Hopkins Ecology

Site:	**Stanfield Garden Village**
Work Item:	**Strategic Ecological Assessment**
Client:	**Glavenhill Strategic Land (Number 17) Ltd and Stearn Farms Ltd**

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Summary

Hopkins Ecology Ltd was appointed by Lanpro on behalf of Glavenhill Strategic Land (Number 17) Ltd and Stearn Farms Ltd to prepare a strategic ecological assessment of the proposed Stanfield Garden Village, with a view to identifying constraints and opportunities in the context of its promotion for development.

The Site is approximately 1.5km south east of Wymondham and immediately west of the Hethel Engineering Centre and is mostly arable, with several other habitats present including broad-leaved woodland. The Site has an area of *c.* 3.4km^2.

There are two statutory sites within 5km, one of which (Ashwellthorpe Lower Wood Site of Special Scientific Interest [SSSI]) is within 2km, at approximately 500m south east of the Site. The other statutory site within 5km of the Site is Flordon Common SSSI, at approximately 3.8km south east, which is also a component site of the Norfolk Valley Fens Special Area of Conservation. There are 19 non-statutory County Wildlife Sites (CWS) within 2km, including two within the Site itself. These are Long Drive CWS, lowland deciduous woodland, and Breakers Yard Meadow CWS, improved grassland associated with the River Tiffey. Additional CWSs include several woodland sites to the north and east and others to the south associated with Ashwellthorpe Lower Wood SSSI. Silfield Newt Reserve CWS and The Lizard CWS are associated with the River Tiffey downstream of the Site.

A review of local planning policies identifies the creation of green infrastructure corridors as a key policy within the Joint Core Strategy. One such sub-regional corridor crosses the Site, running from the Silfield Newt Reserve CWS towards Ashwellthorpe Lower Wood SSSI.

The Site is mostly arable fields, which represent >85% of the Site by area. There are ninety recognised lengths of boundary hedgerows with a total length of >20km, five blocks of deciduous woodland, and several blocks of plantation woodland. The River Tiffey runs west-east through the Site and between adjacent areas of the Site about a third of the way from south to north. Breakers Yard Meadow CWS is improved grassland. There is a small area of parkland, some scrub, and a network of probably seasonally-dry ditches. The woodland, hedgerows and River Tiffey all qualify as habitats of principal importance. The ponds, arable field margins and parkland may qualify as habitats of principal importance. Breakers Yard Meadow CWS does not qualify as a lowland meadow because of its improved nutrient status.

In addition to the sixteen ponds within the Site boundary, there are a further 24 within 250m. These would have to be assessed for the potential of great crested newts. The network of seasonally-dry ditches may also offer great crested newt habitat, and there is potential terrestrial habitat present in the woodland.

Although most of the Site has low potential for bat foraging, hedgerows, woodland and improved grassland have significant foraging potential. There are no buildings within the Site, so the only potential roost sites are mature trees in woodland and hedgerows. Given the large number of trees on such a large site, there is certainly roosting potential albeit at probably low density.

Other species of conservation concern scoped in as likely or potentially present are: birds, with foraging and nesting habitat present, reptiles, brown hares, hedgehogs, badgers and invertebrates. Species of conservation concern unlikely to be present but not scoped out are water voles and harvest mice.

The Site consists of extensive tracts of open arable fields, with significant lengths of boundary hedgerows and considerable areas of other habitats. There is potential for small assemblages

of species of conservation concern to be present on the Site, comprising species that are likely to be present elsewhere in South Norfolk similar landscapes.

Habitat loss is considered to be the principal pathway of possible adverse impact, with mitigation available for most habitats and species via appropriate soft landscaping and scheme masterplanning. Although the mitigation of impacts on some species of open fields will be difficult, the overall scheme could deliver a net biodiversity gain with a net increase of non-arable habitat and creation of green infrastructure corridors. Other potential pathways of impact are surface water management and impacts on the River Tiffey and downstream sites, and recreational impacts on local sites, with mitigation via appropriate water management and habitat buffering and the provision of high-quality green space respectively.

In conclusion, it is considered likely that impacts on the majority of species can be mitigated. Appropriate landscaping and Site design has the potential to deliver net ecological enhancement. A key enhancement could be the delivery of a green infrastructure corridor identified within the Greater Norwich Development Partnership's Green Infrastructure Strategy, as part of scheme design and landscaping.

1. Introduction

BACKGROUND

1.1 Hopkins Ecology Ltd was appointed by Lanpro on behalf of Glavenhill Strategic Land (Number 17) Ltd and Stearn Farms Ltd to prepare a strategic ecological assessment of the proposed Stanfield Garden Village with a view to identify constraints and opportunities in the context of its promotion for a residential led development with associated public open space, community uses, and infrastructure.

SITE CONTEXT AND STATUS

1.2 The Site is approximately 1.5km to the south east of Wymondham and comprises a tract of farmland and other habitat immediately west of Hethel Engineering Centre, with a total area of c. 3.4km^2.

1.3 The Site is mostly farmland and associated habitats (ponds, ditches and hedgerows) with some blocks of other habitat including broadleaved woodland and plantation. The River Tiffey, close to its source, runs through part of the Site and between two adjacent blocks of the Site. It is within the *South Norfolk and High Suffolk Claylands Natural Character Area*[1], which is characterised as an agricultural landscape *"incised by numerous small-scale wooded river valleys with complex slopes"*.

LEGISLATION AND PLANNING POLICY

1.4 The following key pieces of nature conservation legislation are relevant to legally protected species (with a more detailed description in Appendix 2):

- The Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations); and
- The Wildlife and Countryside Act, 1981 (as amended).

1.5 Also, the National Planning Policy Framework (MfCLG, 2019[2]) requires local authorities to avoid and minimise impacts on biodiversity and, where possible, to provide net gains in biodiversity when making planning decisions. A substantial number of species are of conservation concern in the UK. A small number of these species are fully protected under the legislation listed above, but others in England are recognised as Species of Principal Importance under the Natural Environment and Rural Communities Act 2006 and reinforced by the National Planning Policy Framework. For these species local planning authorities are required to promote the "*protection and recovery"* via planning and development control. Examples include the widespread reptiles, skylarks and soprano pipistrelle and, brown long-eared bats.

1.6 Although the NPPF has an overarching aim of minimise impacts to biodiversity, the majority of species of conservation concern are not specifically recognised by legislation or planning policy. The level of protection afforded to these is undefined and should be considered within the overall aim of minimising impacts on biodiversity.

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[1] Natural England (2014) *NCA Profile 83: South Norfolk and High Suffolk Claylands.* Available from: http://publications.naturalengland.org.uk/publication/6106120561098752

[2] MCfLG (2019) *A National Planning Policy Framework for England*. Ministry for Communities and Local Government, London.

2. Methods

DESK STUDY

2.1 At the desk study comprised a formal data search from the local records centre and review of relevant data from and information from other sources (Table 1).

Table 1. Overview of desk study data sources.

Source	Information
Norfolk Biodiversity Information Service	Designated sites, species of conservation concern; 5km search radius
MAGIC (www.magic.gov.uk)	Additional information on statutory sites, habitats of principal importance and wider countryside information
Wymondham Area Action Plan and other policy documents	Information regarding local planning policies including a synthesis of related policies
Local Planning Applications, manual map-based searching of the South Norfolk DC website	Recent survey data for protected species locally, including negative data
Various literature and web-based searches	Information on local projects and initiatives of potential relevance as well as some species-level data
Historic maps Norfolk (http://www.historic-maps.norfolk.gov.uk/)	Aerial photographs from 1988 and 1946; OS maps from 1880s and earlier

FIELD SURVEY

2.2 A Site walkover was undertaken on 24 May 2019, and habitats were described according to the methods of JNCC (2010)[3] and hedgerows following (DEFRA, 2007[4]). The walkover survey cannot be considered comprehensive but is adequate to describe the character of the Site in general and to identify potential ecological constraints on any future development. The field survey was by Drs Graham Hopkins and JI Thacker.

GUIDANCE

2.3 The ecological assessment has been prepared with reference to best practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM) and as detailed in British Standard 42020:2013 Biodiversity - Code of Practice for Biodiversity and Development.

CONSTRAINTS

2.4 It should be noted that this document does not provide a comprehensive description of the ecology of the Site. The broad characterisation and assessment of the Site is, however, considered robust.

[3] JNCC (2010) *Handbook for Phase 1 Habitat Surveys.* Joint Nature Conservation Committee, Peterborough.

