

6 Natural heritage

Introduction

- 6.1 Terence O'Rourke Ltd was commissioned to assess the ecological impact of the proposed development. This chapter describes and evaluates the current nature conservation interest of the site and assesses its potential to support protected and notable species. Where the proposed development is likely to have significant adverse effects on habitats and species, appropriate mitigation measures have been incorporated into the design.

Legislation and policy

- 6.2 The following legislation and guidance documents will be of relevance to the proposed works. Full details of statutory obligations with respect to biodiversity and the planning system can be found in DEFRA Circular 01/2005.
- The Conservation of Habitats and Species Regulations (2010)
 - The Wildlife and Countryside Act 1981 (as amended)
 - The Countryside and Rights of Way Act 2000
 - The Protection of Badgers Act 1992
 - Wild Mammals (Protection) Act 1996
 - Hedgerow Regulations 1997
 - The UK Biodiversity Action Plans (UK BAP), and the Cambridge Biodiversity Action Plans (LBAP)
 - Institute of Ecology and Environmental Management (IEEM) guidelines on ecological impact assessment (IEEM, 2006)
 - Planning Policy Statement (PPS) 9: Biodiversity and geological conservation
 - Paragraphs 168 and 169 of the draft National Planning Policy Framework (July 2011)
- 6.3 The Localism Bill was enacted in November 2011, thereafter becoming the Localism Act. Different parts of the Act will, however, come into effect at different times over the coming months. The Act enables Regional Spatial Strategies, including the East of England Plan, to be abolished, but this will be undertaken by statutory order by the government in due course (it is currently understood that this will be around March / April 2012), subject to consultation. Whilst the East of England Plan remains part of the development plan until it is formally abolished, the government has advised that the proposed abolition of Regional Spatial Strategies should be regarded as a material consideration by local planning authorities when deciding planning applications. It should therefore be afforded limited weight in the determination of this planning application.
- 6.4 Policy NE/6 of South Cambridgeshire District Council's adopted *Development Control Policies Development Plan Document* (2007) relates to the protection

and enhancement of biodiversity, while policy NE/7 relates to the protection of sites of biodiversity or geological importance. South Cambridgeshire District Council's adopted *Northstowe Area Action Plan* (2007) also includes policies relating to natural heritage. Policy NS/16 requires the protection and enhancement of existing biodiversity features, while policy NS/17 covers the creation of new biodiversity features. The council's adopted *Biodiversity Supplementary Planning Document* (2009) expands on these policies and seeks to ensure that biodiversity is adequately protected and enhanced throughout the development process.

Methodology

Baseline

- 6.5 A combination of a desk study and a suite of ecological field surveys have been used to provide the baseline information on which this assessment has been based. The references and data sources used in the assessment are set out in table 6.1.
- 6.6 The desk study entailed a collation of records obtained from internet sources Multi-Agency Geographical Information for the Countryside (MAGIC) and the National Biodiversity Network (NBN), along with records from Cambridge and Peterborough Environmental Records Centre (CPERC). CPERC provided records of protected and notable species and non-statutory wildlife sites within a 5 kilometre radius of the proposed development.

Table 6.1: References and data sources

JNCC, 1990, Handbook for Phase 1 habitat survey
English Nature, 2001, Great Crested Newt Mitigation Guidelines
Bat Conservation Trust, 2007, Bat Surveys – Good Practice Guidelines
Foster, G.N and Eyre, M.D. 1992, Classification and ranking of water beetle communities in Britain. JNCC
Gent, A.H. and Gibson, S.D., eds., 1998, Herpetofauna worker's manual. Joint Nature Conservation Committee, Peterborough
Gilbert, G., Gibbons, D.W. and Evans, J. 1998, Bird Monitoring Methods. RSPB
Holt, C., Austin, G., Calbrade, N., Mellan, H., Mitchell, C., Stroud, D., Wotton, S. and Musgrove, A. 2011, Waterbirds in the UK 2009/10. The Wetland Bird Survey. BTO, RSPB, WWT and JNCC.
Strachan, R. and Moorhouse, T., 2006, Water vole conservation handbook, second edition. Wildlife and Conservation Research Unit, Oxford
Ward, D., Holmes, N. and José, P., 1994, The new rivers and wildlife handbook. RSPB, NRA and The Wildlife Trusts
Foster, G.N. and Eyre, M.D., 1992, Classification and ranking of water beetle communities. UK Nature Conservation 1: 110pp
MAGIC website: http://magic.defra.gov.uk
National Biodiversity Network website: http://www.nbn.org.uk
Froglife (1999) Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Factsheet 10. Froglife, Halesworth

- 6.7 A suite of surveys were undertaken by WSP Environmental Ltd in 2007, and were used to determine which protected species surveys were required during

2011 to update the baseline conditions. These included an extended phase 1 habitat survey, amphibian, badger, bat, bird, invertebrate, reptile, water vole and otter surveys. The survey methodologies are summarised below, and full details are included in technical appendix C. The relevant 2007 reports produced by WSP Environmental are included in technical appendix C.

- 6.8 The extended phase 1 habitat survey was undertaken in July 2011. The survey was carried out in accordance with the methodology within the *Handbook for Phase 1 habitat survey* (JNCC, 1990). Habitats were mapped using colour codes and a direct search was undertaken for legally protected and invasive species of plant.
- 6.9 Great crested newt (*Triturus cristatus*) surveys were undertaken on waterbodies within a 500m radius of the site in accordance with the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). This recommends that a minimum of three survey techniques are employed, ideally bottle trapping, torch survey and egg search, and that at least two survey visits are undertaken between mid-April and mid-May.
- 6.10 Badger (*Meles meles*) surveys were undertaken during the initial phase 1 survey. Any evidence of badgers was recorded, including any setts, latrines, snuffle holes and tracks.
- 6.11 Bat activity, or transect, surveys were undertaken in accordance with the *Bat Surveys – Good Practice Guidelines* (Bat Conservation Trust, 2007). Transect surveys involved walking a pre-defined route, commencing at dusk, incorporating key areas that are likely to be important for foraging and / or commuting bats. A map illustrating the transect routes is provided in figure 6.1. Such areas include scrub, grassland and linear features such as hedgerows and woodland / scrub edge. In this case the transect routes were walked by three pairs of surveyors working simultaneously.
- 6.12 Presence / absence and dusk emergence and dawn re-entry bat surveys were undertaken on the golf course club house. An internal survey of the club house was conducted, directly searching for signs of bats, including droppings, feeding remains, staining and bats themselves. An external survey was also conducted, directly searching for evidence of bats along with suitable access points. Two dusk emergence surveys were undertaken and these commenced 30 minutes before sunset and continued for two hours after sunset. The dawn re-entry survey commenced two hours before sunrise and continued until at or shortly after sunrise. Any bats observed emerging from or re-entering the building were recorded, along with general activity in the vicinity of the club house.
- 6.13 The standard British Bird Survey methodology, as developed by the British Trust for Ornithology (BTO), was adopted. A set route was followed on three occasions during April, May and June 2011 to plot birds holding territory or showing other signs of breeding behaviour.

- 6.14 Macro aquatic invertebrate surveys were conducted on seven ponds. The ponds were selected on the basis of a previous survey undertaken by Norfolk Wildlife Services in 2006. The ponds achieved a Species Quality Score (SQS) of 2.0 or higher, which according to the assessment methodology developed by Foster and Eyre (1992) represents a good site in terms of invertebrate richness. The waterbodies were sampled in July 2011 using a standard pond net, and emergent vegetation was sampled using a sweep net. Ponds were sampled for a maximum of one hour.
- 6.15 Butterfly surveys were undertaken across the site following a pre-defined transect route in accordance with the methodology used by the UK Butterfly Monitoring Scheme. Three visits were made, recording any species present.
- 6.16 A moth survey was also undertaken to ascertain the presence or absence of the white-spotted pinion moth (*Cosmia difinis*), a UK BAP species that is known to occur in this area of Cambridgeshire. A moth trap was set on four separate occasions during suitable weather conditions, following guidance from the Butterfly Conservation Trust. The moth trap was placed in different locations across the primary development site on each occasion.
- 6.17 Presence / absence surveys for reptiles were undertaken in accordance with the *Herpetofauna Workers Guide* (Gent and Gibson, 1998). Reptile refugia were placed in areas of suitable reptile habitat, including scrub and grassland and along linear features such as hedgerows. A plan showing the location of the reptile refugia can be found in technical appendix C.
- 6.18 Water vole (*Arvicola amphibious*) and otter (*Lutra lutra*) surveys were conducted on ten ponds, Longstanton Brook and ditches within the site. The water vole surveys were undertaken in accordance with the *Water Vole Conservation Handbook* (Strachan and Moorhouse, 2006), whereby a direct search for signs of water vole was made. Signs may include latrines, feeding stations, burrows and footprints. Otter surveys were undertaken in accordance with the *New Rivers and Wildlife Handbook* (Ward et al., 1994), whereby a direct search for signs of otters was made. Signs of otter may include spraints, runs or slides to or from the waterbody, holts and footprints.
- 6.19 The scope and methodologies of all surveys undertaken were agreed with South Cambridgeshire District Council (SCDC).

Assessment of significance

- 6.20 The IEEM guidance (2006) is followed in assigning importance or value to a feature and in the assessment of the significance of effects. The value of a feature is assigned by IEEM to seven levels, from 'international' to 'within the immediate zone of the proposal only'. For the purpose of this assessment, international, national, regional / county / district and local levels are considered. To provide consistency with the approach used in other chapters of this ES, table 6.2 explains how the IEEM levels relate to the general Terence O'Rourke Ltd approach to assessment described in chapter 3 of this ES. In accordance with the IEEM guidance and its examples, the values set out

in table 6.2 are modified as appropriate, given local circumstances and context. The justification for selecting the level of significance is given for each feature in the assessment, but some comments on what is a comparatively recent method of assessment are given in the following paragraphs.

