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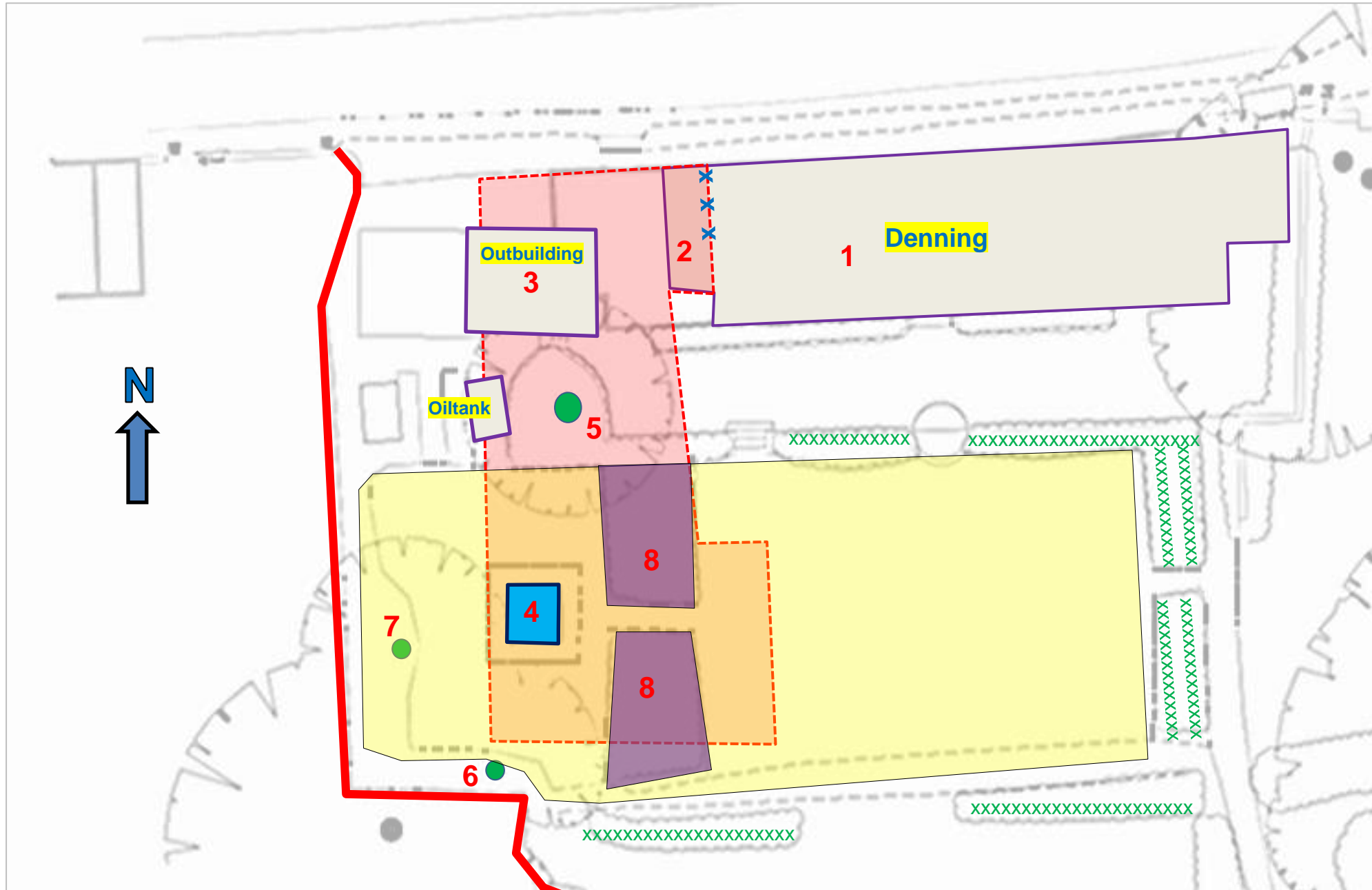
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8 Appendix A - Ecological Features Plan



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●	Tree scheduled for felling
□	Garden boundary (approx.)
□	Extent of proposed extension
X X X	Disused nests
1	Target Note
—	Hedge (species-poor)
XXX	Introduced shrubs
■	Shrub/planted bed
■	Amenity grass lawn
■	Pond
■	Building/structure

Project: Denning, Burnham Norton
Drawing Title: Survey Plan
Client: Sally Nieuwenhuys.

Project Number: REP20045
Drawing Number: REP20045/PRA-HSI
Date: December 2020

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