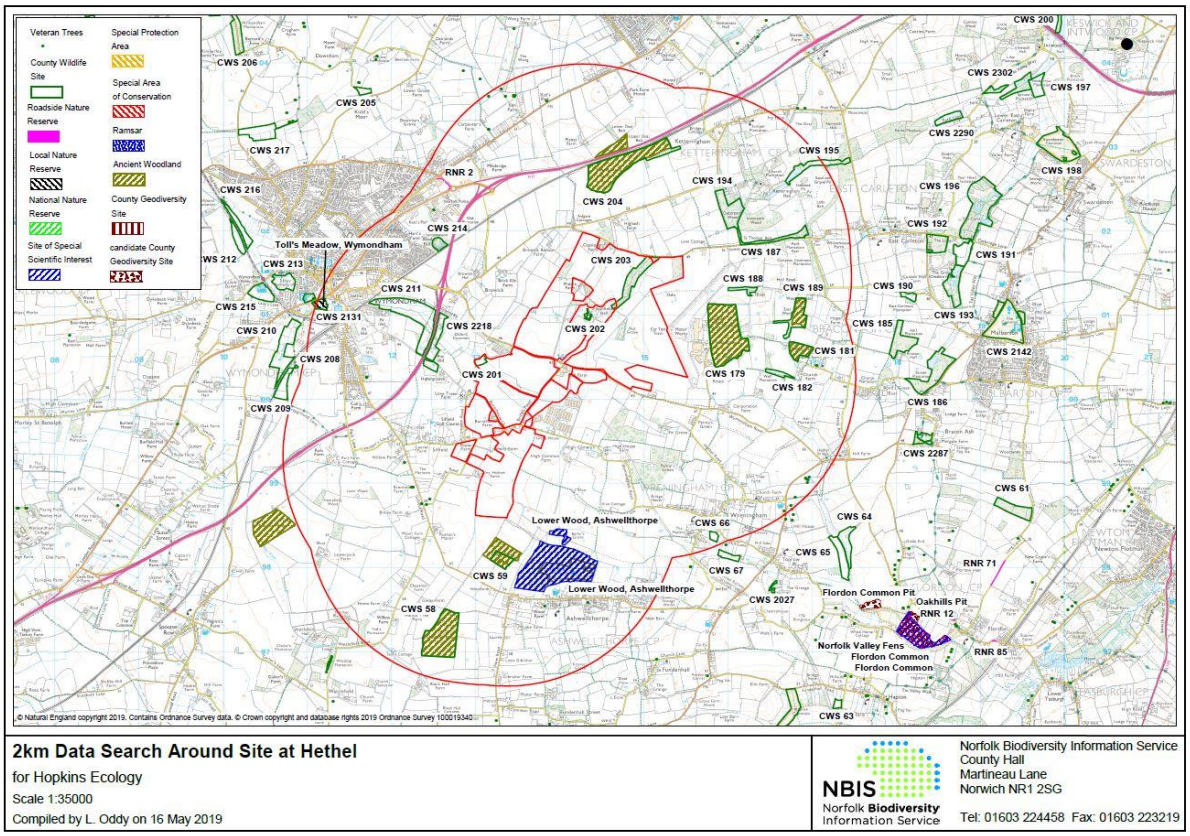
[4] DEFRA (2007) *Hedgerow Survey Manual.* DEFRA, London.

3. Designated Sites

OVERVIEW

3.1 An overview of the Site in relation to nearby designated sites is shown in Figure 1, showing a concentration of sites along the River Tiffey Valley to the west (>500m distant) and as an 'arc' running along the western fringe of Wymondham. As reviewed under 'Section 4: Green Infrastructure Policies' these sites and the wider River Tiffey Valley are seen as important in terms of the Kett's Country landscape and local green infrastructure strategies.

Figure 1. Data search results for designated sites within a 2km radius.



STATUTORY (INTERNATIONAL AND NATIONAL) SITES

3.2 There are two statutory sites within 5km.

3.3 Lower Wood, Ashwellthorpe is the only Site of Special Scientific Interest (SSSI) within 2km of the Site. This is a large area of ancient woodland with a nationally-rare stand type and a very diverse ground flora. The SSSI is about 500m south east of the Site.

3.4 A further SSSI within 5km is Flordon Common, located c. 3.8km south east of the Site. It is designated for its calcareous spring-fed fen and unimproved pasture, and is also a component site of the Norfolk Valley Fens Special Area of Conservation.

NON-STATUTORY SITES

3.5 There are no National Nature Reserves within 2km of the Site boundary. There is a single Local Nature Reserve, Toll's Meadow, which is also a County Wildlife Site. Toll's Meadow is an area of species rich, wet meadow and woodland situated in a gentle valley either side of

the River Tiffey. Fauna present include water voles. Toll's Meadow is approximately 1.8 km west of the Site.

3.6 Within a 5km radius there are more than fifty County Wildlife Sites (CWS), with 19 within a 2km radius (Appendix 2). Two are located within the site (Table 2); a third CWS is within 250m and in an 'island' within the Site boundary.

3.7 The two CWSs within the Site are CWS 201, Breakers Yard Meadow, and CWS 203, Long Drive. Breakers Yard Meadow is on the western edge of the Site between the River Tiffey and the Goff Petroleum site. Long Drive is to the north of the Site near Stanfield Hall. Neither of these CWSs has public access.

Table 2. CWSs within the Site.

CWS reference | name	Location	Description
201 | Breakers Yard Meadow	Western edge, adjoining the Tiffey	Improved and semi-improved grassland with calcareous fen type elements as part of the community.
203 | Long Drive	North of Stanfield Hall	Semi-natural woodland with a relatively rich ground flora.

3.8 The remaining CWS are summarised in Table 3, broadly divided into 'zones' for brevity: those associated with the River Tiffey valley, those of the wider countryside to the north and east of the Site, singletons like Moot Hill and Wreningham Marsh and two CWSs associated with Ashwellthorpe Lower Wood SSSI. A full listing of the CWSs is given in Appendix 2: Table 7.

Table 3. Other CWSs within 2km, according to broad location and habitat association.

Zone	Number of CWSs	Summary
Stanfield Hall Moat	1	A CWS surrounded by an internal Site boundary, 25m from Site.
River Tiffey valley, downstream of Site	3	Associated with the River Tiffey including sections of the channel. The closest of these is the Silfield Newt Reserve, 400m west. Includes Toll's Meadow, which is also a Local Nature Reserve.
Moot Hill	1	An isolated mound of semi-natural woodland surrounded by a moat, 1.25km west.
Wider countryside north and east	9	A loose cluster of CWSs comprising a mixture of fragments of ancient woodland, plantations, and ponds and moats. The closest is Hethel Wood, 350m east.
Wreningham	1	A small CWS of marshy grassland and tall fen, 1.8km south east.
Associated with Ashwellthorpe Lower Wood	2	Two parcels of ancient woodland close to Ashwellthorpe Lower Wood SSSI, the closest 400m south of the Site.

ANCIENT WOODLANDS

3.9 There are no ancient woodlands on the Site, but there are seven within 2km. The most important is Ashwellthorpe SSSI. The additional six are all, or in part, CWSs. CWS 58, 179, 181 and 189 are entirely ancient woodland, while the ancient woodlands at CWSs 59 and 204 extend beyond the boundaries of the CWSs. The closest ancient woodland is the most

northern section of Upper Wood, immediately to the north of CWS 59. This is apparently not intact but is a plantation on an ancient woodland site.

VETERAN TREES

3.10 No veteran trees are registered on the Site. Nearly forty are registered within 2km, the closest of which are a number of ashes (Fraxinus excelsior) near Silfield Road, some 500m west of the Site.

4. Green Infrastructure Policies

OVERVIEW

4.1 The Site falls outside the area covered under the Wymondham Area Action Plan[5] (WAAP) (Fig. 2). However, one of its proposed Neighbourhood Green Infrastructure Corridors runs close to the western boundary of the Site.

4.2 In the Joint Core Strategy[6] (JCS) of the Greater Norwich Development Partnership, the Site falls within the zone where the priority for biodiversity enhancement is buffering existing fragmented habitats. The Green Infrastructure Study (CBA, 2007[7]; Annex 4) supporting the JCS earlier identified the area including the Site as within a zone of key opportunity for enhancing and creating woodland habitat. The upper reaches of the River Tiffey are identified by CBA (op. cit.; Annex 5) as a priority link in the ecological network. The spatial vision for these corridors is informed by a Green Infrastructure Strategy and associated studies (e.g. Green Networks, Norfolk Wildlife Trust, 2007[8]).

4.3 Such policies are broadly in line with other countryside restoration schemes, such as the Norfolk Wildlife Trust's *'Claylands Living Landscape'* project[9] within the South Norfolk area. In the Claylands Living Landscape, NWT proposes to:

- *"Reverse the fragmentation of the landscape by ensuring that conservation action is joined up and builds ecological connectivity."*
- *"In light of development pressures (particularly around Norwich and local market towns) work with local authorities, developers and others to mitigate potential impacts and maximise provision of good quality and biodiversity-rich green infrastructure and open space."*

POLICIES

4.4 The individual documents and policies of relevance are summarised in Table 4, with the identified routes of green infrastructure corridors shown in Figure 2. The green infrastructure corridors proposed within the JCS and relevant to the site are:

- A Sub-regional Green Infrastructure Corridor running from The Lizard CWS and the Silfield Newt Reserve CWS south east through the site towards Ashwellthorpe Lower Wood SSSI.
- A Neighbourhood Green Infrastructure Corridor running along the northern end of the Silfield Newt Reserve, turning south and terminating at Lime Trees Farm at the junction of the promoted walking route Ketts Country Trail.