Table 6.2: Comparison of the IEEM and Terence O'Rourke Ltd approaches for assessing the importance / value of a receptor

IEEM guidelines	Terence O'Rourke Ltd approach
International	High
UK	High
National (England / Northern Ireland / Scotland / Wales)	High to medium
Regional	Medium
County / Metropolitan area	Medium
District / Unitary Authority / City / Borough	Medium
Local or Parish	Low

- 6.21 A nature conservation designation does not necessarily imply a level of effect significance. For example, if a county wildlife site is identified for the population of a particular species of bird, that population is considered to be of county importance; however, other features of the site may be less important. Similarly, legal protection at a national level, or the presence of a priority species or habitat in the UK BAP, does not always imply national importance. For example, in the case of badger this species is afforded legal protection to prevent illegal culling rather due to its scarcity. The mitigation required to meet legal obligations is provided as separate advice for protected species.
- 6.22 For each ecological feature, the effects of the proposed activities during and after construction are assessed and the type of impacts are characterised according to their extent, magnitude, duration, reversibility, timing, frequency and cumulative effects. The effect of the impact on the function of the ecosystem (its integrity), the quality and extent of the habitat or the population size of the species is predicted and an estimate made of the degree of uncertainty in the prediction. Mitigation and enhancement measures, if applicable, are described and the residual effect after these measures have been taken into account is quantified as accurately as possible.
- 6.23 In order to provide an assessment of the potential impacts that is comparable with the other chapters of this ES, a degree is given to each effect following protocols developed by Terence O'Rourke Ltd. Significance has been derived from two measures: the importance of receptors and the magnitude of change. These two sets of criteria are used together in the significance matrix to derive the generic definitions of the degree of potential effects. This process is set out in figures 6.2, 6.3 and 6.4. Where there is doubt over the appropriate degree of effect, for example where there is uncertainty about the full extent of the local resource (habitat area or population size), this is stated and as a precaution the higher degree of effect is applied.
- 6.24 The IEEM guidelines suggest that an effect is either ecologically significant or not. The Terence O'Rourke Ltd approach is a development of this and

determines significance based on the degree of the effect. The IEEM and Terence O'Rourke Ltd approaches are compared in table 6.3.

IEEM guidance	Terence O'Rourke Ltd approach
Significant	Very substantial
	Substantial
	Moderate
Not significant	Slight
	None

Baseline

Off site

- 6.25 The CPERC was contacted in 2002, 2003 and 2004, and these results were used to inform and to provide additional information in support of the field survey results. Statutory and non-statutory designated sites and the assessment of their importance are presented below.
- 6.26 There are no statutory designated sites within a 5 km radius of the site at Northstowe.
- 6.27 Mare Fen Local Nature Reserve (LNR) and County Wildlife Site (CWS) lie approximately 4 km to the north west of the site. It is managed by Cambridgeshire County Council as wet grassland meadow, which is grazed during the summer by cattle and allowed to flood during the winter. During the winter the reserve supports over-wintering wildfowl and waders, and during the spring and summer a range of aquatic plants is present, along with abundant reptiles and amphibians. The site is a receptor of medium (or county) importance.
- 6.28 Madingley Brick Pits CWS lies approximately 5 km to the south west of the site. The site comprises a small group of flooded pits surrounded by mature scrub and trees. The site supports a nationally rare liverwort and is important for invertebrates. The site is a receptor of medium (or county) importance.
- 6.29 Over Railway Cutting CWS lies approximately 2 km to the north west of the site. The CWS comprises a south facing slope, with dominant scrub and open areas of unimproved grassland with calcareous influences. Strong colonies of grizzled skipper (*Pyrgus malvae*), along with a wide range of other butterflies, have been recorded here. The site is of medium (or county) importance.
- 6.30 CPERC also provided records of great crested newt, water vole, adder (*Vipera berus*), bat species and badger within a 10 km radius of the site. These are all receptors of medium (or regional) importance.

On site

Vegetation

- 6.31 The site is composed of two separate areas and covers an area of 122 ha in total. Figures 6.5a and 6.5b show the results of the phase 1 habitat survey and the accompanying target notes can be found in technical appendix C. These areas include the primary development site and the Hatton's Road attenuation ponds area to the south. A summary of habitats recorded within these areas is provided below. Table 6.4 summarises the level of importance that can be attributed to each habitat that was encountered during the survey.
- 6.32 Amenity grassland forms the major habitat of the primary development site. The fairways and greens of the golf course are subject to intensive management and irrigation. This grassland is composed of species typical of a sown grass mix, such as perennial rye-grass (*Lolium perenne*), Yorkshire-fog (*Holcus lanatus*), and red fescue (*Festuca rubra*), with only a few herbaceous species such as white clover (*Trifolium repens*), black medick (*Medicago lupulina*) and dandelion (*Taraxacum officinale agg.*).
- 6.33 The Hatton's Road attenuation ponds area comprises arable fields that are intensely managed. Crops that have been cultivated here include wheat (*Triticum aestivum*) and barley (*Avena sp.*). Unmanaged field margins surround the crops and include false oat-grass (*Arrhenatherum elatius*), barren brome (*Anisantha sterilis*), annual meadow-grass (*Poa annua*), field bindweed (*Convolvulus arvensis*), creeping thistle (*Cirsium arvense*) and scentless mayweed (*Tripleurospermum inodorum*).
- 6.34 Improved grassland is present in fields to the north of the primary development site and adjacent to the Cambridgeshire Guided Busway. This improved grassland includes abundant Yorkshire-fog, yarrow (*Achillea millefolium*), frequent cock's-foot (*Dactylis glomerata*), creeping buttercup (*Ranunculus repens*) and occasional field scabious (*Knautia arvensis*) and common sorrel (*Rumex acetosa*). These areas are currently grazed and cut for hay.
- 6.35 An area of wet grassland in the south of the primary development site supports great willowherb (*Epilobium hirsutum*), horsetail (*Equisetum sp.*), meadow foxtail (*Alopecurus pratensis*), willow (*Salix sp.*) and bulrush (*Typha latifolia*).
- 6.36 Semi-improved grassland is present on the primary development site and along roadsides. Within the primary development site this habitat is not managed and species present include abundant false-oat grass, frequent Yorkshire-fog, yellow oat-grass (*Trisetum flavescens*), mugwort (*Artemisia vulgaris*), teasel (*Dipsacus fullonum*) and creeping cinquefoil (*Potentilla reptans*).
- 6.37 Small patches of woodland are also present across the primary development site. The woodland to the north of the small lake consists of alder (*Alnus glutinosa*), goat willow (*Salix caprea*) and crack willow (*Salix fragilis*). The

ground flora is sparse, with common nettle (*Urtica dioica*) and ivy (*Hedera helix*). Two small blocks of woodland adjacent to the southern boundary are present with oak (*Quercus robur*), sycamore (*Acer pseudoplatanus*) and elm (*Ulmus sp.*) being the abundant species. The ground flora is sparse with abundant common nettle, frequent creeping thistle and cleavers (*Galium aparine*).

- 6.38 Hedgerows across the site are predominately species poor. Hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) are the dominant species, with frequent field maple (*Acer campestre*), bramble (*Rubus fruticosus agg.*), dog rose (*Rosa canina agg.*), elder (*Sambucus nigra*) and elm. Ground flora associated with the hedgerows includes frequent false oat-grass, perennial rye-grass, Yorkshire-fog, and occasional common vetch (*Vicia sativa*), hogweed (*Heracleum sphondylium*), field bindweed (*Convolvulus arvensis*) and dove's-foot crane's-bill (*Geranium molle*).
- 6.39 Scattered trees across the site include abundant mature oak and ash (*Fraxinus excelsior*), with frequent field maple, elm and occasional sycamore and crack willow. Young trees have been planted across the primary development site dividing fairways and include willow, poplar (*Populus sp.*), silver birch (*Betula pendula*), pine (*Pinus sp.*), lime (*Tilia x europaea*) and coniferous species.
- 6.40 Scrub habitat is present across the site, with dominant bramble, hawthorn, blackthorn and elder.
- 6.41 Tall ruderal vegetation was recorded on the primary development site along a mound of disturbed soil. Species present include frequent bristly oxtongue (*Picris echioides*), teasel, creeping thistle, mugwort, rosebay willowherb (*Chamerion angustifolium*) and common nettle.
- 6.42 A small patch of the invasive species Japanese knotweed (*Fallopia japonica*) was noted within the tall ruderal habitat on the primary development site.
- 6.43 Wet and dry ditches are present across the entire site. The majority of the ditches across the primary development site are seasonal drainage ditches that support grassland and ruderal species, including false oat-grass, Yorkshire-fog and bristly oxtongue. Wet ditches are also present and support aquatic vegetation including brooklime (*Veronica beccabunga*), fool's water-cress (*Apium nodiflorum*) and hard rush (*Juncus inflexus*).
- 6.44 Longstanton Brook runs through the Hatton's Road attenuation ponds area, to the south of the village. The brook was dry in sections at the time of the survey. Grassland habitat is present along the banks of the brook, including false oat-grass, cock's-foot, bristly oxtongue, great willowherb and teasel. The main species recorded within the brook's channel are fool's water-cress, false fox sedge (*Carex otrubae*) and hard rush.
- 6.45 A total of 27 ponds were recorded across the primary development site. The ponds varied in size and the majority had steep sided banks. Many of the smaller ponds were dry at the time of the survey. Vegetation within the ponds

includes rigid hornwort (*Ceratophyllum demersum*), bulrush, water mint (*Mentha aquatica*), amphibious bistort (*Polygonum amphibium*), false fox sedge and willow.

