TIM MOYA ASSOCIATES

Ecological Report

Ecological Desk Study

Land North of Mill Lane
Horsford
Norfolk
NR10 3FQ

December 2018
230311-ED-06

Limitations and Copyright

Project	Horsford Phase 3
Report Type	Ecological Desk Study
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Original Report Date	14.12.18
Updates	

CONTENTS PAGE (CLICK TO FOLLOW LINKS)

NON-TECHNICAL SUMMARY

This report provides a broad desk-based ecological assessment of the proposed development site at Mill Lane, Horsford. The indicative proposed development comprises circa 500 dwellings with a public open space and community woodland.

This desk-based study includes a broad assessment of the habitats found within and around the site and the likely impact of the proposed development on habitats of ecological value and protected and notable species.

Key results:

The site is dominated by large arable fields which are in themselves of relatively limited ecological value. The site contains suitable habitat for various protected/notable species, in most cases limited to the peripheral hedgerows.

The proposed development site is located 40 m west of Horsford Woods, a County Wildlife Site (CWS). Horsford Woods supports a population of silver-studded blue butterflies, nightjars and woodlarks; all UK BAP Priority species. Norfolk Valley Fens SAC and River Wensum SAC are located 4.3 and 4.4 km from the proposed development. Increased recreational use of these sites is expected and should be minimised by the creation and management of public open space as part of the development.

Key recommendations (see report for details):

- The peripheral hedgerows and trees should be retained, protected and enhanced to maintain their suitability as a wildlife corridor.
- Liaison with the Local Planning Authority will be required to ensure that adequate alternative green space and green infrastructure are provided or funded, in order to offset the impact of increased recreational pressure on nearby designated sites.
- Further ecological surveys are recommended to fully assess the site for protected and notable species. Appropriate mitigation strategies may be required.
- Recommendations are included at the end of this report for measures to enhance the site for local biodiversity. This includes the creation of new areas of Lowland Heathland and new wildlife corridors across the site.

1 INTRODUCTION

Background

1.1 This report has been instructed by BDW Eastern Counties.

1.2 The indicative proposed development involves construction of a residential development with circa 500 proposed dwellings with an open space and community woodland.

Purpose of the report

1.3 This report broadly assesses the potential ecological interest of the site and the potential impacts of the proposed development on biodiversity.

1.4 TMA have been instructed to undertake a Desk-based Study. This is initial stage of a Preliminary Ecological Appraisal or Extended Phase 1 Habitat Assessment. The study has been carried out using information from biological records centres, protected species groups and satellite imagery. This involves an assessment of broad habitats found within and adjacent to the proposed development boundary and aims to identify the likely ecological constraints and opportunities associated with the project, identify any broad mitigation measures likely to be required, identify any additional surveys that may be required and identify opportunities to deliver ecological enhancement.

1.5 This report aims to satisfy the requirements of the National Planning Policy Framework (MHCLG, 2018), identifying ecological features or protected species within or near the site that could potentially be impacted by the proposed development and opportunities for incorporating biodiversity enhancements into the development proposals.

Limitations

1.6 This report has been written as part of a desk-based study. No site visit has been carried out, therefore it is dependent on satellite imagery which is typically updated every 1 – 3 years. In most cases this can provide reasonably accurate information regarding the broad habitats present within the site. However urban habitats or other regularly disturbed habitats such as open mosaic habitats can change rapidly, meaning satellite imagery is not a reliable source for comprehensive habitat assessments. Broad habitat assessments have been used to assess the site's likely

suitability for protected species. A walkover on site may lead to different conclusions and/or may identify features with particular ecological value or suitability for notable or protected species.

1.7 As no site visit has been carried out, field signs of protected species such as badger setts would not have been detected. Invasive species (e.g. Japanese knotweed) would also not be visible via satellite imagery.

1.8 Information from the biological records data search has been used to indicate which protected and notable species have been found in the local area. It should be noted that absence of records of a particular species does not necessarily indicate absence of the species, simply that records have not been submitted.

1.9 As the attributes of the site and its potential for protected, notable and invasive species may change over time, this report is broadly considered valid for a duration of **two years**, after which time it is recommended that an update site assessment is undertaken.

Information supplied

1.10 This report has been prepared with reference to the following supplied plans, showing the extent of the site boundary and the proposed development:

- Horsford Phase 3 – Masterplan 25-09-18 with B and DWH areas defined.

Site location

1.11 The site is situated in a rural environment dominated by arable farmland, heathland and coniferous woodland interspersed with moderate sized villages and roads.