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[5] South Norfolk DC (2015) *South Norfolk Local Plan. Wymondham Area Action Plan Adopted Version 2015.* Available from: https://www.south-norfolk.gov.uk/sites/default/files/Wymondham_Area_Action_Plan_1.pdf

[6] Greater Norwich Development Partnership (2014) *Joint Core Strategy for Broadland, Norwich and South Norfolk.* Available from: http://www.greaternorwichgrowth.org.uk/planning/joint-core-strategy/

[7] CBA (2007) *Greater Norwich Development Partnership. Green Infrastructure Strategy. A Proposed Vision for Connecting People, Places and Nature*. Available from: http://www.greaternorwichgrowth.org.uk/dmsdocument/201

[8] Norfolk Wildlife Trust (2006) *Report of the Ecological Network Mapping Project for Norfolk.* Available from: http://www.norfolkbiodiversity.org/pdf/news/Final_report_of_indicative_map_July%202006.pdf

[9] https://www.norfolkwildlifetrust.org.uk/a-living-landscape/claylands

Figure 2. Plan of green infrastructure corridors

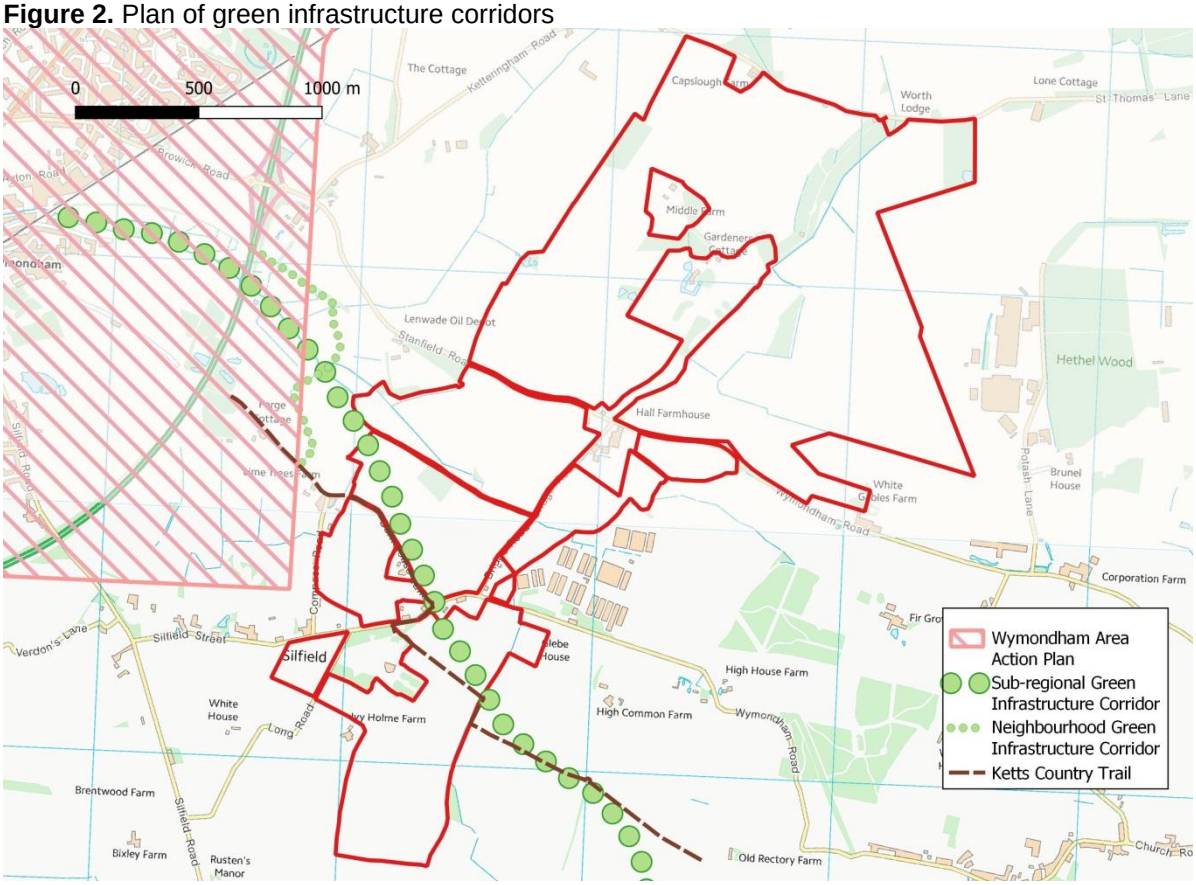


Table 4. Summary of polices and background documents relevant to green infrastructure and ecology.

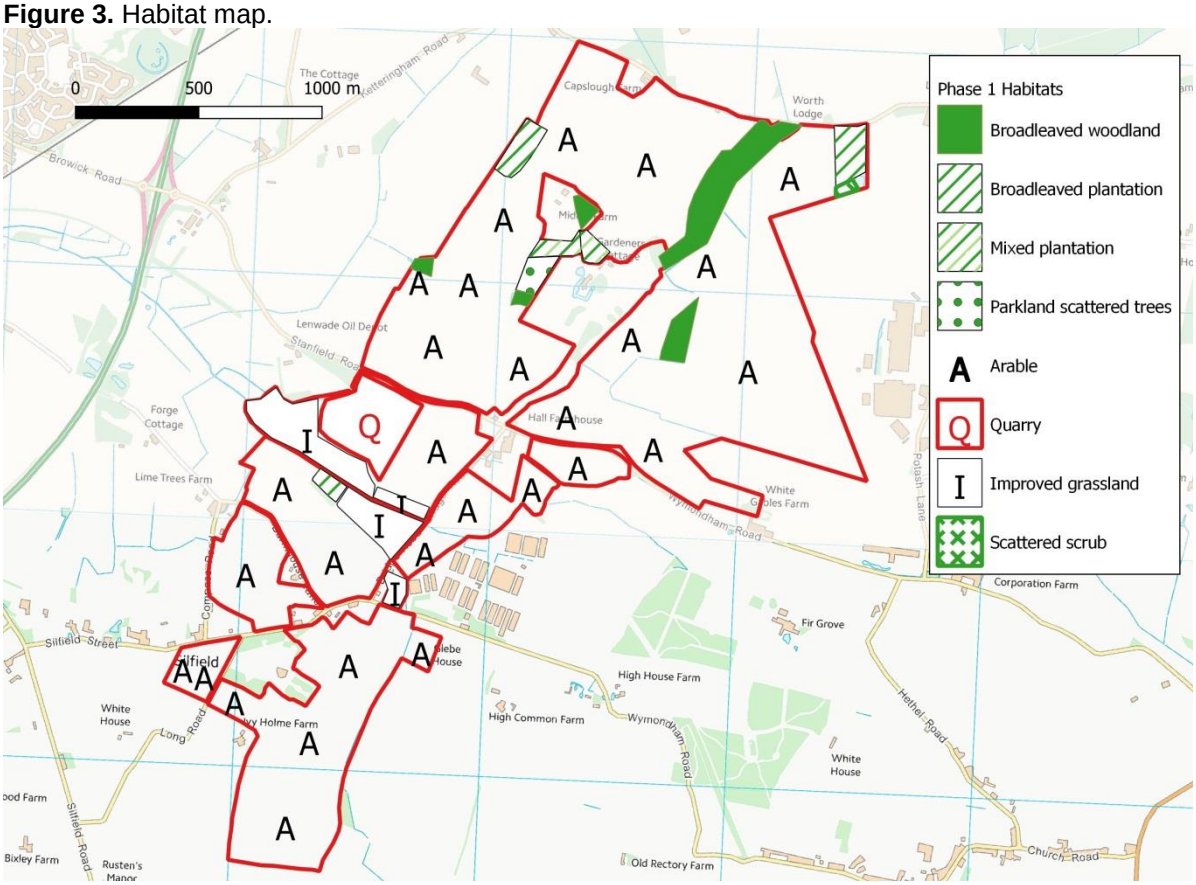
Source	Text
Joint Core Strategy	
Policy 1: Area-wide policies addressing climate change and protecting environmental assets.	General policies that development will: • minimise fragmentation of habitats and seek to conserve and enhance existing environmental assets of acknowledged regional or local importance. • contribute to providing a multifunctional green infrastructure network, including provision of areas of open space, wildlife resources and links between them.
GNDP (2007) Green infrastructure strategy	
Identifying needs and opportunities for enhancing the quality, quantity and accessibility of green infrastructure.	Sub-regional Green Infrastructure Corridor (indicative) passes through the Site. Does not constrain development.
Wymondham AAP	
Just outside the boundary of the Wymondham AP area.	A Neighbourhood Green Infrastructure Corridor passes close to the Site.

