VikingLink

nationalgrid

UK Onshore Scheme

Environmental Statement

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Appendix 21

Ecology (Proposed Converter Station)

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Appendix 21.1 Desktop Study

Methods

21.1.1 Information on designated sites and protected or notable habitats and species was obtained over a large study area in the early stages of Viking Link to aid in site selection and route identification. Information from other sources which correlated with their area of jurisdiction or interest was also obtained. Table .1 provides a list of sources of this information.

Table 21.1.1 Sources of Desktop Study Information

Organisation	Information Supplied
Black Sluice Internal Drainage Board (IDB)	Black Sluice IDB Biodiversity Action Plan (BAP) 2014 (Ref 21-1)
Forestry Commission	Ancient woodland and other woodland sites.
Greater Lincolnshire Nature Partnership (GLNP)	Non-statutory designated sites boundaries and citations and protected and notable species records. Lincolnshire BAP (Ref 21-2) Local Wildlife Site Guidelines for Greater Lincolnshire (Ref 21-3)
Lincolnshire Wildlife Trust	Presentation: Highways for Wildlife – Defending and extending the UK's road verge network for biodiversity (Ref 21-4)
Magic Map	Statutory protected sites & habitats of principal importance

21.1.2 For the final base scheme design for the proposed converter station, permanent access road and proposed AC cable route, a search for internationally designated sites was undertaken within a 10 km buffer, while nationally designated sites were searched for within a 2 km buffer.

21.1.3 Records of non-statutory designated sites, habitats of principal importance and protected or notable species were identified within a 1 km buffer of the proposed converter station, access road and proposed AC cable route. Records of protected species were then screened to include only records from the last 20 years i.e. from 1997.

21.1.4 Figure 21.1 illustrates the study area buffers.

Limitations

21.1.5 Protected and notable species records provide an indication of the presence of species within an area but are based on the submission of records to GLNP and do not provide a consistent level

of coverage over the study area. Therefore the lack of species records from an area cannot be taken to mean that the species is absent.

Results

Designated Sites

21.2.1 There are no internationally designated sites within 10 km of the proposed converter station, permanent access road and proposed AC cable route.

21.2.2 There are no nationally designated sites within 2 km of the proposed converter station, permanent access road and proposed AC cable route.

21.2.3 There is one non-statutory designated site within 1 km of the proposed converter station, permanent access road and proposed AC cable route. South Forty Foot Drain (South Holland End) Local Wildlife Site (LWS) is located approximately 0.7 km west (Figure 21.2). Full details of the site are presented in Appendix 21.1.1.

Habitats of Principal Importance

21.2.4 The habitat of principal importance, coastal and floodplain grazing marsh, as listed under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 21-5) is located within the proposed AC cable route. There are two other areas of coastal and floodplain grazing marsh within 1 km, located 0.8 km west and 0.9 km north west of the proposed AC cable route. Two areas of broadleaved woodland are located within 1 km, approximately 0.2 km south east and 0.5 km north east of the permanent access road. National Forest Inventory data (Ref 21-6) indicates that woodland comprising young trees is present within the 1 km buffer (Figure 21.2).

Protected or Notable Species

21.2.5 Locations of protected and notable species within 1 km are mapped within Figure 21.2. A Confidential Figure 21.3 provides information on the location of badger desktop records. A complete list of protected and notable species within 1 km is presented in Table 21.1.2. Raw data is presented in Appendix 21.1.2.

Table 21.1.2 Protected and Notable Species within 1 km Buffer

Species (Common name)	Species (Latin Name)	Number of Records (other information)
Great Crested Newt	*Triturus cristatus*	2 (peak count of 5 at Bicker Fen Substation)
Skylark	*Alauda arvensis*	2 (peak count of 262)
Kingfisher	*Alcedo atthis*	1 (peak count of 1)

Table 21.1.2 Protected and Notable Species within 1 km Buffer		
Species (Common name)	**Species (Latin Name)**	**Number of Records (other information)**
Teal	*Anas crecca*	1 (peak count of 20)
Mallard	*Anas platyrhynchos*	26 (peak count of 25)
Greylag Goose	*Anser anser*	1 (peak count of 1)
Pink-footed Goose	*Anser brachyrhynchus*	1 (peak count of 600)
Meadow Pipit	*Anthus pratensis*	1 (peak count of 1)
Swift	*Apus apus*	5 (peak count of 26)
Purple Heron	*Ardea purpurea*	1 (peak count of 1)
Short-eared Owl	*Asio flammeus*	1 (peak count of 1)
Black-headed Gull	*Chroicocephalus ridibundus*	3 (peak count of 100)
Stock Dove	*Columba oenas*	2 (peak count of 10)
Mute Swan	*Cygnus olor*	5 (peak count of 44)
Corn Bunting	*Emberiza calandra*	1 (peak count of 1)
Yellowhammer	*Emberiza citrinella*	2 (peak count of 10)
Reed Bunting	*Emberiza schoeniclus*	2 (peak count of 15)
Merlin	*Falco columbarius*	1 (peak count of 1)
Hobby	*Falco subbuteo*	2 (peak count of 13)
Kestrel	*Falco tinnunculus*	1 (peak count of 4)
Brambling	*Fringilla montifringilla*	1 (peak count of 2)
Common Gull	*Larus canus*	1 (peak count of 20)
Lesser Black-backed Gull	*Larus fuscus*	1 (peak count of 1)
Bar-tailed Godwit	*Limosa lapponica*	1 (peak count of 2)
Linnet	*Linaria cannabina*	1 (peak count of 20)
Yellow Wagtail	*Motacilla flava*	3 (peak count of 4)
Whimbrel	*Numenius phaeopus*	1 (peak count of 1)
House Sparrow	*Passer domesticus*	19 (peak count of 100)
Tree Sparrow	*Passer montanus*	3 (peak count of 20)
Grey Partridge	*Perdix perdix*	2 (peak count of 7)
Snow Bunting	*Plectrophenax nivalis*	1 (peak count of 1)
Dunnock	*Prunella modularis*	11 (peak count of 15)
Turtle Dove	*Streptopelia turtur*	2 (peak count of 3)
Tawny Owl	*Strix aluco*	1 (peak count of 1)
Starling	*Sturnus vulgaris*	20 (peak count of 106)

Table 21.1.2 Protected and Notable Species within 1 km Buffer		
Species (Common name)	**Species (Latin Name)**	**Number of Records (other information)**
Redshank	*Tringa totanus*	1 (peak count of 1)
Redwing	*Turdus iliacus*	1 (peak count of 10)
Song Thrush	*Turdus philomelos*	2 (peak count of 10)
Fieldfare	*Turdus pilaris*	2 (peak count of 250)
Mistle Thrush	*Turdus viscivorus*	1 (peak count of 10)
Barn Owl	*Tyto alba*	2 (peak count of 5)
Lapwing	*Vanellus vanellus*	4 (peak count of 60)
European Water Vole	*Arvicola amphibius*	2 (peak count of 1)
Bats	*Chiroptera*	17 (peak count of 5)
Pipistrelle Bat species	*Pipistrellus*	2 (peak count of 1)
Common Pipistrelle	*Pipistrellus pipistrellus*	3 (peak count of 1)
Soprano Pipistrelle	*Pipistrellus pygmaeus*	2 (peak count of 1)
Brown Long-eared Bat	*Plecotus auritus*	1 (peak count of 2)
West European Hedgehog	*Erinaceus europaeus*	1 (peak count of 1)
Brown Hare	*Lepus europaeus*	5 (peak count of 6)
Badger	*Meles meles*	10 (peak count of 29)
Otter	*Lutra lutra*	1 (record of absence)
Cinnabar	*Tyria jacobaeae*	2 (peak count of 1)

Biodiversity Action Plan Habitats and Species

21.2.6 Table 21.1.3 provides a list of the habitats and species highlighted as priorities for action within the Lincolnshire BAP (Ref 21-2) and the Black Sluice Internal Drainage Board (IDB) BAP (Ref 21-1).

Table 21.1.3 Biodiversity Action Plan Habitats and Species		
Habitats/Species	**Lincolnshire BAP**	**Black Sluice IDB BAP**
Coastal Sand Dunes	ü	
Peat and Clay Exposures	ü	
Sabellaria spinulosa Reefs	ü	
Saline Lagoons	ü	
Saltmarsh	Coastal Saltmarsh	
Arable Field Margins	ü	

Table 21.1.3 Biodiversity Action Plan Habitats and Species		
Habitats/Species	**Lincolnshire BAP**	**Black Sluice IDB BAP**
Grazing Marsh	Coastal and Floodplain	
Hedgerow & Hedgerow Trees	Hedgerows	ü
Lowland Calcareous Grassland	ü	
Lowland Meadows	ü	
Lowland Heathland	ü	
Lowland Raised Bog	ü	
Lowland Dry Acid Grassland	ü	
Chalk Streams and Blow Wells	ü	
Fens	Lowland Fens	
Ponds, Lakes and Reservoirs	Eutrophic Standing Water; Ponds	Ponds
Reedbeds	ü	ü
Rivers, Canals and Drains	Rivers	Drains
Springs and Flushes	*Local*	
Lowland Mixed-Deciduous Woodland	ü	
Traditional Orchards	ü	
Wet Woodland	ü	ü
Wood Pasture and Parkland	ü	
Brownfield	Open Mosaic on previously-developed Land	
Churchyards and Cemeteries	*Local*	
Gardens and Allotments	*Local*	
Parks and Open Spaces	*Local*	
Freshwater Fish	ü	ü
Commercial Fish	ü	
Seal	ü	
Otter		ü
Water Vole	ü	ü
Farmland Birds	ü	ü
Bittern	ü	
Barn Owl		ü
Urban Birds	ü	
Bats	ü	ü

Table 21.1.3 Biodiversity Action Plan Habitats and Species		
Habitats/Species	**Lincolnshire BAP**	**Black Sluice IDB BAP**
Newts	ü	ü
Natterjack Toad	ü	
Grass Snake		ü
Large Garden Bumblebee		ü
Great Water Parsnip	ü	ü
Invasive Species	ü	ü
White-clawed Crayfish	ü	

Appendix 21.2 Extended Phase 1 Habitat Survey

Methods

21.1.1 The extended Phase 1 habitat survey was carried out, where access was permitted, in accordance with the Phase 1 habitat survey assessment methods (JNCC, 2010) (Ref 21-7) and the Guidelines for Preliminary Ecological Assessment (IEEM, 2013) (Ref 21-8). Habitat types were mapped and dominant vegetation species noted. Target notes were made of habitats or features of interest. Any invasive species were also recorded. In addition, field signs and potentially suitable habitats for legally protected species or species which are listed on S41 of the NERC Act 2006 (Ref 21-5), or are included in the Lincolnshire BAP (Ref 21-2) and/or Black Sluice IDB BAP (Ref 21-1) were mapped and noted, in order that they could be fed into the relevant detailed species survey or included within the assessment of the scheme as a whole.

21.1.2 Surveys were conducted in May 2016 at the proposed converter station site and mid-April 2017 along the permanent access road and proposed AC cable route.

Limitations

21.1.3 No limitations to the extended Phase 1 habitat survey were encountered. The surveys were undertaken within the optimum survey period of April to mid-October.

Results

21.2.1 The results of extended Phase 1 habitat survey are presented below. The habitats are mapped in Figure 21.4, representative habitats are presented in Figure 21.5 and the target notes are presented in Appendix 21.2.1.

21.2.2 The following habitats are present within, or adjoining the proposed converter station, permanent access road and proposed AC cable route:

- Arable (137.50 ha);
- Modified neutral grassland[1] (8.78 ha);

[1] The neutral grassland categories detailed within the Phase 1 Habitat Survey Handbook are concentrated on grassland associated with rural situations (pastures and meadows), as such it was agreed with JNCC in 2005 (P. Gateley, pers. comm.) that neutral grassland habitats that don't easily fit within these categories, usually within urban or industrial areas, can be referred to as modified neutral grassland –

'*Modified neutral grassland is not derived from agricultural grassland and the terms semi-improved and improved do not apply. Some modified neutral grassland may be species-rich but many swards are dense, coarse and species-poor. Modified neutral grassland naturally regenerates on disturbed ground and is unmanaged. It most commonly occurs in urban areas and on post-industrial land*'.

- Poor semi-improved grassland (8.13 ha);
- Tall ruderal herbs (0.29 ha);
- Standing water (wet ditches) (2862.09 m);
- Dry ditch (3189.43 m);
- Broadleaved trees (accurate measure not possible);
- Plantation broadleaved woodland (1.92 ha);
- Species-poor intact hedgerow (1809.42 m);
- Scattered scrub (accurate measure not possible);
- Swamp (0.17 ha);
- Buildings (0.01 ha);
- Hard standing (5.78 ha).

Proposed Converter Station

Arable and grassland habitats

21.2.3 This site is a rectangular arable field, currently planted with wheat crop. There are no distinguishing field boundaries along the eastern edge of the site; the arable field extends here into further arable land. Arable habitats account for 27.17 ha within the proposed converter station site. Ditches bound the northern, western and southern edges of the field, with adjacent bordering set aside land providing a 5 m buffer between the ditch and crop.

21.2.4 The perimeter of set aside land is classed as modified neutral grassland (TN346). A range of botanical species (around 20) were recorded within this grassland. Dominated by perennial ryegrass *Lolium perenne*, this habitat also contains abundant white clover *Trifolium repens* and hogweed *Heracleum sphondylium*. Less frequent species recorded include dove's-foot cranesbill *Geranium molle*, bird's-foot trefoil *Lotus corniculatus* and Common Vetch *Vicia sativa.* Grassland habitats account for 2.28 ha within the proposed converter station site.

Watercourses and Other Wetland Habitats

21.2.5 Three wet ditches (see D632; D716; D640 in great crested newt survey report) border the north, south and west field boundaries of the proposed converter station site and have fairly steep banks that are approximately 5 m high and 3 m wide, yet vary slightly in ecological diversity (TN348/354). D632, along the northern boundary, comprises good emergent aquatic vegetation with *Callitriche* species dominant, frequent water-crowfoot *Ranunculus aquatilis ssp*., and occasional water mint *Mentha aquatica*. By contrast, D716, along the western boundary, has no aquatic emergent vegetation and its banks are dominated by recently established perennial ryegrass. This is likely a result of recent dredging, which is evident along this ditch. Additionally, D716 is highly eutrophic with an oily slick noted on the surface of the water for more than 50% of its length. D640, running along the southern boundary, also has sections of polluted water although it appears to have only been dredged along the north side, maintaining a strip of

common reed along the south bank. A total of 118.73 m of wet ditch were recorded within the proposed converter station site.

21.2.6 Along the banks of the ditches lies a strip of marginal vegetation approximately 5 m wide (TN348). Common reed *Phragmites australis* is occasional along the banksides, but more frequent along D640. Cuckooflower *Cardamine pratensis* and cow parsley *Anthriscus sylvestris* occur frequently and meadow vetchling *Lathyrus pratensis* occasionally. White dead-nettle *Lamium album* is also present. Like the ditches themselves, the bankside vegetation also varies. D716 and D640 comprise a lower species diversity comparable to D632.

Other habitats

21.2.7 Along the southern boundary is an area of hard standing with a collection of stacked, wooden pallets (TN350). This area accounted for 0.13 ha within the proposed converter station. Surrounding this section is a strip of tall ruderal vegetation which accounts for 0.04 ha. Two metal containers and one wooden shed are also present on this hard standing section.

Permanent Access Road

Arable and grassland habitats

21.2.8 Arable habitats account for 6.77 ha across the permanent access road. The arable fields are interspersed predominantly by the network of field ditches that are characteristic of the area. The arable fields are typically intensively cultivated with no field margins specifically set aside and managed to provide benefits for wildlife. Narrow uncultivated margins alongside watercourses are therefore described as part of these linear habitat types (TN334).

21.2.9 None of the arable flora listed within the Lincolnshire BAP (Ref 21-2) were recorded within the permanent access road, although it is recognised that many of these species are annuals and may be dormant in the seed bank.

21.2.10 Poor semi-improved grassland which accounts for 0.47 ha across the permanent access road is typically associated with narrow uncultivated field margins. These areas do not qualify as Lincolnshire BAP habitat arable field margins. Species associated with these habitats are typically dominated by false oat-grass *Arrhenatherum elatius* and cock's-foot *Dactylis glomerata* with abundant Yorkshire-fog *Holcus lanatus*, cow parsley *Anthriscus sylvestris*, nettle *Urtica dioica* and creeping thistle *Cirsium arvense*.

21.2.11 Improved grassland accounts for 0.04 ha across the permanent access road. These areas also largely comprise narrow uncultivated field margins dominated by perennial ryegrass with a limited number of common and widespread herbaceous plants typically tolerant of disturbance (heavy grazing or cutting), such as white clover. The intensity of management prevents the sward from establishing sufficient diversity to be categorised as semi-improved grassland.

Watercourses and Other Wetland Habitats

21.2.12 The network of field drainage ditches extends across the entirety of the route. The watercourses play an important part in reducing flood risk and as a consequence are subject to dredging and vegetation clearance on a regular basis. They allow irrigation of the extensive low-lying areas in dry periods and drain excess water during wet periods.

21.2.13 A total of 211.60 m of wet ditch were recorded across the permanent access road. The most significant watercourse crossed in this section of the route is Hammond Beck (Drain). Dry ditches (as recorded at the time of survey) were present across the permanent access road. Given the managed seasonal fluctuations in water levels across the local landscape, the length of these has been included within the overall length for wet ditches.

21.2.14 The aquatic component of the ditches supported a variety of marginal and emergent plant species including common reed, lesser pond-sedge *Carex acutiformis and fools watercress Apium nodiflorum.*

21.2.15 Floating and submerged species included common water-crowfoot.

21.2.16 The banks of the ditches support terrestrial plant species including species of coarse grassland such as nettle, false oat-grass, cock's foot and cow parsley.

Hedgerows, Woodland, Trees and Scrub Habitats

21.2.17 No hedgerows occur across the permanent access road.

21.2.18 Woodland habitats occur infrequently across the permanent access road, with only one parcel affected which forms the edge of a larger parcel (TN340). No semi-natural broad-leaved woodland habitat is present. Broad-leaved plantation woodland accounts for 0.06 ha across the permanent access road.

21.2.19 The small area of broad-leaved plantation woodland was noted as being between 15 and 20 years old and comprised frequent hornbeam *Carpinus betulus* and rowan *Sorbus aucuparia*, with occasional field maple *Acer campestre*, dogwood *Cornus sanguinea*, spindle *Euonymus europaeus* and ash *Fraxinus excelsior*.

21.2.20 No significant woodland ground flora species and no WCA8 protected plant species such as bluebell Hyacinthoides non-scripta were identified within the woodland.

21.2.21 Scattered broad-leaved trees are generally few and far between across the route and typically occurred along field and watercourse boundaries. Seventeen individual trees were identified across the permanent access road. All the trees were identified in the same area along the A52 and were acknowledged to be immature (TN300). Species comprised field maple, ash, cherry *Prunus sp.* and lime *Tilia sp.*. None of these trees were identified as veterans.

Other Habitat Types

21.2.22 Bare ground accounts for 0.23 ha across the permanent access road. Areas encountered are mainly associated with existing farmland tracks that cross the permanent access road.

21.2.23 Hardstanding habitats occurring across the permanent access road primarily include roads and tracks, this habitat accounted for 0.42 ha across the permanent access road.

21.2.24 The category of private gardens/farmyard was used where access was granted by the landowner or adjacent landowner but, once on site, the land was considered to be of limited ecological interest and detailed mapping with the Phase 1 alphanumeric codes was not deemed necessary. Nevertheless, by definition, private gardens within the permanent access road would qualify as 'Gardens and Allotments' within the Lincolnshire BAP (Ref 21-2) at the local priority level.

Proposed AC Cable Route

Arable and Grassland Habitats

21.2.25 Arable habitats account for 103.56 ha across the proposed AC cable route. The arable fields are interspersed predominantly by the network of field ditches that are characteristic of the area. The arable fields are typically intensively cultivated with no field margins specifically set aside and managed to provide benefits for wildlife. Narrow uncultivated margins alongside hedgerows or watercourses are therefore described as part of these linear habitat types.

21.2.26 None of the arable flora listed within the Lincolnshire BAP (Ref 21-2) were recorded within the proposed AC cable route, although it is recognised that many of these species are annuals and may be dormant in seed bank.

21.2.27 Semi-improved neutral grassland accounts for 7.66 ha across the proposed AC cable route and is typically associated with narrow uncultivated field margins but also associated with two parcels of land adjacent to the Bicker Fen Substation (TN311). None of these areas qualify as Lincolnshire BAP habitat arable field margins. Species associated with these habitats are typically dominated by false oat-grass and cock's-foot with abundant Yorkshire-fog *Holcus lanatus*, cow parsley, nettle and creeping thistle.

21.2.28 Modified neutral grassland and poor modified neutral grassland comprising 6.48 ha of the proposed AC cable route, is not derived from agricultural grassland and the terms semi-improved and improved do not apply (verbal agreement for the use of this habitat type was given to TEP by JNCC in 2004). It naturally regenerates on disturbed ground and is unmanaged. It most commonly occurs in urban areas, road verges, unmanaged amenity grass and on post-industrial land, for example, in unmanaged areas around farmyards. Many modified neutral grassland swards are dense, coarse and species-poor; it is broadly referable to NVC grassland community MG1. This grassland was largely associated with land surrounding Bicker Fen Substation which has been artificially seeded and was particularly diverse (TN325).

Watercourses and Other Wetland Habitats

21.2.29 A total of 5721.20 m ditch habitat were recorded across the proposed AC cable route. No significant watercourses were crossed in this section of the route. Dry ditches (as recorded at the time of survey) were dominant across this part of the route. Given the managed seasonal

fluctuations in water levels across the local landscape, the length of these has been included within the overall length for wet ditches.

21.2.30 Limited aquatic and marginal vegetation was recorded due to the dry nature of the majority of the ditches. The banks of the ditches however, supported terrestrial plant species including species of coarse grassland such as false oat-grass, cock's foot and cow parsley. Herb species encountered included nettle and great willowherb *Epilobium hirsutum*. Scrub species often encountered included hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus agg*..

21.2.31 A small area of swamp habitat falls within the proposed AC cable route associated with the pond within Bicker Fen Substation. This area accounts for 0.17 ha. The swamp habitat was once an open pond but no open water was observed during the Phase 1 habitat surveys. Common reed dominates this swamp area with occurrences of greater reedmace *Typha latifolia*.

Hedgerows, Woodland, Trees and Scrub Habitats

21.2.32 A number of hedgerows occur across the proposed AC cable route, with six sections recorded (TN314). A total of 1612.09 m species-poor intact hedgerow were recorded. There appears to be no defined network of hedgerows across the route although the majority are associated with watercourses.

21.2.33 In accordance with the Phase 1 Habitat descriptions, hedgerows are considered species-rich where at least five species are recorded within the canopy, typically hawthorn, dog rose *Rosa canina*, elder, field maple and dogwood, or where a notably rich ground flora occurs. The majority of the hedgerows within the proposed AC cable route were identified as species-poor and were typically dominated by hawthorn. Species-rich hedgerows were also dominated by hawthorn but also comprised the species described above.

21.2.34 The NERC Act 2006 (Ref 21-5) description of hedgerows includes all with at least 80% native species, irrespective of diversity. All hedgerows throughout the proposed AC cable route, are native, and although much of the proposed AC cable route has been farmed intensively, all hedgerows qualify as a S41 NERC habitat of principal importance and a Lincolnshire BAP habitat.

21.2.35 Appendix 21.3 provides information on whether hedgerows surveyed within the proposed AC cable route, met the ecological criteria for 'important' under the 1997 Regulations (Ref 21-9) with respect to wildlife and landscape criteria, including information about which of the important hedgerows qualified by supporting native bluebell at the base alone. With respect to the proposed AC cable route no hedgerows were considered to be 'important'.

21.2.36 Woodland habitats occur infrequently across the proposed AC cable route, with only two parcels affected which form the plantations associated with the Bicker Fen Substation. No semi-natural broad-leaved woodland habitat is present. Broad-leaved plantation woodland accounts for 1.86 ha across the proposed AC cable route.

21.2.37 The small area of broad-leaved plantation woodland was noted as being approximately 10 years old and comprised English oak *Quercus robur*, silver birch *Betula pendula* and dogwood *Cornus sanguinea* with alder *Alnus glutinosa*, hazel *Corylus avellana* and hawthorn being locally dominant.

21.2.38 No significant woodland ground flora species and no Wildlife and Countryside Act 1981 Schedule 8 (Ref 21-10) protected plant species such as bluebell *Hyacinthoides non-scripta* was identified within the woodland.

21.2.39 Scattered broad-leaved trees are generally few and far between across the route and typically occurred along field and watercourse boundaries. One individual tree was identified across the proposed AC cable route. The tree is identified along the road adjacent to the Bicker Fen Substation and is a mature white willow *Salix alba* (referred to as tree T286 within the ground based bat assessment (Appendix 21.5)). This tree was not identified as a veteran.

Other Habitat Types

21.2.40 Hardstanding habitats occurring across the proposed AC cable route primarily include areas associated with Bicker Fen Substation, roads and tracks. These habitat types accounted for 5.28 ha.

Appendix 21.3 Hedgerow Survey

Methods

21.1.1 Hedgerows in the survey area were surveyed and target notes taken as part of the extended Phase 1 habitat survey. Where species diversity and features of the hedgerow indicated it may qualify as 'Important' (four woody species, or the presence of bluebell or other protected species) under the Hedgerow Regulations 1997 (wildlife and landscape criteria) (Ref 21-9), a detailed hedgerow survey was also undertaken.

21.1.2 Only one hedgerow qualified for a full Hedgerow Regulations assessment. The survey was undertaken on 4th April 2016, when woodland ground flora was sufficiently developed to enable accurate identification.