1.12 The central grid reference for the site is TG 19418 17363. The site covers approximately 30 hectares.

2 RELEVANT LOCAL PLANNING POLICY

Policy EN1 – Biodiversity and Habitats

2.1 Development proposals will be expected to protect and enhance the biodiversity of the district, avoid fragmentation of habitats, and support the delivery of a co-ordinated green infrastructure network throughout the district.

2.2 Where harmful impacts may occur, it should be adequately demonstrated that:

i) The development cannot be located where it would cause less or no harm; and

ii) That adequate mitigation is incorporated, including specific mitigation requirements to address impacts upon international wildlife sites (Natura 2000 sites); and

iii) That the benefits of the development clearly outweigh the impacts.

Policy EN3 – Green Infrastructure

2.3 All development will be expected to maximise opportunities for the creation of a well-managed network of wildlife habitats.

2.4 Residential development consisting of five dwellings or more will be expected to provide at least 4 ha of informal open space per 1,000 population and at least 0.16 ha of allotments per 1,000 population.

2.5 Development will also be expected to make adequate arrangements for the management and maintenance of green infrastructure.

3 ASSESSMENT METHODOLOGY

Data Searches

3.1 The government's MAGIC search tool was searched for statutory sites designated for nature conservation interest, and for records of European Protected Species licences within 2 km of the site.

3.2 Norfolk Biodiversity Information Service was consulted for records of non-statutory sites designated for nature conservation interest and for historic records of protected or notable species within 2 km of the site.

Habitat Assessment

3.3 The vegetation and habitat types viewed from satellite imagery were tentatively classified in accordance with the categories specified for a Phase 1 Vegetation and Habitat Survey (JNCC, 2010).

3.4 Based on the broad assessment of the habitats present within and adjacent to the proposed development area, an assessment was made on the likelihood of protected and notable species being present within or adjacent to the proposed development area.

4 DESK STUDY RESULTS

Designated Sites

4.1 The site itself is not covered by any statutory or non-statutory nature conservation designations.

4.2 There are five statutory designations within 5 km and nine non-statutory designated sites within 2 km of the site, as follows:

Table 1. Statutory designated sites of nature conservation interest within 5 km

Closest statutory sites:			
Site name	**Designation**	**Distance and direction from proposed works (km)**	**Description**
Swannington Upgate Common	SSSI	4.2 W	A wide range of semi-natural vegetation including dry acidic heathland, wet heathland with acidic flushes, fen, birch and alder woodland, scrub, bracken, rough grassland and ponds.
Buxton Heath/ Norfolk Valley Fens	SSSI/SAC	4.3 NW	A diverse heath with alkaline fen.
River Wensum	SSSI/SAC	4.4 S	An enriched, calcareous lowland river with a total of over 100 species of plants, a rich invertebrate fauna and a relatively natural corridor.
Key: SSSI – Site of Special Scientific Interest SAC – Special Area of Conservation			

Table 2. Non-statutory designated sites of nature conservation interest within 2 km

Closest non-statutory sites:			
Site name	**Designation**	**Distance and direction from proposed works (km)**	**Description**

Horsford Woods	CWS	0.04 E	Made up of two blocks of mature pine plantation with small areas of relict heathland vegetation. Supports a population of silver-studded blue butterflies, nightjars and woodlarks; all UK BAP Priority species
Horsford Rifle Range	CWS	0.2 N	Comprises a mosaic of heath and acidic grassland. It supports a breeding colony of the silver-studded blue butterfly *(Plebejus argus).*
Other non-statutory sites: Seven further CWS are located between 0.5 km and 2 km from the proposed development site.			
Key: CWS – County Wildlife Site			

Historic Species Records

4.3 Local Ecological Records Centre data searches return hundreds of species records. The table below summarises records of key protected species considered to be most sensitive to impact from proposed developments. Numerous additional notable species records were returned for the 2 km radius, which are considered unlikely to be impacted by the proposed development and are therefore not summarised below. For instance, species for which no suitable habitat is present close to the site (see end of table).