5. Habitats and Botany

OVERVIEW

5.1 The Site is largely arable cropland (c. 293ha of the total area of 339ha). Other habitats present comprise: broadleaved woodland, mixed woodland, broadleaved and mixed plantation, parkland with scattered trees, semi-improved grassland and improved grassland, and scattered scrub (Figure 3). Sixteen ponds are present within the Site, with a further 28 within 250m of the boundary. Two priority habitat types[10] are found within the Site: deciduous woodland and coastal and floodplain grazing marsh (described here as improved grassland). The River Tiffey flows east-west through the middle of the site. The soil of the northern half is typical stagnogley, and a band of typical humic-sandy gley forms a band around the river's course. Some of the land in the southwest of the Site is stagnogleyic argillic brown earth.

Figure 3. Habitat map.



ARABLE FIELDS

5.2 The arable fields comprise the majority (c. 86%) of the Site. At the time of visit the fields were under cereals or oilseed rape.

[10] Inventory available at: https://naturalengland-defra.opendata.arcgis.com/datasets/priority-habitat-inventory-england-central

BROADLEAVED WOODLAND

5.3 There are five blocks of broadleaved woodland within the Site, which add up to about 11.3ha. None are on the Ancient Woodlands England[11] inventory, although three of the five are old enough to appear on the 1840 Tithe map of Norfolk. Sections include:

- Long Drive, Stanfield Hall: A block of 8.4ha. CWS 203. Semi-natural woodland visible on the 1840 tithe map and the 1880s OS 1st edition map with a relatively rich ground flora (description from citation below).
- Nut Grove: A remnant of a larger block of woodland visible on the 1840 tithe map and the 1880s OS 1st edition map. 2.0ha
- South west of Stanfield Hall: A small block (0.4ha) represented as wooded ponds on the OS 1st edition map.
- West of Stanfield Hall: A small block (0.5ha) visible on the 1840 tithe map.

5.4 Long Drive CWS is described in the relevant citation as follows:

> "This is an area of semi-natural woodland which is bisected by a concrete track. The site is used for shooting. The majority of the site has a canopy of oak (*Quercus robur*) standards over a coppice layer of hornbeam (*Carpinus betulus*) and hazel (*Corylus avellana*) together with hawthorn (*Crataegus monogyna*), cherry (*Prunus* sp.) and dogwood (*Cornus sanguinea*). The ground flora is relatively rich, but dominated by either bramble (*Rubus fruticosus* agg.), nettles (Urtica dioica) or dog's mercury (Mercurialis perennis), with wood false-brome (Brachypodium sylvaticum), enchanter's nightshade (*Circaea lutetiana*) and ground-ivy (Glechoma hederacea). Other species of note include cuckoo flower (*Cardamine pratensis*), dog violet (*Viola riviniana*), early dog violet (*Viola reichenbachiana*), guelder rose (*Viburnum opulus*), lesser celandine (*Ranunculus ficaria*), bugle (*Ajuga reptans*) and goldilocks buttercup (*Ranunculus auricomus*). Mosses and ferns are also abundant. In one area the canopy contains ash (*Fraxinus excelsior*) (with signs of dieback) as well as oak but hornbeam is absent from the coppice layer. Here the ground flora is less species-rich."

GRASS SWARDS

5.5 The grass swards are all considered to be improved, with two main areas that add up to c.14ha:

- A block including CWS 201, Breakers Yard Meadow
- A small patch in the corner between Bridge Road and Wymondham Road
- Further strips of improved grassland occur throughout the Site in hedgerow margins and at the edges of fields

5.6 Breakers Yard Meadow is described in the relevant citation as follows:

> "This site consists largely of improved grassland with small pockets of semi-improved, wet grassland. The site is grazed by sheep although there is an area of tall and unmanaged fen-type vegetation. The marshy grassland pockets contain abundant jointed rush (*Juncus articulatus*) and greater pond-sedge (*Carex riparia*) with frequent soft rush (*Juncus effusus*) and hard rush (*Juncus inflexus*). Grasses include Yorkshire fog (*Holcus lanatus*), creeping bent (*Agrostis stolonifera*), rough meadow-grass (*Poa trivialis*) and red fescue (*Festuca rubra*). Forbs are represented by creeping buttercup

[11] Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/ancient-woodlands-england

(*Ranunculus repens*), greater bird's foot trefoil (*Lotus uliginosus*) and meadowsweet (*Filipendula ulmaria*). Unmanaged areas contain lesser pond-sedge (*Carex acutiformis*), reed canary-grass (*Phalaris arundinacea*), meadowsweet, nettle (*Urtica dioica*) and false oat-grass (Arrhenatherum elatius). Scattered trees include alder (*Alnus glutinosa*) and sallow (*Salix cinerea*). This area seems to be drying out."

HEDGEROWS

5.7 There are approximately 20km of hedgerows in the Site or running along its borders, in 90 recognized lengths (Figure 4).

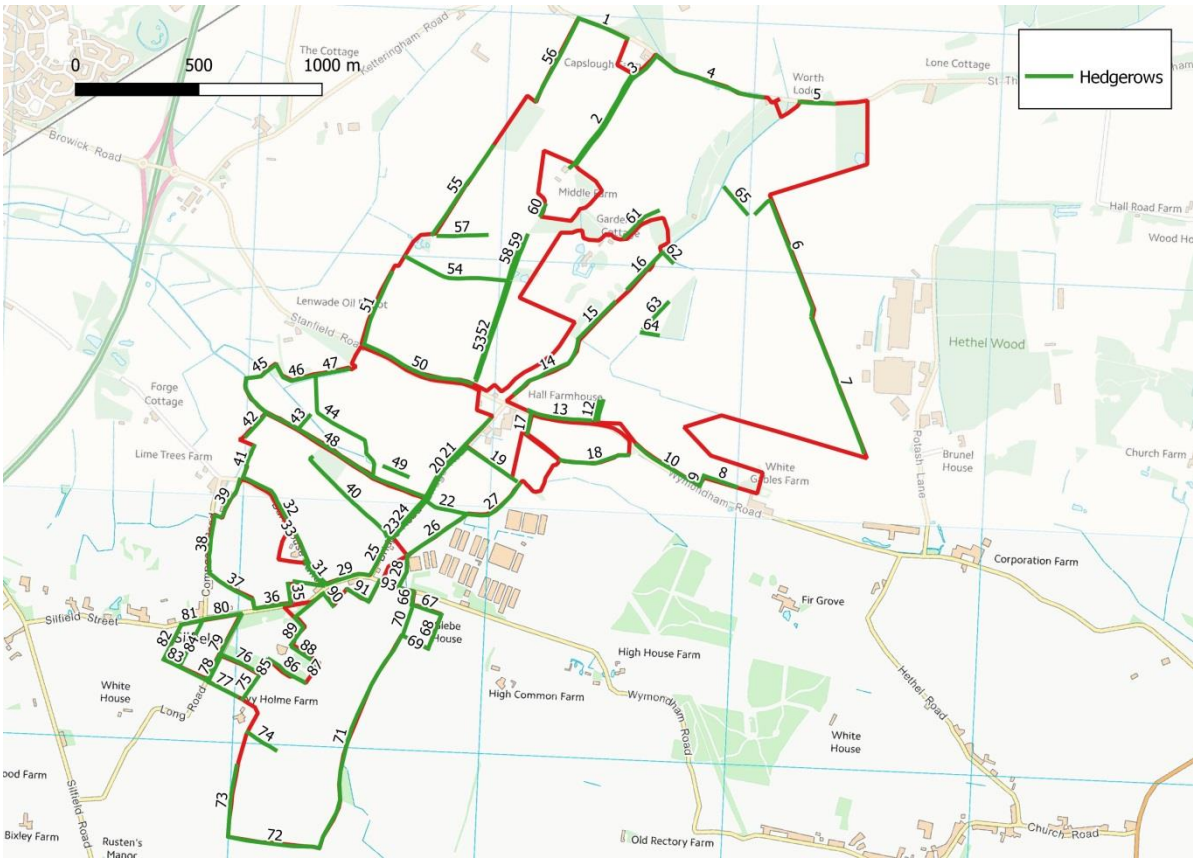
5.8 Hedgerows on the Site comprise lengths running for parts or entire lengths of various field boundaries, albeit with extensive lengths of hedgerow missing from existing fields. Pre-1980s hedgerow removal created larger fields.

5.9 Many hedgerows have additional features of interest, including standard trees (mostly oaks), ditches, or are doubled (e.g. the hedgerow running south from Capslough Farm).

5.10 All hedgerows on the Site probably meet the criteria for the relevant priority habitat, and many have the potential to meet the criteria for Important Hedgerows under the Hedgerow Regulations.

5.11 Native woody plant constituents of the hedgerows include: hawthorn, hazel, *Rosa* spp., blackthorn, elms Ulmus spp., holly, field maple, dogwood and buckthorn. Climbers seen included travellers' joy *Clematis vitalba*, black bryony *Tamus communis* and ivy. Herbaceous plants associated with hedgerow verges included greater stitchwort *Stellaria holostea*, black knapweed *Centaurea nigra*, meadowsweet *Filipendula ulmaria* and cowslip *Primula veris*.

Figure 4. Hedgerows.