- 6.46 Areas of hardstanding are also present within the site and comprise roads, car park and gravel tracks. Abundant annual meadow-grass, perennial rye-grass and frequent ribwort plantain (*Plantago lanceolata*) and occasional scentless mayweed have begun to colonise these areas.

Table 6.4: Level of value of habitats recorded within the site

Receptor	Evaluation rationale	Value of receptor
Amenity grassland	This is a common habitat at local level that can support foraging birds and invertebrate species.	Local / low
Arable	Arable fields are common habitats that can support a range of invertebrates and bird species. Field margins can support a range of flora and fauna including reptiles.	Local / low
Improved grassland	This is a common habitat at local level that can support foraging birds and invertebrate species.	Local / low
Wet grassland	The wet grassland provides habitat for a number of species, including invertebrates, amphibians and reptiles.	Local / low
Semi-improved grassland	Semi-improved grassland provides habitat for a range of flora and fauna, including foraging bats, birds, invertebrates, reptiles and amphibians.	Local / low
Woodland	Woodland provides habitat for a number of species, including foraging bats, nesting birds and a range of invertebrate and flora species. Small pockets of this habitat are common and widespread throughout Britain and Cambridge. No notable species were present.	Local / low
Hedgerow	This is a common habitat at local, county and national level, which can support a range of fauna and flora. The hedgerows on site lacked the species diversity associated with those protected under the Hedgerow Regulations 1997 or the UK BAP. Hedgerows do, however, provide potential foraging habitat for bats, invertebrates and birds, as well as providing suitable nesting habitat. This habitat provides connectivity to nearby and adjacent habitats.	Local / low
Scrub	Scrub vegetation provides potential foraging habitat for birds and invertebrates.	Local / low
Watercourses	This is a common habitat at local, county and national level, which can support a range of fauna and flora. Several ditches on site were dry at the time of survey, with only some holding water. This habitat provides connectivity to nearby and adjacent habitats.	Local / low
Ponds	This is a common habitat at local, county and national level, which can support a range of fauna and flora. A number of ponds across the golf course were dry at the time of survey.	Local / low
Japanese Knotweed	This species is highly invasive and out-competes native flora.	Regional / medium

Fauna

- 6.47 Areas of potential terrestrial habitat for great crested newts were identified across the site. In addition a total of 34 ponds were identified within the site boundary and within a 500 m radius of the site. A Habitat Suitability Index (HSI) assessment was conducted on 31 ponds; access was not possible to three of the ponds. Initially, two targeted great crested newt surveys were conducted on all ponds within the site boundary and four on ponds on third party land where access was possible. Following discussions with Rob Mungovan (South Cambridgeshire District Council), the survey effort was reduced, with a further two surveys conducted only on those ponds that were categorised as being good or excellent great crested newt habitat according to the HSI assessment (five ponds in total). No great crested newts were recorded in any of the ponds surveyed and therefore no further action has been recommended. Full details of the HSI can be found in technical appendix C.
- 6.48 Evidence of foraging badgers was recorded on the primary development site, with numerous tracks, snuffle holes and a latrine. One sett with three entrance holes was also recorded on the primary development site. No evidence of badger was recorded on the Hatton's Road attenuation ponds area, although several mammal tracks were present. The location of the sett is the same as one recorded in this area during previous surveys undertaken by WSP. These were, however, characteristic of fox (*Vulpes vulpes*) and rabbit (*Oryctolagus cuniculus*). Figure 6.6 illustrates the location of badger evidence recorded.
- 6.49 The club house was identified as holding high potential for roosting bats, due to the numerous gaps present around the eaves and barge boards and beneath the tiles. An internal survey identified that bats have used the club house to roost. Approximately 70 medium-sized bat droppings characteristic of long-eared bats (*Plecotus* sp) were recorded around the loft hatch above the living quarters. Approximately 20 small bat droppings characteristic of pipistrelle bats were also recorded at the apex on the north west gable end around a hole, and a further 20 droppings were recorded on the wall and within cobwebs beneath the hole.
- 6.50 Phase 2 bat surveys of the club house revealed a total of eight common pipistrelle (*Pipistrellus pipistrellus*) bats emerging on 28 July 2011. Two emerged from the northern elevation through a hole in the brickwork and six emerged from beneath the barge board on the north western gable end towards the apex. Eight bats were also recorded emerging and re-entering the building on 3 and 4 August 2011 at the same locations. Results of the emergence and re-entry survey are provided in technical appendix C.
- 6.51 Potential bat foraging habitat was recorded across the site. The tables in technical appendix C provide the results for the transect surveys. Figure 6.7 shows the location of the recorded activity. A total of six species were recorded commuting and foraging across the primary development site. Species present were common pipistrelle, soprano pipistrelle (*Pipistrellus pygmaeus*), Nathusius' pipistrelle (*Pipistrellus nathusii*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*) and suspected Daubenton's bat

(*Myotis daubentonii*). Important foraging and commuting areas include the northern, eastern and western tree and hedge boundaries, along the hedgerow north of the club house, around the dense areas of scattered trees in the centre of the site, and over the lake and several ponds.

- 6.52 A total of four bat species, common and soprano pipistrelle, noctule and suspected Natterer's bat (*Myotis nattereri*), were recorded foraging within the Hatton's Road attenuation ponds area. Commuting bats were recorded around the small holding outside of the site boundary, and along the main bridleway to the south west of the site boundary.
- 6.53 Nesting and foraging habitat for birds is present across the site. A total of 40 bird species were recorded on the primary development site, with 13 of these confirmed as breeding species. An additional nine species were considered likely to be breeding on site and four as possible. Four of the 13 species confirmed as breeding on the site are listed as Birds of Conservation Concern and three of these, song thrush (*Turdus philomelos*), linnet (*Carduelis cannabina*) and starling (*Sturnus vulgaris*), are UK BAP species.
- 6.54 A total of 24 species of bird were recorded on the Hatton's Road attenuation ponds area, with 13 of these confirmed as breeding species. Seven of the species are listed as Birds of Conservation Concern and five are UK BAP species. Full details of the bird surveys are included in technical appendix C.
- 6.55 Table 6.5 lists the Birds of Conservation Concern and UK BAP species recorded across the two sites.

Table 6.5: Conservation status of confirmed breeding bird species

Location	Species	Number of territories	UK BAP priority species	Birds of conservation concern
Primary development site	Willow warbler (<i>Phylloscopus trochilus</i>)	1	-	Amber
	Starling	1	UK BAP	Red
	Linnet	2	UK BAP	Red
	Song thrush	2	UK BAP	Red
Hatton's Road attenuation ponds area	Yellowhammer (<i>Emberiza citrinella</i>)	2	UK BAP	Red
	Duncock (<i>Prunella modularis</i>)	2	UK BAP	Amber
	Whitethroat (<i>Sylvia communis</i>)	3	-	Amber
	Reed bunting (<i>Emberiza schoeniclus</i>)	2	UK BAP	Red
	Yellow wagtail (<i>Motacilla flava</i>)	1	UK BAP	Amber
	Skylark (<i>Alauda arvensis</i>)	3	UK BAP	Red
	Linnet	1	UK BAP	Red

- 6.56 Two water beetles with a current status of Nationally Scarce¹ were recorded within ponds across the primary development site. One of these, *Berosus affinis*, was found in good numbers, while *Hygrotus nigrolineatus* was found in only one location. Two Nationally Scarce weevils were also recorded, one associated with brooklime and one with blue water-speedwell (*Veronica anagallis-aquatica*), both within the same pond. A soldierfly in the family *Odontomyia* was seen briefly but not identified to species level. This will have conservation significance, as all species in this family are of Red Data Book² status. Further details of the invertebrates recorded during the survey can be found in technical appendix C.
- 6.57 Aquatic invertebrate sampling in July is outside the optimum period, as some species of water beetle may be in a larval stage rather than adults. The survey work at Northstowe was commissioned after the optimum sampling period had passed. Sustained drought in spring and early summer meant that water levels were depleted and two of the ponds were completely dry at the time of survey.

¹ Nationally Scarce species are found in 16 to 100 ten km squares in the UK. This status replaces Nationally Notable A (those found in less than 30 ten km squares in the UK) and Nationally Notable B (species found in 31 to 100 ten km squares).

² Red Data Book invertebrates were formerly those found in 15 or fewer ten km squares in the UK. This status has now been replaced by various categories related to threat and decline.

- 6.58 A total of 14 species of butterfly were recorded across the primary development site and include red admiral (*Vanessa atalanta*), ringlet (*Aphantopus hyperantus*) and large skipper (*Ochlodes sylvanus*). Further details of these surveys can be found in technical appendix C.
- 6.59 Butterfly surveys on the Hatton's Road attenuation ponds area identified 11 species to be present, including meadow brown (*Maniola jurtina*), small skipper (*Thymelicus sylvestris*) and green-veined white (*Pieris napi*). Butterflies were recorded along the drainage ditches and along the bridle way within the south east of the site.
- 6.60 No white-spotted pinion moths were recorded during the survey. All moth species that were recorded are common and widespread and included ruby tiger moth (*Phragmatobia fuliginosa ssp.*), lunar underwing (*Omphaloscelis lunosa*) and setaceous Hebrew character (*Xestia c-nigrum*). Further details of these surveys can be found in technical appendix C.
- 6.61 Common lizards (*Zootoca vivipara*) were recorded across the primary development site and Hatton's Road attenuation ponds area. In addition, a grass snake (*Natrix natrix*) was recorded on the primary development site. Full results are provided in technical appendix C.
- 6.62 A maximum count of 61 common lizards was recorded on the primary development site, which represents an exceptional population, whilst the individual grass snake represents a low population (Froglife, 1999). A maximum count of eight common lizards was recorded on the Hatton's Road attenuation ponds area, which represents a good population. Their locations are provided in figure 6.8.
- 6.63 Potential habitat for water vole and otter is present across the site. However, no evidence of water vole or otter was recorded on the primary development site. A water vole burrow, latrine and feeding station was recorded within the Hatton's Road attenuation ponds area along Longstanton Brook. The results are provided in figure 6.9.
- 6.64 Evidence of brown rats (*Rattus norvegicus*) along with bank voles (*Myodes glareolus*), including burrows and latrines, were recorded along Longstanton Brook. Two mink (*Mustela vison*) scats were also noted along this stretch of the brook.
- 6.65 A comparison between survey results from WSP Environmental Ltd and Terence O'Rourke Ltd has been provided in technical appendix C.
- 6.66 Table 6.6 assesses the level of importance that could be attributed to each of the protected species that have been identified above.