Table 3. Existing protected species records

	Local Ecological Records Centre			**EPS Licences granted**
Species	**Number of records within 2 km**	**Closest record to site (km) and orientation***	**Most recent record**	**No. within 2 km**
Great crested newt (*Triturus cristatus*)	4	1.3 SW	2013	None
Common lizard (*Zootoca vivipara*)	2	1 N	2006	N/A
Slow—worm (*Anguis fragilis*)	2	0.5 SW	2008	N/A
Grass snake (*Natrix helvetica*)	5	0.9 N	2011	N/A

Adder (*Vipera berus*)	5	1 NW	2011	N/A
Bat species (*Chiroptera* sp.)	37 Records; 5 species	0.8 SW Brown long-eared bat *(Plecotus auritus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Noctule (*Nyctalus noctula)*	2016 – Unidentified bat	1 – 2015 destruction of a resting place for Brown long-eared and common pipistrelle (*Pipistrellus pipistrellus)*. Located 0.01 km N.
Badger (*Meles meles*)	1	1.3 NW	2001	N/A
Hedgehog (*Erinaceus europaeus*)	7	0.4 SW	2015	N/A
Nightjar *(Caprimulgus europaeus)*	4	0.8 NW	2012	N/A
Skylark *(Alauda arvensis)*	2	1.4 W	2011	N/A
Barn Owl *(Tyto alba)*	3	1.3 SW	2008	N/A
Silver-studded blue butterfly *(Plebejus argus)*	30	0.6 NE	2003	N/A
No records were returned of the following key protected/notable species: Water vole (*Arvicola amphibius*), dormouse (*Muscardinus avellanarius*) and stag beetle (*Lucanus cervus*).				
Records were returned of the following species (amongst others) but no suitable habitat is present close to the site: Otter (*Lutra lutra*)				

* Where the distance of records is further than the search radius, this is due to lack of accuracy in the record's coordinates. The true location of the record may be inside the search radius.

5 RESULTS OF HABITAT ASSESMENT

Habitats and Vegetation

Table 1. Habitats present within the site

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP Priority Habitat?**	Norwich BAP Priority Habitat?**	Additional Notes
Arable fields and field margins	The site is dominated by large arable fields.	Unknown	Negligible, other than potentially for nesting birds	No	Yes – Field Margins only.	This assessment is based on aerial photographs only and ground-truthing will be required. This habitat is due to be completely removed as part of the proposed plans. Nesting bird potential is assessed in Table 5, below.
Hedgerows	The site appears to have hedgerows or peripheral vegetation surrounding its south-east and northern borders.	Unknown	High	Yes	Yes	This assessment is based on aerial photographs only and ground-truthing will be required. It is currently unknown if the development will impact the hedgerows. Potential bird nesting habitat. They may also act as an important wildlife corridor for bats, reptiles and great crested newts.

Habitat type	Description	Dominant plant species	Overall biodiversity value*	UK BAP Priority Habitat?**	Norwich BAP Priority Habitat?**	Additional Notes
Ponds	Four ponds were identified within 500 m of the site. The closest where located 50 m north and 65 east of the site boundary.	Unknown	High	Yes	Yes	This assessment is based on aerial photographs only and ground-truthing will be required. All ponds are located outside the proposed development area.

*Overall biodiversity value of a habitat is guided by the criteria listed in section 3.20 of the Guidelines for Ecological Impact Assessment (CIEEM, 2018), which include habitats required by rare or uncommon animal or plant species, habitat connectivity and species-rich assemblages of plants.

** UK Biodiversity Action Plan – for details see Appendix 1- Wildlife Law and Planning Policy.

Protected/Notable Species Potential

5.1 Table 6, below, details the suitability of habitats within the site for key protected/notable species.

5.2 Species not detailed below are considered unlikely to be significantly impacted by the proposed works.

Table 6. Protected species potential

Species group	Strict Protection*	UK BAP?**	Norfolk BAP?	General habitat requirements	Suitable habitat within or adjacent to the site
Great crested newt	Yes	Yes	Yes	Breed in ponds and other waterbodies. Terrestrial habitat includes woodland and grassland.	There are four off-site ponds within 500 m of the site. The closest of which are 50 m north and 65 m east of the site boundary. The arable fields offer sub-optimal habitat for great crested newts as they do not provide shelter or suitable foraging habitat, but the hedgerows may act as important dispersal corridors.
Reptiles	Yes	Yes – all reptiles	No	Long grass, scattered scrub, hedgerows, rubble and log piles.	The site itself has limited suitable habitat, comprising mainly arable land with some hedgerows and field boundaries offering a suitable corridor. The surrounding area contains lowland heathland, which is likely to support a range of reptile species.