21.1.3 The detailed survey included a description of the hedge and detailed plant species list, and recorded the number of woody species (as listed on Schedule 3 of the Hedgerow Regulations (Ref 21-9)) within 30 m sample sections as well as any features within 2 m associated with the hedge. These features include the presence of any bank or wall, ditch, standard trees and ground flora species (as listed on Schedule 2 of the Hedgerow Regulations 1997 (Ref 21-9)). The number of connections with adjacent hedgerows was also recorded.

21.1.4 Further factors in the identification of 'important' hedgerows include the proximity of public by-ways and footpaths, parallel hedgerows, semi-natural woodland and waterbodies and the presence of protected species (recorded in the field or identified in desktop data). The presence of these features adjacent to a hedgerow increases the likelihood of it qualifying as 'important'.

21.1.5 In addition, presence of or field signs of any legally protected species or species which are listed on Section 41 of the NERC Act 2006 (Ref 21-5) or are included in the Local BAPs were mapped and noted. This includes species which form part of Schedule 1, 5 & 8 of the Wildlife and Countryside Act (WCA), as amended (1981) (Ref 21-10).

21.1.6 A hedgerow is defined as a boundary line of native shrubs or a mix of native shrubs and trees over 20 m long and less than 5 m wide, where any gaps between the trees or shrub species are less than 20 m wide. Any bank, wall, ditch or tree within 2 m of the centre of the hedgerow is considered to be part of the hedgerow, as is the herbaceous vegetation within 2 m of the centre of the hedgerow. Only hedgerows consisting predominantly (>80% cover) of at least one woody UK native species (listed on Schedule 3 of the Hedgerow Regulations) are considered to be native. This is based on the UK Biodiversity Action Plan (UKBAP) (Ref 21-11) definition of a hedgerow and takes account of the Hedgerow Regulations 1997 (Ref 21-9) and Handbook for Phase 1 Habitat survey (JNCC 2010) (Ref 21-7) to include all hedgerow features considered native.

Limitations

21.1.7 No limitations to the hedgerow survey were encountered with respect to access. Although slightly earlier than the recommended optimum survey period of mid-April to mid-June, plant growth was sufficiently advanced to enable identification of spring woodland ground flora.

Results

21.2.1 The results of the hedgerow survey are presented below. The hedgerow (H45) is identified on the Phase 1 habitat survey maps in Figure 21.4 and the full assessment details are presented in Appendix 21.3.1.

21.2.2 The hedgerow is mature and approximately 5 m in height. It comprises the woody species hawthorn *Crataegus monogyna*, elder *Sambucus nigra*, dog rose *Rosa canina agg*., dogwood Cornus *sanguinea* and field maple *Acer campestre*. The average number of woody species, based on the 30 m survey sections was four. This, in combination with only two additional features (a ditch and less than 10% gaps) means this hedgerow does not qualify as 'important' with respect to the wildlife and landscape criteria of the Hedgerow Regulations 1997 (Ref 21-9).

Appendix 21.4 Great Crested Newt Survey

Methods

21.1.1 The area which is generally considered when designing an amphibian survey for the purposes of impact assessment is broadly defined as the waterbody and any area within 500 m of the waterbody (English Nature, 2001) (Ref 21-12), that is not cut off by barriers which prevent amphibian migration (such as major roads or fast-flowing rivers).

21.1.2 Construction and operation of the proposed converter station site, permanent access road and proposed AC cable will include permanent and temporary vegetation loss, with potential effects on the local ecology including great crested newts *Triturus cristatus* (GCN) if present.

21.1.3 Significant distances associated with GCN ecology that have been considered when designing surveys include:

- 500 m - the generally accepted maximum range of amphibians from a specific waterbody that is not cut off by barriers which prevent amphibian migration;
- 250 m - the distance from a waterbody within which great crested newts will spend the majority of their time; and
- 50 m - the minimum distance from waterbodies and other features of significance to GCN within which mitigation will be required.

21.1.4 Desktop records indicate that GCN have been recorded as present within the Bicker Fen Substation during unrelated surveys from 2015. Given the paucity of GCN records, yet the prevalence of potentially suitable waterbodies in the form of field drains, it was proposed that GCN surveys be undertaken. However, due to the abundance of potentially suitable waterbodies within the 500 m buffer around the proposed converter station site and within 250 m of the permanent access road and proposed AC cable route, including 56 ditches and two ponds, survey effort was targeted to identify and survey those considered as suitable breeding habitat for GCN in order to ensure an efficient use of surveyor time and effort.

21.1.5 Table 21.4.1 shows a summary of the survey effort and methods proposed depending on the waterbody distance from the proposed converter station site, permanent access road and proposed AC cable route. The different survey methods are then described in detail below.

Table 21.4.1 Proposed GCN Survey Effort

Survey Method	Distance from proposed converter station		
	0-50 m	51-250 m	251-500 m
Habitat Suitability Index (HSI) and Ditch Suitability index (DSI)	ü	ü	ü

Table 21.4.1 Proposed GCN Survey Effort			
Survey Method	**Distance from proposed converter station**		
Presence/Absence (traditional and eDNA)	ü	ü	û
Population Estimate (if GCN present)	ü	ü	û
Survey Method	**Distance from permanent access road and proposed AC cable route**		
	0-50 m	**51-250 m**	**251-500 m**
Habitat Suitability Index (HSI) and Ditch Suitability index (DSI)	ü	ü	û
Presence/Absence (traditional and eDNA)	ü	ü	û
Population Estimate (if GCN present)	ü	û	û

21.1.6 Surveys were undertaken on the dates indicated within Table 21.4.2 below.

Table 21.4.2 GCN Survey Dates Summary	
Survey Method	**Survey Dates**
Habitat Suitability Index (HSI) and Ditch Suitability index (DSI)	3rd to 6th May 2016 6th to 10th March 2017 17th May 2017
Presence/Absence (traditional and eDNA)	31st May to 2nd June 2016 18th to 20th April 2017 27th to 30th June 2017
Population Estimate (if GCN present)	18th April to 20th April 2017

Pond Habitat Suitability Assessment (HSI) and Ditch Suitability Assessment (DSI)

21.1.7 Waterbodies (including drains, ditches and ponds) within 500 m of the proposed converter station site and within 250 m of the permanent access road and proposed AC cable route were identified for initial habitat assessment from desk based study using base mapping, web-based satellite imagery and information provided by consultees.

21.1.8 Any waterbodies within the relevant buffer zone which were cut off by barriers preventing amphibian migration, such as major roads or fast-flowing rivers were screened out of assessment where applicable. All remaining waterbodies were surveyed (subject to access) for their suitability to support GCN.

21.1.9 If surveyors encountered any waterbodies which had not been mapped during the desk based study which they considered suitable for GCN, the locations of the additional waterbodies were noted on survey maps provided and the appropriate habitat assessments undertaken.

21.1.10 Once in the field any waterbodies which were no longer present or were inappropriate to survey (e.g. were not possible to access, were completely scrubbed over, dry or likely to dry and no longer be suitable for breeding GCN) were scoped out of the GCN habitat assessment surveys. Where shallow water levels were identified this was considered appropriate due to the often fluctuating water levels in the ditches and drains and the likelihood that these ditches would become too dry to be suitable to support GCN during the breeding season (mid-April to June inclusive). Surveyors completed survey forms (in brief) in these circumstances stating the reason that the waterbody was not HSI or DSI surveyed. This ensured that all known waterbodies were accounted for when assessing returned data.

21.1.11 The risks to entering each waterbody for potential future full traditional GCN surveys was assessed and used to inform the need for additional safety equipment such as lifejackets and throw ropes. Further details of possible constraints to future full traditional GCN surveys were also noted such as problems with access, potential growth of vegetation, livestock issues, steep banks or marshy edges.

HSI Survey Method

21.1.12 Ponds identified from the desk based study which had approved access were surveyed using the Habitat Suitability Index (HSI) (Oldham et al., 2000) method (Ref 21-13).

21.1.13 The Habitat Suitability Assessment produces a HSI score for GCN habitat suitability which incorporates ten suitability indices, all of which are factors thought to affect GCN presence in a waterbody with regard to breeding. The ten characteristics are as follows:

- SI.1 Geographical location
- SI.2 Area
- SI.3 Permanence
- SI.4 Water quality
- SI.5 Shading
- SI.6 Presence of water fowl
- SI.7 Presence of fish
- SI.8 Pond dispersion
- SI.9 Terrestrial habitat quality
- SI.10 Proportion of macrophyte vegetation

21.1.14 In general, ponds with high HSI scores are more likely to support GCN than those with low scores. Table 21.4.3 sets out a simple system for using HSI scores to define pond suitability for GCN.

Table 21.4.3 Categorisation of HSI Scores for GCN Habitat Suitability	
HSI Score	Pond Suitability for Great Crested Newts
<0.5	Poor
0.5 – 0.59	Below Average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

21.1.15 The HSI for each pond was calculated and the pond suitability for GCN determined. Ponds which obtained HSI scores rated as either having 'good' or 'excellent' habitat suitability were taken forward for further survey.

DSI Survey Method

21.1.16 The Oldham et al., (2000) HSI survey method (Ref 21-13) is not appropriate for ditches because they are linear habitats. A modified HSI survey method (Ref 21-14) for ditches was therefore used, which had been previously approved by Natural England as part of the surveys for the Hinkley Point C overhead line project. A discussion of this modified method is presented in full in Appendix 21.4.1.

21.1.17 The modified HSI survey method produces a simplified habitat suitability score for ditches referred to during this survey as a Ditch Suitability Index (DSI). The DSI involves assessment of five ditch characteristics in addition to noting other informative features such as water flow, bank profile and surrounding vegetation. The five characteristics are as follows and the scoring matrix is shown in Table 21.4.4:

- DC.1 Water permanence
- DC.2 Vegetation presence
- DC.3 Fish presence
- DC.4 Shade
- DC.5 Water quality

Table 21.4.4 Scoring Matrix to Assess Ditch Habitat Suitability (DSI) for GCN				
Ditch Characteristic	Negative Measure	Score	Positive Measure	Score
Permanence	Dry (dry or dries annually during breeding season)	-2	Wet (even water distribution, water level >5cm deep)	+1

Table 21.4.4 Scoring Matrix to Assess Ditch Habitat Suitability (DSI) for GCN				
Ditch Characteristic	**Negative Measure**	**Score**	**Positive Measure**	**Score**
Vegetation	No suitable egg laying plants present	-1	Suitable egg laying plants present	+1
Fish	Present	-1	Absent	+1
Shade	Shaded (>60% shaded, 1m from bank)	-1	Not shaded (>40% open, 1m from bank)	+1
Water Quality	Poor (evidence of pollution or enrichment)	-1	Moderate/Good (no evidence of pollution or enrichment)	+1

21.1.18 As many ditches tend to be interlinked, ditches were identified as separate for survey where they changed direction or were blocked. The length of each ditch was walked in its entirety, with the exception of those ditches which continued more than 100 m outside of the relevant buffer zone, to ensure the habitat quality was fully assessed and any variation noted. The GCN habitat suitability for each ditch was then determined across a representative 100 m section.

21.1.19 In circumstances where originally identified ditches had breaks within a linear node to node stretch and where habitat quality appeared to significantly vary, ditches were subdivided. The subdivided sections with varying habitat, were reassigned individual ditch reference numbers for future identification if further surveys were required.

21.1.20 Ditches which produced DSI scores determining the need for further GCN survey were scoped for presence/absence survey i.e. positive or neutral. Where ditches were noted as having 'fast' flow though DSI assessments were undertaken and 'neutral' or 'positive' DSI scores sometimes obtained, these waterbodies were then determined as unsuitable for further survey as GCN would not use aquatic habitat with fast flowing water during the breeding season.

Environmental DNA (eDNA) Survey Technique

21.1.21 Ponds and ditches which were determined as requiring further survey were identified for environmental DNA (eDNA) sampling to confirm presence or absence of GCN (subject to access). eDNA sampling can be undertaken between mid-April and 30th June and can provide a valuable method of quickly testing for the presence or absence of GCN in a waterbody. This is considered the optimum period due to it covering the peak in the GCN breeding season (mid-April to mid-May). The test detects DNA traces from GCN skin, faecal matter or mucous samples that a GCN will have left within a waterbody particularly during the breeding season.

21.1.22 Waterbodies which had dried out or become too vegetated or shallow to support breeding GCN since the HSI and DSI assessments were subsequently scoped out of further GCN surveys.

21.1.23 Whilst undertaking eDNA sampling, surveyors made assessments as to whether traditional GCN surveys were viable and if so which methods could be used (taking health and safety considerations, such as steep banks, into account).

21.1.24 All eDNA sampling was undertaken by a surveyor holding a science and education licence for GCN issued by Natural England or a registered surveyor on the GCN class licence administered by Natural England. All survey leads were appropriately trained in using the eDNA sampling technique.

21.1.25 In regard to ponds, surveyors extracted 20 water samples from at least 80 % of the pond perimeter, with care taken to sample a variety of habitats within each pond in order to undertake efficient eDNA sampling.

21.1.26 The eDNA survey technique was originally developed for use on ponds (Ref 21-15). Ditches are linear waterbodies where the standing water is often no more than 1 m wide, and in Lincolnshire are often more than 200 m long, so a different approach to sampling was proposed to ensure full coverage of each ditch and to enable sampling to be undertaken.

21.1.27 Samples were taken at 10 m intervals along the length of each ditch. This method compensated for the potential for GCN to enter a ditch at any point along its length and reasonably assumed that individuals would be likely to move 5 m in either direction from their entry point.

21.1.28 Where ditches were more than 200 m long sampling was initiated at the point nearest the proposed converter station site and care was then taken to distribute sampling along the length of the ditch with particular focus on sampling representative stretches which exhibited the highest quality breeding habitat for GCN.

21.1.29 Waterbodies (ponds and ditches) were not entered during sampling to prevent the disturbance of sediment and the contamination of samples. DNA can persist in silt layers for several years so the samples must be taken from the upper water column and the sediment left undisturbed in order to allow accurate detection of the recent presence of GCN in the water.

21.1.30 Sampling was undertaken following the standard procedure described below:

- Whilst sampling waterbodies surveyors wore sterile gloves included in the sampling pack to reduce risks of contamination. Biosecurity measures were implemented to minimise the risk of transferring genetic material from one waterbody to another.
- If sampling could not be easily undertaken from the water's edge, a sampling pole was used and the sampling ladle taped to the end.
- Effective cleaning of the extension pole between sites with a diluted bleach solution to remove any risk of cross contamination with GCN DNA between waterbodies was undertaken. The extension pole was kept separate from any equipment that was in contact with potential GCN habitat.
- 20 samples were collected using the ladle (filling the ladle), with each sample emptied into the bag. Before each ladle sample was taken, the water column was mixed by gently using the

ladle to stir the water from the surface to close to the bottom of the waterbody without disturbing the sediment on the bed of the waterbody.

- Once all the samples had been collected, the bag was closed securely and shaken for 10 seconds to mix the samples;
- New sterile gloves were worn at this point to keep the next stage uncontaminated.
- Water was extracted from the sterile bag using a pipette and pipetted into a sterile tube (filling the tube to the 50 ml mark). The cap on the tube was tightly secured to prevent leakage of the sample.
- The tube was then shaken vigorously for 10 seconds to mix the sample and preservative.
- This process was repeated for each of the 6 tubes in the kit.
- Before filling each tube the water samples contained in the sterile bag were stirred or shaken again to prevent DNA sinking to the bottom of the sterile bag.
- Once finished the remaining water from the sterile bag was emptied back into the waterbody.
- After collection samples were stored in a refrigerator at 2-4 °C to prevent deterioration of samples.
- Care was taken to ensure samples were correctly labelled and that forms were completed fully to avoid any mix up with waterbody numbers or eDNA kit numbers and therefore problems with analysis and data collation.
- The eDNA samples were then sent in batch by courier for laboratory analysis.

21.1.31 Following analysis, where a 'negative' result was returned the relevant waterbody was excluded from further survey. Where 'positive' eDNA test results were returned, traditional GCN surveys were undertaken to provide population estimates within a 50 m buffer around the proposed converter station site, the permanent access road and the proposed AC cable route.

Traditional Surveys

21.1.32 All waterbodies identified as requiring further survey during HSI/DSI assessments within 50 m of the proposed converter station site, the permanent access road and the proposed AC cable route were subject to one traditional survey visit which was undertaken at the same time as the eDNA surveys (subject to access). This enabled five further visits to be undertaken within the survey period to obtain a population estimate if a 'positive' eDNA result was returned.

21.1.33 Waterbodies where eDNA sampling was not possible were also traditionally surveyed to confirm presence/absence up to 250 m from the proposed converter station site and 50 m from the permanent access road and proposed AC cable route.

21.1.34 Waterbodies which had dried out or become too vegetated or shallow to support breeding GCN, since the HSI/DSI or eDNA surveys, were scoped out of further GCN surveys.

21.1.35 The methods and effort of the traditional surveys were carried out in accordance with the current "Great Crested Newts: surveys and mitigation for development projects" guidelines (English Nature 2001) (Ref 21-12).

21.1.36 All survey visits to waterbodies were led by a surveyor holding a science and education licence for GCN issued by Natural England or was a registered surveyor on the GCN class licence administered by Natural England. The licensed surveyors were assisted by non-licensed surveyors acting under the supervision of the licensee.

21.1.37 Traditional surveys providing population estimates include:

- **Effort** - six visits to waterbodies in suitable weather using minimum of three traditional survey techniques.
- **Timing** - mid-March to mid-June, with at least 3 visits undertaken during mid-April to mid-May.
- **Suitable Weather** - Weather conditions on the nights of traditional surveys should have no appreciable rain or wind which may affect the survey. Temperatures must be consistently above 5 ºC at midnight or at the end of surveys.

21.1.38 The traditional survey methods which were undertaken to determine population estimates include; torch survey, bottle trap survey, egg searching and hand netting.

Torch Survey Method

21.1.39 Ponds were surveyed by walking the perimeter, while ditches were surveyed by walking the top bank on one side of the ditch. Torch surveys were carried out after dusk with a powerful torch (one million candle power).

21.1.40 The number, species and (where possible) sex and age class of amphibians seen were recorded.

21.1.41 It is not always possible to achieve 100 % coverage of shorelines of all waterbodies or along the length of all ditches using torch surveys because of access difficulties, for example dense vegetation or boggy margins and access was only taken where it was safe to do so.

21.1.42 Estimates of the percentage of shoreline of each waterbody surveyed and other factors affecting torching such as water turbidity and emergent vegetation were recorded.

Bottle Trap Survey Method

21.1.43 Bottle traps were only used at ponds and where ditches provided almost pond-like habitat i.e. were flooded in sections providing pooled water and unlikely to be affected by fluctuating water levels within the wider drainage system. Bottle traps were only used in waterbodies which had sufficient water depth for the bottles to remain submerged to prevent animal welfare issues.

21.1.44 If there were any health and safety constraints to surveys such as steep banks (particularly in relation to ditches), bottle trapping was not implemented.

21.1.45 Bottle traps were not used in waterbodies where there was a concern that they may be tampered with e.g. moved by members of the public or overly inquisitive horses and cattle etc.

21.1.46 The bottle traps used were composed of a two litre plastic bottle secured to the bottom of the waterbody by a bamboo cane passing through the trap at an angle. When surveying ponds,

bottle traps were set at an average spacing of 2 m along accessible shorelines (to allow estimation of population size).

21.1.47 Bottle traps were set out in factors of five to prevent any traps being left within waterbodies and assist with remembering trap numbers when counting bottles back in.

21.1.48 Traps were set in the evening and operated overnight, with surveyors emptying the traps early the following morning. Newts are particularly at risk on warm sunny days in shallow water traps. Traps were operated well within the maximum time limits set by English Nature (2001) (Ref 21-12). All bottle traps were emptied within 12 hours in March-April, 10 hours in May and 8 hours in June.

21.1.49 All bottle traps were set with air bubbles and submerged below the water's surface.

Egg Search Survey Method

21.1.50 Aquatic vegetation was searched by walking or wading (only where considered safe to enter the water and with a throw rope at all times) the waterbody shoreline, looking for the characteristic shape of folded leaves on favoured plants for ovipositing. GCN lay their eggs singly on the leaves of submerged vegetation and then the vegetation is folded over the egg to form a protective 'purse'.

21.1.51 Searching for newt eggs is useful between March and July (the peak egg laying period is April to June). Not all eggs are viable, so although most eggs will have hatched by June, non-viable eggs will remain on vegetation longer before decaying or becoming predated.

21.1.52 Egg searching was used at both ponds and ditches. In the event that egg folds were identified but could not be accessed to sample, an assumption was made of great crested newt breeding where adult GCN have been recorded and the egg laying substrate is suitable for large newt eggs.

Hand Netting Survey Method

21.1.53 Hand netting was used at ponds and ditches where an alternative third survey method was required (i.e. bottle trapping was not feasible) and where health and safety constraints were not noted.

21.1.54 The standard procedure for hand netting was used; requiring a D-net to be swept vigorously through the water in 2 m sweeps with a survey effort of 15 minutes per 50 m of shoreline (Froglife Advice Sheet 11 (Ref 21-16), English Nature (2001) (Ref 21-12)) in order to search for GCN adults or larvae.

Meta Population and Population Size Class Assessments

21.1.55 GCN often exist as a series interlinked subpopulations where individuals disperse between a cluster of ponds. Studies reveal variation in dispersal distances, but GCN commonly move between waterbodies that are within around 250 m of each other. This system is called a meta

population. As such, impacts on a single waterbody may have knock-on effects on GCN in nearby habitats.

21.1.56 The Population Size Class Assessment is determined by the peak count of GCN on any one survey visit using any single survey method at a single waterbody and then adding these totals together for all waterbodies within a meta population. Population size classes are classified as follows:

- 'small population' for a maximum peak count up to 10 GCN
- 'medium population' for a maximum peak count between 11 and 100 GCN
- 'large population' for a maximum peak count over 100 GCN

21.1.57 The Population Size Class Assessment has been used to determine the GCN Population Size Class within Sections of the base scheme design where GCN have been recorded during surveys. The GCN Population Size Class is used to assess likely impacts of works on GCN populations and to inform mitigation strategies.

Limitations

21.1.58 Lack of agreed land access or confirmation of access initially prevented survey of Ditch 703 which accounted for only 2% of scoped waterbodies. Once access was agreed later in the survey season, presence of a pair of breeding marsh harriers in the vicinity, which, being a Wildlife and Countryside Act 1981 Schedule 1 species (Ref 21-10), could not be disturbed and prevented further survey.

21.1.6 Desktop records indicated that a 'small' population of GCN was recorded at Bicker Fen Substation in 2015, with GCN recorded in Pond P175. eDNA sampling and traditional surveys were attempted for Pond 175 however these were not possible due to dense emergent vegetation preventing access to the open water in addition to identification of the pair of breeding marsh harriers.

21.1.7

21.1.8 Ditches D619 and D646 were DSI assessed as requiring further survey, however initially the ditches were scoped out of further GCN survey as they were within 251-500 m of the proposed converter station site, where further survey was not required. However, following revision of the base scheme design, D619 and D646 fell within the 0-50 m survey buffer. Pre-commencement survey of D619 and D646 will therefore be required as it was not possible to survey them within the 2017 GCN breeding season.

21.1.59 HSI and DSI surveys were not all undertaken within the optimum survey period of late April to September due to a combination of the project programme and when access was available. Aquatic vegetation may not have had sufficient time to establish for an accurate macrophyte coverage assessment to be made. However, seasonality was taken into consideration by surveyors and remnant vegetation was used to estimate vegetation density during optimum

survey periods. Ditches within the area are regularly dredged and vegetation cut so this is unlikely to have significant constraints to the assessment.

21.1.9 Additional limitations regularly encountered when undertaking eDNA sampling and traditional surveys include:

- Varying water levels and drying – the majority of ditches surveyed were observed drying as the survey season progressed, preventing full traditional surveys from being undertaken. Variations in ditch water levels were difficult to anticipate due to the nature of the ditches being used to irrigate the surrounding landscape and in some circumstances artificially controlled by use of major drains. Natural fluctuations also occurred particularly due to the dry spring of 2017;
- Shallow water (<5 cm in depth) - making eDNA sampling impossible with high risk of sediment contamination. Additionally other than torching and egg searching, waterbodies were too shallow to allow bottle trapping or successful hand netting due to animal welfare constraints;
- Inconsistent poor water levels, where water depth varied - preventing extraction of sufficient water samples for effective eDNA sampling and increasing risk of sediment contamination. Also reducing the extent and effectiveness of traditional survey methods with a diminished proportion of the waterbody possible or suitable to survey;
- Insufficient open water - ditches contained too much vegetation and insufficient open water for eDNA sampling to be possible without significant increased risk of sediment contamination. Traditional survey methods were inhibited due to decreased visibility within waterbodies or insufficient access to open water to allow hand netting, or space for placement of bottle traps particularly as the season progressed and vegetation density increased;
- Health and Safety – some ditches had steep banks with uneven ground and dense vegetation and were difficult to survey. This would prevent the use of methods such as bottle trapping and hand netting, in addition to preventing eDNA sampling even with extension poles; and
- Pollution – water very polluted, supporting minimal life and often being covered with dense green algae, making eDNA sampling difficult as water depth was difficult to assess and inhibiting effectiveness of traditional survey methods such as hand netting and torching.

21.1.60 With respect to traditional surveys, the ditches were generally unsuitable for bottle trapping due to their steep sides and shallow water and therefore torching, egg searching and netting were used as the three methods required to comply with the English Nature guidelines (Ref 21-12). However, the steep banks and dense vegetation also on occasion prevented hand netting from being undertaken. Steep banks prevented safe access for egg searching at some ditches and dense vegetation reduced effectiveness of torch survey. These constraints to survey were unavoidable.

21.1.61 As a result, it has not been possible to employ three different methods of traditional GCN survey at every waterbody in accordance with guidelines and methods for establishing the presence or likely absence and estimating the population size class of GCN at these locations has been

limited. However proposed mitigation has taken this limitation in the data into account and it is not considered to limit the findings of the assessment.