Table 6.6: Level of value of protected species recorded on site		
Receptor	Evaluation rationale	Value of receptor
Badger	Evidence of badger activity and a sett was recorded using the site. Badgers are widespread in England and are protected under the Protection of Badger Act.	Regional / medium
Bats	Small numbers of common, soprano and Nathusius' pipistrelle bats, along with noctule, serotine and suspected Daubenton's and Natterer's bats use the site as foraging habitat. All bat species are legally protected under the European Habitats Directive and as a signatory to the Bonn Convention the UK is also required to protect their habitats. In addition, soprano pipistrelle and noctule are priority BAP species. Common pipistrelle bats were also recorded roosting within the club house.	Regional / medium
Birds	Breeding birds were recorded across the site, including birds listed as Birds of Conservation Concern. Eight of these, song thrush, skylark, linnet, yellowhammer, dunnock, reed bunting, yellow wagtail and starling are UK BAP species.	Regional / medium
Invertebrates	A number of invertebrates, including butterflies and moths, were present across the site. Two nationally scarce water beetles and weevils were recorded within ponds on the primary development site, along with a soldier fly that is listed as a Red Data Book species.	Regional / medium
Grass snake and common lizard	Exceptional and good populations of common lizards are present across the site, with low populations of grass snakes. Reptiles are protected under domestic legislation and are all priority BAP species.	Regional / medium
Water vole	Evidence of water voles was found along Longstanton Brook, which runs through part of the site. This is a UK BAP species.	Regional / medium

Effects during construction

On site

Vegetation

- 6.67 Construction activity is anticipated to commence in late 2012 / early 2013. Details of the proposed construction timetable are set out in chapter 2. During the construction period the primary impacts will be direct loss of habitat, disturbance (both visual and from noise), creation of dust and possible contamination of nearby watercourses through accidental pollution incidents.
- 6.68 Construction on the primary development site and Hatton's Road attenuation ponds area will result in the loss of amenity grassland, arable and small pockets of improved grassland, wet grassland, semi-improved grassland, woodland, hedgerow, scrub, ruderal and watercourses. There is also potential that land take of these habitat would impact upon badgers, bats, birds, invertebrates, reptiles, including grass snake and common lizard, and water voles.

- 6.69 Site preparation work will result in the loss of 61.71 ha of amenity grassland. This habitat comprises common and widespread species and is of limited botanical value, although it does provide foraging habitat for birds, mammals and invertebrates. This habitat is considered to be of low importance. The magnitude of change will be large and the unmitigated adverse effect is assessed as being moderate and significant.
- 6.70 There will be a loss of 2.58 ha of improved grassland. This habitat is of limited botanical value and is grazed by both rabbits and cattle. This habitat is considered to be of low importance, whilst the magnitude of change will be large. The unmitigated adverse effect is assessed as being moderate and significant.
- 6.71 Site preparation works will result in the loss of 14.59 ha of semi-improved grassland. This grassland contains common and widespread species and provides nesting and foraging habitat for birds, reptiles, mammals and invertebrates. This habitat is considered to be of low importance, and the magnitude of change will be large. The overall unmitigated adverse effect is assessed as moderate and significant.
- 6.72 Site preparation work will also result in the loss of 24.4 ha of arable land. This habitat contains common and widespread species and provides potential nesting and foraging habitat for a variety of birds, mammals and invertebrates. This habitat is considered to be of low importance. The magnitude of change will be large. The unmitigated adverse effect is assessed as being moderate and significant.
- 6.73 Although there will not be any direct loss of the wet grassland habitat to land take, it has the potential to be indirectly affected through dust deposition and pollution incidents. The 0.44 ha of wet grassland habitat is of low botanical interest; however, it does provide potential habitat for birds, reptiles and invertebrates. This habitat is considered to be of low importance. The magnitude of change will be small and the overall unmitigated adverse effect is assessed as being slight and not significant.
- 6.74 Although there will be no direct loss of the woodland habitat to land take, it has the potential to be indirectly affected through dust deposition and pollution incidents. The 0.55 ha of woodland comprises common and widespread species and provides nesting and foraging habitat for birds, mammals and invertebrates. The woodland also provides bat foraging habitat within the site. This habitat is considered to be of low importance, whilst the magnitude of change will be small. The overall unmitigated adverse effect is assessed as being slight and not significant.
- 6.75 There will be a loss of approximately 2,208 m of hedgerow during the construction period which equates to 45% of the existing hedgerows on site. The hedgerows on site comprise common and widespread species and provide foraging habitat for bats, invertebrates and birds, as well as providing suitable bird nesting habitat. These hedgerows also provide connectivity to nearby and adjacent habitats. This habitat is considered to be of low importance and the

magnitude of change will be large. The overall unmitigated adverse effect is assessed as being moderate and significant.

- 6.76 Scattered trees are present within the site and many of these, particularly the immature specimens that are present in central areas of the primary development site, will be lost to the proposed development. The predicted magnitude of change to these receptors of low importance will be large, resulting in an unmitigated adverse effect that is moderate and significant.
- 6.77 Site preparation work will also result in the loss of 0.08 ha of scrub. This habitat is composed of common and widespread species and is of limited botanical value, although it does provide nesting and foraging habitat for birds, mammals and invertebrates. It is also likely to provide habitat for foraging bats within the site. This habitat is considered to be of low importance, whilst the magnitude of change will be large. The overall unmitigated adverse effect is assessed as being moderate and significant.
- 6.78 There will be a loss of 2.17 ha of ruderal vegetation through site preparation work. This habitat consists of common and widespread species and is of limited botanical value. It does, however, provide some potential for foraging birds and mammals. This habitat is considered to be of low importance whilst the magnitude of change will be medium. The overall unmitigated adverse effect is assessed as being slight and not significant.
- 6.79 The seasonal ditches that lie within the primary development site will be lost during the construction phase. These waterbodies are of low importance and the magnitude of change will be large, resulting in the overall unmitigated adverse effect being moderate and significant.
- 6.80 The ditches that form the western and eastern boundary of the primary development site and the lake will be retained within the design of the redevelopment. The ditches are assessed as being of local importance due to their function within the landscape providing connectivity between sites for reptiles, amphibians and mammals. Their tree-lined nature means they are also used as commuting and foraging habitat for bats. The lake is assessed as being of local or low importance. Although this will not be lost to land take, there is the potential for indirect effects through contamination from dust deposition, spilt and leached materials or through sedimentation caused by run-off. These waterbodies are assessed as being of low importance and the potential magnitude of change, if unmitigated, could be large. The overall adverse effect can therefore be assessed as being moderate and significant.
- 6.81 The seasonal ditches that lie within the Hatton's Road attenuation ponds area will partially be lost. In addition, a stretch of Longstanton Brook within this area will be diverted. These ditches are of low importance whilst the magnitude of change will be large, resulting in the overall unmitigated adverse effect being moderate and significant.
- 6.82 All ponds across the primary development site will be lost during the construction phase. These ponds are seasonally dry and are of low importance.

The magnitude of change will be large, resulting in the overall unmitigated adverse effect being moderate and significant.

- 6.83 Features of nature conservation interest will be incorporated within the soft-landscaping of the development, including the creation of balancing ponds, ditches and planting of native trees and shrubs. These will provide foraging and nesting opportunities for a range of birds and mammals and provide potential habitat for invertebrates, amphibians and reptiles. These features are considered to be of local, or low, importance and the magnitude of change is considered to be medium. This will result in an adverse effect that is moderate and significant.
- 6.84 A stand of Japanese knotweed, of approximately four square metres, is present on the primary development site. This species is a receptor of medium importance as it is listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Unmitigated, the magnitude of change could be large due to the potential for this highly invasive species being spread through soil movement within the site. The overall unmitigated adverse effect can therefore be assessed as being substantial and significant.

Fauna

- 6.85 Groundworks associated with construction of the new formal recreation / sports grounds have the potential to disturb badgers through noise and vibration whilst occupying their sett, which is located approximately 20 m from the proposed sports ground. There is also the possibility that existing sett entrances may become blocked and badgers may become trapped, or trapped within open pits or trenches if left uncovered during construction work.
- 6.86 The development on the primary development site will result in the loss of habitat used by foraging badgers. Badgers are considered to be a receptor of medium importance. The magnitude of change if unmitigated could be large and the overall adverse effect can therefore be assessed as being substantial and significant.
- 6.87 The club house on site supports a non-breeding summer roost for common pipistrelle bats, which will be demolished during the construction phase. Bats are an ecological receptor of medium importance and the magnitude of change, if unmitigated, would be large and therefore the overall unmitigated adverse effect is assessed as being substantial and significant.
- 6.88 The primary development site was confirmed to provide foraging and commuting habitat for six species of bat, with four species of bat using the Hatton's Road attenuation ponds area. There will be some loss of bat foraging habitat with areas of grassland and scrub being utilised by the bats. Bats are an ecological receptor of medium importance, whilst the magnitude of change in terms of the loss of bat foraging habitat is considered to be medium. The overall unmitigated adverse effect is assessed as being moderate and significant.