Species group	Strict Protection*	UK BAP?**	Norfolk BAP?	General habitat requirements	Suitable habitat within or adjacent to the site
Bats	Yes	Yes - 7 species	Yes – 4 species	Roost in buildings, tree cavities and caves.	The hedgerows to the north and south of the site contain a number of trees which may have suitable roosting features for bats. The hedgerows may act as important features within the landscape for foraging and commuting.
Dormouse	Yes	Yes	No	Hedgerows, dense scrub, deciduous woodland with connected canopy and good ground flora	The site itself offers unsuitable habitat comprising arable fields. Hedgerows on the periphery of the site may provide suitable habitat and offer a corridor between areas of optimal habitat such as the woodlands.Records of dormouse in Norfolk are scarce.
Water vole	Yes	Yes	Yes	Rivers, streams, wet ditches.	No streams, ditches or rivers are present within or adjacent to the site.
Otter	Yes	Yes	Yes	Rivers and lakes	No rivers or lakes are present within or adjacent to the site.
Badger	Yes	No	No	Woodland, dense scrub, meadows, field edges.	Woodland is present to the north and east of the site and is well connected by hedgerows and arable field boundaries. Therefore, it is considered likely badgers use the site itself to some extent.
Hedgehog	No	Yes	No	Woodland, hedgerow, gardens, parks	The hedgerows along the edges offer suitable habitat.
Stag beetle	No	Yes	No	Woodland, hedgerow, orchard, parks	The hedgerows along the edges offer suitable habitat.

Species group	Strict Protection*	UK BAP?**	Norfolk BAP?	General habitat requirements	Suitable habitat within or adjacent to the site
Other invertebrates	No	Various	Various	Species-dependent. High invertebrate diversity is favoured in sites with a mosaic of habitats and diverse plant assemblage.	Arable fields within the site are unlikely to be an important habitat for invertebrates. The hedgerows along the edges offer suitable habitat.
Nesting birds	While nesting	Various	Various	Trees, shrubs, scrub, hedgerows, cavities within buildings, waterbodies, arable fields, bare/stony ground.	The arable fields and hedgerows surrounding the site provide suitable nesting habitat for a range of species. The arable fields may provide suitable nesting habitat for skylarks (see below).
Nightjar	While nesting	Yes	Yes	Heathland and forestry re-stock areas.	No suitable habitat is present within the proposed development area, but the surrounding CWS does contain suitable heathland habitat.
Woodlark	While nesting	Yes	Yes	Heathland and forestry re-stock areas.	No suitable habitat is present within the proposed development area, however the surrounding CWS does contain heathland habitat.
Silver-studded blue butterfly	No	Yes	Yes	Heathland.	No suitable habitat is present within the proposed development area, however the surrounding CWS does contain suitable heathland habitat.
Skylark	While nesting	Yes	Yes	Arable farmland and rough grassland.	The site contains large areas of arable land, potentially suitable for nesting skylarks.

Species group	Strict Protection*	UK BAP?**	Norfolk BAP?	General habitat requirements	Suitable habitat within or adjacent to the site
Invasive Plant Species	No	No	No	Species-dependent: Waste land, railway verges, river banks, waterbodies	The habitat appears to be unlikely to support invasive species, as it is currently arable farmland. However, this should be confirmed with a site visit.

*Strict Protection – species for which individuals and/or their habitats are protected against harm/destruction/disturbance by European or UK Law – for details see Appendix 1- Wildlife Law and Planning Policy.

** UK Biodiversity Action Plan – for details see Appendix 1- Wildlife Law and Planning Policy.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 For any constraints identified, mitigation options should follow the Mitigation Hierarchy as set out in British Standard BS42020 (BSI, 2013). This seeks as a preference to avoid impacts then to mitigate unavoidable impacts, and, as a last resort, to compensate for unavoidable residual impacts that remain after avoidance and mitigation measures.

Designated sites

6.2 There are five statutory designations within 5 km and nine non-statutory designated sites within 2 km of the site. This includes the Norfolk Valley Fens SAC and River Wensum SAC (4.3 km and 4.4 km away respectively). Horsford Woods CWS and Horsford Rifle Range CWS are located 40 m east and 200 m north of the proposed development site respectively.

6.3 The proposed development includes the construction of circa 500 residential dwellings. This will likely lead to an increase in recreational pressures on the nearby designated sites. The proposed development currently includes the provision of public open space and a community woodland, which will likely reduce the recreational pressure on the nearby designated sites to some extent.

6.4 The Broadland District Council Development Management DPD (2015) states “Housing developments will be required to implement or contribute to measures to mitigate the adverse effects of recreational disturbance impact on Natura 2000 sites [SAC and SPA] identified through the strategic HRA, or subsequently identified through project level HRA…Green Infrastructure provision or contribution to this will be secured through planning permissions, including S106 obligations or unilateral undertakings, or CIL…Where appropriate, on-site provision will be expected and this will need to be adequate to provide a viable alternative to visiting Natura 2000 sites or contribute to the provision of a viable alternative as part of a wider Green Infrastructure network. On sites where adequate provision cannot be achieved, off-site provision is necessary.”