Results

21.2.1 The results of the GCN surveys are shown on Figure 21.5 with representative habitats presented in Figure 21.6 and detailed in the following sections.

HSI and DSI Survey

21.2.2 The results of the pond HSI assessments are shown in Table 21.4.5 and the results of the ditch DSI assessments in Table 21.4.6.

21.2.3 Two ponds were identified within the 500 m buffer around the proposed converter station site and within 250 m of the permanent access road and the proposed AC cable route; Pond 175 within the Bicker Fen Substation and Pond 192 identified along the permanent access road. Both were subject to HSI survey.

21.2.4 Both ponds were categorised as having 'Poor' habitat suitability to support breeding GCN. The ponds were noted as having poor/moderate water quality, major presence of wildfowl with the possibility of fish being present which increases the potential that GCN would be prevented from breeding within these ponds.

21.2.5 No ponds were therefore suitable under the initial survey criteria to take forward for further survey. However, survey of Pond 175 was proposed due to 2015 desktop records confirming presence of a 'small' GCN population. Further GCN surveys of P175 were prevented during 2017 due to the presence of nesting marsh harriers (WCA 1981 Schedule 1) (Ref 21-10) being noted within the reed bed adjacent to and surrounding the pond, during the attempted traditional survey visit in April 2017.

21.2.6 A total of 56 ditches were identified within the 500 m buffer around the proposed converter station site, the 250 m buffer of the permanent access road and the 250 m buffer of the proposed AC cable route. Access was not possible to one of the identified ditches; 33 ditches were not considered suitable for DSI habitat assessment as shallow water was noted by surveyors and drying during the GCN breeding season was considered likely or ditches were found to be dry. Twenty-two ditches were subject to DSI survey.

21.2.7 DSI scores determined that 14 ditches were categorised as requiring further survey and were taken forward for additional GCN surveys. Eight ditches were not suitable for further survey as determined by the DSI scores, including D600 which was outside the 500 m buffer around the proposed converter station site, the 250 m buffer of the permanent access road and the 250 m buffer of the proposed AC cable route.

Table 21.4.5 Habitat Suitability Index (HSI) for ponds assessed in regard to habitat suitability for GCN at the proposed converter station

Pond No	SI1 - Geographic Location		SI2 - Pond area (m²)		SI3 - Pond drying		SI4 - Water quality		SI5 – Shading (%)		SI6 - Presence of waterfowl		SI7 - Presence of fish		SI8 - Pond density in area (per km²)			SI9 - Terrestrial habitat quality		SI10 - Macrophyte cover in pond		Pond Suitability	HSI
	Measure	SI score	Measure	SI score	Measure	SI score	Measure	SI score	Measure	SI score	Measure	SI score	Measure	SI score	No of ponds	Measure	SI score	Measure	SI score	Measure	SI score		
175	A optimal	1	50	0.1	Never	0.9	Moderate	0.67	0	1	Major	0.01	Possible	0.67	0	0	0.1	Good	1	80	1	poor	0.36
192	A optimal	1	1000	0.953846	Never	0.9	Poor	0.33	10	1	Major	0.01	Possible	0.67	1	0.31831	0.4	Moderate	0.67	20	0.5	poor	0.44

Table 21.4.6 Ditch Suitability Index (DSI) for ditches assessed in regard to habitat suitability for GCN at the proposed converter station

Ditch No	SI1 - Permanence		SI2 - Vegetation		SI3 - Fish		SI4 - Shade		SI5 - Water Quality		Water Flow	DSI Score	Further Survey Required	Survey Requirement	Population Estimate Required if GCN Presence Confirmed
	Measure	SI Score	Measure	SI Score	Measure	SI Score	Measure	SI Score	Measure	SI Score					
600	Wet	1	Not Suitable	-1	Absent	1	Not Shaded	1	Poor	-1	Fast	1	No	n/a	n/a
602	Dry	-2	Not Suitable	-1	Absent	1	Shaded	-1	Moderate	1	Slow	-2	No	n/a	n/a
611	Wet	1	Suitable	1	Absent	1	Not Shaded	1	Poor	-1	Slow	3	Yes	eDNA Traditional Survey	Yes
619	Wet	1	Suitable	1	Absent	1	Not Shaded	1	Moderate	1	Slow	5	Yes	eDNA Traditional Survey	No
621	Wet	1	Not Suitable	-1	Absent	1	Not Shaded	1	Poor	-1	Fast	1	No	n/a	n/a
622	Wet	1	Not Suitable	-1	Absent	1	Not Shaded	1	Moderate	1	Slow	3	Yes	eDNA Traditional Survey	Yes
629	Wet	1	Not Suitable	-1	Absent	1	Not Shaded	1	Moderate	1	Slow	3	Yes	eDNA Traditional Survey	Yes
630	Wet	1	Suitable	1	Absent	1	Not Shaded	1	Moderate	1	Slow	5	Yes	eDNA Traditional Survey	Yes
632	Wet	1	Suitable	1	Absent	1	Not Shaded	1	Moderate	1	Slow	5	Yes	eDNA Traditional Survey	Yes
640	Dry	-2	Not Suitable	-1	Absent	1	Not Shaded	1	Poor	-1	Slow	-2	No	n/a	n/a
641	Dry	-2	Not Suitable	-1	Absent	1	Not Shaded	1	Poor	-1	Slow	-2	No	n/a	n/a

Table 21.4.6 Ditch Suitability Index (DSI) for ditches assessed in regard to habitat suitability for GCN at the proposed converter station

Ditch No	SI1 - Permanence		SI2 - Vegetation		SI3 - Fish		SI4 - Shade		SI5 - Water Quality		Water Flow	DSI Score	Further Survey Required	Survey Requirement	Population Estimate Required if GCN Presence Confirmed
	Measure	SI Score	Measure	SI Score	Measure	SI Score	Measure	SI Score	Measure	SI Score					
646	Wet	1	Suitable	1	Absent	1	Not Shaded	1	Moderate	1	Slow	5	Yes	eDNA Traditional Survey	Yes
679	Wet	1	Not Suitable	-1	Absent	1	Not Shaded	1	Moderate	1	Slow	3	Yes	eDNA	No
681	Wet	1	Suitable	1	Absent	1	Not Shaded	1	Moderate	1	Slow	5	Yes	eDNA Traditional Survey	Yes
692	Wet	1	Not Suitable	-1	Absent	1	Not Shaded	1	Moderate	1	Slow	3	Yes	eDNA Traditional Survey	Yes
693	Dry	-2	Suitable	1	Absent	1	Not Shaded	1	Moderate	1	Slow	2	Yes	eDNA Traditional Survey	Yes
699	Dry	-2	Not Suitable	-1	Absent	1	Shaded	-1	Moderate	1	Slow	-2	No	n/a	n/a
700	Wet	1	Suitable	1	Absent	1	Not Shaded	1	Moderate	1	Slow	5	Yes	eDNA Traditional Survey	Yes
708	Dry	-2	Suitable	1	Absent	1	Shaded	-1	Poor	-1	Slow	-2	No	n/a	n/a
709	Wet	1	Not Suitable	-1	Absent	1	Shaded	-1	Moderate	1	Slow	1	Yes	eDNA Traditional Survey	Yes
713	Dry	-2	Not Suitable	-1	Absent	1	Not Shaded	1	Poor	-1	Slow	-2	No	n/a	n/a
716	Wet	1	Not Suitable	-1	Absent	1	Not Shaded	1	Poor	-1	Slow	1	Yes	eDNA Traditional Survey	Yes

eDNA Survey

21.1.10 eDNA sampling results and requirement for further traditional GCN survey is detailed in Table 21.4.7 below. For those 14 ditches taken forward for further survey, three ditches could not be subject to eDNA survey as they were found to have dried out since the DSI identified them as potentially suitable features. Ditches D619 and D646 were not surveyed as they were initially outside of the 0 - 250 m survey buffer of the proposed converter station site. However, following changes to the base scheme design (after the GCN survey season), they are now within the 0 - 50 m survey buffer and will require pre-commencement survey. A total of nine ditches were therefore taken forward for further survey in accordance with the agreed survey approach (refer to Table 21.4.1).

21.2.8 The 2016 eDNA survey of Ditch 716 returned a 'positive' result for GCN presence. However the laboratory identified analysis inconsistencies during the time that Ditch D716 was being analysed and therefore a repeat eDNA survey was undertaken in 2017 which returned a 'negative' result for GCN presence.

21.2.9 The remaining eight ditches that were eDNA sampled within the 250 m buffer around the proposed converter station site and within 50 m of the permanent access road and the proposed AC cable route also returned 'negative' results for GCN presence. The 'negative' results indicate that GCN are absent from these waterbodies and therefore there are no constraints with regard to GCN.

21.1.11 Ditch D611 within the Bicker Fen Substation returned an 'inconclusive' eDNA result for GCN presence/absence. The 'inconclusive' results indicate that laboratory analysis detected degradation of the internal control for these samples. Therefore, due to the risk of any eDNA also being degraded (resulting in a false negative) an 'inconclusive' result was provided.

Table 21.4.7 Ditch and Pond eDNA Results and Requirement for Traditional Survey

Waterbody Number	Year of Survey	eDNA Sampling Undertaken	eDNA Result	Traditional Survey Required
Ditches				
611	2017	Yes	Inconclusive	Yes
619	2016	No (eDNA required, but previously outside 250 m buffer)	n/a	Yes
622	2016	Yes	Negative	No
629	2017	Yes	Negative	No
630	2016	No - dry	n/a	No
632	2016	Yes	Negative	No

Table 21.4.7 Ditch and Pond eDNA Results and Requirement for Traditional Survey				
Waterbody Number	**Year of Survey**	**eDNA Sampling Undertaken**	**eDNA Result**	**Traditional Survey Required**
Ditches				
646	2016	No (eDNA required, but previously outside 250 m buffer)	n/a	Yes
679	2017	Yes	Negative	No
681	2017	Yes	Negative	No
692	2017	Yes	Negative	No
693	2016	No - dry	n/a	No
700	2016	Yes	Negative	No
709	2016	No - dry	n/a	No
716	2016 and 2017	Yes	Positive (2016, but analysis was faulty) Negative (2017 retest)	No

Traditional GCN Surveys

21.2.10 One traditional GCN survey visit was undertaken on waterbodies within 250 m of the proposed converter station site and within 50 m of the permanent access road and the proposed AC cable route, at the same time as eDNA surveys. The results of the torch surveys are presented in Table 21.4.8. Ditch D716 was surveyed using traditional methods for one visit only as once a 'negative' eDNA result was returned GCN absence was confirmed and further traditional surveys were no longer required.

21.2.11 An adult small newt was identified in Ditch D716 whist undertaking torch surveys, the sex was not possible to determine. No other waterbodies were taken forward for traditional GCN surveys.

21.2.12 Traditional surveys to confirm presence/absence of GCN within D611 after the return of an 'inconclusive' eDNA result were not possible due to the survey season being almost concluded at the time access for DSI assessment and eDNA sampling was agreed.

Table 21.4.8 Ditch and Pond Torch Survey Results											
Waterbody Ref	Date	Air Temp °C	Water Temp °C	Turbidity (0-5)	Vegetation Cover (0-5)	Shoreline covered %	GCN adult	Smooth/ Palmate newt adult	Toad	Frog	Fish?
Ditch 716	19-Apr-17	12	-	1	3	100	0	1	0	0	-
	Further surveys not required – GCN absence confirmed by eDNA sampling										
Weather Conditions/ Comments	No precipitation. Wind Beaufort Scale - 2. Algae obscuring view for 40% of length. Could not get to ditch side, so torch only from top of ditch.										

Metapopulation and Population Size Class Assessments

21.1.12 Desktop records indicated that a 'small' population of GCN was recorded at Bicker Fen Substation in 2015. Surveys conducted in 2015 indicated a peak count of five individuals in P175 and one individual in D611. eDNA sampling was attempted in 2017 to update this information for Pond 175 and traditional survey proposed, but surveys were not possible due to dense emergent vegetation preventing access to the open water and the presence of a pair of breeding marsh harriers (WCA 1981 Schedule 1 (Ref 21-10)), which could not be disturbed.

21.2.13 Ditch 611 within the Bicker Fen Substation returned an 'inconclusive' eDNA result for GCN presence/absence. The 'inconclusive' result prevented confirmation of GCN presence as identified in 2015 surveys. Traditional surveys to confirm presence/absence of GCN within D611 were not possible due to the survey season being almost concluded at the time access for DSI assessment and eDNA sampling was agreed.

21.2.14 The desktop GCN records within the Bicker Fen Substation date from 2015 and it is therefore considered that these records remain pertinent. It is assumed that a 'small' GCN population is still present within the Bicker Fen Substation as survey results from 2017 and constraints to surveys cannot confirm absence of GCN within the locality.

21.2.15 Construction of the northern part of the proposed AC cable route within 500 m of the assumed 'small' GCN population within Pond 175 and Ditch 611 (within Bicker Fen Substation), has the potential to lead to killing and injury of individuals where suitable habitats such as hedgerows, ditches, tall grassland and plantation woodland may be temporarily disturbed. A Natural England licence will be obtained to undertake works within Bicker Fen Substation. GCN surveys will be undertaken at Pond 175 and Ditch 611 to confirm population size prior to licence submission.

Appendix 21.5 Bat Roost and Activity Survey

Methods

Roost Surveys

Ground Based Assessment

21.1.13 A preliminary ground based assessment of trees and built features within the proposed converter station site was undertaken in May 2016, while a preliminary ground based assessment was undertaken along the permanent access road and proposed AC cable route in March and April 2017. The inspections were undertaken to assess the suitability of features for roosting bats in trees, buildings and built features.

21.1.14 The daytime assessment was undertaken in accordance with the criteria for roost assessment identified in the Bat Conservation Trust (BCT) Good Practice Guidelines (2016) (Ref 21-17).

21.1.15 Most tree roosts are created by one or a combination of the following:

- Old woodpecker holes;
- Splits in trunk, bough or large branches;
- Rot holes in trunk, bough or large branches;
- Holes formed by two boughs or branches growing in contact;
- Loose or lifting bark; and
- Underneath a covering of dense latticed creeper, usually ivy *Hedera helix*.

21.1.16 The trees and built features were searched externally for any evidence of use by bats and classified according to the suitability for roosting bats in line with the criteria set out in Table 21.5.1. The surrounding habitat was also assessed for its potential to support foraging and commuting bats.

Table 21.5.1 Bat Roosting Habitat Categories (BCT, 2016) (Ref 21-17)		
Suitability	**Roosting Habitats**	**Commuting/Foraging Habitats**
Negligible	Negligible potential roost features are present that are likely to be used by bats	Negligible features on site likely to be used by commuting or foraging bats. A general lack of linear features and low habitat, structural or floristic diversity.
Low	A structure with one or more potential roost features that could be used by individual bats opportunistically, but which do not offer sufficient space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats.	Habitat that could be used by small numbers of commuting bats (e.g. a gappy hedgerow or an un-vegetated stream) or foraging bats (e.g. a lone tree or small patch of scrub) but which is isolated from the surrounding countryside.
Moderate	A structure with one or more potential roost features that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat, but which is unlikely to support a roost of high conservation status (maternity or hibernation).	Continuous habitat connected to the wider landscape that could be used by bats for commuting (e.g. lines of trees or scrub or linked back gardens), or foraging bats (e.g. trees, scrub, water, grassland).
High	A structure possessing one or more potential roost features that are suitable for use by larger numbers of bats on a regular basis and potentially for longer periods of time, due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high quality habitat that is strongly connected with the wider landscape that is likely to be used regularly by commuting bats (e.g. river valley, vegetated stream, woodland edge, hedgerows with trees) or foraging bats (e.g. broadleaved woodland, grazed parkland, tree-lined watercourses or ponds).

Evening Emergence Surveys

21.1.17 Dusk emergence surveys were undertaken on the trees and built structures with bat roosting suitability. Two evening emergence surveys were undertaken on tree T286 which was categorised as having moderate bat potential following the ground based assessment. The surveys were carried out in line with the 2016 BCT Guidance (Ref 21-17), commencing 15 minutes prior to sunset and finishing 90 minutes after sunset.

21.1.18 A team of two surveyors used heterodyne (Pettersson D240) and frequency division detectors (Anabat) to record bat calls. The surveyors were positioned either side of the tree, with a clear vantage point of the features which could be used by bats.

21.1.19 Surveyors recorded the location, time and species of any emerging bats, and noted flight lines and foraging hotspots. The survey was carried out during favourable weather conditions. Air temperature, precipitation, cloud cover and wind speeds were recorded. Standardised methods of recording weather parameters were used, e.g. cloud cover in Oktas2 and wind on the Beaufort scale3.

21.1.20 The surveys were undertaken on 21st June and 8th August 2016 within the optimum survey period of May to August by suitably experienced ecologists. Details of survey times and weather conditions are shown in Table 21.5.2.

Activity Survey

21.1.21 An assessment of the suitability of the habitats to provide foraging and commuting habitats for bats at the proposed converter station site, permanent access road and proposed AC cable route was undertaken at the same time as the preliminary ground based assessment for roosts.

21.1.22 The open arable habitats which dominate the proposed converter station site, permanent access road and proposed AC cable route represent low quality bat foraging habitat. The ditch and drain network may be used by low numbers of foraging and commuting bats, with Hammond Beck representing the most suitable of these features. The small block of woodland also provides a likely key spot for bat foraging and commuting in this area of generally low suitability.

21.1.23 A transect route was undertaken in June and September 2016 around an arable field which intersects with the northern part of the proposed AC cable route. To complement this data, two locations (referenced A and B) were subject to static monitoring in June and September 2016. This area was surveyed during the early stages of development of the Onshore Scheme and the results are considered useful to this assessment .This transect route (referenced as Transect CS9) is shown on Figure 21.8. The locations of the static detectors (referenced A and B) are also shown on this drawing.

21.1.24 Due to the presence of Hammond Beck and the woodland block on the permanent access road, a walked transect survey (referenced as Transect 6) and static monitoring at two locations (referenced as N4 and H3) were undertaken to sample these features. The transect route and static monitoring locations are shown in Figure 21.8. As the habitats in this location have been categorised to be low quality foraging and commuting habitats, three seasonal survey visits over the active season (between May and September) are required, sampling spring, summer and autumn.

[2] Cloud cover is reported in oktas or eighths with the additional convention that 0 oktas represents the complete absence of cloud, 1 okta represents a cloud amount of 1 eighth or less, but not zero, 7 oktas represents a cloud amount of 7 eighths or more, but not full cloud cover, 8 oktas represents full cloud cover with no breaks, 9 oktas represents sky obscured by fog or similar

[3] Wind strength is reported using the Beaufort Scale of Wind Force, this scale runs from 0 to 12, information on the conditions experienced during surveys are as follows: 0 – Calm (vertical smoke); 1 – Light Air (slight smoke drift); 2 – Light Breeze (leaves gently rustle).

Transect Survey

21.1.25 A pair of surveyors walked the transect routes using heterodyne (Pettersson D240) and frequency division (Anabat) detectors. The surveys commenced at sunset and continued for two hours after sunset. Transect CS9 included nine, four-minute listening points. Transect 6 included ten, five-minute listening points. The number of bat passes[4], species, behaviour and flight direction were noted at each pre-determined stop and the intervening walks.

21.1.26 Transect CS9 surveys were undertaken on the 22nd June 2016 and the 7th September 2016, by suitably experienced ecologists.

21.1.27 The spring visit of Transect 6 was undertaken on 16th May 2017 and the summer visit was undertaken on 29th June 2017. Details of dates, times and weather conditions are shown in Table 21.5.3. The transect route was reversed in June to optimise sampling efficacy. A third visit is scheduled for August 2017 and will be included in a supplementary report.

Static Detector Survey

21.1.28 In 2016, two static Anabat Express detectors were deployed in the area to the northeast of the proposed AC cable route, along a hedgeline (referenced A) and on a tree (referenced B). These locations were chosen as the features monitored had the potential to be impacted during early stages of the design. The statics were left for a minimum of five nights during favourable weather conditions to monitor bat activity between sunset and sunrise (in line with the 2016 BCT Guidance (Ref 21-17)). Details of dates, times and weather conditions are shown in Table 21.5.4.

21.1.29 In 2017, two static Anabat SD2 detectors were deployed along the permanent access road transect, at Hammond Beck (referenced H3) and on the edge of a block of woodland (referenced N4). These locations were chosen as the features monitored are likely to be impacted by the base scheme design. The statics were left for a minimum of five nights during favourable weather conditions to monitor bat activity between sunset and sunrise (in line with the 2016 BCT Guidance (Ref 21-17)). Details of dates, times and weather conditions are shown in Table 21.5.4.

Sonogram Analysis

21.1.30 Recorded sonograms were analysed using Analook W4.2d software (Ref 21-18) by ecologists trained to Analook Analysis Advanced Level 3.

[4] A bat pass is defined as the number of bat calls in a continuous sequence; each sequence or pass is separated by 1 second or more in which no calls are recorded (Hundt, 2012).

21.1.31 For transect data, bat calls were manually verified with bat calls geo-referenced, automatically where possible, and digitally mapped using GIS. Each species is colour coded and flight direction is provided where this was observed.

21.1.32 The static monitoring data was scanned using an automated Pipistrellus sp. filter (developed by TEP) and all non-pipistrellus calls then manually verified. Data is presented as an activity index of average bat passes per night (total number of passes divided by the number of nights monitored).

Limitations

21.1.33 The ground based assessment was undertaken during suitable weather conditions and before trees were in full leaf, thus allowing detailed inspection of any trees present within the survey area from the ground with the use of binoculars. No limitations with respect to land access were encountered.

21.1.34 No limitations with respect to weather conditions or access were encountered during the evening emergence surveys at tree T286.

21.1.35 The static detector at location B failed to record on the second visit in September 2016, therefore there is no data available for analysis and comparison. During static monitoring in 2017 there were spells of rain, which may have deterred bats from emerging. This may contribute to the lower levels of activity recorded and reduced species assemblage recorded in 2017 compared to 2016.

21.1.36 Brown long-eared bats were recorded during the static monitoring. This species can be relatively difficult to detect due to their low amplitude (i.e. quiet) calls. The activity of this species may therefore be underestimated. The conclusions and interpretation in this report takes this into consideration.

21.1.37 Bats vary their calls dependent on the habitats in which they fly and on their activity (commuting, foraging, social interaction, etc). It is not always possible to identify sonograms to species level owing to the overlap of call parameters between some species and/or poor quality recordings (e.g. of brief and distant passes). In these cases, it is accepted that species are identified to genus level or group level (e.g. Myotis, Myotis/Plecotus and Nyctalus/Eptesicus) (Russ, 1999) (Ref 21-19). Where call parameters are inconclusive the species has been labelled as 'unknown'. This ensures the dataset is interpreted accurately and transparently.

21.1.38 Bat activity indices do not represent the number of bats on site but an indication or sample of their activity. Due to the sampling rates, indices on transect surveys tend to produce an overestimate of bat activity and conversely static monitoring tends to produce an underestimated rate of bat activity.

Results

Roost survey

Ground Based Assessment

21.1.39 Results of the ground based assessment are presented in Figure 21.4 and discussed below. The proposed converter station comprises an open arable field. Small wet ditches delineate the southern and western study area boundaries, with a wider, but shallow ditch delineating the northern study area boundary. The eastern study area boundary comprises open arable habitat.

21.1.40 A small brick built culvert is present in the north east corner of the proposed converter station. The culvert is approximately 1.5 m in height by 1 m in width and in a good state of repair. No bat access points were observed and the culvert was assessed as having negligible bat roost suitability. A small fenced-off compound was present along the southern boundary of the converter station site. The shelters and containers within the compound did not possess features with the potential to support roosting bats.

21.1.41 Tree T288 (mature ash) is located within 50 m of the proposed converter station, on the opposite side of the road. This tree was found to have low suitability for roosting bats.

21.1.42 The permanent access road predominantly passes through arable fields, intersecting with a number of ditches, dykes and drains, including Hammond Beck. At the junction of the permanent access road with the A52 a number of young trees are present. These trees do not support any features which could provide potential roosting habitat for bats. The permanent access road also crosses the southern end of a small block of broadleaved plantation woodland. These trees are only 15-20 years old and being young, do not support any features which could provide suitable bat roosting habitat.

21.1.43 The proposed AC cable route passes through open, arable fields. The route intersects a number of ditches, dykes and drains. Tree T286, a white willow Salix alba, is located within the proposed AC cable route on Vicarage Drove adjacent to the eastern boundary of Bicker Fen Substation. This tree was categorised as having moderate bat roost potential due to the presence of small rot holes and broken limbs and was taken forward for nocturnal surveys. Young plantation broadleaved woodland within the Substation is also within the proposed AC cable route, although these trees are too young to support any features suitable for roosting bats.

21.1.44 No buildings or other built structures are within 50 m of the permanent access road or proposed AC cable route.

Evening Emergence Survey

21.1.45 Weather conditions during the two emergence surveys undertaken at tree T286 are presented in Table 21.5.2.

Table 21.5.2 Weather Conditions during Emergence Surveys						
Visit	Start/Finish	Date/Time	Temperature (°C)	Rain	Cloud Cover (Oktas)	Wind (Beaufort)
Visit 1	Start	21/6/16 (21:13)	15.6	Nil	2	1
	Finish	21/6/16 (23:00)	14.7	Nil	4	2
Visit 2	Start	8/8/16 (20:25)	15.0	Nil	4	3
	Finish	8/8/16 (22:10)	12.5	Nil	0	1

21.1.46 During visit 1, no bats were observed emerging from the tree. The first bat recorded was a common pipistrelle bat at 22:08 hrs, 40 minutes after sunset (21:28 hrs). Bats flew towards the tree from the west, and used the habitat around the tree for foraging. All bats observed were common pipistrelle.

21.1.47 On visit 2, no bats were seen emerging from the tree. The first bat recorded was a common pipistrelle bat at 21:32 hrs, 52 minutes after sunset (20:40 hrs). Again, only common pipistrelle bats were recorded and observed foraging around the tree.