- 6.89 The primary development site was confirmed to support habitat for nesting and foraging birds. A total of 13 species were confirmed to be breeding on the site, including four species of Conservation Concern, three of which were also UK BAP species, including starling, song thrush and linnet. There will be a loss of both foraging and nesting habitat during construction. The proposed development will result in the redistribution of the local breeding population. Birds are an ecological receptor of medium importance, whilst the magnitude of change if unmitigated will be large. Therefore the overall adverse effect can be assessed as being substantial and significant.
- 6.90 Work on the Hatton's Road attenuation ponds will lead to the loss of foraging and nesting habitat used by 24 species of birds, including 13 confirmed as breeding, including three pairs of skylark. Given the extent of arable habitat surrounding this site, it is predicted that birds will disperse to suitable surrounding habitat. Birds are a receptor of medium importance, whilst the unmitigated magnitude of change is considered to be large. This will result in an adverse effect that is substantial and significant.
- 6.91 Noise generated through the construction phase will impact upon bird populations. Breeding birds are likely to suffer disturbance as a result of unpredictable and repetitive noises during the construction process. The magnitude of change will be medium and the adverse effect, if unmitigated, will be moderate and significant.
- 6.92 Habitat across the primary development site that is important for invertebrates will be lost during the construction phase. Two nationally scarce water beetles and two weevils were recorded within ponds, along with a soldier fly that is listed as a Red Data Book species. These ponds will be lost to the development and the predicted magnitude of change is considered to be large to these receptors of medium importance. The overall adverse effect will therefore be substantial and significant if unmitigated.
- 6.93 Two species of reptile, common lizard and grass snake, were recorded on both parts of the site. Substantial areas of reptile habitat will be lost during the construction phase, including 17.17 ha of semi-improved and improved grassland and 0.08 ha of scrub. Common lizards and grass snakes are ecological receptors of medium importance. The magnitude of change is considered to be large and the overall adverse effect is considered to be substantial and significant if unmitigated.
- 6.94 Water voles were recorded along a stretch of ditch on the Hatton's Road attenuation ponds area, which will be diverted to facilitate the excavation and creation of the attenuation ponds. Water voles are ecological receptors of medium importance. The magnitude of change is considered to be large and the overall unmitigated adverse effect is considered to be substantial and significant.

Effects post-construction

Off site

- 6.95 The scoping response from Natural England identified the potential for impacts arising from approximately 1,500 residential units on the RSPB reserve at Fen Drayton, Coton Country Park and Wicken Fen (National Trust). Natural England suggested that there would be an increase in the use of sites such as the Mare Fen LNR and CWS for recreational purposes by inhabitants of the new development.
- 6.96 Wicken Fen is located approximately 27 km from Northstowe by road. Given the nature of the roads it is a journey of approximately 40 minutes to reach the reserve. The reserve itself has a large pay and display surfaced car-park with capacity for approximately 50 cars, and additional overflow parking in the picnic area. There is a small charge for parking (£2 per car) and for access to parts of the reserve a permit is required.
- 6.97 The reserve is sign-posted from the A10 and within Wicken and is clearly set up to cater for visitors with a visitor's centre, cycle hire and café. The reserve can also be accessed from public rights of way. It is considered unlikely that significant numbers of residents from Northstowe would use the reserve on a regular basis for recreation given the travel time involved. The reserve is clearly designed to cope with large numbers of visitors and a slight increase associated with people making occasional visits from Northstowe is unlikely to have any significant effect.
- 6.98 Coton Country Park is located approximately 13km from Northstowe and is accessible from junction 13 of the M11. The park lies to the south of the village of Coton although it is not sign-posted from the village. There is a large surfaced car-park along Coton Road with space for approximately 20 cars, small pull-ins along this road also provide limited parking opportunities.
- 6.99 The country park provides a range of way-marked walks around arable fields adjacent to the M11. The noise from the M11 is a constant feature of this site. The reserve is bordered on the western side by a military firing range. There is little to suggest that, apart from attending events, there would be much to draw inhabitants from Northstowe to this reserve on a regular basis. There is ample opportunity for walks across arable land in the immediate proximity of the proposed development, using public rights of way that would provide a very similar experience to visiting Coton. As such it is not considered that the proposed development at Northstowe will lead to a significant increase in visitors at this site.
- 6.100 Madingley Brick Pits CWS is located in the grounds of Madingley College. There is no obvious access to the area although public access to the grounds of the college may be allowed. Part of the site is bordered by residential housing. Given the small size of this site and its location it is unlikely to attract visitors from Northstowe. An area of newly planted woodland (controlled by Cambridge University) is located nearby, adjacent to the A428. No significant

effect on Madingley Brick Pits is predicted as a result of the proposed development.

- 6.101 Fen Drayton RSPB reserve is located approximately 7 km by road from Northstowe, this site also has a request stop on the Cambridgeshire Guided Busway so would be easily accessible by public transport. The reserve is an area of reclaimed gravel works, with a network of footpaths and viewing hides and screens. Some of the pits are also used for fishing.
- 6.102 The reserve is accessible via a long access track (c1.7km) with a large car-park providing space for approximately 40 cars. A much smaller car-park with disabled access is also provided. There is also clearly a degree of parking by visitors outside of the designated car parks as the width of the road allows for cars to be parked along the entrance track. The reserve is sign-posted from Swavesey. A variety of way-marked trails, footpaths and bridleways allow access to the reserve. The majority of tracks within the reserve, although level, are not surfaced.
- 6.103 The reserve is used for a range of recreational activities including bird-watching, fishing, horse-riding, cycling and dog-walking. Given the proximity of the reserve to Northstowe and its accessibility via public rights of way, public transport and by car it is considered likely that the development will lead to an increase in visitor numbers at this site.
- 6.104 It is not considered that any increase in visitor numbers would have a significant impact on the nationally important number of birds wintering at this site. Species such as gadwall (*Anas strepera*) and coot (*Fulica atra*) (which often feed together) are unlikely to be affected as they spend much of their time feeding in open water and would be largely unaffected by any increases in recreational activity around the periphery of the lakes.
- 6.105 The site also supports nationally important numbers of ruff (*Philomachus pugnax*) and internationally important numbers of black-tailed godwit (*Limosa limosa*) during the winter (based on wintering numbers between 2005/06 – 2009/10). Both species generally feed on shallow lagoons or flooded grassland, nearly all of which is inaccessible to the public at Fen Drayton because of the network of ditches and drains. It is not considered that an increase in recreational use of the public rights of way and trails within the site would have a significant effect on either of these species.
- 6.106 A similar RSPB reserve, Ouse Fen, lies to the north of Fen Drayton. This reserve is a partnership with Hanson and although lacking in car-parking facilities is readily accessible via public rights of way. The site is already used by locals and is likely to become more attractive to visitors as facilities develop over time.
- 6.107 Mare Fen LNR and CWS is contiguous with Fen Drayton reserve and can be accessed via public rights of way around Over or through the reserve. There is no recognised parking provision for Mare Fen around Over. Access is limited to existing public rights of way. Given the reserve is located approximately

four kilometres to the north west of the site with poor access by car it is unlikely to experience a significant increase in recreational use. The predicted magnitude of change to this receptor of medium importance is negligible. The significance of effect is therefore negligible.

- 6.108 Further details on these sites can be found in technical appendix C.
- 6.109 Scoping responses from Natural England and the RSPB also identified the potential for waste water containing high levels of nitrogen and phosphorus, or pollution events, to affect the Ouse Washes Special Protection Area / Special Area of Conservation / Site of Special Scientific Interest via the Uttons Drove Sewage Treatment Works. The treatment of waste water and impacts of the proposed development on hydrology have been considered in chapter 11 of the ES. This concludes that the upgrade measures to be implemented by Anglian Water will be sufficient to ensure the proposals have no adverse impacts on the watercourses draining into the Ouse Washes.

On site

- 6.110 On completion of construction there will be an increase in hardstanding and road surfaces. Waterbodies across the site are receptors of low importance; however, without mitigation there will be an increase in surface water run-off rates and also the potential contamination of this run-off. This will result in a medium magnitude of change, resulting in an unmitigated adverse effect that will be slight and not significant.
- 6.111 The field surveys identified that most badger activity on the primary development site was to the west of the site, with mammal tracks also noted around the site boundary. The majority of these areas will remain as public open space adjacent to residential dwellings. The proposed development will result in increased disturbance levels from the recreational use of the site and dog walkers. In addition, there will be an increase in traffic, which increases the potential for badgers to be involved in road traffic accidents. It is considered that these effects represent a medium magnitude of change on these receptors of medium importance, and the unmitigated adverse effect will be substantial and significant.
- 6.112 An increase in street lighting and security lighting on buildings (both commercial and residential) will have an effect on foraging and roosting bats. Pipistrelle bats were recorded foraging along hedgerows adjacent to lighting along the street. This species is not considered particularly sensitive to light; however, the relationship between bats' feeding activity and lights is not fully understood. Lighting that emits high levels of ultra-violet light, such as mercury lighting, attracts high numbers of insects in certain conditions compared to unlit areas. High insect numbers will attract bat species such as pipistrelles that feed by aerial hawking. Bat species are receptors of medium importance, and it is considered that lighting on site will have a medium magnitude of change. This will result in a substantial adverse effect, which is significant.