6.5 Recommendation: Liaison with the Local Planning Authority will be required to ensure that adequate alternative green space and green infrastructure are provided or funded, in order to offset the impact of increased recreational pressure on nearby designated sites.

6.6 Horsford Rifle Range supports a breeding colony of silver-studded blue butterflies. Therefore, disturbance to the site must be kept to a minimum. This can be achieved by encouraging residents to use the community woodland instead of surrounding CWS and creating new areas of suitable habitat for the silver-studded blue to mitigate against any damage caused by increased recreational pressure. Recommendations for habitat creation are included in Section 6 of this report.

6.7 There is potential for Horsford Woods CWS and Horsford Rifle Range CWS to be impacted by short-term indirect disturbance from noise, light and dust pollution throughout the construction period.

6.8 Recommendation: The site boundaries should be lined with hoarding during the construction process. This will act as a buffer against indirect impacts to the CWS from light, noise and dust. It will also reduce the impact of any noise pollution. There should be no night time working or lighting on the periphery of the site.

Habitats and Vegetation

6.9 The following habitats within the proposed development site are listed as Priority Habitats on the UK Biodiversity Action Plan (UKBAP) and Norfolk BAP habitat:

- Hedgerow/Trees

Hedgerow

6.10 These habitats are considered to be of importance in the UK and Norfolk and should be retained within the development and enhanced wherever possible.

Trees

6.11 The Horsford site contains several historic field boundary lines which typically contain mature trees that provide historical context and landscape character to the site.

6.12 The retention of significant trees within the boundary lines will be important in minimising any change on landscape character that the development may have and will provide a sense of maturity to the finished site.

6.13 Recommendation: An arboricultural consultant should be consultant to provide a tree survey plan and schedule to inform an arboricultural impact assessment detailing protection measures during construction and mitigation measures to balance any proposed removals.

Protected and Notable Species

Great crested newts

6.14 Great crested newts have previously been recorded 1.3 km south-west of the site. The landscape surrounding the site includes four off-site ponds within 500 m of the proposed development site. The closest pond is located 50 m north of the site. Other ponds are present 65 m east, 235 m north and 340 m north of the site.

6.15 The arable habitats within the site are sub-optimal for great crested newts and offer little opportunity for hibernating or sheltering great crested newts. However, as great crested newts may typically disperse up to 500 m from their breeding ponds, newts from the wider area may potentially disperse into the terrestrial habitats within the site and be impacted by the proposed development.

6.16 Recommendation: A great crested newt habitat suitability assessment (HSI) should be carried out on all ponds within 500 m of the site boundary, to assess the risk of this species being found within the development site. Further 'eDNA' surveys may be required of ponds suitable for great crested newts, to confirm the presence or absence of this species. eDNA surveys can only be carried out between mid-April and June (inclusive). If great crested newts are present and considered likely to be impacted by the proposed development, a mitigation strategy and potentially licensing by Natural England may be required.

Reptiles

6.17 Slow-worm, common lizard, grass snake and adder have all been previously recorded within 2 km of the site. The site is dominated by arable fields, which are sub-optimal for reptiles. However, the hedgerows and peripheral habitats surrounding the site offer suitable habitat and may provide a key corridor between optimal heathland areas.

6.18 Recommendation: The hedgerows around the site should be retained and enhanced where possible to maintain their suitability as a wildlife corridor. Where removal of such habitats is necessary, mitigation measures will be required to avoid an impact on reptiles. Any rubble and building materials should not be stored near the periphery of the site, as they may be colonised by reptiles.

Roosting bats - buildings

6.19 No buildings are present within the proposed development area. Therefore, no further surveys regarding bats in buildings are recommended.

Roosting bats - trees

6.20 The site is bordered by mature hedgerows to the south and north which contain a number of trees.

6.21 Recommendation: A ground level tree assessment of any trees due to be impacted by the proposed development will be required to assess the suitability of the trees (if any) present in the hedgerow for roosting bats. This may lead to the recommendation for further bat surveys if necessary.

Foraging and commuting bats

6.22 Due to the habitats present within the site and the local landscape, it is considered likely that foraging or commuting bats use the site to a certain extent. The hedgerows present on site may act as important flight lines for bats, connecting large areas of suitable roosting and foraging habitat.

6.23 Recommendation: Bat activity surveys may be required if peripheral/hedgerow habitats are due to be impacted by the development, including creation of significant new gaps and lighting. Automated bat detectors should be placed along the hedgerows for five days each month between April – October (inclusive) to assess the hedgerows use by commuting and foraging bats.