Activity Survey

Transect Survey

21.1.48 Results are displayed in Figure 21.8 and Figure 21.9. Weather conditions during the transect surveys are presented in Table 21.5.3.

Table 21.5.3 Weather Conditions during Transect Surveys						
Visit	Start/ Finish	Date/Time	Temperature (°C)	Rain	Cloud Cover (Oktas)	Wind (Beaufort)
Visit 1 – Transect CS9	Start	22/6/16 (21:28)	18.2	Nil	1	0
	Finish	22/6/16 (23:28)	16.3	Nil	1	0
Visit 2 – Transect CS9	Start	7/9/16 (19:36)	21	Nil	2	2
	Finish	7/9/16 (21:24)	19.5	Nil	0	1
Visit 1 – Transect 6	Start	16/5/17 (20:51)	16	Nil	6	4-5
	Finish	16/5/17 (23:30)	15	Nil	7	4
Visit 2 – Transect 6	Start	29/6/17 (21:34)	13	Nil	8	1
	Finish	29/6/17 (00:00)	13	Mil	8	1

21.1.49 The activity transects revealed at least three species of bat across the site:

- Common pipistrelle Pipstrellus pipistrellus;
- Noctule Nyctalus noctula;
- Daubenton's bat *Myotis daubentonii*; and
- Unconfirmed *Myotis* bat.

21.1.50 **Transect CS9:** In June 2016 (visit 1), common pipistrelle was the most frequent species encountered and activity was concentrated around the periphery of the field. Daubenton's bat were recorded along the southeast boundary of the field only. An unknown species of bat was noted in the northwest corner of the field. No bat activity was recorded in September 2016 (visit 2).

21.1.51 Transect 6: At least three bat species were recorded along the transect including common pipistrelle, noctule and Daubenton's bat *Myotis daubentonii*. During the walked transect conducted on 16th May 2017 the first bat was recorded at 21:35, approximately 39 minutes after sunset. Common pipistrelle was the most frequent species encountered. Common pipistrelle activity in spring was recorded at low levels in the northwest (around walks 4 and 8) with activity concentrated around the woodland associated with stop 10 and the arable fields on walk 11. One *Myotis* species contact was recorded at Park Farm (near to stop 11). During the transect conducted on 29th June 2017, the first bat recorded was a common pipistrelle at 22:16 at stop 11. Common pipistrelle activity was concentrated along walks 6 and 9. Noctule *Nyctalus noctula* was recorded in summer (June) at Stop 2.

Static Detector Survey

21.1.52 Static monitoring focused on two locations in 2016 (A and B) and two locations in 2017 (N4 and H3). Details of the static monitoring is provided in Table 21.5.4.

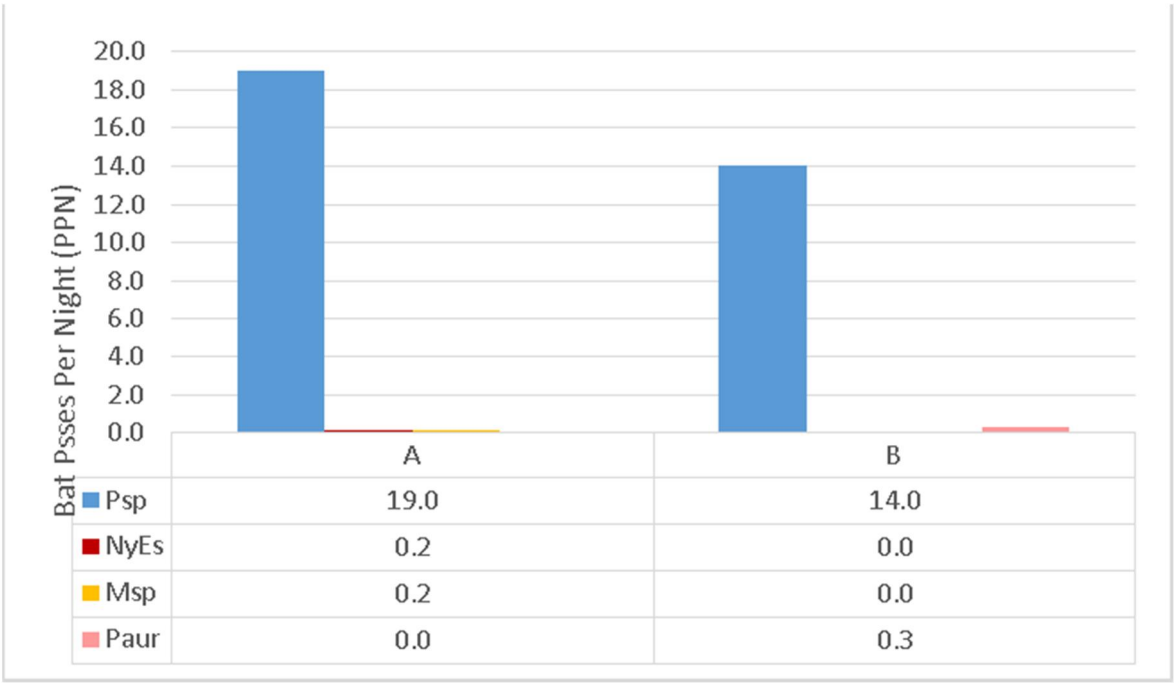
Table 21.5.4 Details of Static Monitoring

Start/Finish	Date/Time	Min Temperature (°C)	Notes on weather
A & B (Visit 1)	22/6/16 – 27/6/16 (21:33 – 04:35)	11	Generally cloudy with sun. Light rain spells in the early evening of 23rd, 24th and 26th June. Prevailing wind SW.
A & B (Visit 2)	7/9/16 – 12/9/16 (19:31 – 06:27)	10	Overcast with spells of light rain on 10th September during the day. Sunny on 12th with highs of 24C. Prevailing wind SSW.
N4 & H3 (Visit 1)	17/5/17 – 22/5/17 (20:52 – 04:59)	10	Overcast, with spells of rain, which were notably heavier on 17th and 19th. Prevailing wind SSW.

Table 21.5.4 Details of Static Monitoring			
Start/Finish	**Date/Time**	**Min Temperature (°C)**	**Notes on weather**
N4 & H3 (Visit 2)	28/6/17 – 04/7/17 (21:28 – 04:41)	10	Partly sunny with highs of 26. There was light rain in the evenings between 27th and 29th. Prevailing wind W.

21.1.53 A summary of the monitoring results is shown in Graphs 21.5.1 to 21.5.6 below[5]. Graph 21.5.1 compares the bat activity between locations A and B in June 2016. In June 2016, Location A had higher levels of bat activity in comparison to Location B. *Pipistrelle* species (sp.) were the most abundant species group at both locations, with passes per night higher at Location A (19 ppn compared to 14 ppn). Low levels of *Myotis* and 'big bat' (NyEs) activity were recorded at location A only (0.2 ppn), resulting in a higher overall species assemblage at this location. Brown long-eared bats were recorded at location B only, albeit at low levels (0.3 ppn). No data was recorded at Location B in September 2016

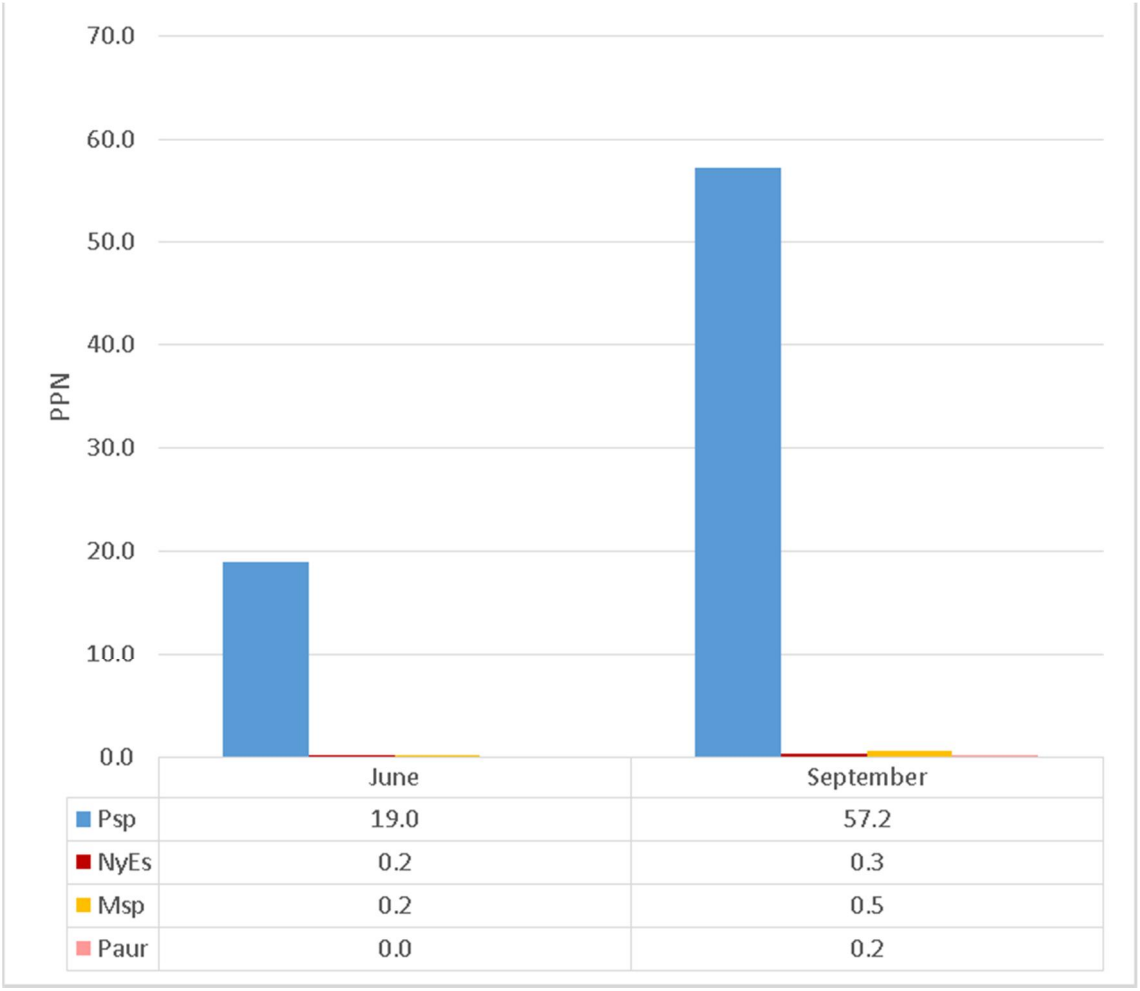
Graph 21.5.1 Comparison of Bat Activity Between Locations A and B (June 2016)



[5] Key to bat species codes: Psp: *Pipistrellus* species; Msp: *Myotis* species; NyEs: Big bats; Nn: Noctule; Paur: Brown long-eared bat

21.1.54 The temporal distribution of bat activity between June and September 2016 can be compared at Location A (Graph 21.5.2). *Pipistrelle* sp. were the most abundant species recorded in both monitoring periods, however levels were much higher in September (more than doubling). 'Big bat' and *Myotis* species groups were present at low levels and there was a slight increase in activity in September. Brown long-eared bats were only recorded in September, at low levels.

Graph 21.5.2 Temporal Distribution of Bat Activity at Location A



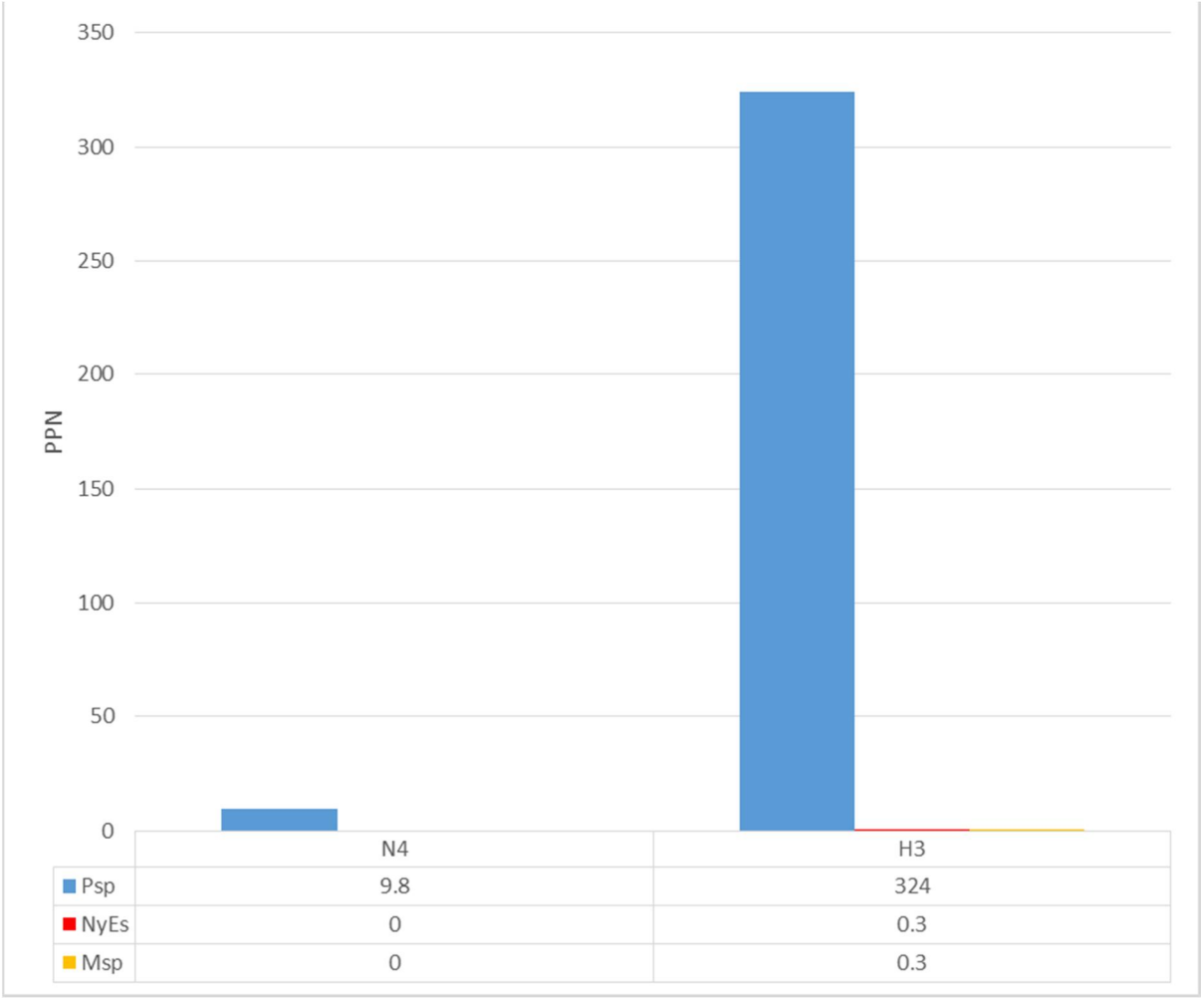
	June	September
Psp	19.0	57.2
NyEs	0.2	0.3
Msp	0.2	0.5
Paur	0.0	0.2

21.1.55 No data was recorded for location B in September due to a technical issue and therefore it is not possible to compare the temporal distribution of bat activity at this location.

21.1.56 Graph 21.5.3 compares the bat activity between locations N4 and H3 in May 2017. In May 2017, Location H3 had substantially higher levels of bat activity in comparison to Location N4, although the location of H3 was also in close proximity to a house and group of trees.. Pipistrelle species (sp.) were the most abundant species group at both locations, with passes per night higher at Location H3 (324 ppn compared to 9.8 ppn). Low levels of Myotis and 'big bat' activity were recorded at Location H3 only (0.3 ppn), resulting in a higher overall species assemblage at this location. At Location H3 activity levels in May were more than double the activity levels recorded

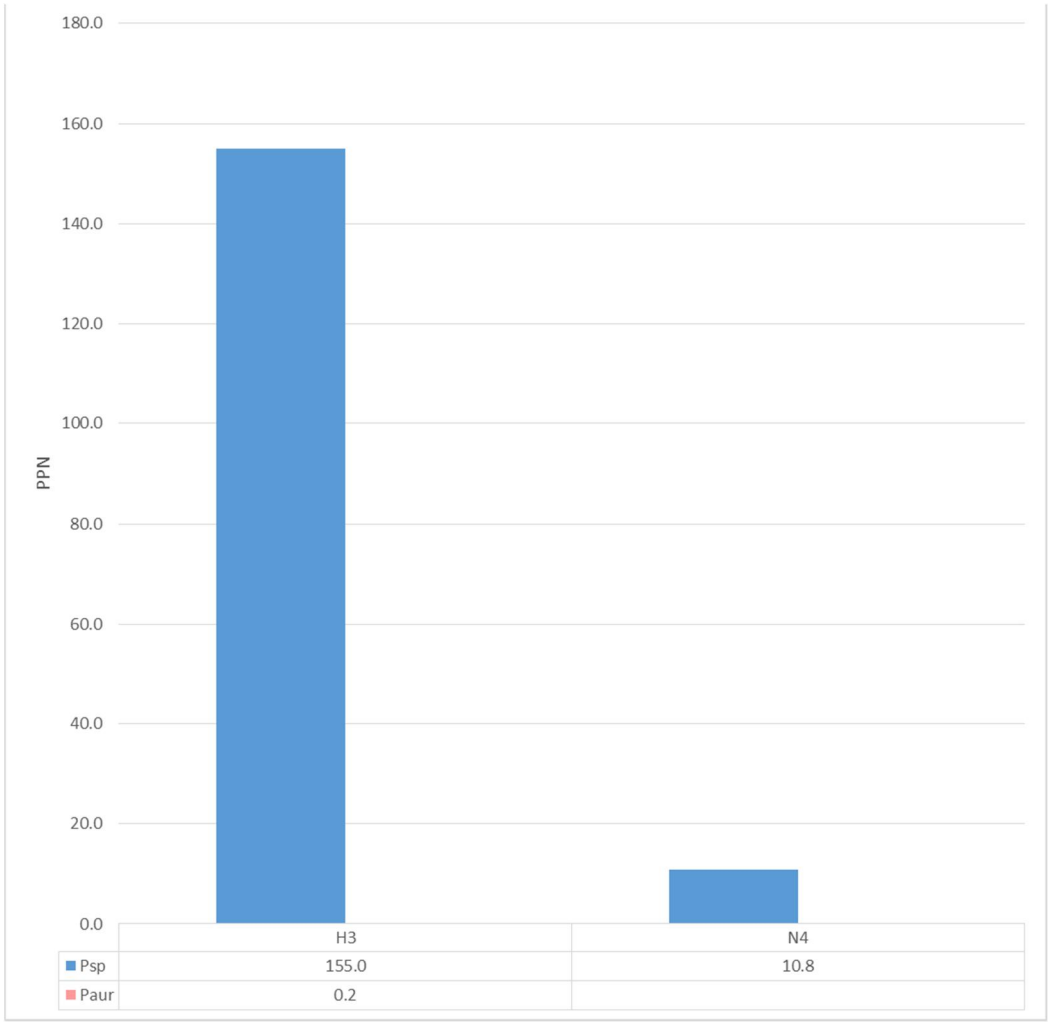
in June indicating the site is used more frequently in the spring. At location N4 the activity levels were more stable over May 2017 and June 2017, with only slightly higher levels recorded in June 2017.

Graph 21.5.3 Comparison of Bat Activity Between Locations N4 and H3 (May 2017)



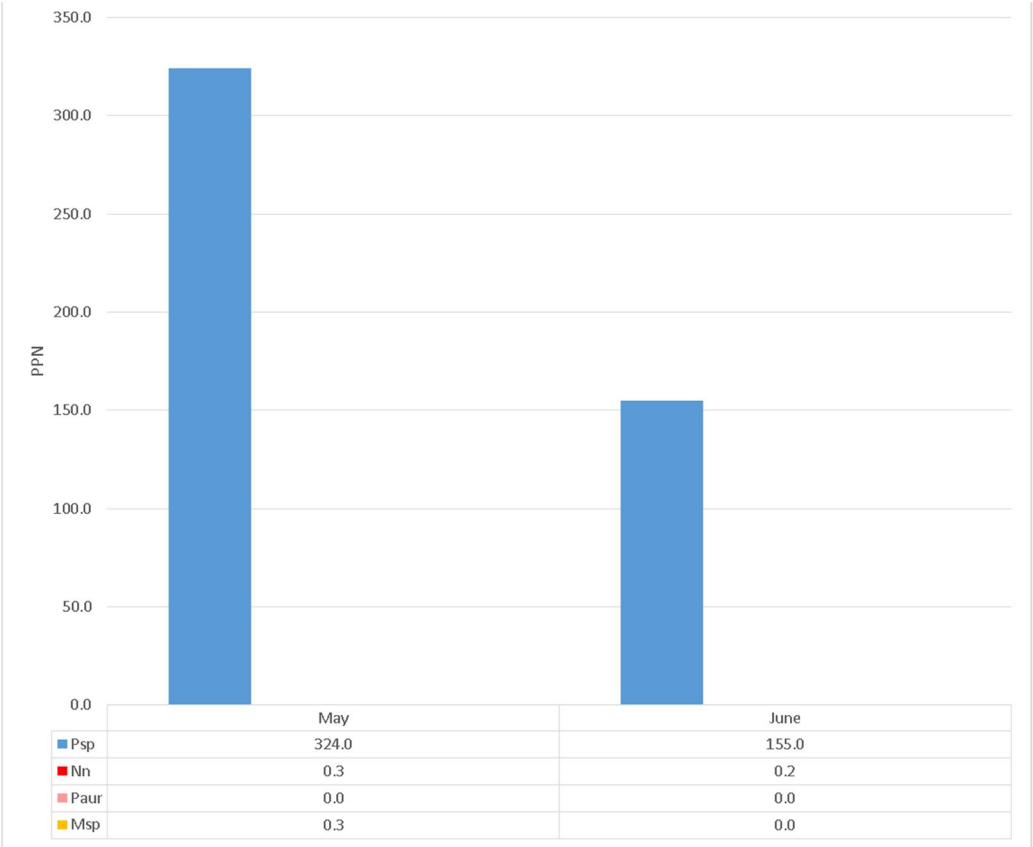
21.1.57 Graph 21.5.4 compares the bat activity between Location N4 and H3 in June 2017. In June 2017, Location H3 had substatntially higher levels of bat activity in comparison to Location N4. *Pipistrelle* species (sp.) were the most abundant species group at both locations, with passes per night higher at Location H3 (155 ppn compared to 10.8 ppn). Low levels of brown long-eared bats were recorded at Location H3 only (0.2 ppn), resulting in a higher overall species assemblage at this location.

Graph 21.5.4 Comparison of Bat Activity Between Locations N4 and H3 (June 2017)



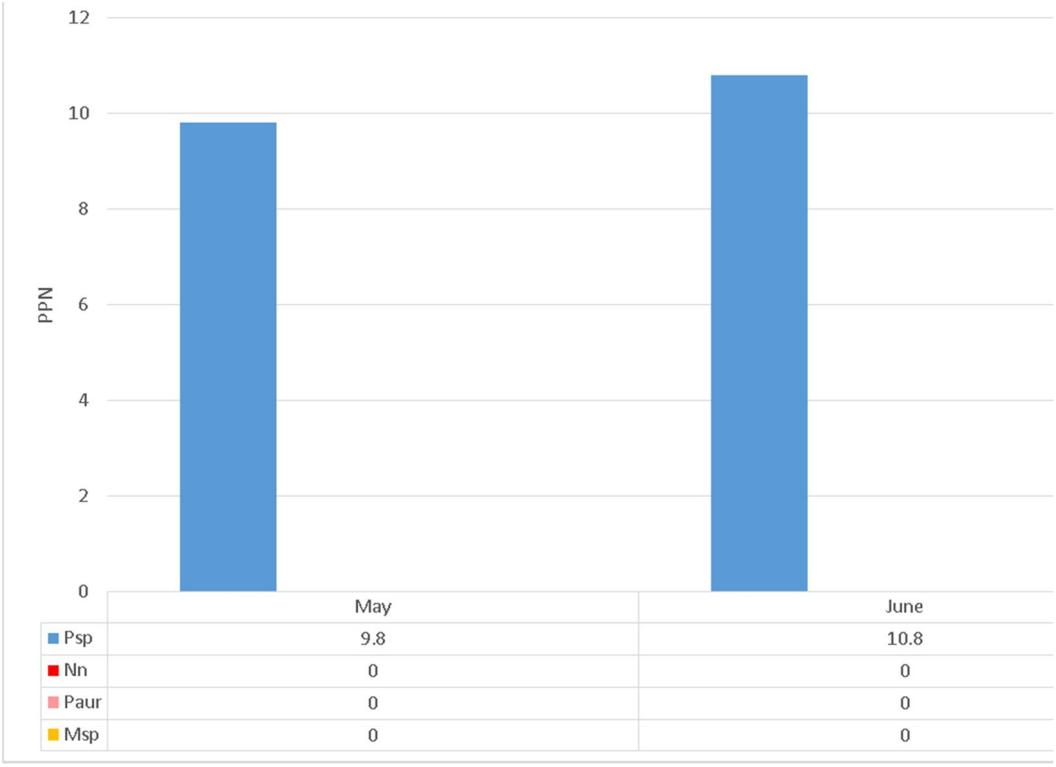
21.1.58 The temporal distribution of bat activity at Location H3 can be compared between May and June 2017 (Graph 21.5.5). *Pipistrelle* sp. were the most abundant species recorded in both monitoring periods, however levels were much higher in May (more than doubling). Noctule and *Myotis* species groups were present at low levels in May but only low levels of noctule activity were recorded in June.

Graph 21.5.5 Temporal Distribution of Bat Activity at Locations H3



21.1.59 The temporal distribution of bat activity at Location N4 can be compared between May and June 2017 (Graph 21.5.6). *Pipistrelle* sp. were the only species recorded in both monitoring periods, however levels were slightly higher in June compared to May.