- 6.113 Brown long-eared bats (*Plecotus auritus*) and *Myotis* bats were also recorded foraging across the site. These species generally feed by gleaning insects off vegetation, avoiding well lit areas. It is therefore considered that lighting on site will have a large magnitude of change if left unmitigated, which will result in a substantial adverse effect that will be significant.
- 6.114 During the field surveys, the majority of breeding birds were confirmed to be present along the western boundary of the primary development site, which is to be retained within the design of the development. Additional bird nesting habitat has also been incorporated within the landscape design. The increase in residential housing will almost certainly increase the number of predators, particularly domestic cats. This will result in a small magnitude of change, which will have a moderate adverse effect on these receptors of medium importance and will be significant.
- 6.115 The increase in light levels across the site will impact upon breeding behaviour of birds. Lighting can cause male birds to begin mating calls earlier than normal and attract multiple breeding partners. Birds are receptors of medium importance, and it is considered that lighting on site will have a medium magnitude of change if left unmitigated. This will result in a substantial adverse effect, which is significant.
- 6.116 The lighting may also reduce suitable hunting habitat for owls. Birds are receptors of medium importance, and it is considered that lighting on site will have a medium magnitude of change if left unmitigated. This will result in a moderate adverse effect, which is significant.
- 6.117 There will be an increase in waste disposal, including food waste, as a result of the residential development. There is the potential for waste to attract species such as fox and brown rats, which could increase predation of bird species across the site. The magnitude of change will be small and the unmitigated adverse effect is moderate and significant.
- 6.118 The residential development will also result in an increase in numbers of predators of reptiles and birds, particularly domestic cats, but also dogs. Therefore there is likely to be a medium magnitude of change, which would result in a moderate adverse effect that is significant.
- 6.119 The proposed development, excavation and infrastructure will increase surface run-off, and could affect both water levels and quality. This may be of particular importance on the Longstanton Brook, which supports a population of water vole. Unmitigated, there would be a medium magnitude of change, which would result in a moderate adverse effect that is significant.

Mitigation

Construction mitigation

Vegetation

- 6.120 Site preparation works will result in the loss of 78.88 ha of species-poor amenity, improved and semi-improved grassland, all of which are receptors of low importance. However, there will be approximately 38.56 ha of new grassland habitats incorporated into the design of the proposed development. A natural hay meadow and wet grassland mix will be sown in these areas. Mixes such as EM3 – Special general purpose meadow mixture and EM8 – Meadow mixtures for wetlands sown at a rate of 4 g/m² will be used and can be obtained from www.wildseed.co.uk. An ecological management plan will be prepared for the site and this will include details on a cutting regime for this grassland, which will aim to create a varied sward height. Such grassland provides better nectar sources for invertebrates, hence is of greater value for foraging birds and also has potential as foraging habitat for reptiles and mammals. In addition, low intensity cutting of road verges and the edges of sport facilities will provide additional habitat. This will reduce the magnitude of grassland habitat loss from large to medium, which reduces the adverse effects to moderate and significant.
- 6.121 A total of 24.4 ha of arable land will be lost. On completion of the excavation and infilling, the site will be landscaped to provide open green space with attenuation ponds, small copses and a scrub and grassland mosaic. Although the arable land holds negligible botanical value, it provides potential habitat for foraging mammals and nesting and foraging birds. The newly designed open space will provide a small amount of replacement habitat for these species through the planting of cornfield annuals within the south eastern corner of the primary development site. This area will be rotavated and sown on an annual basis. However these measures will not reduce the magnitude of change to arable habitats, which remains large, adverse and significant.
- 6.122 Site preparation works will result in the potential for indirect effects, such as dust deposition and / or pollution incidents, on 0.44 ha of wet grassland and 0.55 ha of woodland. In order to safeguard these habitats a Construction Management Strategy (CMS) will be prepared prior to works commencing on site, a draft of which has been submitted in support of the application. This will set out a strategy to prevent or minimise the risk of dust deposition and pollution or contamination on these habitats. This will include, but will not be restricted to the following: materials, vehicles and fuels will be stored in a designated secure compound placed away from these habitats; diesel pumps and standing plant will be regularly maintained and drip trays will be used to prevent leaks; oil interceptors will be provided for discharges from any temporary oil storage or refuelling areas; spill containment equipment will be provided on the site and the site will be secure at all times to prevent vandalism; pollution control procedures will be developed in line with the Environment Agency's guidelines and appropriate training will be provided for all construction personnel; dampening of stock piles and surfaces and

implementing a speed limit to limit dust deposition. This will reduce the magnitude of change from small to negligible, resulting in reduction in the adverse effect to negligible and not significant.

- 6.123 Although no woodland will be lost through development, approximately 0.5 ha of small copses will be created on the Hatton's Road attenuation ponds area. These will comprise small blocks of native species, located away from the waterbodies to prevent shading. The ecological management plan will detail tree planting methods and management. Species such as ash, field maple, oak, hazel and hornbeam (*Carpinus betulus*) will be planted. A seed mix such as EW1 from Emorsgate will be sown within these areas. It will be sown at the recommended rate of 4 g/m² directly onto the soil. This will represent a small magnitude of change on a receptor of low importance. This will be a slight beneficial effect that will not be significant.
- 6.124 Although 2,205 m of hedgerow will be lost to facilitate the development, an equal amount of new hedgerow will be incorporated into the design through structural planting. A double hedgerow will be created along the western site boundary and hedgerows will also be planted throughout the residential areas, and along the southern site boundary adjacent to the SuDS. Native species that will be planted include hawthorn, blackthorn, crab apple (*Malus sylvestris*), wych elm (*Ulmus glabra*), rowan (*Sorbus aucuparia*), guelder-rose (*Viburnum opulus*), ash, oak, field maple and hazel (*Corylus avellana*). The provision of these replacement hedgerows will reduce the magnitude of change in the long term from large to small, resulting in a mitigated adverse effect that is slight and not significant.
- 6.125 Scattered trees will be lost across the site to facilitate the residential dwellings. A mixture of native trees and shrubs will be planted within landscaped areas. Native tree and shrub planting will include fruiting shrubs such as crab apple, elder and apple to provide sources of food for invertebrates and for badgers. Other trees species to be incorporated will include oak, ash, field maple and hawthorn. A 30 m wide green space containing footpaths and SuDS will be planted with an avenue of trees. The magnitude of change as a result of tree loss will be reduced from large to small and the mitigated adverse effect is considered to be slight and not significant.
- 6.126 During construction, 0.08 ha of scrub habitat will be lost. A mosaic of scrub covering 1.08 ha will be planted within the primary development site, and within the Hatton's Road attenuation ponds area. A scrub and grassland mosaic will be created within the south western corner of the primary development site and along the eastern boundary of the residential dwellings parallel to the Cambridgeshire Guided Busway. This will ensure there is suitable habitat for birds, bats and badgers across the site. A mixture of native species, including hawthorn, blackthorn, elder (*Sambucus nigra*), wych elm (*Ulmus glabra*) and hazel, will be planted and bramble will be allowed to colonise these areas. This mitigation will reduce the magnitude of change from large to negligible resulting in a negligible adverse effect that is not significant.

- 6.127 Although approximately 3,215 m of seasonal ditches will be lost to the development, approximately 2,986 m of linear waterbodies will be incorporated into the soft landscaping (figure 6.10). These will have profiled edges to incorporate a shelf for marginal planting and to maximise potential burrowing habitat for species such as water and bank vole. The native species listed in table 6.7 will be planted on the profiled shelves at the recommended relative proportions. The ditches will also be subject to a rotational management regime, which will aim to create a varied structure of vegetation, prevent drying from siltation and manage levels of litter and other debris. The details of this will be presented in a five year ecological management plan for the site. This will reduce the predicted magnitude of change to ditch habitats from large to small, resulting in a reduction of the adverse effect from moderate to slight and not significant.

Table 6.7: Wetland species to be planted

Common name	Scientific name	Proportion
Hairy sedge	<i>Carex hirta</i>	5
Greater tussock sedge	<i>Carex paniculata</i>	5
Hemp agrimony	<i>Eupatorium cannabinum</i>	5
Yellow iris	<i>Iris pseudacorus</i>	10
Sharp-flowered rush	<i>Juncus acutifloris</i>	5
Soft-rush	<i>Juncus effusus</i>	5
Gypsywort	<i>Lycopus europaeus</i>	5
Yellow loosestrife	<i>Lysmachia vulgaris</i>	5
Purple loosestrife	<i>Lythrum salicaria</i>	5
Water mint	<i>Mentha aquatica</i>	5
Common reed	<i>Phragmites australis</i>	10
Common fleabane	<i>Pulicaria dysenterica</i>	5
Water figwort	<i>Scrophularia auriculata</i>	5
Unbranched bur-reed	<i>Sparganium emersum</i>	5
Blue water-speedwell	<i>Veronica anagallis-aquatica</i>	10
Brooklime	<i>Veronica beccabunga</i>	10

- 6.128 Waterbodies that are to remain within the design of the site will be protected from accidental damage through the measures that will be included within the CMS, as detailed in paragraph 6.122. This mitigation will reduce the magnitude of change to negligible and the mitigated adverse effect to negligible and not significant.
- 6.129 There will be partial loss of ditches on the Hatton's Road attenuation ponds area, including the diversion of part of Longstanton Brook. This diversion will be enhanced once the excavation and infilling is complete, and will be profiled, planted and managed as described in paragraph 6.127 (figure 6.10). This, in combination with the new linear waterbodies described in paragraph 6.127 will result in a medium magnitude of change resulting in a moderate, beneficial, significant effect from these measures.
- 6.130 Although all ponds except the lake across the primary development site will be lost to the development, new balancing ponds are to be created into the design of the proposed development and these will provide habitats for a wide variety

of species, including invertebrates, amphibians, birds and mammals. A cluster of six ponds ranging from 2 m² to 15 m² and varying in profile will be created within the south western corner of the site (figure 6.10). Six ponds will also be created in a linear design with connecting overflow ditches along the eastern boundary. A range of sizes and depths from 30 cm to 2 m will be provided. A second cluster of six ponds will also be created in the south eastern corner of the site. The planting of species such as blue water-speedwell and brooklime will provide like for like habitat for two nationally scarce weevils that are associated with these species and were recorded in ponds on the golf course during the field surveys. Species that can be used to enhance these waterbodies are listed in table 6.7, along with their relative proportions. The banks of the balancing ponds will be profiled to incorporate a variety of gradients, including gently sloping banks, shelves and vertical banks. The ponds will also be subject to management conducive to optimising potential for wildlife and the details of this will be presented within the ecological management plan.