6.24 The foraging and commuting behaviour of bats is known to be altered by artificial lighting and bats may avoid illuminated areas (ILP 2018).

6.25 Recommendation: In order to avoid a detrimental impact on bats using the site, there should be no increased light spillage on to suitable habitats, particularly on the periphery of the site, where bats are most likely to forage and commute. Lighting should be restricted to the interior of the site and should be kept to a low level. The following measures should be implemented within the lighting scheme:

- Dark corridors should be created through the site to encourage bat dispersal.
- Spillage of light into off-site areas must be avoided.
- Minimise light spill, through use of lighting hoods, and setting the height and angle appropriately;
- Reduce the light intensity to the minimum required for safety and security;
- Set lighting curfews, e.g. lights off at night

- Where security lamps are used these should use a trigger to illuminate them (e.g. infra-red detector), and switch off after a short period, rather than remaining on all night.
- All luminaires should lack a UV element. LED luminaires should be used where possible due to their sharp cut off, lower intensity and dimming capacity.
- Further guidance is available in *Bats and artificial lighting in the UK* (ILP 2018).

Dormice

6.26 No records of dormice within 2 km of the site were returned from the local records centre. The site site itself is largely unsuitable for this species, being composed of arable fields. However, hedgerows and vegetation around the periphery of the site may offer suitable habitat for dormice and are well connected to optimal habitats.

6.1	Recommendation: The hedgerows around the site should be retained and enhanced where possible to maintain their suitability as a wildlife corridor. If the hedgerow is due to be significantly impacted by the proposed development, it is recommended that dormouse surveys are undertaken. The survey should be undertaken in accordance with current survey guidelines, likely to require monthly visits throughout April to September or May to October.

Water Vole and Otter

6.2 No habitat suitable for water voles or otters is present within or adjacent to the site. The proposed development is considered unlikely to impact these species and no further surveys are recommended.

Badger

6.3 The habitats within and adjacent to the proposed development area are considered suitable for badgers, particularly peripheral habitats.

6.4	Recommendation: A site visit should be carried out to inspect the site for signs and evidence of use by badgers and presence of badger setts. Impacts on badgers should then be avoided where possible, or an appropriate mitigation strategy and licence put in place.

Invertebrates

6.5 Due to the common habitats present within the site, it is considered unlikely that the proposed works will significantly impact important populations of invertebrates.

Section 6 of this report includes measures to enhance the development for invertebrates.

Nesting birds

6.6 The site includes trees and hedgerows, all of which are suitable for nesting birds during the nesting season (typically March to August inclusive).

6.7 Recommendation: To avoid destruction of active bird nests, it is recommended that vegetation removal is only undertaken outside the bird nesting season. vegetation removal may only be undertaken during the nesting season if a careful check by a suitably experienced ecologist can confirm that no active bird nests are present. If bird nests are present within buildings or vegetation to be removed, they must be left in place and not disturbed until all the young have fledged and cease to return to the nest.

6.8 The arable crops dominating the site are suitable for ground-nesting birds, particularly skylarks.

6.9 Recommendation: In order to assess the extent to which skylarks and other ground-nesting birds may be impacted, it is recommended that a skylark survey is undertaken over four occasions between April and June, following published methods (Gilbert et al., 1998). Following the survey, appropriate mitigation recommendations will be made regarding ground-nesting birds, which may include provision of ‘skylark plots’ within the development site or nearby.

Invasive plant species

6.10 Invasive species are unlikely to be detected using aerial imagery. Therefore, a site visit will be required to inspect the proposed development area for invasive plant species. Spreading of invasive plant species must be avoided and in some cases eradication strategies must be implemented.

7 OPPORTUNITIES FOR BIODIVERSITY ENHANCEMENT

7.1 In accordance with the National Planning Policy Framework, suggested opportunities for biodiversity enhancement (above and beyond those required to mitigate for the identified impacts) are set out below. Any additional measures pending the results of the recommended ecological surveys should be incorporated as necessary. The below recommendations may not all be feasible within the final development and alternative enhancements should also be considered.

Lowland Heathland Creation

7.2 Lowland heathland is present in the adjacent areas and provides excellent nesting habitat for the Nightjar, as well as ideal habitat for the silver-studded blue and protected reptile species. It is recommended that an area of land should be set aside to support the conservation of these species. This can be achieved by planting an area with plant species including heather (*Calluna vulgaris*), bell heather (*Erica cinerea*), cross-leaved heath (*Erica tetralix*), gorse (*Ulex europaeus*), dwarf gorse (*Ulex minor)* bilberry (*Vaccinium myrtillus*) and cowberry (*Vaccinium vitis-idaea*). Log and brash from any felled trees as a result of the development should be sited in sunny locations within the heathland to provide suitable basking habitat for reptiles.