SCRUB

5.12 There is a small section (0.4ha) of cleared broadleaved plantation at the north east of the Site.

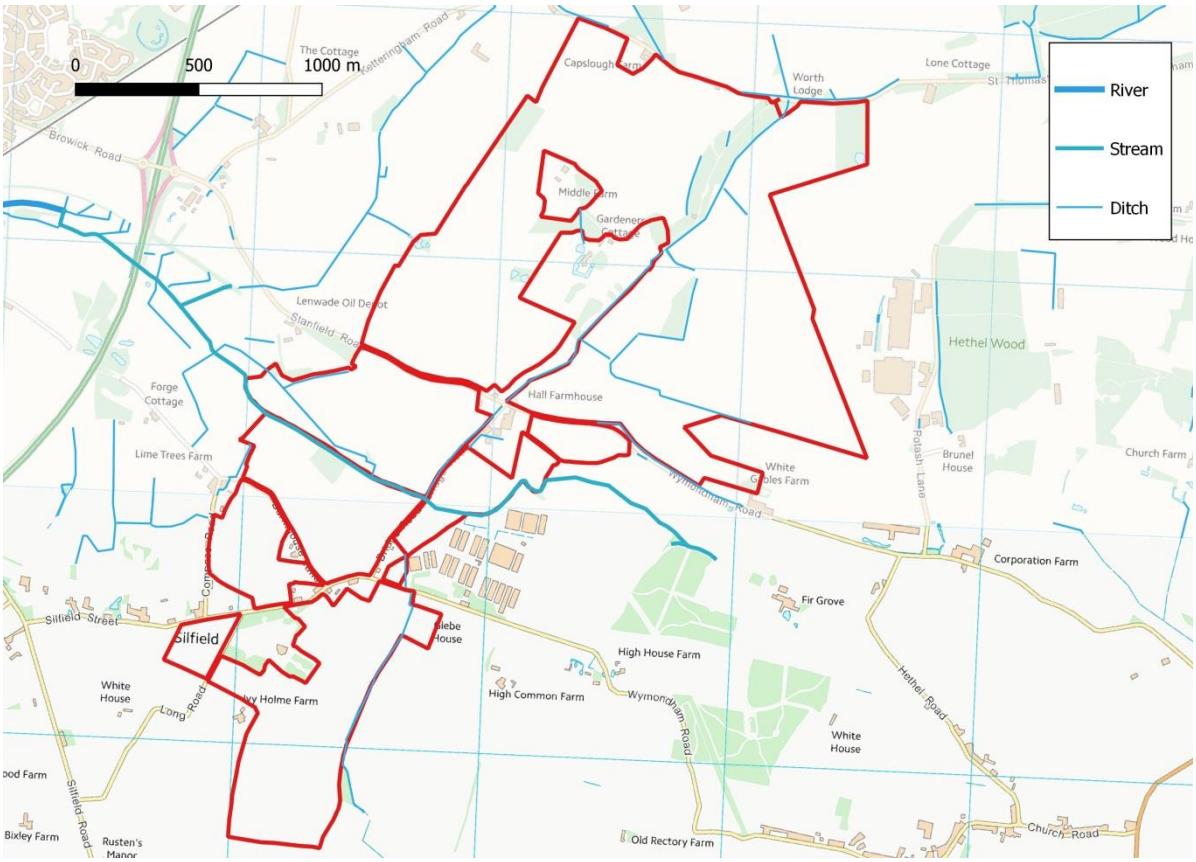
PLANTATION WOODLAND

5.13 There are several areas of plantation woodland on the Site, totalling c. 8.3 ha, of which 2.3ha are mixed plantation. At the north east corner of the Site the plantation consisted of beech, oak and sycamore, with apparently secondary regrowth and a varied age structure. Ground flora included dog's mercury *Mercurialis perennis* and nettle *Urtica dioica*. The plantation was lined at its northern edge by a ditch.

RUNNING WATER

5.14 The River Tiffey runs west-east through the Site and between adjacent areas of the Site about a third of the way from south to north. At the time of visit the Tiffey was a sluggishly flowing stream, about 30cm in diameter and 10cm in depth, in a heavily shaded channel and with no aquatic vegetation present. It qualifies as the rivers habitat of principal importance, which includes almost all running water regardless of quality.

Figure 5. Running water and ditches.



PARKLAND

5.15 A small area (1.5ha) of grassland with scattered trees is present to the west of Stanfield Hall. This is visible on the 1880s OS 1st edition map. It may contain veteran trees, although it is likely to be mown rather than grazed, reducing its probably quality.

DITCHES

5.16 There is an extensive network of ditches within and adjacent to the Site, often associated with hedgerows. The ditches are likely to be largely ephemeral, with standing water in winter but mostly dry in summer. In wet periods the ditches carry water to the River Tiffey.

PONDS

5.17 Sixteen ponds within the Site boundary and a further 28 ponds within 250m were identified with reference to satellite imagery or OS mapping. Of these, 6 are apparently defunct. Several ponds appear to be the remains of linear features, i.e. ditches. Others are farm ponds of significant age, often in areas that have developed dense woodland cover and a thus probably highly shaded. A few of the ponds are formal and/or located within domestic curtilages. Ponds are discussed further below with reference to great crested newts (see also Figure 6).

QUARRY

5.18 The quarry on Stanfield Road (9.5ha) is likely to include bare ground and ephemeral vegetation. It has apparently been recently created from former arable land.

6. Scoping for Species of Conservation Concern

PLANTS

6.1 Only a few records of rare or scarce plants were returned by the data search, none of which are likely relevant to the Site. These comprise a record of Silene gallica, small-flowered catchfly (GB red-listed: endangered; NERC S.41 priority species) and mossy stone crop (nationally scarce) from sandy areas near Rightup Lane, and a 2002 record of bird's nest orchid (GB red list: near threatened) from Ashwellthorpe Lower Wood. *S. gallica* is an arable margin species. The broader landscape has a moderate diversity of arable margin species (Walker et al. 2012[12]).

BATS

6.2 Records for nine species of bat were returned by the data search: barbastelle, serotine, Natterer's, noctule, common pipistrelle, soprano pipistrelle, Myotis spp., Daubenton's and brown long-eared. The majority of these records were obtained during field surveys for the Norfolk Bat Survey[13]; the only roost record was for a brown long-eared roost, c.850m west at Wiffen's Farm.

6.3 Many records are from Ashwellthorpe Lower Woods SSSI. Other records are from the Silfield Street/Wymondham Road area, close to and potentially within the Site. The locations of records in the vicinity of the Site represent where recorders have visited rather than showing an accurate distribution of bat activity. Most of the Site (the >80% that is arable) has very low bat potential, but habitats with potential on the Site include:

- Hedgerows. With 20km of hedgerows, the Site has a lot of linear features used either for commuting or foraging. There are also standard trees on some hedgerow lengths with low potential for roosting.
- Woodland. There are >11ha of broadleaved woodland and additional areas of plantation, with potential for roosting and foraging.
- Parkland. The parkland to the west of Stanfield Hall has trees with roosting potential.
- Improved grassland. Potential foraging areas.

6.4 In summary, most of the Site is low-diversity arable and therefore has low potential for bat foraging. Mature trees in woodland and hedgerow have some roosting potential. Significant areas of habitat, particularly hedgerows and improved grassland, have foraging potential.

GREAT CRESTED NEWTS

6.5 The South Norfolk Claylands area is considered to be a 'stronghold' for the great crested newt[14]. The data search returned about 150 records from the south of Wymondham, such as from The Lizard CWS and the Siflield Newt Reserve CWS.

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[12] Walker, H., Cunningham, S., Ellis, B., Neal, S. and Swan, E. (2012) *Important Arable Plant Areas in Norfolk.* Available from: http://www.nbis.org.uk/sites/default/files/documents/Important%20Arable%20Plant%20Areas%20in%20Norfolk_SCREEN.pdf