- 6.131 The balancing pond on the primary development site and the Hatton's Road attenuation ponds will be designed to attract wildlife through the creation of reedbeds. Shallow waters will be created along the edge between 1 and 10 cm deep. Small floating islands will also be incorporated into the design to provide a breeding habitat for birds (figure 6.10).
- 6.132 The lake, which is to be retained within the design of the development, will also be subject to ecological enhancement and management, the details of which will be included within the ecological management plan. Measures will include the planting and management of marginal vegetation.
- 6.133 Both the lake and balancing pond on the primary development site and the larger of the Hatton's Road attenuation ponds will be designed to incorporate a kingfisher (*Alcedo atthis*) bank. A hollow concrete structure filled with a low density mortar to resemble packed sand along a bank will be provided and covered with soil and plant debris to encourage breeding populations onto the site.
- 6.134 Areas of grassland between the development area and the ponds in the eastern side of the site will be terraced, allowing wetter and drier grassland communities to form in close proximity to each other. Ridge and furrow will be created around the Hatton's Road attenuation ponds.
- 6.135 Collectively, the proposed pond creation and management of the retained lake will reduce the magnitude of change from large to small, reducing the mitigated adverse effect from moderate to slight and not significant.
- 6.136 The stand of Japanese knotweed on site is not considered to be an overriding constraint to the proposed development, but a control strategy will be needed prior to site clearance, allowing sufficient time for implementation. This invasive species is considered to be detrimental to the native flora and may affect the integrity of the development. An eradication programme will therefore be implemented by a specialist sub-contractor following the

Environment Agency's Code of Practice. As this area of the site will form part of the new informal open space, the stands will be removed and taken to landfill. A method statement will be prepared detailing the eradication programme for the Japanese knotweed. In addition, the presence of the stand of Japanese knotweed will be incorporated within the CMS and construction traffic, machinery and personnel will be strictly forbidden from entering an area within a 7 m radius of the stand of knotweed. Herras fencing will be provided to prevent movement into this area. This will ensure that this invasive species is not spread throughout the site from accidental contact. The implementation of a programme of eradication will reduce the magnitude of change from large to negligible, reducing the adverse effect from substantial to negligible and not significant.

Fauna

- 6.137 The outlier badger sett has been retained within the design of the proposed development, although there is some potential for groundworks relating to the creation of the sports / recreation grounds to occur within 20 m of the sett, which would result in disturbance to badgers. A temporary sett closure is therefore required prior to construction works. A Natural England licence will be required to facilitate this closure. In order for the sett to be temporarily closed a new artificial sett will be created within the north western corner of the primary development site, adjacent to the current site entrance. The replacement sett will comprise three chambers constructed from concrete paving slabs and 500 mm² wooden chambers. These will be connected by 300 mm plastic piping. Four entrances will be created. Care will be taken to ensure that tunnels slope away from the sett chambers by locating them on lower elevations of the slope on which the sett will be constructed.
- 6.138 There is also potential for incidental disturbance. A series of simple mitigation measures will be put in place to ensure that construction traffic and storage of materials is maintained at a distance of more than 20 m from the temporary sett and that the badgers are able to freely access foraging habitat and other setts within their territories during the construction phase. Temporary fencing will be installed at a suitable radius from this sett. This will be constructed from metal or wooden posts with two strands of barrier tape, with the lowest raised at least 30 cm from the ground to allow free movement of badgers. Signs will be attached to the temporary fencing forbidding access into the zone around the badger sett. Any trenches or holes left overnight and during weekends will either be covered or an exit will be provided to ensure badgers do not become trapped. With these measures in place the magnitude of change will be reduced from large to small for this receptor of medium importance, and the mitigated adverse effect from disturbance will be reduced to slight and not significant.
- 6.139 There will also be a loss of 61.71 ha of badger foraging habitat as a result of the development. However, approximately 23 ha of informal open space have been incorporated into the soft landscaping, along with tree species favoured by badgers for foraging. A community orchard will be created within the area surrounding the new artificial badger sett and will include apple and cherry

species. The ecological management plan will include details on a planting regime and tree management. Species-rich grassland will also be sown around the sett and within the orchard, and will be managed at a varied sward height between 5 and 15 cm.

- 6.140 Fruit shrubs such as crab apple and elder will provide sources of food for badgers in late summer and will also be incorporated into the tree planting along the western boundary. The sowing of new natural hay meadow mixes within areas of the informal open spaces will support higher worm populations. This combined mitigation will enhance the site for badgers and therefore will reduce the magnitude of change to negligible and the mitigated adverse effect to negligible and not significant.
- 6.141 The non-breeding summer common pipistrelle bat roost in the golf club house will also be lost as a result of the proposed development. A European Protected Species Licence will be required from Natural England to facilitate the removal of the roost. Prior to demolition a new compensatory bat roost will be created suitable for a non-breeding summer roost of common pipistrelle bats. This will be provided through the construction of a store building for the new allotments, approximately 60 m to the south of the golf club house. The building will be designed to include a cavity wall to mimic the existing area that the bats are currently using and access will be provided via bat tubes. In addition a roof void will be available with small crevices suitable for pipistrelle bats. Works to the club house will be conducted outside of the summer season, which is considered to run between 1 May and 30 August. The licence conditions will also include measures such as soft-demolition under the watching brief of a licensed bat ecologist and post-development monitoring for two years. Following the conditions within the licence will reduce the magnitude of change to negligible and the mitigated adverse effect will be negligible and not significant.
- 6.142 There will also be a loss of bat foraging habitat through the loss of habitat within the site, in particular hedgerows, semi-improved grassland and waterbodies. Bat foraging habitat will be provided within the proposed development and within the areas of new habitat. Areas of existing tree groups that bats are currently using will be retained, such as the line of poplar trees along the southern boundary of the primary development site, and new structural planting will be provided using native trees and shrubs. Native trees and shrubs will also be planted within the residential areas to increase potential bat foraging areas. This will include species such as those listed in paragraphs 6.125 and 6.126. Hedgerows will be planted along the SuDS on the southern boundary creating buffer strips that remain predominately dark for the light sensitive species, including *Myotis* species. In addition, a total of 50 1FF Schwegler bat boxes will be erected on a variety of aspects on trees across the site. The implementation of this mitigation will reduce the magnitude of change for bats from loss of foraging and roosting habitat from medium to small and the mitigated adverse effect to slight and not significant.
- 6.143 The development across the two areas will result in the loss of scrub and hedgerow habitat used by breeding and foraging birds. Habitats favoured for

nesting and foraging by passerines will be incorporated into the landscaping of the development, including scrub, hedgerows and scattered trees. Site clearance, where possible, will also be timed to avoid the bird breeding season (which is considered to run between March and August). However, if works must take place within this period a suitably qualified ecologist will check for nesting birds prior to work commencing. Any nest present will be left and a buffer zone of at least a 5 m radius will be placed around the nest, excluding any works until the young have fledged. With this mitigation in place the magnitude of change from disturbance will be reduced to negligible and the mitigated adverse effect will be negligible and not significant.

- 6.144 Three pairs of skylark were confirmed to be breeding on the arable fields on the Hatton's Road attenuation ponds area. As this habitat will be lost, an area of strips of cornfield annuals will be planted within the south eastern corner of the primary development site. Such mixes can be obtained from www.wildflower.org.uk and should be sown at a rate of 2.5 g/m². These areas, along with the grassland will provide nesting opportunities and foraging habitat for skylarks, as well other bird species. Providing nesting opportunities for birds such as skylark within this habitat will reduce the magnitude of change from large to medium; the mitigated adverse effect would reduce to moderate but remain significant.
- 6.145 Noise disturbance associated with construction activities will cause short term disturbance to the birds present on habitats being retained within the design of the proposed development. To reduce the impact of disturbance, the construction work will be restricted to normal working hours during the week and machinery used on site will be fitted with appropriate sound moderators. The magnitude of change will be reduced from medium to small and the mitigated adverse effect reduced from moderate to slight and not significant.
- 6.146 Habitat suitable for the two nationally scarce species of water beetle, two rare weevils and the Red Data Book soldier fly will be incorporated within the wetland habitats, including the balancing ponds and the linear watercourses. Sediment will be imported from the two ponds where the nationally scarce species were recorded and placed into the newly created waterbodies, either in spring or late autumn at a time when aquatic beetles are mobile. The ponds will be created with a range of depths from 30 cm to 2 m suitable for a range of aquatic invertebrates. The nationally scarce beetle and weevil were recorded on blue water-speedwell and brooklime respectively, and these species have therefore been included within the planting scheme for the wetland habitat. Aquatic beetles are highly mobile species and, therefore, through the creation of suitable habitat and suitable subsequent management through the preparation and implementation of an ecological management plan, should continue to survive on the site in the long term. This will reduce the magnitude of change from large to small, reducing the adverse effect from substantial to slight and not significant.
- 6.147 The two sites support two species of British reptile that are protected under domestic law, the Wildlife and Countryside Act 1981 (as amended), as well as being priority BAP species. An exceptional population of common lizard and

low populations of grass snake were recorded on the primary development site and good populations were recorded on the Hatton's Road attenuation ponds area. A mitigation strategy will therefore be implemented. This mitigation will include an exclusion exercise using specialist drift fencing to ring-fence the construction site, and the relocation of reptiles to the habitat created within the informal open areas, and surrounding the Hatton's Road attenuation ponds. The use of these areas as a receptor site will also allow migration onto suitable habitat within the adjacent pasture fields, along the drainage channel parallel to the Cambridgeshire Guided Busway and along Longstanton Brook.