Graph 21.5.6 Temporal Distribution of Bat Activity at Locations N4



Appendix 21.6 Water Vole & Otter Survey

Methods

21.1.1 Waterbodies were identified as having potential to support water vole and/or otter during the extended Phase 1 habitat survey. Those within or adjacent to the proposed converter station, permanent access road and proposed AC cable route and a 100 m buffer were taken forward for survey.

21.1.2 Waterbodies were surveyed for evidence of water vole activity in accordance with current guidelines (Dean et al., 2016) (Ref 21-20). These guidelines require two survey visits to be undertaken; one in the first half of the season (mid-April to the end of June) and one in the second half of the season (July to September inclusive). These visits should be undertaken at least two months apart. Water vole field signs including burrows, latrines, footprints, feeding remains and runs were searched for from the banks or from within the watercourse on foot or by boat. The relative suitability of the habitats for water vole was also recorded in detail during these surveys.

21.1.3 Due to the anticipated high number of watercourses requiring water vole survey over the Onshore Scheme as a whole and in order to streamline survey effort, a presence/absence survey approach has been taken as opposed to recording the locations of all signs of presence. Each watercourse was searched for signs of water vole and when three signs were recorded, the watercourse was classed as having water vole presence. This approach can be justified because water voles are known to expand and contract their ranges and move location within any one watercourse on a regular basis. Recording this species as being present, as opposed to mapping the locations of all signs, on a watercourse will still enable a robust assessment of the effects of the scheme and identify where full mitigation must be implemented during construction.

21.1.4 The otter survey was undertaken in accordance with current methods (Chanin, 2003) (Ref 21-21). Otter field signs include spraints, urination points, footprints, feeding remains, slides or runs and holts or other resting places.

21.1.5 A combination of field signs often helps in confirming otter presence, where a single field sign may be inconclusive. The age of spraints found can give some indication of how recently a site has been used by an otter but cannot be used to reliably estimate population density due to the tendency of otters to roam large distances. For the same reason the absence of spraints does not necessarily mean that otters are not present.

21.1.6 Water vole and otter surveys were undertaken during suitable weather conditions, as the validity of survey data is compromised if it is undertaken after heavy rain. All surveys were undertaken by a pair of surveyors for to ensure their health and safety.

21.1.7 Surveys at the proposed converter station were undertaken on 20th June and 7th September 2016.

21.1.8 Surveys along the permanent access road and proposed AC cable route were undertaken between 22nd – 24th May 2017. Dates for the proposed surveys due to take place in August 2017 are to be confirmed. Findings from these surveys will be provided within a Supplementary Report.

Limitations

21.1.9 The 2016 surveys were undertaken in suitable dry weather conditions and with no substantial rain in the preceding few days to the survey. During the September survey all ditches had recently been cleaned, cut and scraped.

21.1.10 2017 surveys were carried out in suitable weather conditions and at the appropriate time of year. No substantial rain was recorded in the days prior to the survey.

21.1.11 Five ditches were found to be dry at the time of the survey meaning a full assessment of aquatic habitat conditions could not be made.

Results

21.2.1 The results of the 2016 and 2017 surveys are presented in Table 21.6.1 below. The 15 waterbodies which were surveyed are identified in Figure 21.10.

21.2.2 No signs of water vole or otter were recorded along any of the ditches associated within the proposed converter station. Although water vole were not recorded during the survey visits, D632 has the greatest potential to support water vole as it contains cleaner water and a higher density of emergent/ bankside vegetation than D716 and D640. D629, D716 and D640 had also recently been dredged and therefore had little/ no vegetation on the immediate banks at the time of survey.

21.2.3 No signs of water vole or otter were recorded during the May 2017 survey of ditches and drains potentially affected by the permanent access road and proposed AC cable route. However, the majority of them (those which don't show seasonal drying) still retain the potential to support water vole or otter.

21.2.4 Water vole feeding signs were recorded within the pond at Bicker Fen Substation (P175) in two locations, during an attempted GCN survey in April 2017.

Table 21.6.1 Ditch Description and Water Vole/Otter Survey Results

Ditch ID	Habitat Description	Water voles present/absent (signs found)	Otter signs
2016 Surveys			

Table 21.6.1 Ditch Description and Water Vole/Otter Survey Results			
Ditch ID	**Habitat Description**	**Water voles present/absent (signs found)**	**Otter signs**
D629	The ditch has a steep bank profile with earth banks containing occasional reeds, sedges, and grasses. The ditch is between 2 m and 5 m wide and over 2 m deep.	Absent during both surveys.	Absent during both surveys.
D632	The ditch has a steep bank profile with earth banks containing abundant reeds/sedges and tall grass with frequent short grass. The ditch is 5-10 m wide and over 2 m deep.	Absent during both surveys.	Absent during both surveys.
D716	The ditch has a steep bank profile with earth banks containing frequent submerged weed, reeds/sedges and tall grass with abundant short grass. The ditch is between 2 m and 5 m wide and over 2 m deep.	Absent during both surveys.	Absent during both surveys.
D640	The ditch has a steep bank profile with earth banks containing occasional submerged weed, frequent reed/sedges, occasional tall grass, abundant short grass and a small number of bushes. The ditch is between 2 m and 5 m wide and over 2 m deep.	Absent during both surveys.	Absent during both surveys.
2017 Surveys			
D668	This ditch comprises earth banks with a shallow profile containing abundant submerged weeds, reeds/sedges, tall grasses and herbs with occasional short grasses. The ditch is over 2 m wide with a depth of 2-5 m.	Absent during May 2017 survey.	Absent during May 2017 survey.
D667	This ditch comprises earth banks with a shallow profile containing abundant herbs, reeds/sedges and tall grasses with occasional submerged weeds, and short grasses. The ditch is over 2 m wide with a depth of 2-5 m.	Absent during May 2017 survey.	Absent during May 2017 survey.
D662	This drain, Hammond Beck, comprises earth banks with a steep profile containing abundant submerged weeds, herbs, reeds/sedges and tall grasses with occasional short grasses. The ditch is approximately 10 m wide with a depth of 2-5 m.	Absent during May 2017 survey.	Absent during May 2017 survey.
D660	This ditch comprises earth banks with a shallow profile containing abundant herbs and tall	Absent during May 2017	Absent during May 2017

Table 21.6.1 Ditch Description and Water Vole/Otter Survey Results			
Ditch ID	**Habitat Description**	**Water voles present/absent (signs found)**	**Otter signs**
	grasses with occasional reeds/sedges. The ditch is over 2 m wide with a depth of 1-2 m. This ditch was dry at the time of the survey.	survey.	survey.
D650	This ditch comprises earth banks with a shallow profile containing abundant herbs; frequent bankside trees and reeds/sedges and occasional bushes and short grasses. The ditch is 1-2 m wide with a depth of 1-2 m. This ditch was dry at the time of the survey.	Absent during May 2017 survey.	Absent during May 2017 survey.
D656	This ditch comprises earth banks with a shallow profile containing abundant herbs and tall grasses; frequent reeds/sedges and occasional submerged weeds and short grasses. The ditch is over 2 m wide with a depth of 1-2 m.	Absent during May 2017 survey.	Absent during May 2017 survey.
D648	This ditch comprises earth banks with a shallow profile containing abundant herbs and tall grasses; frequent reeds/sedges and occasional short grasses. The ditch is over 2 m wide with a depth of 1-2 m. This ditch was dry at the time of the survey.	Absent during May 2017 survey.	Absent during May 2017 survey.
D652	This ditch comprises earth banks with a shallow profile containing abundant herbs and tall grasses; with occasional reeds/sedges and short grasses. The ditch is over 2 m wide with a depth of 1-2 m. This ditch was dry at the time of the survey.	Absent during May 2017 survey.	Absent during May 2017 survey.
D654	This ditch comprises earth banks with a shallow profile containing abundant herbs, reeds/sedges and tall grasses; with occasional short grasses and submerged weeds. The ditch is over 2 m wide with a depth of 2-5 m.	Absent during May 2017 survey.	Absent during May 2017 survey.
D646	This ditch comprises earth banks with a shallow profile containing abundant herbs, reeds/sedges and tall grasses; with frequent submerged weeds and occasional short grasses. The ditch is over 2 m wide with a depth of 2-5 m.	Absent during May 2017 survey.	Absent during May 2017 survey.
D639	This ditch comprises earth banks with a steep profile containing abundant herbs, reeds/sedges and tall grasses with occasional short grasses	Absent during May 2017 survey.	Absent during May 2017 survey.

Table 21.6.1 Ditch Description and Water Vole/Otter Survey Results			
Ditch ID	**Habitat Description**	**Water voles present/absent (signs found)**	**Otter signs**
	and rarely, submerged weeds. The ditch is over 2 m wide with a depth of 1-2 m.		

Appendix 21.7 Badger Survey - CONFIDENTIAL

See separate document “Appendix 21.7 – Badger Survey - CONFIDENTIAL”

Appendix 21.8 Winter Bird Survey

Methods

21.1.1 A point count and transect survey technique (look-see methods (Bibby et al., 2000 (Ref 21-24), Gilbert et al., 1998 (Ref 21-25))) was used to record primary and secondary bird species within the proposed converter station, permanent access road and proposed AC cable route and a 500 m buffer. The survey was undertaken from public roads and footpaths. Primary species included all waders, wildfowl, raptors and any other species associated with The Wash SPA/Ramsar site, Gibraltar Point SPA/Ramsar site or the Humber Estuary SPA/Ramsar site, or Schedule 1 (WCA, 1981) (Ref 21-10) bird species. Secondary species included all other Birds of Conservation Concern (BoCC) (Ref 21-26) species.

21.1.2 Each surveyor drove throughout their survey area stopping at regular intervals to view adjacent fields with binoculars (and telescope if necessary). All primary and secondary species were recorded and mapped directly on the survey map, using BTO species codes and behaviour symbology. If a group of birds was recorded, the extent of that group of birds was recorded on the survey map. If any qualifying species for the Humber Estuary SPA or The Wash SPA were recorded, the time of the record was also noted to reduce the risk of double counting these species.

21.1.3 The survey route taken was such that every field within the survey area and 500 m buffer could be viewed to determine if primary species were present within the fields. Where this was not possible, public footpaths were walked to view these fields.

21.1.4 Details of survey times, dates and weather conditions are provided at Appendix 21.8.1.

Limitations

21.1.5 It is possible that due to the lack of direct land access to the proposed converter station, permanent access road and proposed AC cable route that some species of birds could have been missed. However, due to the views of the site that were obtained during each survey visit it is considered that all waders, wildfowl and raptors present during each survey visit were recorded.

Results

21.2.1 The results of the 2014–2015 and 2015-2016 winter bird surveys for the proposed converter station, permanent access road and proposed AC cable route are provided below and illustrated in Figures 21.12 to 21.13.

2014 – 2015 Survey

21.2.2 The peak counts of each species recorded, per month, are presented at Table 21.8.1 for the proposed converter station, permanent access road and proposed AC cable route during the period December 2014 to April 2015. The peak count is shown for those birds recorded within the base scheme design as well as within 500 m of this area.

21.2.3 Marsh harrier is a qualifying species of the Humber Estuary SPA, however this is for the breeding rather than the wintering marsh harrier population. A marsh harrier was recorded on one occasion during January.

21.2.4 Small numbers of buzzard and kestrel were regularly recorded within 500 m of the proposed converter station, permanent access road and proposed AC cable route during the winter period. Barn owl were recorded during January, March and April with a peak count of two birds. These individuals were recorded foraging near to the railway line in the south and over fields to the east of the AC cable route. A marsh harrier was recorded on one occasion during January.

21.2.5 Birds of Conservation Concern (BoCC) (Ref 21-26) species recorded within the proposed converter station site included small groups of gulls (peak count of 23 common gull) and starling (peak count of 60 individuals in February).

21.2.6 A single group of 150 lapwing was recorded on one occasion in December. This group of birds was recorded just within 500 m east of the AC cable route.

21.2.7 Moderate to large flocks of fieldfare were recorded on a couple of occasions, with a peak count of 483 fieldfare recorded within 500 m of the proposed converter station site, permanent access road and proposed AC cable route during February 2015. This peak count comprised a number of smaller groups of fieldfare scattered throughout a number of localities within the surrounding 500 m buffer area. A peak count of 100 redwing was also recorded during January, with this group of 100 individuals recorded approximately 250 m north of the access road.

21.2.8 Flocks of linnet were regularly recorded within 500 m of the site, with a peak count of 80 individuals recorded within a field to the south of Northing Drove to the south west of the proposed converter station during January 2015. A flock of 20 yellowhammer were recorded with a flock of 40 linnet within 500 m south east of the proposed converter station, near Northorpe Farm in March 2014.

21.2.9 A peak count of 510 starling was recorded within 500 m of the proposed converter station, permanent access road and proposed AC cable route during January 2015. The majority of these individuals were recorded 200 m of the access road.

21.2.10 Only small numbers of other BoCC species such as reed bunting and skylark were recorded during the winter bird survey.

Table 21.8.1 Winter Bird Survey Peak Count Data 2014-2015 – Converter Station, Access Road and AC Cable Route											
Species	Dec 2014		Jan 2015		Feb 2015		Mar 2015		Apr 2015		Conservation Status **
	BSD*	500 m	BSD	500 m	BSD	500 m	BSD	500 m	BSD	500 m	
Waders, wildfowl and raptors											
Barn Owl			1	2			1	2		1	Sch1
Buzzard	1	2	1	1		1		1			
Kestrel		2	1	4		5		4		3	Am
Lapwing		150						5		5	S41, Rd
Mallard				14		2		4		4	Am
Marsh harrier				1							Sch1, Am
Mute swan						3					Am
Other protected or BoCC species											
Black-headed Gull		75		120	50	64					Am
Brambling				10							Sch1
Common Gull	23	23									Am
Dunnock					1	1					S41, Am
Fieldfare			50	336		483		80			Sch1, Rd
Grey partridge		3								2	S41, Rd
Linnet		24		80		25		40		19	S41, Rd
Redwing			20	100		60		25			Sch1, Rd
Reed Bunting		1		1				2		6	S41, Am

Table 21.8.1 Winter Bird Survey Peak Count Data 2014-2015 – Converter Station, Access Road and AC Cable Route											
Skylark		4		4	2	8		4	1	16	S41, Rd
Starling				470	60	100					S41, Rd
Tree sparrow			16	30	20	20					
Yellowhammer				8		5		20		3	S41, Rd
Yellow wagtail										1	S41, Rd

* BSD - Base Scheme Design

** Sch1: Schedule 1, Wildlife and Countryside Act 1981; S41: Section 41 species of principal importance NERC Act 2006; Rd: Birds of Conservation Concern (BoCC) Red List; Am: BoCC Amber List.

2015 – 2016 Surveys

21.2.11 The peak counts of each species recorded, per month, are presented at Table 21.8.2 for the proposed converter station site, permanent access road and proposed AC cable route during the period October 2015 to March 2016. The peak count is shown for those birds recorded within the base scheme design, as well as within 500 m of this area.

21.2.12 During the winter bird survey, two SPA/Ramsar site species was recorded; golden plover and marsh harrier. Golden plover, is a qualifying species of the Humber Estuary SPA and is listed under Criterion 6 for The Wash Ramsar site and the Humber Estuary Ramsar site. A peak count of 67 golden plover was recorded within 500 m of the proposed converter station site, permanent access road and proposed AC cable route during October 2015, however these birds were recorded flying only and were not recorded on land.

21.2.13 Small numbers of buzzard and kestrel were recorded within 500 m of the proposed converter station site and five mute swan were recorded just within 500 m south west of the proposed converter station site.

21.2.14 BoCC species recorded within 500 m of the proposed converter station site, permanent access road and proposed AC cable route included groups of gulls (peak counts of 150 black-headed gull recorded in October and 40 common gull recorded in December). Within the proposed converter station site itself, peak counts of 50 black-headed gull and 30 common gull were recorded. Small numbers of skylark were also recorded using the arable field within the proposed converter station site, with a peak count of nine skylark recorded within the wider area.

21.2.15 Flocks of fieldfare, linnet and starling were also recorded on fields within 500 m of the proposed converter station site, permanent access road and proposed AC cable route including 323 fieldfare recorded in December and 400 starling recorded in March. A small flock of 8 tree sparrow was recorded on one occasion within 500 m of the proposed AC cable route in March 2016. Ten reed bunting were recorded within 500 m in December 2015.

Table 21.8.2 Winter Bird Survey Peak Count Data 2015-2016 – Converter Station, Access Road and AC Cable Route													
Species	Oct 2015		Nov 2015		Dec 2015		Jan 2016		Feb 2016		Mar 2016		Conservation Status
	BSD*	500 m	BSD	500 m	BSD	500 m	BSD	500 m	BSD	500 m	BSD	500 m	
Waders, wildfowl and raptors													
Barn Owl												1	Sch1, Am
Buzzard		1	1	1		2	1	2		2		2	
Golden plover		67											Am
Kestrel				2	1	1			1	3			Am
Lapwing		200						14					S41, Rd
Little egret										1			
Mallard		23		43		6						8	Am
Merlin										1			Sch1, Am
Mute swan						5				4			
Other protected or BoCC species													
Black-headed Gull		150		100			50	50		23			Am
Common Gull				600			30	30					Am
Fieldfare		13	50	90		300	120	122		330		323	Sch1, Rd
Grey partridge								9					S41, Rd
Linnet		12		28		12		8					S41, Rd

Table 21.8.2 Winter Bird Survey Peak Count Data 2015-2016 – Converter Station, Access Road and AC Cable Route													
Redwing				16		30		10		20		60	Sch1, Rd
Reed Bunting					1	10		2		7	1	6	S41, Am
Skylark	1	3	1	7		7			3	6	2	7	S41, Rd
Starling				2						120		400	S41, Rd
Stock dove								50		2		2	
Tree sparrow												8	S41, Rd
Twite										4			S41, Rd
Yellowhammer						4	2	14		18		9	S41, Rd

* BSD - Base Scheme Design

** Sch1: Schedule 1, Wildlife and Countryside Act 1981; S41: Section 41 species of principal importance NERC Act 2006; Rd: Bords of Conservation Concern (BoCC) Red List; Am: BoCC Amber List.

Appendix 21.9 Breeding Bird Survey

Methods

21.1.1 A breeding bird survey transect was carried out within the proposed converter station site between April and June 2016 (19th April, 18th May and 21st June 2016). A transect along the permanent access road was undertaken between April and June 2017 (3rd and 4th April, 8th May and 5th June 2017). For both surveys, the survey area included a 100 m buffer.

21.1.2 The survey used a transect method, based on the British Trust for Ornithology's (BTO) Breeding Bird Survey (BBS) and Common Bird Census methodologies (Gilbert et al., 1998) (Ref 21-25). The transect method employed was conducted over three visits evenly spaced between April and the end of June. This period covers the main activity period of resident breeding birds, and the arrival of migrant breeding birds, respectively. Each survey visit was made in the morning, starting approximately half an hour after dawn and no later than 9am in accordance with the BTO BBS method. Visits were evenly spaced at approximately four weeks apart.

21.1.3 Weather conditions during survey were recorded, including wind direction and speed, cloud cover, rain and temperature (see Appendix 21.9.1).

21.1.4 Where the site was contiguous with river valleys, woodlands or other open habitats of value to birds, the survey ensured coverage of neighbouring land that may be affected by the development, typically within 100 m or greater if visibility and access allows. The bird species and activity patterns were recorded on appropriately scaled maps of the site, using standard symbology. The presence of birds which were WCA Schedule 1 (Ref 21-10), S41 (Ref 21-5), Local BAP (Ref 21-2) or red listed Birds of Conservation Concern (BoCC) (Ref 21-26) species were highlighted. Any buildings and structures in the survey area were checked for signs of the presence of owls and raptors.

Results

21.2.1 The results of the breeding bird surveys at the proposed converter station and the permanent access road are provided below and illustrated in Figures 21.14-21.16.

Proposed converter station site transect

21.2.2 A total of 25 species were recorded within 100 m of proposed converter station site during the breeding bird survey. All priority bird species recorded during each visit as well as their conservation status and likely breeding status within the site are presented in Table 21.9.1. Eight S41 species were recorded (dunnock, grey partridge, linnet, reed bunting, skylark, starling, yellow wagtail and yellowhammer). Six of these species are also red listed BoCC species (Ref 21-26).

21.2.3 It is likely that a pair of linnet nested within scrub along the edge of North Drove. A pair of reed bunting were also likely to have nested within vegetation within or adjacent to North Drove and it is probable that a pair of yellowhammer also nested in this location. It is possible that a pair of grey partridge nested within the field margins of the site.

21.2.4 Good numbers of skylark were recorded within the site throughout the breeding bird surveys and it is likely that eight pairs of skylark nested within the open arable field in the site.

21.2.5 Yellow wagtail were recorded at the eastern edge of the site during each survey visit and a juvenile bird was observed in this location during the final survey visit confirming breeding in this location.

21.2.6 Five amber listed species were also recorded (dunnock, meadow pipit, reed bunting, stock dove and wheatear). It is possible that meadow pipit nested within the site.

Table 21.9.1 Proposed Converter Station Site Breeding Bird Survey Data

Species	Visit 1 (19/04/16)	Visit 2 (18/05/16)	Visit 3 (21/06/16)	Conservation status	Likely breeding status within site [6]
Dunnock	1			S41, Am	Po
Grey Partridge			2	S41, Rd	Po
Linnet	5	8	3	S41, Rd	Pr (1)
Meadow Pipit	9	2	3	Am	Po
Reed Bunting	6	6	3	S41, Am	Pr (1)
Skylark	17	16	11	S41, Rd	Pr (8)
Starling			70	S41, Rd	
Stock Dove	7	6		Am	
Wheatear	3			Am	
Yellow Wagtail	5	4	4	S41, Rd	C (1)
Yellowhammer		2	1	S41, Rd	Pr (1)

Permanent access road transect

21.2.7 A total of 37 bird species were recorded over the three survey visits for the transect containing the proposed permanent access road location (Table 21.9.2). This included a total of 18 priority species, including 7 S41 species, 6 red listed BoCC species and 12 amber listed species. No species protected under Schedule 1 of the Wildlife and Countryside Act 1981 (Ref 21-10) were recorded.

[6] Po – Possibly breeding; PR – Probably breeding; C – Confirmed breeding

21.2.8 Priority species recorded as likely breeding within 100m of the proposed permanent access road include linnet (1 pair), reed bunting (3 pairs) and skylark (6 pairs). It is likely that both linnet and reed bunting could breed within the vegetation in field margins within the proposed works area for the road. It is highly unlikely that skylark would breed within the proposed works area as this species breeds within open areas away from field margins.

21.2.9 No species listed under Schedule 1 of the Wildlife and Countryside Act (Ref 21-10) were recorded within or near to the proposed permanent access road location, however during 2017 the Schedule 1 (WCA) species marsh harrier was recorded nesting at the edge of the existing substation (the location for the proposed AC cable route connection). This species was recorded as nesting at the south eastern edge of the substation within an area of wetland vegetation.

Table 21.9.2 Permanent Access Road Transect –Breeding Bird Survey Data –WCA1 species, S41 species and BoCC species.

Species	Visit 1 (03/04/17 & 04/04/17)	Visit 2 (08/05/17)	Visit 3 (05/06/17)	Conservation status	Likely breeding status within site [7]
Black-headed gull		1	1	Am	N
Greylag goose	1			Am	N
House martin			2	Am	N
Kestrel	2			Am	N
Linnet	13		5	S41 Rd	Pr (1 pair)
Mallard	7			Am	N
Meadow pipit	2	1		Am	Po
Mute swan	5		1	Am	Po
Reed bunting	5	4	3	S41 Am	Pr (3 pairs)
Skylark	19	5	14	S41 Rd	Pr (6 pairs)
Starling			4	S41 Rd	Po
Swallow			4	Am	N
Snipe	1			Am	N
Song thrush			1	S41 Rd	Po
Tufted duck	2			Am	N
Willow warbler		1	1	Am	Po
Yellowhammer	4			S41 Rd	Po

[7] N – Not breeding; Po – Possibly breeding; Pr – Probably breeding; C – Confirmed breeding

Table 21.9.2 Permanent Access Road Transect –Breeding Bird Survey Data –WCA1 species, S41 species and BoCC species.					
Species	Visit 1 (03/04/17 & 04/04/17)	Visit 2 (08/05/17)	Visit 3 (05/06/17)	Conservation status	Likely breeding status within site [7]
Yellow wagtail		4		S41 Rd	Po

Appendix 21.10 Reptile Survey

Methods

21.1.1 A reptile survey was carried out within the proposed converter station site in September 2016. The survey was undertaken in line with standard methodologies ((Froglife, 1998 (Ref 21-27); Foster & Gent, 1996 (Ref 21-28); and Edgar et al, 2010 (Ref 21-29)).

21.1.2 On the first visit 75 artificial reptile refugia were laid out on site. They were numbered and the locations marked on the reptile survey map (Figure 21.17). Refugia were laid out at approximately 20 m intervals along the field boundaries in suitable habitat (e.g. top of drainage ditches/unmanaged field margins).

21.1.3 Following the setup of refugia, the tiles where given time to bed in before survey commenced, approximately one week. The survey consisted of seven visits across the month of September. The survey visits were undertaken at an appropriate time of day (generally 08.30-11.00 or 16.00-18.30) and only during suitable weather conditions. A survey form was filled in with the findings and any incidental records of other species were noted. Following the final survey visit, the artificial refugia were removed from site.

Limitations

21.1.4 Generally the accepted temperature range for reptile surveys is between 9-18°C and the best time for survey is 08.30-11.00 or 16.00-18.30. The temperature range during these surveys varied between 15-23°C and the timings varied between starting at 14:40 and ending at 17:15 at the latest. Although slightly above the recommended levels, the seven surveys were undertaken across varying temperatures and times and all results found were identical.