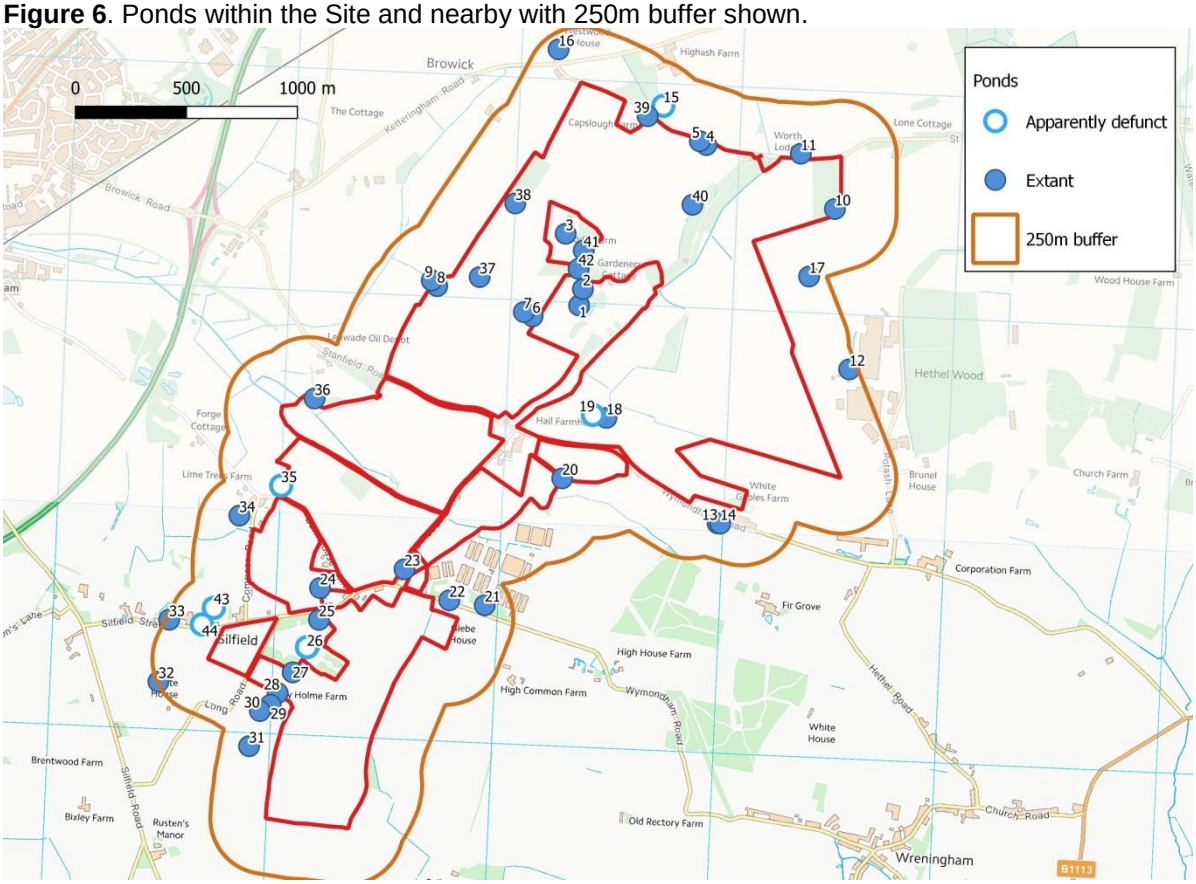
[13] http://www.batsurvey.org/

[14] Natural England (2007) loc. cit.

6.6 In terms of assessing the potential for great crested newts to be present, consideration is typically given to on-Site ponds and nearby ponds, with a 250m radius considered appropriate given the open arable character of surrounding habitat (following English Nature, 2001[15]).

6.7 Sixteen ponds within the Site and a further 28 ponds within 250m were identified with reference to satellite imagery or OS mapping (Figure 6).

Figure 6. Ponds within the Site and nearby with 250m buffer shown.



6.8 Of the on-Site ponds, some appear to be the remains of linear features, i.e. ditches. Others are farm ponds of significant age, often in areas that have developed dense woodland cover and are thus probably highly shaded. A few of the ponds outside the Site but within 250m are formal and/or located within domestic curtilages. Six of the ponds outside the Site but within 250m are apparently defunct.

6.9 The pond numbered 1 on Figure 6 is Stanfield Hall Moat CWS, which is c.120m from the Site boundary. The relevant citation describes it as follows:

> "This is an area of mesotrophic water surrounding Stanfield Hall. There is no aquatic vegetation but the marginal flora is rich with frequent sweet-flag (*Acorus calamus*), sedges (*Carex* spp.), figwort (*Scrophularia nodosa*), gipsywort (*Lycopus europaeus*), mint (*Mentha* sp.) and meadowsweet (*Filipendula ulmaria*). White willow (*Salix alba*) is frequent across the site. (Based on the 1985 habitat survey (NWT))."

6.10 There is also potential great crested newt habitat in the network of ditches across the Site (Figure 5), and terrestrial habitat in woodland and plantation.

[15] English Nature (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

BIRDS

6.12 There are 1818 recent records of birds of conservation concern from within 2km of the Site. Many of these relate to birds of the urban fringe from Wymondham like house sparrows which are unlikely to be of relevance to the Site. Of species red-listed in the UK, the following records are of particular relevance to the Site: skylarks, with 19 records, mostly from the area of The Lizard and Rightup Lane; song thrushes, with 17 records, mostly from Wymondham; and turtle doves, with 19 records, mostly from Wymondham with some additional records from East Carleton.

6.13 Relevant amber-listed species include: bullfinches, with 13 records, mostly from Wymondham; kingfishers, with 29 records, mostly associated with the River Tiffey in Wymondham although this is likely too ephemeral where it crosses the Site to provide suitable habitat; swifts, with 31 records, and tawny owls, with records from Hethel, East Carleton and Wymondham.

6.14 Relevant habitats for birds of conservation concern on the Site include:

- Arable fields and improved grassland for overwintering species like lapwings, fieldfares and redwings.
- Arable fields and improved grassland for nesting for skylarks: based on an arable area of c. 293ha and typical upper and lower densities for skylarks in arable[16] the numbers of skylark pairs could be between 65 and 100 pairs, although it would be exceptional for the Site to be at capacity.
- Improved grassland for foraging for swifts.
- Hedgerows as nesting habitat for species like turtle doves, yellowhammers, bullfinches, mistle thrushes and song thrushes.
- Woodlands for nesting for species like lesser-spotted woodpeckers, tawny owls, wood warblers, marsh tits and woodcocks.

6.15 In summary, it is likely that the Site supports numerous birds of conservation concern, with the most important habitats hedgerows and woodland.

REPTILES

6.16 The data search returned records for slow worms, grass snakes and common lizards, mostly from the south edge fringe of Wymondham but with two records of grass snakes from East Carleton. There are six records from within 250m of the Site, all of grass snakes and all dating from 2006 on what was formerly improved grassland but is now disturbed ground and scrub associated with the Goff Petroleum site (c.220m from the Site boundary). There are records of slow worms at the Silfield Newt Reserve and The Lizard (500m distant and >1km respectively) and a record of common lizards from Moot Hill, 1.25km west.

6.17 Ditches, woodland and the improved grassland associated with the River Tiffey are potentially suitable habitat for grass snakes. Arable landscapes typically support few if any reptiles but there is a possibility of low densities of common lizards in the improved grassland associated with hedgerows. The quarry is unlikely to support lizards because of its recent appearance on land that was formerly arable.

[16] Based on territory sizes of 4.5ha in winter cereals and 2.5ha in other arable types, from: Poulsen, J.G., Sotherton, N.W., & Aebischer, N.J. (1998) Comparative nesting and feeding ecology of skylarks *Alauda arvensis* on arable farmland in southern England with special reference to set-aside. *Journal of Applied Ecology*,*35*(1), 131-147.

TERRESTRIAL MAMMALS

6.18 Terrestrial mammals are assessed as follows:

- Badgers. Most records of badgers relate to road casualties on the A11, some 750m north of the Site. There is another nearby record from immediately west of the Site from 2006. The locations of a further pair of records were not disclosed. The blocks of woodland and plantation offer potential habitat for this species.
- Harvest mice. No records returned. The only potential habitat available is the improved grassland associated with the River Tiffey including Breakers Yard Meadow CWS. The presence of this species is highly unlikely.
- Water voles. The data search returned 85 records of water voles, with a single record from within the Site or close to its boundary at Holly Farm, Silfield, from 2003. There is a record from near Wreningham, 400m south of the Site from 2014. The vast bulk of the records refer to Toll's Meadow, 1.8km west, with a further two from the Silfield Newt Reserve 400m west. There is a low possibility of water voles within the Site, based on the presence of potentially suitable habitat (ditches and stream) albeit of likely low quality.
- Otters. Two records from 2010-11 from Toll's Meadow, 1.8km west. A further record from 2010, 1km to the north on the other side of the A11. Highly unlikely to be present.
- Brown hares. There are seven records of brown hares from the Site, mostly south of St Thomas' Lane and dating from 2013-2015. Of sixty-five other records, most relate to arable land within about 500m north of the Site. Potentially present.
- Hedgehogs. There are two records of hedgehogs from close to the eastern Site boundary dating from 2008. A further record from St Thomas Lane (close to the northern boundary of the Site) in 2014 refers to a road casualty. There are a few records from Silfield Road (500 m west of the Site) from 2013-2016 that also relate to road casualties and a single live individual. Most records from within 2km of the Site refer to road casualties in Wymondham, on the other side of the A11. Probably present on the Site.

INVERTEBRATES

6.19 Records for 43 species of invertebrate of conservation concern were returned from within 2km. Most records of invertebrates of conservation concern returned by the data search are NERC S.41 priority moths that are listed due to recent declines but which remain widespread (Butterfly Conservation, 2007[17]), with records concentrated at The Lizard and Silfield Newt Reserve (>1km and 500m west of the Site, respectively).

6.20 Several water beetles of note have been recorded at The Lizard/Silfield Newt Reserve, and There are records of white admirals (GB red-listed: vulnerable) from Ashwellthorpe, and a 2006 record of white-letter hairstreak (endangered) from Wymondham. Black-headed cardinal beetles are recorded from the Silfield Newt Reserve CWS.