- 6.148 A hedgerow of native species will be created along a bank in the south western corner of the primary development site. This bank will act as hibernacula for reptiles. In addition this area will be created with a scrub and grassland mosaic as described in paragraphs 6.120 and 6.126. This mosaic of habitat will also be created adjacent to the edge of the development area, along with the construction of ten hibernacula. These hibernation sites can be simply created and composed of bricks and / or rubble that is buried into a depression within the ground. Earth is placed on the surface and grass seeded. In addition ten log piles will be created and will be scattered across the site. Log piles will be provided within the community orchard, the south western corner of the site and along the eastern boundary.
- 6.149 A planting strategy will be devised to enhance the areas of Longstanton Brook that will not be affected by the diversions. This strategy will help to create and enhance existing habitat for reptiles that have been recorded along the ditch and field margins. The ecological management plan will provide information on the cutting regime required along here to maintain a varied sward height required by reptiles. In addition earth mounds will be provided adjacent to the attenuation ponds, which will provide potential sheltering and foraging habitat by being seeded with a mix of natural hay meadow and wetland grass mixtures. Scrub and copses in this area will also provide suitable hibernation sites. With this combined mitigation the magnitude of change will be reduced to small, resulting in a change in the overall adverse effect on reptiles to slight and not significant.
- 6.150 A mitigation strategy will be required to facilitate the diversion of Longstanton Brook, as the brook is known to support water voles. The mitigation will include excluding and trapping the water voles from the working area. As water voles are highly loyal to their burrows, vole-proof fencing will be required around the stretch of brook to be diverted, to prevent water voles re-colonising these areas. However, prior to works commencing, a licence will be required and approved by Natural England to facilitate works.
- 6.151 Controlled habitat degradation will be conducted to discourage water voles away from their existing burrows prior to installing fencing and to increase trap success. This will be achieved by removing surface vegetation to encourage water voles to use nearby alternative areas. In addition, new shoots will be removed at frequent intervals to discourage water voles from returning and to maintain a short sward height. This will be carried out early in the year. Work along the ditch will be undertaken outside of the water vole breeding

season, which runs from May to August. Works will also avoid the autumn when water vole populations are at their greatest.

- 6.152 Water voles will be captured by setting out traps on features such as latrines, feeding stations, and regularly used runs. Traps will be checked twice daily and will contain hay and chopped apple to entice water voles into the trap. Trapping of water voles is best conducted between September and October or March and April. Once trapped, water voles will be released singly and slowly along the stretches of Longstanton Brook that are to be enhanced.
- 6.153 Prior to the controlled habitat degradation and trapping, adjacent lengths of the Longstanton Brook that are not going to be affected by the proposed development will be enhanced for water voles, to provide suitable alternative habitat for the water voles to migrate into and to act as a receptor site for captured animals. Five metre stretches of the banks will be profiled to ensure that suitable shelves are available for burrowing and for use as feeding platforms. The vegetation will be managed along stretches of the brook that are currently choked by common reed by cutting sections to ground level. In areas where there is currently little bankside vegetation, the native species listed in table 6.7 will be planted with additional species that are particularly favoured foods of water vole. These include reed canary-grass (*Phalaris arundinacea*), sweet-grasses (*Glyceria fluitans*, *Glyceria notata*), false oat-grass, pendulous sedge (*Carex pendula*) and fool's watercress.
- 6.154 The banks of the diverted length of brook (which will be longer than the area lost) will be profiled to incorporate a combination of vertical banks suitable for burrowing and shelves to provide feeding platforms. Additional habitat will also be provided by the creation of four small inlets of approximately 2 m in length along the ditch. The attenuation ponds will also provide additional water vole habitat. With the implementation of this combined mitigation, the magnitude of change will be negligible, resulting in a change in the overall adverse effect on water voles to negligible and not significant.
- 6.155 Earth bunds will be created surrounding the newly diverted brook and new attenuation ponds. Top soil will be stored to the south of the southern pond. These features will be enhanced for wildlife and will be of local (low) value. The ponds will be carefully profiled, allowing for a diverse range of flora to grow. A range of native aquatic and marginal species (such as those in table 6.7) to maximise the ecological value of the ponds without compromising the hydrological function will be planted.

Post-construction mitigation

- 6.156 Increased surface water run-off and contamination could affect waterbodies across the site. In order to prevent significant effects on waterbodies and water quality, the surface water drainage scheme for the site will include the use of trapped highway gullies and interceptors to minimise pollution levels in run-off. This surface water run-off will lead to one of the several balancing / attenuation ponds across the whole site. This mitigation will reduce the

magnitude of change from medium to negligible and the mitigated adverse effect will be negligible and not significant.

- 6.157 The existing badger sett will be re-opened once works are complete and will be screened from the residential development with existing trees and the new area of informal open space. In addition, new native shrubs will be planted, including holly (*Ilex aquifolium*), blackthorn and hawthorn, which will prevent access to the sett entrances. This mitigation will reduce the magnitude of change to negligible and the mitigated adverse effect to negligible and not significant.
- 6.158 The proposed development will increase lighting levels across the site compared to that of the baseline conditions. This increase in light levels could potentially have an adverse impact on feeding bats in the vicinity of the site. Light spill will therefore be kept at a minimum by using low-level and directional lighting where possible. Where possible, lights will be no greater than 3 lux and where possible 1 lux. Floodlights will be installed surrounding the sports area. Asymmetric beam floodlights, oriented so that the glass is parallel to the ground will help light spill. In addition, the sports fields will be surrounded by native planting, which will act as a screen.
- 6.159 In addition to the measures described above, the area to the west of the site will mainly be unlit to ensure suitable habitat is available for light sensitive bats such as *Myotis* species. This mitigation will reduce the magnitude of change to small and the mitigated adverse effect on bats to slight and not significant.
- 6.160 The increase in lighting could also have an effect on the breeding behaviour of birds. The measures detailed in paragraph 6.155 will also help to reduce the magnitude of this change, and is considered to reduce it to small, reducing the mitigated adverse effect to slight and not significant.
- 6.161 The increase in lighting could also impact hunting birds such as owls and the measures as detailed in paragraph 6.155 will reduce the magnitude of change to small, reducing the mitigated adverse effect to slight and not significant.
- 6.162 Food waste from the residential dwellings and commercial properties may attract fox and brown rat which could result in the increased predation of birds. Green bins will be provided by SCDC and will be collected on a fortnightly basis. These will be loaded directly into collection vehicles. This will reduce the change of magnitude from small to negligible and the adverse effect from moderate to negligible and not significant.
- 6.163 The increase in residential housing will almost certainly increase the number of predators for reptiles and birds, particularly from domestic cats. However the location of the mitigation areas will be over 400 m from the development and therefore there will be a small magnitude of change, which will result in a slight adverse effect that is not significant.

- 6.164 The increase in surface water-run off associated with the increase in hardstanding and built environment has the potential to affect water vole habitat in terms of its effect on water levels and water quality. The measures outlined in paragraph 6.151 will help to minimise the severity of these impacts, and will reduce the magnitude of change from medium to negligible, which will reduce the adverse effect from moderate to negligible and not significant.

Ecological enhancement post-construction

- 6.165 An ecological management plan will be produced that will include a series of ecological enhancement measures and the management of habitats and features created within the soft landscaping of the proposed development.
- 6.166 Where trees are cut, wood will be stored as log piles in areas of woodland and informal open spaces to create and enhance the habitat for invertebrates and reptiles.
- 6.167 The small blocks of woodland that are to be retained within the development will be enhanced through thinning of trees to allow ground flora vegetation to grow. A seed mix such as EW1 seed mixture will be sown within these areas. It will be sown at the recommended rate of 4 g/m² directly onto the soil with no imported topsoil or sub-soil.
- 6.168 A barn owl nest box is present on the primary development site and will need to be moved to facilitate the development. A further two boxes will be erected along the eastern boundary adjacent to the Cambridgeshire Guided Busway.
- 6.169 The above habitat enhancement measures will lead to beneficial effects on the populations of the species using the habitats. However, the magnitude, and hence the significance, of these beneficial effects is dependent on the occupation of the newly created habitats, which cannot be predicted with certainty at this stage.

Residual effects

- 6.170 The significant residual effects that are likely to occur through the result of the proposed development, both beneficial and adverse, are summarised in table 6.8.

Table 6.8: Significant residual effects

Significant residual effect	Sensitivity of receptor	Magnitude of change	Duration	Nature	Degree of effect	Level of certainty
Loss of grassland habitat	Low	Medium	Long term	Adverse	Moderate	Absolute
Loss of arable habitat	Low	Large	Long term	Adverse	Moderate	Absolute
Creation of new linear waterbodies and enhancement of the diverted section of Longstanton Brook	Low	Medium	Long term	Beneficial	Moderate	Absolute
Loss of skylark nesting habitat	Medium	Medium	Long term	Adverse	Moderate	Absolute