21.1.5 During the seventh visit, 11 of the refugia were found to have been destroyed by mowing. However 64 refugia could still be surveyed and all six previous surveys had been completed without incident.

Results

21.2.1 The results of the reptile surveys for the proposed converter station are provided below (Table 21.10.1) and illustrated in Figure 21.17.

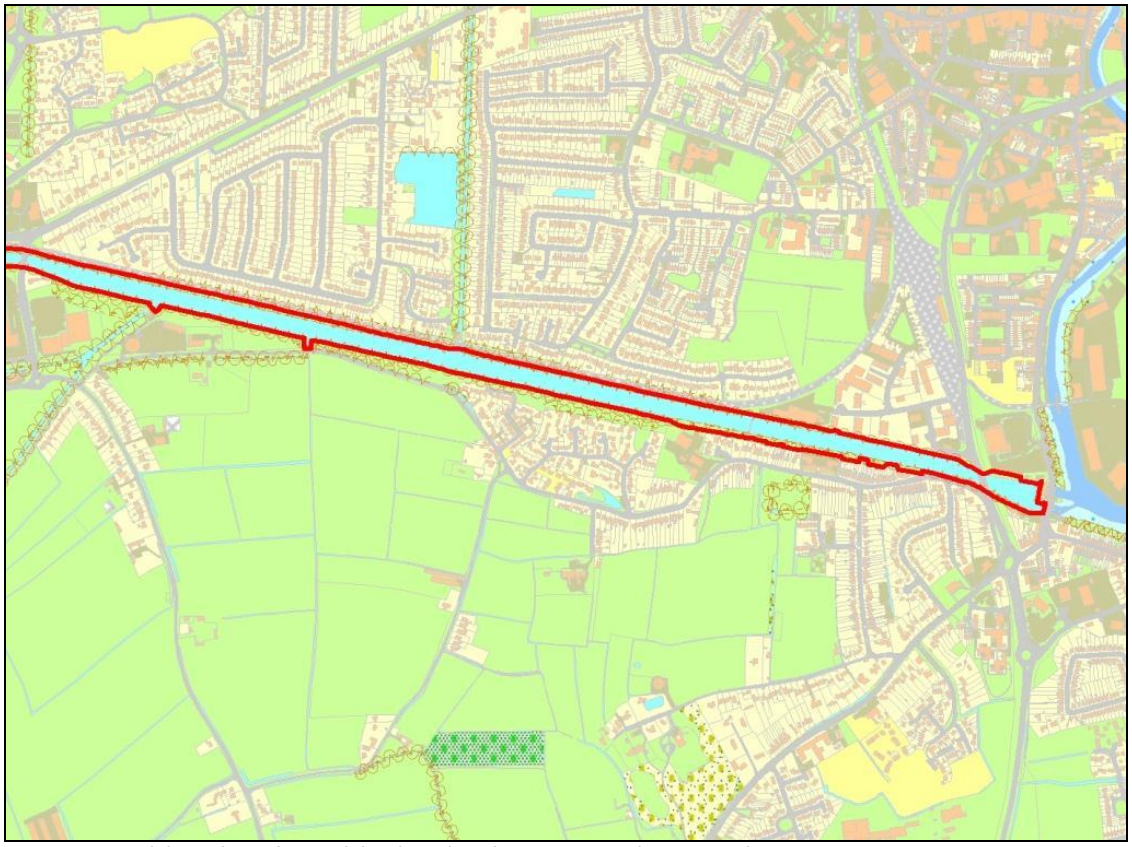
21.2.2 Across the seven surveys no evidence of reptiles was identified. However, a dead grass snake *Natrix natrix* was recorded to the west of the proposed converter station site and a common lizard *Zootoca vivipara* was observed to the north east of Bicker Fen Substation during habitat surveys in September 2016.

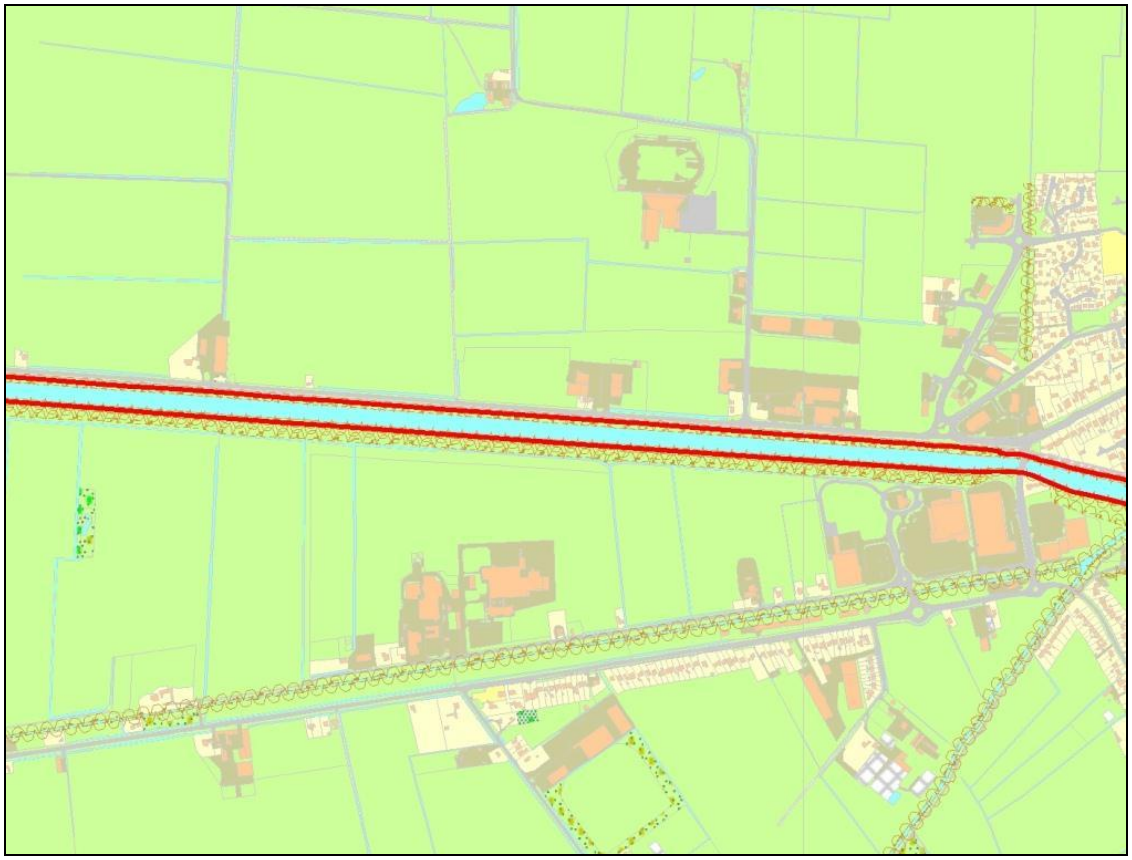
21.2.3 One common frog *Rana temporaria* and one common toad *Bufo bufo* were identified during the first survey. Field and bank voles were found to be using the refugia sporadically across the next six surveys. During survey visits three and five, evidence of badger was identified (latrine).

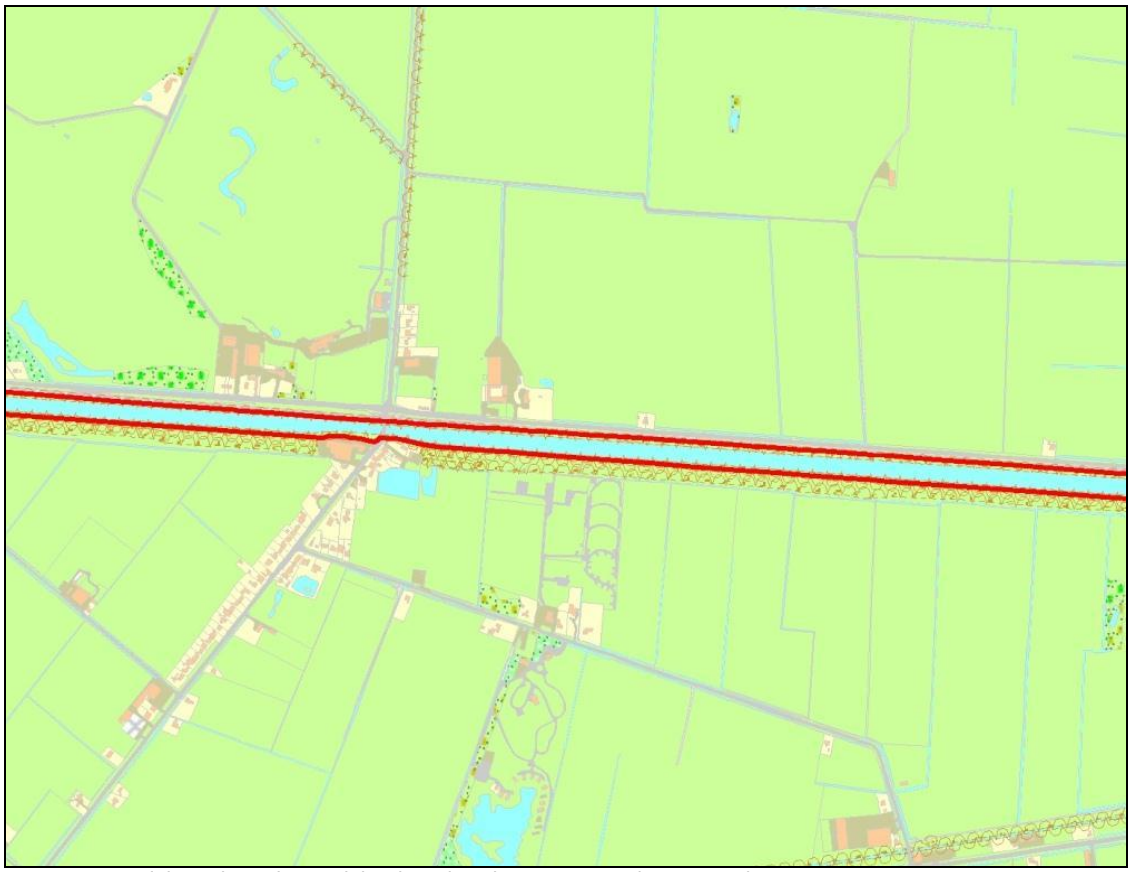
Table 21.10.1 Reptile Survey Results at the proposed converter station											
Survey Visit	Date	Start	Finish	Cloud (0-8)	Wind (Beaufort)	Rain	Sun (1-5)	Temp (°C) Start	Temp (°C) Finish	Reptile Results	Incidental Records
1	16/09/2016	14:40	16:40	7	2	0	1	16	16	No reptiles identified	Common toad (under refugia 24) and common frog (under refugia 45)
2	18/09/2016	16:20	17:16	6	2	0	5	20	19	No reptiles identified	Occasional field voles
3	21/09/2016	15:45	16:30	7	3	0	1	21	21	No reptiles identified	Occasional field voles, badger sighted at refugia 69
4	23/09/2016	15:20	16:20	6	3	0	4	18	18	No reptiles identified	Occasional field voles
5	25/09/2016	15:30	16:30	5	4	0	5	18	18	No reptiles identified	Field/bank voles under refugia, 4, 6, 12, 35. Recent use of badger latrine on western headland.
6	28/09/2016	16:10	17:00	6	5	0	5	23	23	No reptiles identified	Field/bank voles under refugia 23, 27.
7	30/09/2016	16:25	17:15	6	4	Intermittent light rain	1	15	15	No reptiles identified	Field/bank voles under refugia 1,5,21.

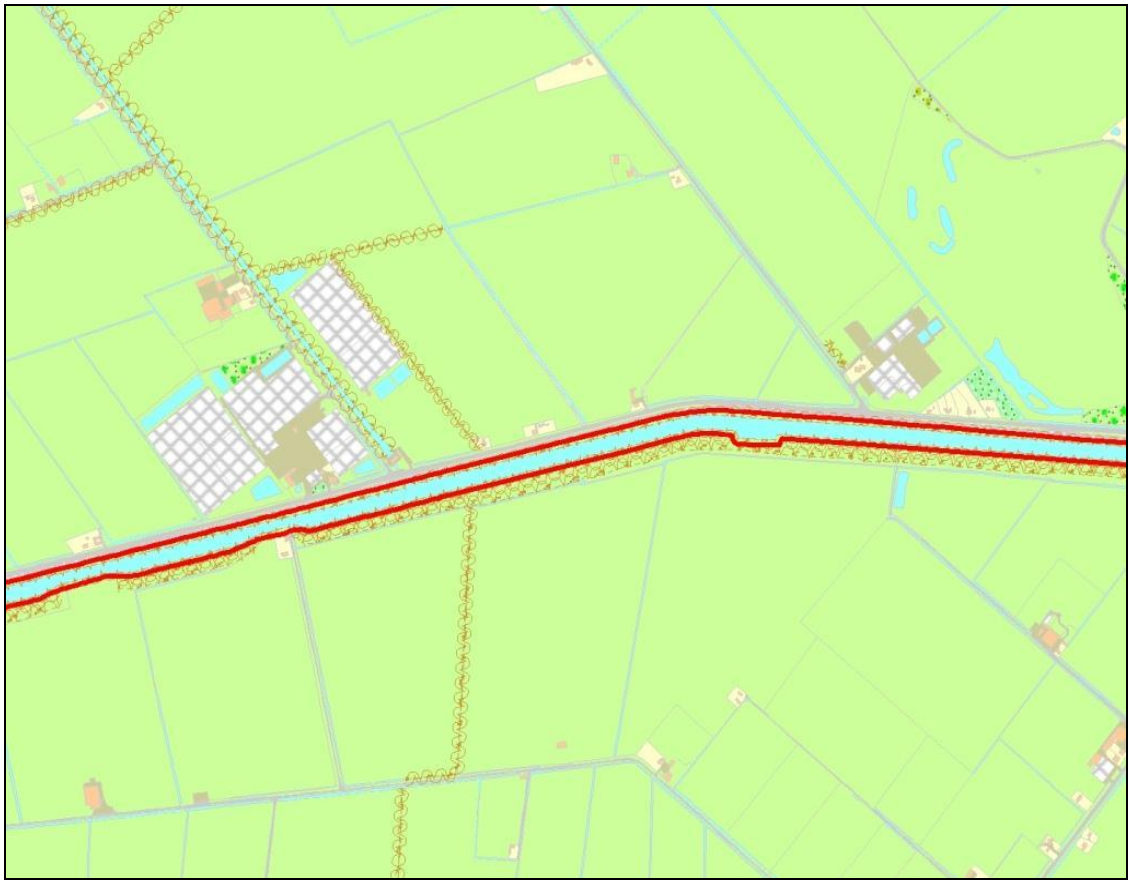
Appendix 21.1.1 South Forty Foot Drain LWS Citation