6.21 The invertebrate records were analysed using Natural England's *Invertebrate Species-habitat Information System*[18] (ISIS) that classifies such inventory data into standardised habitat

[17] Butterfly Conservation (2007) *Biodiversity Action Plan – Moths*. Available from: http://butterfly-conservation.org/files/uk-bap-species-moths-research-only.pdf

[18] Drake C.M., Lott, D.A., Alexander, K.N.A. & Webb, J. (2007) Surveying *Terrestrial and Freshwater Invertebrates for Conservation Evaluation.* Natural England, Sheffield.

assemblages (Table 7). A small number of species are associated with wetland habitats and microhabitat (Broad and Specific Assemblage Types), but the majority are generalists of grassy and woodland vegetation with the only potentially relevant specialist species being those found in 'open short sward' grassland and 'bark and sapwood decay'.

Table 5. Habitat (assemblage type) associations of the invertebrates from the data search.

Assemblage code	Assemblage name	Number of species
Broad Assemblage Type		
A1	Arboreal canopy	12
W3	Permanent wet mire	5
F1	Unshaded early successional mosaic	4
F2	Grassland & scrub matrix	3
A2	Wood decay	1
W2	Mineral marsh & open water	1
Specific Assemblage Type		
W313	Moss and tussock fen	2
W314	Reedfen and pools	2
F112	Open short sward	1
A212	Bark & sapwood decay	1

6.22 The extent of habitat for noteworthy invertebrates on the Site is low, restricted to hedgerows, woodland and improved grassland associated with the River Tiffey and grass verges. There may be potential for white-letter hairstreaks on or near the Site in elm-containing hedgerows. The woodland offers potential habitat for specialist dead wood species. There is potential that the small area of parkland might include veteran trees which have an associated specialist dead wood fauna.

6.23 The Site is likely to be of moderate value for invertebrates, with key habitats woodlands, hedgerows and the improved grassland of Breakers Yard Meadow CWS.

7. Evaluation

STRATEGIC GREEN INFRASTRUCTURE

7.1 A key policy requirement locally in the Joint Core Strategy is the provision of green infrastructure to maintain and enhance habitat connectivity across the landscape. The Site is relevant to two green infrastructure corridors identified in the Greater Norwich Development Partnership's Green Infrastructure Strategy:

- A sub-regional green infrastructure corridor running from The Lizard CWS and the Silfield Newt Reserve CWS south east through the Site towards Ashwellthorpe Lower Wood SSSI; and
- A neighbourhood green infrastructure corridor running along the northern end of the Silfield Newt Reserve and terminating at Lime Trees Farm at the junction of the promoted walking route Ketts Country Trail. The neighbourhood green infrastructure corridor approaches the western boundary of the Site, but does not cross it.

7.2 The Sub-regional green infrastructure corridor connects habitat of high quality in the CWSs and the SSSI, but where it crosses the Site is consists of poor-quality open arable fields.

7.3 There promoted footpath Ketts Country Trail runs north west-south east through the Site and connects to the Silfield Newt Reserve CWS.

HABITATS OF PRINCIPAL IMPORTANCE

7.4 In general, the Site is typical of lowland farmland, with large fields of arable cropland with partial boundary hedgerows and smaller patches of other habitats. There are three habitats that are considered to qualify as Habitats of Principal Importance (Maddock, 2011[19]):

- Hedgerows, almost of all which probably qualify under the criterion of >80% native woody species.
- Lowland mixed deciduous woodland. Three blocks appear on the 1840 tithe map, including Long Drive CWS towards the north east of the Site.
- The River Tiffey qualifies as the river habitat of principal importance, because almost all running water is included under the definition of this habitat.

7.5 Further assessment would be required to determine the status of:

- Ponds. To qualify they should be of high ecological quality, most likely achieved here by supporting great crested newts.
- Parkland. To qualify as the relevant habitat of principal importance, the parkland would have to include veteran trees, i.e. dating from before the 19th century.
- Arable field margins. There are a variety of ways that arable field margins can qualify as the relevant habitat of principal importance, which generally involve active management for wildlife. As viewed however most of the margins will not qualify.

7.6 The following habitat does not qualify as habitat of principal importance:

- The improved grassland of Breakers Yard Meadow does not qualify as a lowland meadow habitat of principal importance because of its improved status.

[19] Maddock, A. (2011) *UK BAP Priority Habitat Descriptions*. Available from: http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2010.pdf

SCOPING FOR SPECIES OF CONSERVATION CONCERN

7.7 The Site consists of extensive tracts of open arable fields, with significant lengths of boundary hedgerows and considerable areas of other habitats. There is potential for significant assemblages of species of conservation concern to be present on the Site. The protected species scoping is summarised below (Table 8).

Table 6. Summary of ecology assessment.

Feature	Description	Assessment
Bats	Significant areas of foraging habitat Mature trees with some roosting potential.	Certain to support foraging by a range of species. Roosting likely at low density.
Great crested newts	Sixteen on-Site ponds, with further potential habitat in seasonally dry ditches. Terrestrial habitat in woodland.	Potentially present.
Birds	Extensive lengths of hedgerows with nesting and foraging potential Areas of woodland with nesting and foraging potential. Arable fields with wintering and nesting potential.	Nesting likely in hedgerows, woodland and also open fields by common and also widespread, declining species. Red and amber-listed species probably present in some numbers.
Reptiles	Nearby records of grass snakes, slow worms and common lizards. Potential habitat for grass snakes in woodland and ditches.	Potentially present.
Badgers	Records from within 1km mostly relate to road casualties on the A11. Suitable habitat on the Site in the woodland and plantation.	Potentially present
Harvest mice	No records returned. Potentially suitable habitat at Breakers Yard Meadow.	Highly unlikely to be present but cannot be discounted.
Otters and water voles	On-Site ditches of probably low quality, seasonally dry. River Tiffey also potentially seasonally dry. Records from within 400m of the Site.	Water voles unlikely to be present but cannot be discounted. Otters highly unlikely to be present.
Brown hares	Hares reported from within the Site, mostly south of St Thomas' Lane.	Potentially present.
Hedgehogs	Known to be present locally and hedgerows and woodland offer shelter and foraging habitat.	Probably present.
Invertebrates	Potential specialist habitat in woodland and hedgerows.	Rare and scarce species likely present but as a small assemblage typical of other similar farming landscapes.

RECOMMENDATIONS FOR ADDITIONAL SURVEYS

7.8 The work reported here provides a strategic overview of the Site and the main ecological features. For a full baseline assessment, it is recommended that surveys are undertaken for: bats (roosting and foraging), great crested newts, breeding and wintering birds, reptiles, badgers, water voles and invertebrates.

8. Impacts, Mitigation and Enhancements

IMPACTS

8.1 Adverse impacts from the development of the Site are likely to be driven by habitat loss, with the significance of this dependant on the extent and location of development. Construction should avoid priority habitats as identified here and in further comprehensive surveys; it should also consider the indirect effects of proximity to the development, e.g. via recreation. Hedgerows should be retained wherever possible and buffered from development. Mitigation of impacts will be achievable in most instances. Site landscaping, provision of open green space and also the creation of green infrastructure corridors will provide the potential for net biodiversity gain.

8.2 Other potential pathways of impacts include:

- Surface water management, with the River Tiffey passing through the Site. Mitigation of flows and water quality will require an appropriate surface water management mitigation train, and is likely to be achievable. Development should be subject to a buffer from the river.
- Recreational impacts on the Silfield Newt Reserve CWS is likely given the existing Ketts Country Trail connects to it and passes through the Site. Impacts on The Lizard CWS are also likely since the same route connects to The Lizard via Rightup Lane, which passes over the A11.
- Recreational impacts on Ashwellthorpe Lower Wood SSSI are likely given its proximity and because it is connected to the Site via existing footpaths, including the promoted Ketts Country Trail.

8.3 There is potential for recreational impacts on European sites. The nearest component site of the Norfolk Valley Fens SAC (Flordon Common SSSI) is c.3.8km south east of the Site and is open to the public. It is not associated with the River Tiffey and will not therefore be subject to direct impacts.

MITIGATION OF CONSTRUCTION IMPACTS

8.4 Direct measures to avoid impacts during construction may depend on the results of follow-up surveys, e.g. for reptiles. Generic guidance at this stage includes:

- General site clearance works should avoid the nesting bird season; and
- Measures to prevent soil and other run-off into the ditch network should be avoided, by following appropriate guidance[20].

ENHANCEMENTS

Green Infrastructure Corridors

8.5 A sub-regional green infrastructure corridor runs from The Lizard CWS and the Silfield Newt Reserve CWS south east through the Site towards Ashwellthorpe Lower Wood SSSI. Where it crosses the Site, this is generally of low ecological quality. There is therefore the potential to enhance this green corridor.