7.3 Its recommended 10-20% of the site should be maintained as old heather, with a sparse scatter of trees to act as look out posts to encourage the Nightjar (RSPB, 2018).

7.4 Access should be controlled to prevent disturbance. This can be achieved by creating well defined footpaths around the site, leaving large areas in the centre undisturbed. A management plan will be required in order to maintain the habitat.

7.5 For more information please see Lowland Heathland - a Cultural and Endangered Landscape (English Nature, 2002) and Reptile Habitat Management Handbook (Edgar, P., Foster, J. and Baker, J. 2010).

New wildlife corridors

The site is large and would be enhanced by the creation of corridors of habitat including hedgerows and tree lines, to assist wildlife to cross the site. These corridors should not be subject to intense artificial lighting, in order to encourage bats and other nocturnal species.

Pond

7.6 If feasible, a new pond may be included in the proposed development. Ponds create a significant habitat enhancement for a wide range of wildlife including plants, invertebrates, amphibians, reptiles, bats and birds. Ponds also help with flood water retention. Ponds should include at least one shallow-sloped bank and should include a variety of wildlife-friendly planting (either planted or naturally colonising).

Tree and shrub planting

7.1 Wherever possible, additional tree and shrub planting is recommended within the site which will increase connectivity for dispersing wildlife including bats, birds and invertebrates. Native species should be used within planting schemes. Tree species such as blackthorn (*Prunus spinosa*), crab apple (*Malus sylvestris sens.str*), elder (*Sambucus nigra*), field maple (*Acer campestre*), hawthorn (*Crataegus monogyna*), honeysuckle (*Lonicera periclymenum*), holly (*Ilex aquifolium*) and English oak (*Quercus robur*) could be used to provide known benefit to wildlife. Shrub planting should include a variety of species found on the Royal Horticultural Society's 'Perfect for Pollinators' lists, such as lavender (*Lavandula* species), knapweeds (*Centaurea* species), guelder rose (*Viburnum opulus*), barberry (*Berberis* species) and honeysuckle (*Lonicera peridymenum*).

Grassland planting

7.2 Wherever possible, areas of informal 'meadow' grassland should be included, seeded with a species-rich wildflower grassland mix to provide foraging opportunities, particularly for pollinating invertebrates. Areas of longer informal grassland also offer shelter for reptiles, amphibians and small mammals. Recommended grassland species are included in the Royal Horticultural Society's 'Perfect for Pollinators' lists.

Bird boxes

7.3 Installation of bird boxes increases nesting opportunities for bird species. A variety of bird box designs are available, for installation on existing mature trees, on external building walls, or to be in-built into the structure of new buildings. Bird boxes should be installed at least 2 m in height facing north and east, thus avoiding strong sunlight and wet winds.

Bat boxes

7.4 The inclusion of bat boxes provides new roost sites for bats within the local area. A variety of bat box designs are available, for installation on existing mature trees, on external building walls, or to be in-built into the structure of new buildings. Bat boxes

should be located in sheltered spots away from artificial lighting and placed at a height of at least 3 metres from the ground, ideally facing south.

Hedgehog boxes/corridors

7.5 In order to enhance the site for hedgehogs, it is recommended that hedgehog nest boxes/domes are installed in undisturbed locations within the site.

7.6 In order to allow hedgehogs to pass through the site, it is recommended that all garden fences include a gap of at least 13 cm x 13 cm at ground level.

Log Piles

7.7 To enhance the site for invertebrates such as the stag beetle (*Lucanus cervus*), it is recommended that log piles, 2 m width/length and 1 m in height, are created in shaded and undisturbed locations, within the site.

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Appendix 1 - Wildlife Law and Planning Policy

Statutes and English Law

Reptiles

All species of native reptiles are protected against killing or injury under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). The sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*) are further protected under The Conservation of Habitats and Species Regulations 2017 against capture or disturbance and the places they use for breeding, resting, shelter and protection are protected from being damaged or destroyed.

Great Crested Newts

The great crested newt and its habitat are protected under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017. This legislation makes it an offence to deliberately kill, injure or capture a great crested newt; deliberately disturb a great crested newt; damage, destroy or obstruct access to a structure used for shelter or protection by a great crested newt; or possess or transport a great crested newt.