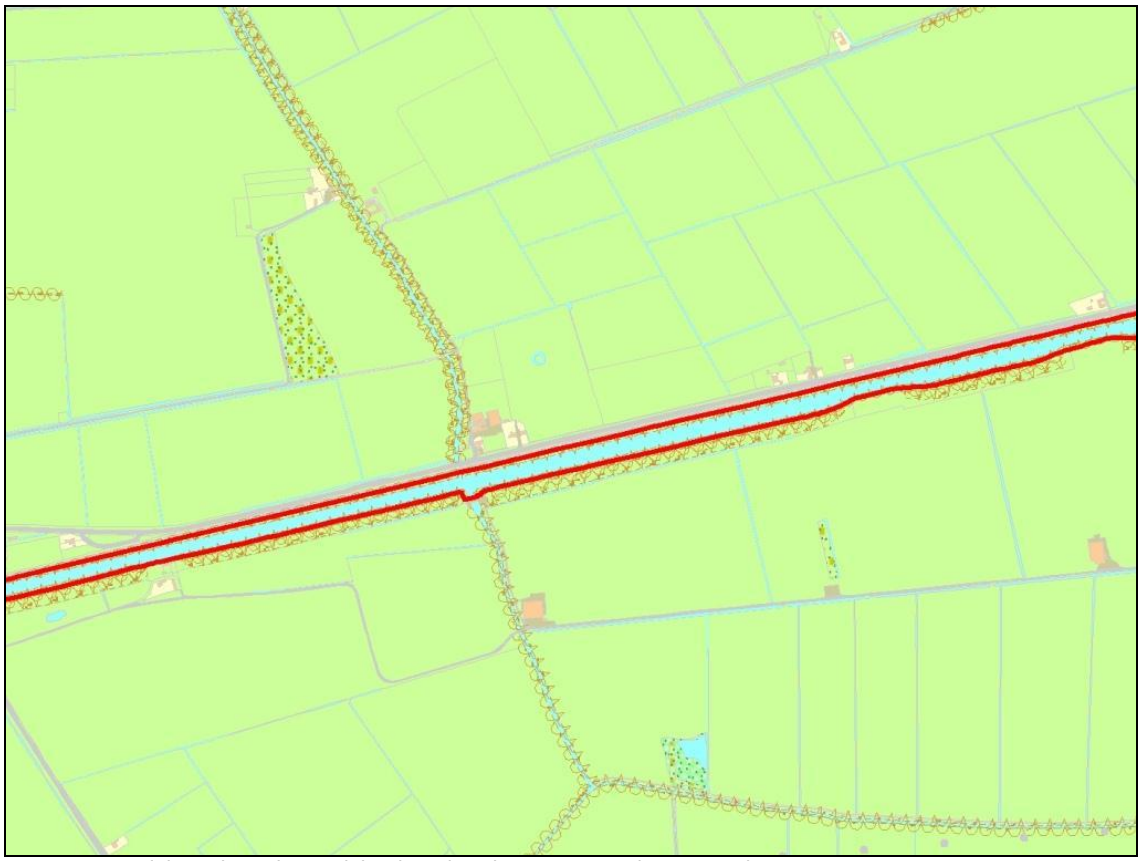
South Forty Foot Drain

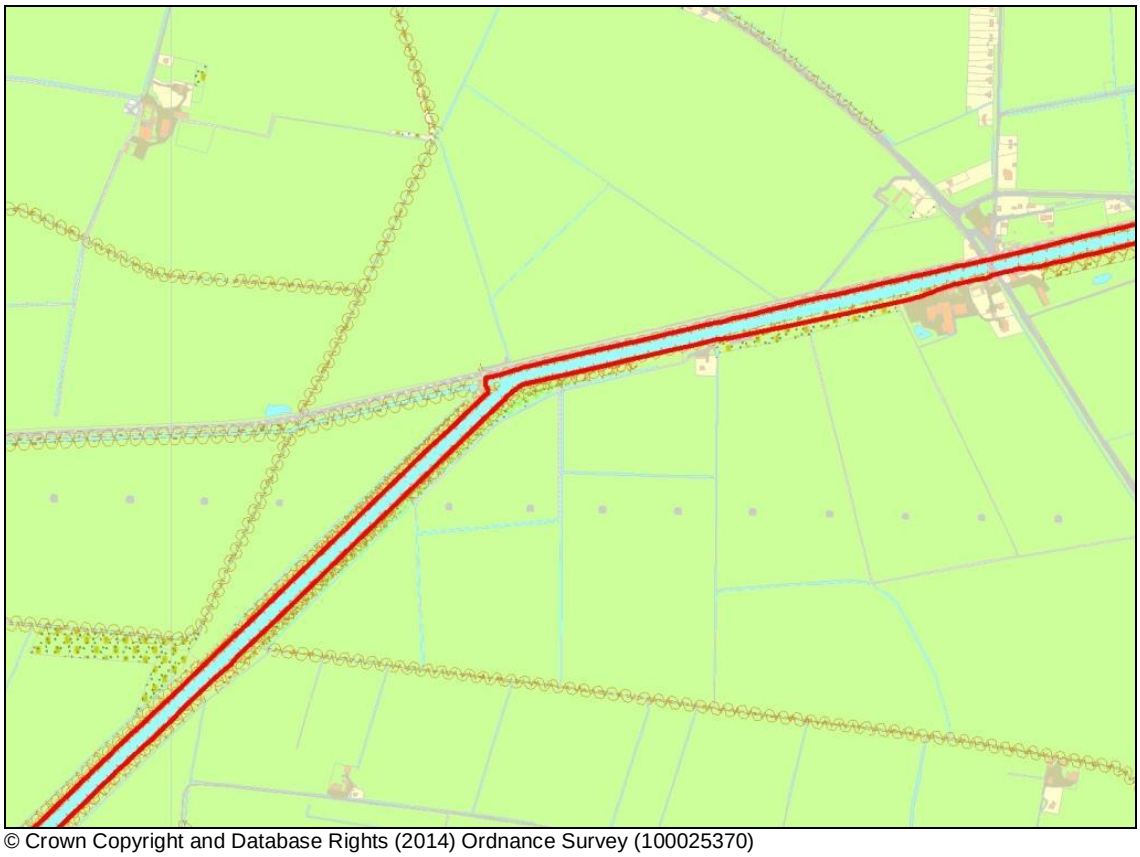


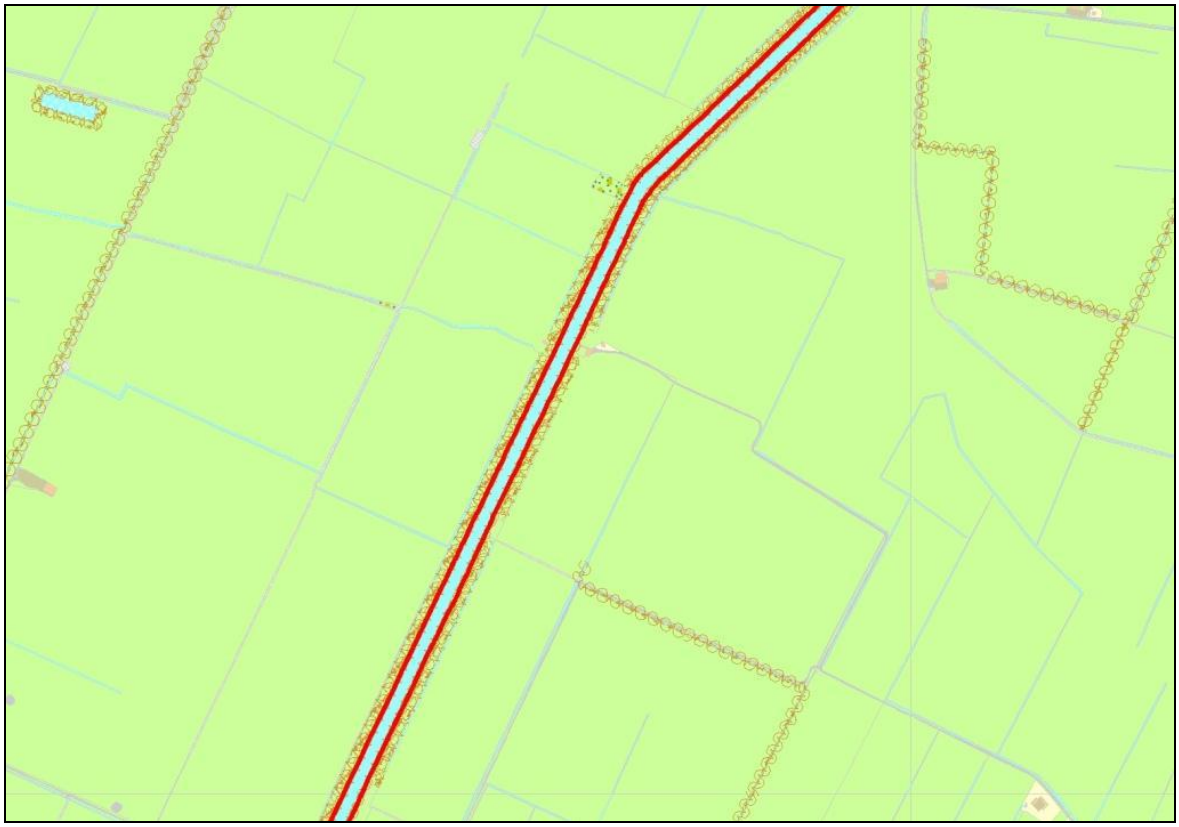


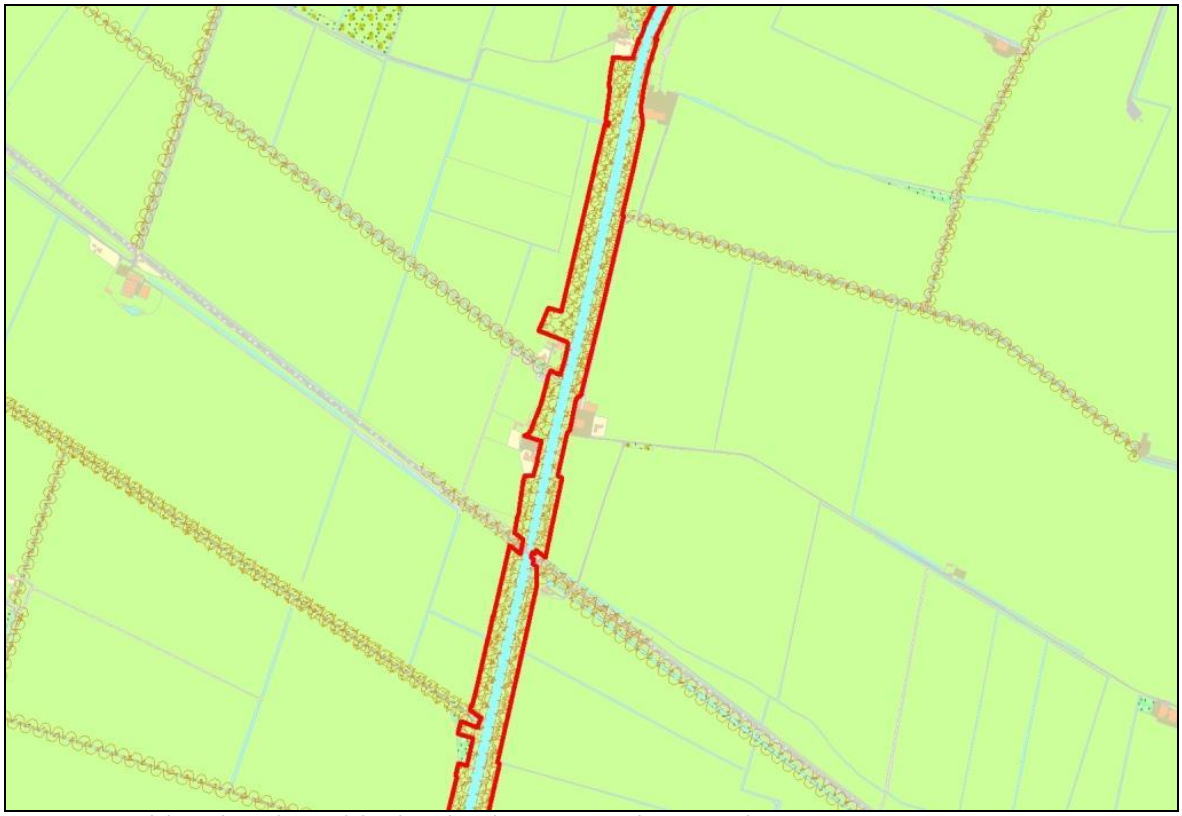


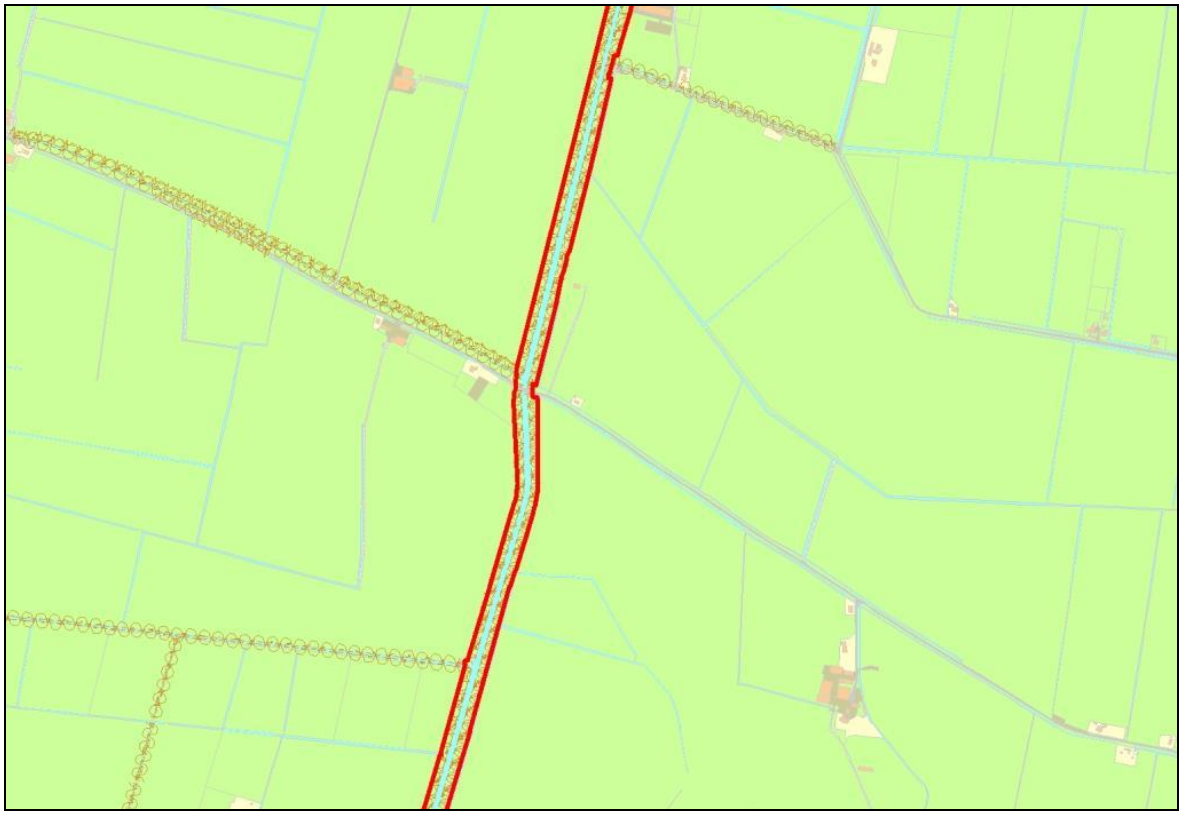


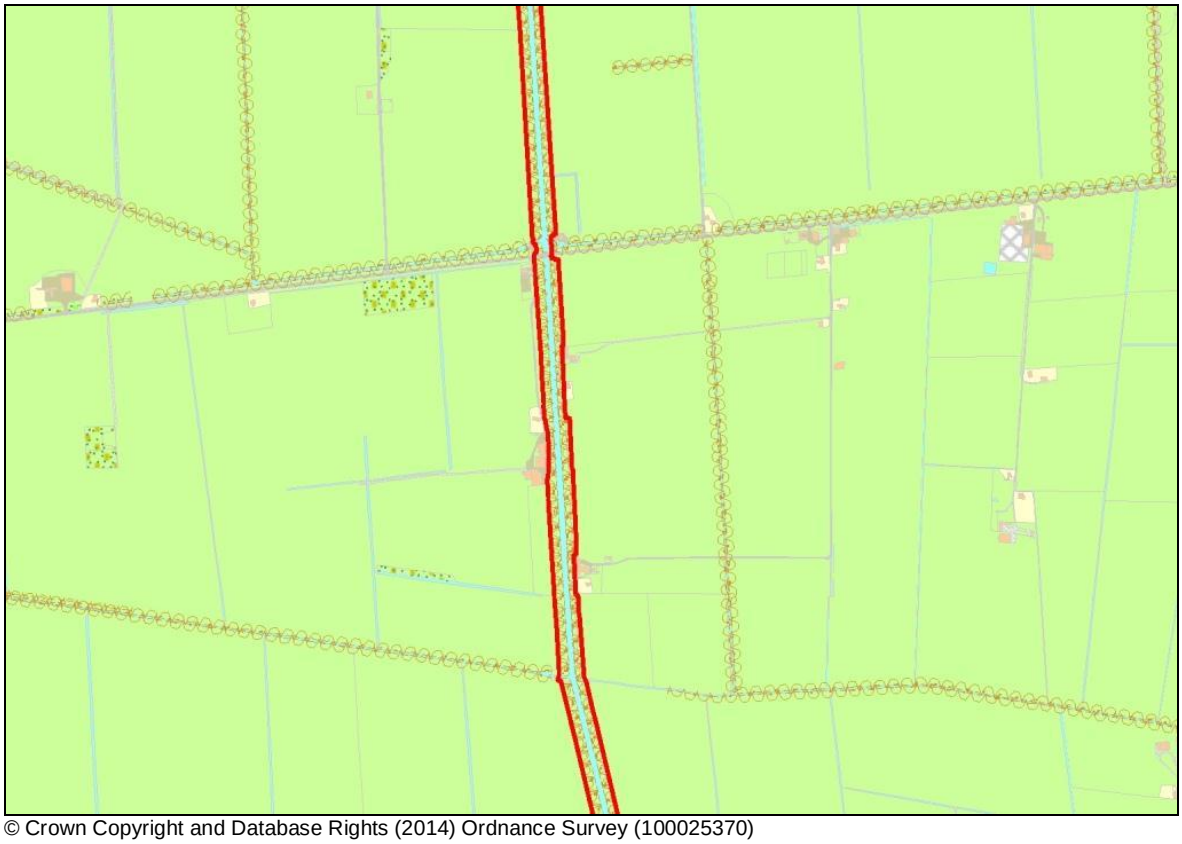


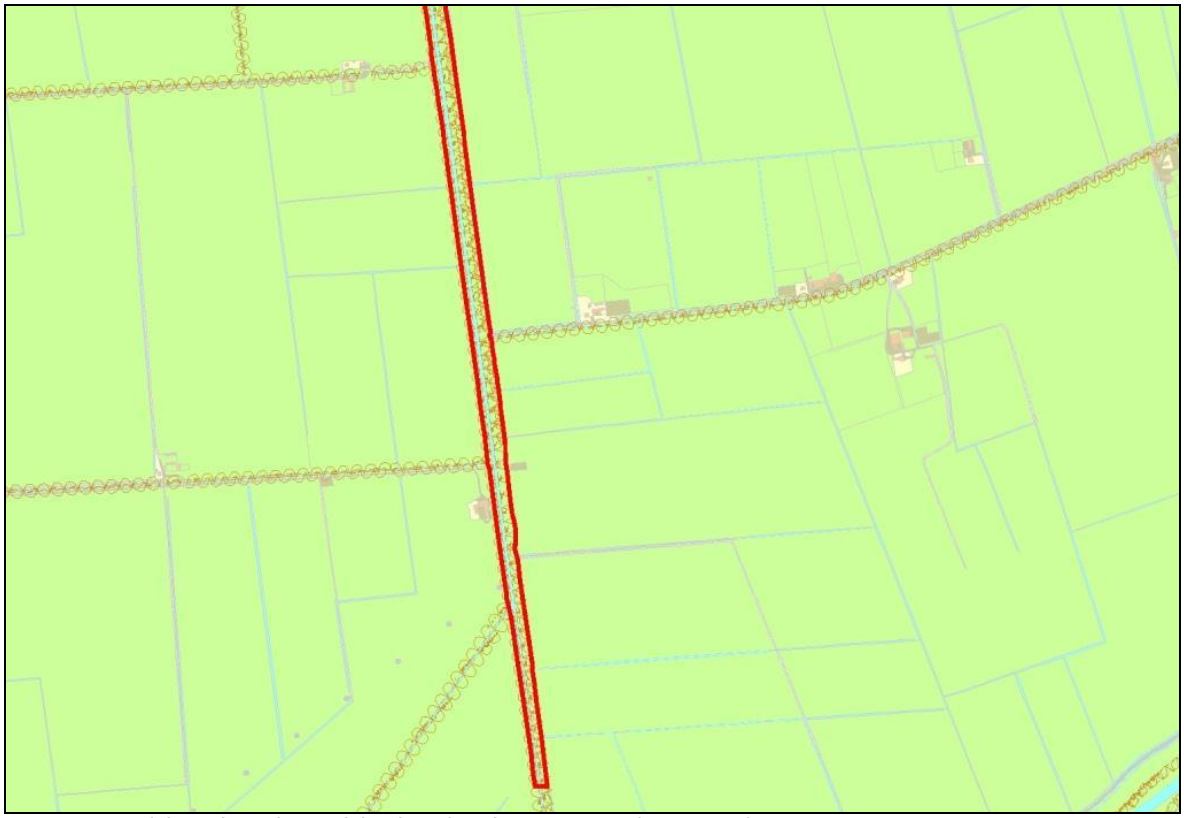












Grid ref:	**TF170230-TF326429**	**Baseline survey:**	**23 October 2007, 20 September, 15, 17, 24 October 2013**
Length:	**33.3 km**	**Monitoring survey:**	**18 May, 5, 10 July, 10 October 2012**
		Surveyors:	**G.Steele, H.Scarborough, J.Fraser**

Main habitat: **Semi-improved neutral grassland, Drain, Coarse or rank grassland**
Additional habitat: **Scattered scrub, Semi-improved calcareous grassland, Reedbed**

TF326429 - TF180382 (Boston end)
A man-made watercourse and bankside communities. The bankside vegetation comprises rough neutral grassland, scrub and trees. The site is a good corridor linking the centre of Boston with the wider countryside.

Overall the site has not altered much since 2007. There is ongoing work to reinforce the bank toe with rip-rap and coir rolls starting at the Boston end. The extent of this work is unknown; at present only one bankside is affected – if the work is extended to include both banks them the bankside flora may be affected. The use of coir rolls may assist in maintaining the fringing/marginal flora.

Scattered scrub and trees on the bankside: willow species, ash, hawthorn, elder, pedunculate oak, silver birch, poplar species, hazel, oak, elder, blackthorn, apple, dog-rose, bramble and exotic species.

Rank grasslands: cock's-foot, false oat grass, common nettle, great willowherb, hedge bindweed, cow parsley, meadowsweet, common couch, cleavers, teasel, hemlock and hogweed.

Neutral grassland: perennial rye-grass, white clover, tall fescue, crested dog's tail, common bent, common mouse-ear, dandelion and creeping bent.

Aquatic and marginal vegetation: reed sweet grass, common reed, reed canary grass, water mint, brooklime, watercress, greater pond sedge, lesser pond sedge, fool's watercress, floating sweet grass, great willowherb, pink water speedwell, lesser water parsnip, yellow iris, false fox sedge, water forget me not, hard rush, soft rush, fennel pond weed, rigid hornwort, shining pondweed, yellow water lily, common duckweed, algae and toad rush.

TF180382 – TF170230 (South Holland end)
This is a 15.5km stretch of a major watercourse of total length 33km that flows northwards from Guthram Gowt and gradually turns eastwards before joining the River Witham in the centre of Boston. That part of the site described here is the majority of the south-north stretch at the headwater end of the drain, where the channel varies between 8 and 20m wide, within a general trend of increasing size northwards.

Except for the southern 2km of the drain, all land within the site boundaries is owned by Environment Agency, including the vast majority of adjacent banks, which support grassland and variable amounts of scrub. Flat tops of the banks are managed by cutting at least once a year, while sloping land is either very rarely managed, or flailed annually, or grazed by cattle. Wildlife-poor arable fields dominate the surrounding landscape, emphasising how important the drain and its banks are as a wildlife corridor and habitat resource.

Large populations of many aquatic plants occur in the watercourse, such as shining & perfoliate pondweed, whorled water-milfoil, rigid hornwort, mare's-tail, arrowhead, water-crowfoot, common, ivy-leaved & fat duckweed, and water-starwort. The water's-edge is dominated by a broad strip of reed sweet-grass in many places, usually with smaller numbers of branched bur-reed, reed canary-grass, greater pond-sedge, bulrush, and in the south by club-rush. Common reed is locally abundant, but mostly absent. Other marginal plants are most common in those sections that are grazed, and include water forget-me-not, water-plantain, gypsywort, water-speedwell, water-cress, lesser water-parsnip, brooklime, fool's-water-cress and cuckooflower. Bankside vegetation is of greater interest where grazing occurs, but generally is dominated by competitive and ruderal species, such as teasel, hemlock, hogweed, ragwort, common mallow, hedge bindweed, broad-leaved dock, spear thistle, cock's-foot and couch. In addition to the abundant hawthorn, woody species include ash, elder, crack & goat willow, grey sallow, blackthorn, bramble and dog-rose.

A few late dragonfly and butterfly species were apparent during the survey, but many more are likely to be present. Summer birds were also mostly missed, but a good range of resident or winter visitors were observed, such as kingfisher, reed bunting, moorhen, redwing, fieldfare, yellowhammer, linnet, goldfinch, sparrowhawk and common buzzard.

Criteria passed: Flo3, Sw2
Recommended as a Local Wildlife Site: 8 December 2009

Appendix 21.1.2 GLNP Protected Species Records - Raw Data

Taxon_Grou	Taxon_Name	Common_Nam	Location	Grid_Refer	Grid_Ref_1	Date_Full	Record_Typ	Abundance	Count	Designatio	Source_Org
amphibian	Triturus cristatus	Great Crested Newt		TF196383	Imported	01/04/2015		5 Present (Count: Exact)	5	Bern2, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Natural England
amphibian	Triturus cristatus	Great Crested Newt		TF197386	Imported	18/05/2015		1 Present (Count: Exact)	1	Bern2, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Natural England
bird	Alauda arvensis	Skylark	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	12 Present (Count: Exact)	12	BD2.2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41	Lincolnshire Bird Club
bird	Alauda arvensis	Skylark	Donington	TF208356	Site Centroid	22/01/2013	Field record / observation	c250 Present (Count: Estimate)	250	BD2.2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41	Lincolnshire Bird Club
bird	Alauda arvensis	Skylark	South Forty Foot Drain	TF177373	Original Recorder	15/10/2013		Present Present (DAFOR: Exact)	1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41	Lincolnshire Wildlife Trust
bird	Alcedo atthis	Kingfisher	Bicker Fen	TF196396	Site Centroid	13/12/2012	Field record / observation		1	BD1, Bern2, BoCC4-Amber, FEP7/2, LBCSchedule1, ScotBL, WCA1i, WO1i	Lincolnshire Bird Club
bird	Anas crecca	Teal	Bicker Fen	TF196396	Site Centroid	21/11/2010	Field record / observation	20 Present (Count: Exact)	20	BAmb, BD2.1, BoCC4-Amber, CITESC, CMS_A2, CMS_AEWA-A2	Lincolnshire Bird Club
bird	Anas platyrhynchos	Mallard	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	25 Present (Count: Exact)	25	BAmb, BD2.1, BoCC4-Amber, CMS_A2, CMS_AEWA-A2	Lincolnshire Bird Club
bird	Anas platyrhynchos	Mallard	Hammond Beck	TF190361	Original Recorder	20/06/2014			1	BAmb, BD2.1, BoCC4-Amber, CMS_A2, CMS_AEWA-A2	Greater Lincolnshire Nature Partnership
bird	Anser anser	Greylag Goose	Bicker Fen	TF196396	Site Centroid	07/11/2010	Field record / observation	1 Present (Count: Exact)	1	BAmb, BD2.1, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, Non-native, WCA1ii	Lincolnshire Bird Club
bird	Anser brachyrhynchus	Pink-footed Goose	Bicker Fen	TF196396	Site Centroid	07/11/2010	Field record / observation	200 Present (Count: Exact)	200	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP, Non-native	Lincolnshire Bird Club
bird	Anser brachyrhynchus	Pink-footed Goose	Bicker Fen	TF196396	Site Centroid	21/11/2010	Field record / observation	c160 Present (Count: Estimate)	160	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP, Non-native	Lincolnshire Bird Club
bird	Anser brachyrhynchus	Pink-footed Goose	Bicker Fen	TF196396	Site Centroid	13/12/2012	Field record / observation	240 Present (Count: Exact)	240	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP, Non-native	Lincolnshire Bird Club
bird	Anthus pratensis	Meadow Pipit	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	1 Present (Count: Exact)	1	BAmb, Bern2, BoCC4-Amber	Lincolnshire Bird Club
bird	Apus apus	Swift	Donington	TF208356	Site Centroid	01/06/2004	Field record / observation	3 Present (Count: Exact)	3	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Lincolnshire Bird Club
bird	Apus apus	Swift		TF204352	Imported	2011		3 Nest (Count: Exact)	3	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Apus apus	Swift		TF205352	Imported	2011		12 Calling (Count: Exact)	12	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Apus apus	Swift		TF205352	Imported	2011		3 Nest (Count: Exact)	3	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Apus apus	Swift		TF205352	Imported	2011		3 Nest (Count: Exact)	3	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Apus apus	Swift		TF206357	Imported	23/07/2012		1 Nest (Count: Exact)	1	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Apus apus	Swift		TF207357	Imported	23/07/2012		1 Nest (Count: Exact)	1	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Apus apus	Swift		TF207357	Imported	23/07/2012		15 Calling (Count: Exact)	15	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Apus apus	Swift		TF207357	Imported	29/06/2012		10 Calling (Count: Exact)	10	BAmb, BoCC4-Amber, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Ardea purpurea	Purple Heron	Bicker Fen	TF196396	Site Centroid	26/05/2011	Field record / observation	1 1st summer(s) (Count: Exact)	1	BD1, Bern2, CMS_AEWA-A2, WCA1i	Lincolnshire Bird Club
bird	Asio flammeus	Short-eared Owl	Northorpe	TF207366	Site Centroid	18/04/2009	Field record / observation		1	BD1, Bern2, BoCC4-Amber, CITESA, FEP7/2, ScotBL, WO1i	Lincolnshire Bird Club
bird	Chroicocephalus ridibundus	Black-headed Gull	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	100 Present (Count: Exact)	100	BAmb, BD2.2, BoCC4-Amber, CMS_AEWA-A2, ScotBL, Sect.42	Lincolnshire Bird Club

bird	Chroicocephalus ridibundus	Black-headed Gull	South Forty Foot Drain	TF175363	Original Recorder	15/10/2013		Present Present (DAFOR: Exact)	1	BAmb, BD2.2, BoCC4-Amber, CMS_AEWA-A2, ScotBL, Sect.42	Lincolnshire Wildlife Trust
bird	Chroicocephalus ridibundus	Black-headed Gull	South Forty Foot Drain	TF177373	Original Recorder	15/10/2013		Present Present (DAFOR: Exact)	1	BAmb, BD2.2, BoCC4-Amber, CMS_AEWA-A2, ScotBL, Sect.42	Lincolnshire Wildlife Trust
bird	Columba oenas	Stock Dove		TF209359	Imported	24/01/2009			1	BAmb, BD2.2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Columba oenas	Stock Dove	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	10 Present (Count: Exact)	10	BAmb, BD2.2, BoCC4-Amber	Lincolnshire Bird Club
bird	Cygnus olor	Mute Swan	Donington	TF208356	Site Centroid	14/01/2001	Field record / observation	43 Present (Count: Exact)	43	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP	Lincolnshire Bird Club
bird	Cygnus olor	Mute Swan	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	1 Present (Count: Exact)	1	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP	Lincolnshire Bird Club
bird	Cygnus olor	Mute Swan	Bicker Fen	TF196396	Site Centroid	13/12/2012	Field record / observation	5 Present (Count: Exact)	5	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP	Lincolnshire Bird Club
bird	Cygnus olor	Mute Swan	South Forty Foot Drain	TF175363	Original Recorder	15/10/2013		Present Present (DAFOR: Exact)	1	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP	Lincolnshire Wildlife Trust
bird	Cygnus olor	Mute Swan	South Forty Foot Drain	TF177373	Original Recorder	15/10/2013		Present Present (DAFOR: Exact)	1	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP	Lincolnshire Wildlife Trust
bird	Cygnus olor	Mute Swan	Hammond Beck	TF190361	Original Recorder	20/06/2014			1	BAmb, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, GBNNSIP	Greater Lincolnshire Nature Partnership
bird	Emberiza calandra	Corn Bunting		TF13T	Imported	2005 - 2010			1	BoCC4-Red, FEP7/2, LBAP:3, ScotBL, WO1i	Royal Society for the Protection of Birds
bird	Emberiza citrinella	Yellowhammer	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	10 Present (Count: Exact)	10	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Bird Club
bird	Emberiza citrinella	Yellowhammer	South Forty Foot Drain	TF175363	Original Recorder	15/10/2013		Present Present (DAFOR: Exact)	1	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Wildlife Trust
bird	Emberiza schoeniclus	Reed Bunting	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	15 Present (Count: Exact)	15	Bern2, BoCC4-Amber, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Bird Club
bird	Emberiza schoeniclus	Reed Bunting	Hammond Beck	TF196368	Original Recorder	20/06/2014			1	Bern2, BoCC4-Amber, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
bird	Falco columbarius	Merlin	Donington	TF208356	Site Centroid	24/03/1998	Field record / observation	1 Present (Count: Exact)	1	BD1, Bern2, BoCC4-Red, CITESA, CMS_A2, FEP7/2, ScotBL, WCA1i, WO1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Bicker Fen	TF196396	Site Centroid	15/08/2003	Field record / observation	1 Adult Female (Count: Exact)	1	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Bicker Fen	TF196396	Site Centroid	15/08/2003	Field record / observation	1 Adult Male (Count: Exact)	1	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Bicker Fen	TF196396	Site Centroid	15/08/2003	Field record / observation	2 Juvenile (Count: Exact)	2	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Bicker Fen	TF196396	Site Centroid	15/08/2003	Field record / observation	c4 Present (Count: Estimate)	4	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Bicker Fen	TF196396	Site Centroid	23/08/2004	Field record / observation	1 Adult Female (Count: Exact)	1	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Bicker Fen	TF196396	Site Centroid	23/08/2004	Field record / observation	1 Adult Male (Count: Exact)	1	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Bicker Fen	TF196396	Site Centroid	23/08/2004	Field record / observation	3 Juvenile (Count: Exact)	3	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco subbuteo	Hobby	Donington	TF208356	Site Centroid	15/09/2010	Field record / observation	1 Present (Count: Exact)	1	Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Falco tinnunculus	Kestrel	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	4 Present (Count: Exact)	4	Bern2, BoCC4-Amber, CITESA, CMS_A2, FEP7/2, ScotBL, Sect.42, WO1i	Lincolnshire Bird Club
bird	Fringilla montifringilla	Brambling	Bicker Fen	TF196396	Site Centroid	07/11/2010	Field record / observation	2 Present (Count: Exact)	2	ScotBL, WCA1i	Lincolnshire Bird Club
bird	Larus canus	Common Gull	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	20 Present (Count: Exact)	20	BAmb, BD2.2, BoCC4-Amber, CMS_AEWA-A2	Lincolnshire Bird Club
bird	Larus fuscus	Lesser Black-backed Gull	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	1 Present (Count: Exact)	1	BAmb, BD2.2, BoCC4-Amber, CMS_AEWA-A2	Lincolnshire Bird Club
bird	Limosa lapponica	Bar-tailed Godwit	Bicker Fen	TF196396	Site Centroid	28/04/2011	Field record / observation	2 Present (Count: Exact)	2	BAmb, BD1, BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, ScotBL, Sect.42	Lincolnshire Bird Club