[20] *Guidance for Pollution Prevention Works and maintenance in or near water: GPP 5 January 2017.* Available from: http://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf

- As far as possible, the corridor should offer near-continuous belts of structural planting along which species that tend not to stray from cover will fly along. This includes many bats and also birds.
- Conversely, structural planting should not form overly dense belts of trees through which many species will struggle to fly. The options are to create paths through the planting, akin to double hedgerows or by spacing trees such that gaps will be retained between individual tree canopies. Planting should also aim to provide a diversity of local conditions, from open grassland to longer grassland forming a matrix with scrub, ultimately grading into denser scrub and tree cover.
- The corridor should be as dark as possible, through a combination of reduced lighting and also structural planting to screen from light spill (Gunnell and Grant, 2012[21]).
- The corridor should offer resources for a range of species, increasing the value of the corridor as stepping stones across the landscape. Examples include the provision of blossom over an extended period, required by many pollinating insects, and fruit and berries in autumn for many birds, and insect food plants.

Generic Soft Landscaping

8.6 Soft landscaping is the most appropriate Site-wide enhancement, using appropriate native species and species of known wildlife value. Key points for many species groups is the need for insect prey, for bats and also for the chicks and fledgling birds of many species. Thus, range of native plant types should be planted to provide a range of resources across the seasons from spring to autumn (insects and their predators), and also fruit and berry producing species in autumn and winter (birds).

8.7 For woody species appropriate for structural planting, those typical of local hedgerows (Norfolk County Council, undated[22]) are:

- Hawthorn, blackthorn, ash, maple, dogwood *Cornus sanguinea*, elm and hazel, with lesser amounts of crab apple *Malus sylvestris*, hornbeam and holly, and scattered examples of privet *Ligustrum vulgare*, oak, spindle *Euonymus europaeus*, wild cherry *Prunus avium* and guelder rose *Viburnum opulus*.

8.8 Shrubs suitable for planting within the scheme include most of the species listed for hedgerows, other than blackthorn and hawthorn (due to spines) and those with requirements for large distances to the nearest buildings (mainly ash and oak). Small trees with smaller minimum distances to buildings include silver birch *Betula pendula*, rowan *Sorbus aucuparia*, whitebeams *Sorbus* species, and fastigiate forms of hornbeam. Within open green space trees allowed to develop open growth forms typical of parkland trees would be of particular value in the medium- and long-term, with oak and beech *Fagus sylvatica* of very high value in such contexts.

8.9 Within areas of grassland and SUDS features a number of wildflower seed mixes are available from commercial suppliers, including wetland and pond planting (e.g. Emorsgate EM8 meadow mixture for wetlands), wildflower swards on heavy soils (e.g. EM4 meadow mixture

[21] Gunnell, K. and Grant, G. (2012) *Landscape and Urban Design for Biodiversity and Bats*. Bat Conservation Trust, London.

[22] Norfolk County Council (undated) *Planting Hedges in Norfolk – Maintaining Regional Character*. Norfolk County Council, Norwich.

for clay soils and EM10 tussock mixture) and flowering lawns for areas with more intensive use and management (e.g. EL1 flowering lawn mixture).

8.10 Along the ditch-side areas soft landscaping would serve to substantially enhance the value of these areas for wildlife, as areas of habitat and also as corridors across the landscape.

8.11 Additional measures could include:

- Bat boxes to be erected on buildings, either as integral 'bat tubes' embedded within walls or as external boxes. A wide range of types are suitable[23].
- Bird boxes should be erected for locally relevant species, including swifts and house sparrows.
- The scheme should allow for the continued movements of hedgehogs, with garden gates raised to allow them to pass under and holes within gravel boards to allow them to pass through[24].

[23] http://www.wildlifeservices.co.uk/batboxes.html

[24] https://www.jacksons-fencing.co.uk/News/outdoor-living/new-hedgehog-friendly-gravel-boards-winter-news-topical-treats-and-more-6511.aspx

9. Conclusion

9.1 In general, the Site is typical of lowland farmland, with large fields of arable cropland with partial boundary hedgerows and smaller patches of other habitats. A number of species of conservation concern are likely or potentially present, many of which will be widespread but declining species, and present as components of larger local populations. Further surveys are recommended to provide a robust baseline for the Site.

9.2 Habitat loss is considered to be the principal pathway of adverse impact, with mitigation available for most species via appropriate soft landscaping and scheme masterplanning. Although mitigation of impacts on some species associated with open fields will be difficult, the overall scheme could deliver a net biodiversity gain with a net increase of non-arable habitat and creation of green infrastructure corridors.

9.3 In conclusion, it is considered likely that the impacts on the majority of species can be mitigated. Appropriate landscaping and scheme design has the potential to deliver net ecological enhancement. A key enhancement could be the delivery of the green infrastructure corridor identified within the GNDP Green Infrastructure Strategy, as part of scheme design and landscaping.

10. Appendix 1: Photographs

Figure 7.
Open arable field under cereals.

Figure 8.
Recently ploughed arable field with woodland edge.

Figure 9.
Field boundary removed leaving standard trees only.

Figure 10.
Tall roadside hedgerow.

11. Appendix 2: Additional Data

Table 7. Details of County Wildlife Sites within 5km.

Zone	Location	CWS Reference	Name	Description
Within Site	North east corner of Site	203	North Drive	Semi-natural woodland with a relatively rich ground flora
	West central edge of Site	201	Breakers Yard Meadow	Improved and semi-improved grassland with calcareous fen type elements as part of the community. Adjoining the River Tiffey
River Tiffey valley, downstream of Site	400 m west	2218	Silfield Newt Reserve	Five connected fields with ponds, grassland, scattered scrub and hedges
	550 m west	211	The Lizard & Wade's Pit	Mixed habitats including marshy grassland, acid grassland and woodland, straddling the River Tiffey
	1.8 km west	2131	Toll's Meadow & Friarscroft	Species-rich marshy grassland and fen meadow straddling the River Tiffey. Also an LNR.
Stanfield Hall Moat	25 m from internal Site boundary	202	Stanfield Hall Moat	Mesotrophic water with rich marginal flora
Wider countryside north and east	500 m north	204	Smeeth Wood	Mixed plantation on former ancient woodland
	600 m north east	194	Bean & Outer Park Woods	Oak-dominated mixed plantation
	1.5 km north east	195	Ketteringham Hall Lake	Macrophyte-rich lake and alder carr
	700 m east	187	St Thomas' Belt	Broad-leaved plantation with marshy areas
	550 m east	188	Hethel Hall Moat	Partly-dry moat with herb-rich grassland
	350 m east	179	Hethel Wood	Semi-natural woodland with ancient woodland indicators.
	1.2 km east	189	East Wood	Damp coppiced woodland
	1.3 km east	181	Bush Close	Ancient woodland with species-rich ground flora
	900 m east	182	Hethel Pond and The Drift	Pond with rich marginal flora and neutral grassland
Wreningham	1.8 km south east	66	Wreningham Marsh	Marshy grassland and tall fen
Associated with Ashwellthorpe Lower Wood SSSI	400 m south	59	Upper Wood	Conifer plantation on former ancient woodland with remnant of the original coppice
	1.2 km south	58	Fundenhall Wood	Ancient woodland with diverse ground flora
Moot Hill	1.25 km west	214	Moot Hill	A mound of semi-natural woodland surrounded by a moat

Table 8. Non-technical account of relevant legislation and policies.

Species	Legislation	Offence	Licensing
Bats: European protected species	Conservation of Habitats and Species Regulations 2010 (as amended) Reg 41	Deliberately capture, injure or kill a bat; deliberate disturbance of bats; or damage or destroy a breeding site or resting place used by a bat. [The protection of bat roosts is considered to apply regardless of whether bats are present.]	A Natural England (NE) licence in respect of development is required.
Bats: National protection	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place.	Licence from NE is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.
Birds	Wildlife and Countryside Act 1981 (as amended) S.1	Intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built. Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species [e.g. kingfisher].	No licences are available to disturb any birds in regard to development.
Great crested newt: European protected species	Conservation of Habitats and Species Regulations 2010 (as amended) Reg 41	Deliberately capture, injure or kill a great crested newt; deliberate disturbance of a great crested newt; deliberately take or destroy its eggs; or damage or destroy a breeding site or resting place used by a great crested newt.	Licences issued for development by Natural England.
Great crested newt: National protection	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb it in such a place.	A licence is required from Natural England for surveying and handling.
Adder, common lizard, grass snake slow worm	Wildlife and Countryside Act 1981 S.9(1) and S.9(5)	Intentionally kill or injure any common reptile species.	No licence is required. However, an assessment for the potential of a site to support reptiles should be undertaken.
Scientific Interest (SSSI)	Wildlife and Countryside Act 1981 (as amended)	To carry out or permit to be carried out any potentially damaging operation. SSSIs are given protection through policies in the Local Development Plan.	Owners, occupiers, public bodies and statutory undertakers must give notice and obtain the appropriate consent under S.28 before undertaking operations likely to damage a SSSI. All public bodies to further the conservation and enhancement of SSSIs.

Species	Legislation	Offence	Licensing
County Wildlife Sites	There is no statutory designation for local sites.	Local sites are given protection through policies in the Local Development Plan.	Development proposals that would potentially affect a local site would need to provide a detailed justification for the work, an assessment of likely impacts, together with proposals for mitigation and restoration of habitats lost or damaged.