Bats

All species of bat and their breeding sites or resting places (roosts) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2017 and Section 9 of the Wildlife and Countryside Act 1981. It is an offence for anyone intentionally to kill, injure or handle a bat, to possess a bat (whether live or dead), disturb a roosting bat, or sell or offer a bat for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

Badgers

Badgers and their setts are protected under the Protection of Badgers Act 1992 which makes it an offence to kill, injure or possess a badger; interfere with, damage or destroy a badger sett including obstructing access to a badger sett; cruelly treat or harm a badger; or disturb a badger in a sett.

Otters

Otters and their resting places are protected under the Wildlife and Countryside Act 1981 (as amended) and the The Conservation of Habitats and Species Regulations 2017. This legislation makes it an offence to deliberately kill, injure or capture an otter;

deliberately disturb an otter in their breeding or resting places; damage, destroy or obstruct access to their resting or breeding places.

Water Voles

Water voles are protected under the Wildlife and Countryside Act 1981 (as amended) from killing or taking by certain prohibited methods. Their breeding and resting places are fully protected from damage, destruction or obstruction; it is also an offence to disturb them in these places.

Dormice

Hazel dormice are protected under both the The Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended). Dormice and their breeding sites and resting places are fully protected. Without a licence it is an offence for anyone to deliberately disturb, capture, injure or kill them. It is also an offence to damage or destroy their breeding or resting places, to disturb or obstruct access to any place used by them for shelter. It is also an offence to possess, or sell a wild dormouse.

Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to kill, injure or take wild birds; take, damage or destroy the nest of wild birds while it is in use or being built; or take or destroy the eggs of wild birds.

Certain bird species are listed on Schedule 1 of The Wildlife and Countryside Act 1981 (as amended). Under this legislation they are afforded the same protection as all wild birds and are also protected against **disturbance** whilst building a nest, or on or near a nest containing eggs and or unfledged young.

Invasive Plant Species

It is prohibited to plant or otherwise cause to grow in the wild any species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). The Environmental Protection Act 1990 also classifies certain invasive plants as controlled waste which must be disposed of safely at an appropriately licensed landfill site (e.g. Japanese knotweed).

Under section 57 of the Anti-social Behaviour, Crime and Policing Act 2014, if an individual or an organisation fails to control an invasive plant species which is having a detrimental effect on the quality of life of those in the locality. A notice can be issued

after a mandatory written warning has been served. Breach of this notice, without reasonable excuse, would be a criminal offence, subject to fixed penalty notice (a penalty of £100) or prosecution. On summary conviction an individual could be liable to a level 4 fine and an organisation (e.g. a company) could be liable to a fine not exceeding £20,000.

National Planning Policy

In addition to the statutes described above, various planning policy imposes duties upon planning applicants to take account of protected species and habitats at sites of proposed development and in particular, protected species. The objective of this policy is to prevent a net loss of species and habitats diversity identified as priorities for the U.K. as a consequence of development activity.

National Planning Policy Framework (NPPF)

The National Planning Policy Framework is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

Planning policies should promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations. If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.

Natural Environment and Rural Communities Act (NERC Act)

Section 40 of the Natural Environment and Rural Communities Act 2006 places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity.

Priority Habitats and Species

Priority habitats and species are defined (NPPF, 2018) as ‘Species and Habitats of Principle Importance included in the England Biodiversity List published by the Secretary of State under Section 41 (S41) of the Natural Environment and Rural Communities Act 2006 (NERC Act)’. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their

duty under the NERC Act, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

These species and habitats were subject to conservation action under the UK Biodiversity Action Plan (UK BAP). The 'UK Post-2010 Biodiversity Framework', published in July 2012, has succeeded the UK Biodiversity Action Plan (UK BAP). However, the UK BAP lists of priority species remain important and valuable reference sources.

Fifty-six **habitats** of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and subtidal sands and gravels.

There are 943 **species** of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the Hen Harrier has also been included on the list because without continued conservation action it is unlikely that the Hen Harrier population will increase from its current very low levels in England.

ODPM Circular 06/2005

This Government Circular entitled 'Biodiversity and Geological conservation – Statutory obligations and their impact within the planning system' (ODPM, 2005) provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England.

The potential effects of a development, on habitats or species listed as priorities in the UK Biodiversity Action Plan (BAP), and by Local Biodiversity Partnerships, together with policies in the England Biodiversity Strategy, are capable of being a material consideration in the preparation of regional spatial strategies and local development documents and the making of planning decisions.

The presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed

development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by the development. Where this is the case, the survey should be completed and any necessary measures to protect the species should be in place, through conditions and/or planning obligations, before the permission is granted.

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