bird	Linaria cannabina	Linnet	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	20 Present (Count: Exact)	20	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL	Lincolnshire Bird Club
bird	Motacilla flava	Yellow Wagtail	Bicker Fen	TF196396	Site Centroid	26/05/2011	Field record / observation	1 Male (Count: Exact)	1	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, WO1i	Lincolnshire Bird Club
bird	Motacilla flava	Yellow Wagtail		TF13X	Imported	2001 - 2006			1	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, WO1i	Royal Society for the Protection of Birds
bird	Motacilla flava	Yellow Wagtail		TF13X	Imported	2003 - 2008			1	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, WO1i	Royal Society for the Protection of Birds
bird	Motacilla flava	Yellow Wagtail		TF13X	Imported	2004 - 2009			1	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, WO1i	Royal Society for the Protection of Birds
bird	Motacilla flava	Yellow Wagtail		TF13T	Imported	2005 - 2010			1	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, WO1i	Royal Society for the Protection of Birds
bird	Motacilla flava	Yellow Wagtail		TF13X	Imported	2005 - 2010			1	Bern2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL, WO1i	Royal Society for the Protection of Birds
bird	Numenius phaeopus	Whimbrel	Bicker Fen	TF196396	Site Centroid	28/04/2011	Field record / observation	1 Present (Count: Exact)	1	BD2.2, BoCC4-Red, BRed, CMS_A2, CMS_AEWA-A2, WCA1i, WO1i	Lincolnshire Bird Club
bird	Passer domesticus	House Sparrow		TF202353	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF205352	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF205357	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF206354	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF206356	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF208364	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF210351	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF210354	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF211353	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF211358	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF212353	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF214355	Imported	26/01/2008-27/01/2008			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF205353	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF206352	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF206356	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF209359	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF209365	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF211354	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF212353	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF212358	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer domesticus	House Sparrow		TF214355	Imported	24/01/2009			1	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds

bird	Passer domesticus	House Sparrow	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	100 Present (Count: Exact)	100	BoCC4-Red, BRed, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Bird Club
bird	Passer montanus	Tree Sparrow	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	20 Present (Count: Exact)	20	BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Bird Club
bird	Passer montanus	Tree Sparrow		TF13X	Imported	2003 - 2008			1	BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer montanus	Tree Sparrow		TF13X	Imported	2004 - 2009			1	BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer montanus	Tree Sparrow		TF13T	Imported	2005 - 2010			1	BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Passer montanus	Tree Sparrow		TF13X	Imported	2005 - 2010			1	BoCC4-Red, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Perdix perdix	Grey Partridge	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	7 Present (Count: Exact)	7	BD2.1, BoCC4-Red, FEP7/2, GBNNSIP, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Bird Club
bird	Perdix perdix	Grey Partridge		TF13X	Imported	2003 - 2008			1	BD2.1, BoCC4-Red, FEP7/2, GBNNSIP, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Perdix perdix	Grey Partridge		TF13X	Imported	2004 - 2009			1	BD2.1, BoCC4-Red, FEP7/2, GBNNSIP, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Perdix perdix	Grey Partridge		TF13X	Imported	2005 - 2010			1	BD2.1, BoCC4-Red, FEP7/2, GBNNSIP, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Plectrophenax nivalis	Snow Bunting	Donington	TF208356	Site Centroid	26/10/1999	Field record / observation	1 Present (Count: Exact)	1	BAmb, Bern2, BoCC4-Amber, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Prunella modularis	Dunnock		TF205353	Imported	24/01/2009			1	BAmb, Bern2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Prunella modularis	Dunnock		TF206352	Imported	24/01/2009			1	BAmb, Bern2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Prunella modularis	Dunnock		TF206356	Imported	24/01/2009			1	BAmb, Bern2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Prunella modularis	Dunnock		TF209359	Imported	24/01/2009			1	BAmb, Bern2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Prunella modularis	Dunnock		TF210359	Imported	24/01/2009			1	BAmb, Bern2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Prunella modularis	Dunnock		TF211354	Imported	24/01/2009			1	BAmb, Bern2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Prunella modularis	Dunnock		TF212358	Imported	24/01/2009			1	BAmb, Bern2, BoCC4-Amber	Royal Society for the Protection of Birds
bird	Prunella modularis	Dunnock	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	15 Present (Count: Exact)	15	BAmb, Bern2, BoCC4-Amber	Lincolnshire Bird Club
bird	Prunella modularis	Dunnock	Hammond Beck	TF190361	Original Recorder	20/06/2014			1	BAmb, Bern2, BoCC4-Amber	Greater Lincolnshire Nature Partnership
bird	Prunella modularis	Dunnock	Hammond Beck	TF196368	Original Recorder	20/06/2014			1	BAmb, Bern2, BoCC4-Amber	Greater Lincolnshire Nature Partnership
bird	Prunella modularis	Dunnock	Donington	TF213354	Imported	18/04/2016			1	BAmb, Bern2, BoCC4-Amber	Greater Lincolnshire Nature Partnership
bird	Streptopelia turtur	Turtle Dove		TF13X	Imported	2003 - 2008			1	BD2.2, BoCC4-Red, CITESA, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WO1i	Royal Society for the Protection of Birds
bird	Streptopelia turtur	Turtle Dove		TF13X	Imported	2004 - 2009			1	BD2.2, BoCC4-Red, CITESA, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WO1i	Royal Society for the Protection of Birds
bird	Streptopelia turtur	Turtle Dove		TF13T	Imported	2005 - 2010			1	BD2.2, BoCC4-Red, CITESA, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WO1i	Royal Society for the Protection of Birds
bird	Streptopelia turtur	Turtle Dove		TF13X	Imported	2005 - 2010			1	BD2.2, BoCC4-Red, CITESA, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WO1i	Royal Society for the Protection of Birds
bird	Strix aluco	Tawny Owl	Donington	TF213354	Imported	18/04/2016			1	BAmb, Bern2, BoCC4-Amber, CITESA	Greater Lincolnshire Nature Partnership
bird	Sturnus vulgaris	Starling	Donington	TF208356	Site Centroid	07/05/2006	Field record / observation	26 Present (Count: Exact)	26	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Lincolnshire Bird Club
bird	Sturnus vulgaris	Starling		TF202353	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds

bird	Sturnus vulgaris	Starling		TF205352	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF205357	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF206354	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF206356	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF208364	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF210351	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF210354	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF211353	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF211358	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF212353	Imported	26/01/2008-27/01/2008			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF205353	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF206352	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF206355	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF206356	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF209359	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF209365	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF210359	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF211354	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF212353	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling		TF212358	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Royal Society for the Protection of Birds
bird	Sturnus vulgaris	Starling	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	80 Present (Count: Exact)	80	BD2.2, BoCC4-Red, FEP7/2, LBAP:3	Lincolnshire Bird Club
bird	Tringa totanus	Redshank	Bicker Fen	TF196396	Site Centroid	21/11/2010	Field record / observation	1 Present (Count: Exact)	1	BD2.2, BoCC4-Amber, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3	Lincolnshire Bird Club
bird	Turdus iliacus	Redwing	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	10 Present (Count: Exact)	10	BD2.2, BoCC4-Red, BRed, ScotBL, WCA1i	Lincolnshire Bird Club
bird	Turdus philomelos	Song Thrush		TF209359	Imported	24/01/2009			1	BD2.2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL	Royal Society for the Protection of Birds
bird	Turdus philomelos	Song Thrush	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	10 Present (Count: Exact)	10	BD2.2, BoCC4-Red, FEP7/2, LBAP:3, ScotBL	Lincolnshire Bird Club
bird	Turdus pilaris	Fieldfare	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	100 Present (Count: Exact)	100	BD2.2, BoCC4-Red, BRed, WCA1i, WO1i	Lincolnshire Bird Club
bird	Turdus pilaris	Fieldfare	Bicker Fen	TF196396	Site Centroid	30/11/2012	Field record / observation	250 Present (Count: Exact)	250	BD2.2, BoCC4-Red, BRed, WCA1i, WO1i	Lincolnshire Bird Club
bird	Turdus viscivorus	Mistle Thrush	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	10 Present (Count: Exact)	10	BD2.2, BoCC4-Red, BRed	Lincolnshire Bird Club
bird	Tyto alba	Barn Owl	Donington	TF208356	Site Centroid	07/02/1998	Field record / observation	1 Present (Count: Exact)	1	Bern2, CITESA, FEP7/2, LBAP:3, LBCSchedule1, ScotBL, WCA1i, WCA9, WO1i	Lincolnshire Bird Club

bird	Tyto alba	Barn Owl	Bicker Fen	TF196396	Site Centroid	05/10/2000	Field record / observation	3 Present (Count: Exact)	3	Bern2, CITESA, FEP7/2, LBAP:3, LBCSchedule1, ScotBL, WCA1i, WCA9, WO1i	Lincolnshire Bird Club
bird	Tyto alba	Barn Owl	Bicker Fen	TF196396	Site Centroid	13/01/2001	Field record / observation	1 Present (Count: Exact)	1	Bern2, CITESA, FEP7/2, LBAP:3, LBCSchedule1, ScotBL, WCA1i, WCA9, WO1i	Lincolnshire Bird Club
bird	Tyto alba	Barn Owl	Bicker Fen	TF196396	Site Centroid	13/12/2012	Field record / observation	1 Present (Count: Exact)	1	Bern2, CITESA, FEP7/2, LBAP:3, LBCSchedule1, ScotBL, WCA1i, WCA9, WO1i	Lincolnshire Bird Club
bird	Vanellus vanellus	Lapwing	Donington	TF208356	Site Centroid	15/02/2009	Field record / observation	15 Present (Count: Exact)	15	BD2.2, BoCC4-Red, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Bird Club
bird	Vanellus vanellus	Lapwing	Bicker Fen	TF196396	Site Centroid	30/11/2012	Field record / observation	60 Present (Count: Exact)	60	BD2.2, BoCC4-Red, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Bird Club
bird	Vanellus vanellus	Lapwing		TF13X	Imported	2001 - 2006			1	BD2.2, BoCC4-Red, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Vanellus vanellus	Lapwing		TF13X	Imported	2004 - 2009			1	BD2.2, BoCC4-Red, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Vanellus vanellus	Lapwing		TF13Y	Imported	2004 - 2009			1	BD2.2, BoCC4-Red, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
bird	Vanellus vanellus	Lapwing		TF13X	Imported	2005 - 2010			1	BD2.2, BoCC4-Red, CMS_A2, CMS_AEWA-A2, FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP	Royal Society for the Protection of Birds
insect - moth	Tyria jacobaeae	Cinnabar	Hammond Beck	TF190361	Original Recorder	20/06/2014			1	ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
insect - moth	Tyria jacobaeae	Cinnabar	Hammond Beck	TF196368	Original Recorder	20/06/2014			1	ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
terrestrial mammal	Arvicola amphibius	European Water Vole		TF202375	Imported	26/05/2006	Burrow	1 Present (Count: Exact)	1	FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4.a, WCA5/9.4b, WCA5/9.4c	Black Sluice IDB
terrestrial mammal	Arvicola amphibius	European Water Vole		TF177375	Imported	26/03/2007	Burrow	1 Present (Count: Exact)	1	FEP7/2, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4.a, WCA5/9.4b, WCA5/9.4c	Black Sluice IDB
terrestrial mammal	Chiroptera	Bats	Northorpe	TF2036	Original Recorder	Aug-97	roost		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF200352	Original Recorder	1998	Field record / observation	1 Present (Count: Exact)	1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF212356	Estimated from Map	1998		1 Present (Count: Exact)	1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF2035	Original Recorder	05/08/1999	roost		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF208355	Original Recorder	1999	Field record / observation	2 Present (Count: Exact)	2	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF208365	Imported	1999			1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF2035	Estimated from Map	2002	Field record / observation		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF2035	Original Recorder	2002	roost		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group

terrestrial mammal	Chiroptera	Bats	Donington	TF208358	Estimated from Map	2002			1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Northorpe	TF209364	Estimated from Map	2002			1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF2035	Original Recorder	10/08/2003	roost		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF2035	Original Recorder	17/03/2003	roost		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF191367	Original Recorder	04/07/2005			1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF203355	Original Recorder	2006	Field record / observation		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF206358	Original Recorder	Oct-06		1 Present (Count: Exact)	1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF213357	Original Recorder	12/01/2006			1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF214357	Original Recorder	2008	Field record / observation		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	South Forty Foot Drain	TF177372	Original Recorder	2008			1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	South Forty Foot Drain	TF177375	Original Recorder	2008			1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF214356	Imported	2010	Field record / observation	1 Present (Count: Exact)	1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF178361	Imported	2011	Field record / observation	1 Present (Count: Exact)	1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Chiroptera	Bats	Donington	TF214356	Imported	2011	Field record / observation	2 Present (Count: Exact)	2	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD2p, HSD4, LBAP:3, RLGLB.NT, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Erinaceus europaeus	West European Hedgehog		TF2035	Imported	2006		1 Adult (Count: Exact)	1	Bern3, ScotBL, Sect.41, Sect.42, UKBAP	People's Trust for Endangered Species

terrestrial mammal	Lepus europaeus	Brown Hare		TF1935	Imported	1999	Field record / observation	1 Adult (Count: Exact)	1	FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
terrestrial mammal	Lepus europaeus	Brown Hare		TF1935	Imported	2001	Field record / observation	1 Adult (Count: Exact)	1	FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
terrestrial mammal	Lepus europaeus	Brown Hare	Donington	TF205362	Imported	15/04/2001		1 Present (Count: Exact)	1	FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP	Lincolnshire Biodiversity Action Plan
terrestrial mammal	Lepus europaeus	Brown Hare	Donington	TF208356	Imported	2002	Field record / observation	1 Adult (Count: Exact)	1	FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
terrestrial mammal	Lepus europaeus	Brown Hare		TF185368	Imported	29/02/2008	Field record / observation	1 Adult (Count: Exact)	1	FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
terrestrial mammal	Lepus europaeus	Brown Hare		TF201351	Imported	29/02/2008	Field record / observation	6 Adult (Count: Exact)	6	FEP7/2, ScotBL, Sect.41, Sect.42, UKBAP	Greater Lincolnshire Nature Partnership
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	01/02/1998	sett		1	Bern3, PBA, WO5	Greater Lincolnshire Nature Partnership
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	1998	sett	Present Adult (Count: Estimate)	1	Bern3, PBA, WO5	Greater Lincolnshire Nature Partnership
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	09/10/2003	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/04/2004	sett	1 Adult (Count: Exact)	1	Bern3, PBA, WO5	Greater Lincolnshire Nature Partnership
terrestrial mammal	Meles meles	Eurasian Badger		TF199354	Imported	04/10/2004	Road casualty	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1837	Imported	25/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1837	Imported	25/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	24/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1938	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1938	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1938	Imported	24/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1938	Imported	25/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1938	Imported	25/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group

terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	24/05/2006	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	25/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	25/05/2006	Sett - Outlier	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2038	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2038	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	24/05/2006	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger	Mill Drain	TF1837	Imported	25/05/2006	Sett - Main	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger	Mill Drain	TF1837	Imported	25/05/2006	Sett - Outlier	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1737	Imported	26/03/2007	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1738	Imported	26/03/2007	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1738	Imported	26/03/2007	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1738	Imported	27/03/2007	sett		1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF1738	Imported	27/03/2007	sett	6 Present (Count: Exact)	6	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF198353	Imported	01/10/2007	Road casualty		1	Bern3, PBA, WO5	Lincolnshire Badger Group

terrestrial mammal	Meles meles	Eurasian Badger	Engine Drain (Helpringham Pump Drain)	TF1737	Imported	26/03/2007	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1838	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1938	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF1939	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2035	Imported	Unknown	Road casualty	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Lincolnshire Badger Group
terrestrial mammal	Meles meles	Eurasian Badger		TF2038	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2038	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Meles meles	Eurasian Badger		TF2039	Imported	Unknown	sett	1 Present (Count: Exact)	1	Bern3, PBA, WO5	Black Sluice IDB
terrestrial mammal	Pipistrellus	Pipistrelle Bat species	Donington	TF2035	Imported	18/08/2013	roost		1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group

terrestrial mammal	Pipistrellus	Pipistrelle Bat species	Donington	TF204356	Imported	19/08/2013	grounded	1 Juvenile Male (Count: Exact)	1	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Northorpe	TF202367	Original Recorder	16/08/2004			1	CMS_A2, CMS_EUROBATS-A1, HabRegs2, LBAP:3, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Donington	TF213356	Original Recorder	04/09/2006			1	CMS_A2, CMS_EUROBATS-A1, HabRegs2, LBAP:3, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Donington	TF2035	Imported	2008	roost		1	CMS_A2, CMS_EUROBATS-A1, HabRegs2, LBAP:3, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Pipistrellus pygmaeus	Soprano Pipistrelle	Northorpe	TF202367	Original Recorder	16/08/2004			1	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Pipistrellus pygmaeus	Soprano Pipistrelle	Donington	TF213356	Original Recorder	04/09/2006			1	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Plecotus auritus	Brown Long-eared Bat	Donington	TF2035	Imported	2008	roost		1	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group
terrestrial mammal	Plecotus auritus	Brown Long-eared Bat	Donington	TF2035	Imported	18/08/2013	roost		1	Bern2, CMS_A2, CMS_EUROBATS-A1, FEP7/2, HabRegs2, HSD4, LBAP:3, ScotBL, Sect.41, Sect.42, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a	Lincolnshire Bat Group

Appendix 21.2.1 Phase 1 Habitat Survey Target Notes Report

Target Notes Report

KEY - D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare

Target Note 298 - VG150916T006

Helminthotheca echioides	Bristly Oxtongue	F
Schedonorus arundinaceus	Tall Fescue	F
Arrhenatherum elatius	False Oat-grass	O
Cirsium arvense	Creeping Thistle	O
Cirsium vulgare	Spear Thistle	O
Dactylis glomerata	Cock's-foot	O
Elytrigia repens	Common Couch	O
Geranium molle	Dove's-foot Cranesbill	O
Heracleum sphondylium	Hogweed	O
Matricaria chamomilla	Scented Mayweed	O
Phragmites australis	Reed	O
Plantago major	Greater Plantain	O
Rumex crispus	Curled Dock	O
Senecio jacobaea	Common Ragwort	O
Trifolium repens	White Clover	O
Persicaria maculosa	Redshank	R
Rumex obtusifolius	Broad-leaved Dock	R
Salix caprea	Goat Willow	R

Target Note 300 - CS200417T009

Roadside verge with grassland and scattered young trees.

Agrostis stolonifera	Creeping Bent	A
Arrhenatherum elatius	False Oat-grass	A
Dactylis glomerata	Cock's-foot	A
Festuca rubra	Red Fescue	A
Galium aparine	Cleavers	A
Holcus lanatus	Yorkshire-fog	A
Urtica dioica	Nettle	A
Acer campestre	Field Maple	F
Anthriscus sylvestris	Cow Parsley	F
Cirsium arvense	Creeping Thistle	F
Cochlearia officinalis	Scurvy-grass	F
Heracleum sphondylium	Hogweed	F
Lamium album	White Dead-nettle	F
Lolium perenne	Perennial Ryegrass	F
Plantago lanceolata	Ribwort Plantain	F
Poa trivialis	Rough Meadow-grass	F
Prunus sp.	Cherry species	F
Taraxacum officinale agg.	Dandelion	F
Achillea millefolium	Yarrow	O
Aegopodium podagraria	Ground-elder	O
Fraxinus excelsior	Ash	O
Narcissus cvr.	Narcissus cultivar	O
Senecio jacobaea	Common Ragwort	O
Senecio vulgaris	Groundsel	O
Sonchus arvensis	Perennial Sow-thistle	O
Tilia sp.	Lime species	O

Target Note 307 - LR140916T008

Hawthorn hedgerow growing in remnant ditch, approximately 3m high and unmanaged. Common reed is present in parts and tall ruderal patches of vegetation.

Crataegus monogyna	Hawthorn	D
Cirsium arvense	Creeping Thistle	O
Phragmites australis	Reed	O
Rosa canina agg.	Dog Rose	O
Rubus fruticosus agg.	Bramble	O
Salix cinerea	Grey Willow	O
Urtica dioica	Nettle	O
Bryonia dioica	White Bryony	R
Salix caprea	Goat Willow	R

Target Note 308 - KG280617T002

Substation South Grassland

Centaurea scabiosa	Greater Knapweed	A
Galium verum	Lady's Bedstraw	A
Holcus lanatus	Yorkshire-fog	A
Lotus corniculatus	Bird's-foot Trefoil	A
Poa trivialis	Rough Meadow-grass	A
Achillea millefolium	Yarrow	F
Arrhenatherum elatius	False Oat-grass	F
Cirsium arvense	Creeping Thistle	F
Convolvulus arvensis	Field Bindweed	F
Lathyrus pratensis	Meadow Vetchling	F
Leucanthemum vulgare	Oxeye daisy	F
Plantago lanceolata	Ribwort Plantain	F
Agrostis stolonifera	Creeping Bent	O
Daucus carota	Wild Carrot	O
Galium palustre	Marsh Bedstraw	O
Heracleum sphondylium	Hogweed	O
Knautia arvensis	Field Scabious	O
Rumex conglomeratus	Clustered Dock	O
Schedonorus arundinaceus	Tall Fescue	O
Senecio jacobaea	Common Ragwort	O
Trifolium pratense	Red Clover	O
Vicia cracca	Tufted Vetch	O
Vicia tetrasperma	Smooth Tare	O
Anthyllis vulneraria	Kidney Vetch	R
Cirsium vulgare	Spear Thistle	R
Dactylis glomerata	Cock's-foot	R
Elytrigia repens	Common Couch	R
Helminthotheca echioides	Bristly Oxtongue	R
Malva sylvestris	Common Mallow	R

Target Note 310 - AS180517T002

MG (semi-improved) grassland with rubble piles offering potential hibernaculae for reptiles.

Target Note 311 - VG140916T004

Semi-improved grassland - species poor sheep grazed field.

Holcus lanatus	Yorkshire-fog	A
Lolium perenne	Perennial Ryegrass	A
Agrostis stolonifera	Creeping Bent	F
Cirsium vulgare	Spear Thistle	F
Festuca rubra	Red Fescue	F
Cerastium arvense	Field Mouse-ear	O
Cynosurus cristatus	Crested Dog's-tail	O
Dactylis glomerata	Cock's-foot	O
Phleum pratense	Timothy	O
Phragmites australis	Reed	R
Plantago lanceolata	Ribwort Plantain	R

Target Note 312 - AS180517T003

Active Badger Sett, foraging and numerous pathways. Described as similar to: AS180517T005.

Target Note 314 - AS180517T009

Generally applicable to all hedges.

Crataegus monogyna	Hawthorn	D
Corylus avellana	Hazel	O
Fraxinus excelsior	Ash	O
Rosa canina agg.	Dog Rose	O
Acer campestre	Field Maple	

Target Note 315 - PD290617T002

Ditch is completely dry halfway downwith abundant hawthorn and dogrose taking over

Arrhenatherum elatius	False Oat-grass	D
Phragmites australis	Reed	D
Carex acutiformis	Lesser Pond-sedge	A
Cirsium arvense	Creeping Thistle	A
Crataegus monogyna	Hawthorn	A
Geranium robertianum	Herb-Robert	A
Lamium purpureum	Red Deadnettle	A
Plantago lanceolata	Ribwort Plantain	A
Rosa canina agg.	Dog Rose	A
Sinapis arvensis	Charlock	A
Tripleurospermum inodorum	Scentless Mayweed	A
Alopecurus myosuroides	Black-grass	F
Convolvulus arvensis	Field Bindweed	F
Elytrigia repens	Common Couch	F
Helminthotheca echioides	Bristly Oxtongue	F
Ranunculus repens	Creeping Buttercup	F
Senecio vulgaris	Groundsel	F
Urtica dioica	Nettle	F
Agrostis capillaris	Common Bent	O
Carex otrubae	False Fox-sedge	O
Cirsium vulgare	Spear Thistle	O
Dactylis glomerata	Cock's-foot	O
Glyceria maxima	Reed Sweet-grass	O
Heracleum sphondylium	Hogweed	O
Lolium perenne	Perennial Ryegrass	O
Phleum pratense	Timothy	O
Poa annua	Annual Meadow-grass	O
Senecio jacobaea	Common Ragwort	O
Veronica agrestis	Field Speedwell	O
Rubus fruticosus agg.	Bramble	R
Stachys sylvatica	Hedge Woundwort	R

Target Note 316 - AS180517T004

Young plantation, broad-leaved woodland.

Poa trivialis	Rough Meadow-grass	D
Betula pendula	Silver Birch	F
Crataegus monogyna	Hawthorn	F
Salix caprea	Goat Willow	F
Alnus glutinosa	Alder	O
Corylus avellana	Hazel	O
Prunus sp.	Cherry species	O
Quercus robur	English Oak	O
Urtica dioica	Nettle	O
Carex sp.	Sedge species	R
Cornus sanguinea	Dogwood	R
Fraxinus excelsior	Ash	R
Ilex aquifolium	Holly	R
Ligustrum vulgare	Wild Privet	R
Prunus spinosa	Blackthorn	R
Senecio jacobaea	Common Ragwort	R
Viburnum opulus	Guelder-rose	R

Target Note 318 - LR140916T007

Hedgerow along track to east of CS9, bramble and hawthorn dominant, where hawthorn is present the hedge is taller approximately 3-4m in height. There is a barbed wire fence running through the hedge which becomes gappy mid-way along its length. The hedgerow continues along the length of the track with similar species composition.

Crataegus monogyna	Hawthorn	D
Rubus fruticosus agg.	Bramble	D
Urtica dioica	Nettle	O
Rosa canina agg.	Dog Rose	R
Sambucus nigra	Elder	R

Target Note 319 - VG140916T005

Species poor hedge and dry ditch. Thin rank grass /ephemeral vegetation on strip adjacent. Arable field to north recently cropped with abundant dove's-foot crane's-bill present and creeping thistle.

Cirsium arvense	Creeping Thistle
Conium maculatum	Hemlock
Crataegus monogyna	Hawthorn
Galium aparine	Cleavers
Heracleum sphondylium	Hogweed
Phragmites australis	Reed
Rosa canina agg.	Dog Rose
Rubus fruticosus agg.	Bramble
Sambucus nigra	Elder
Urtica dioica	Nettle

Target Note 321 - PD200417T017

Rough grassland with small deciduous plantation (against fence). Self-sown willows. Some specimen sycamore.

Dactylis glomerata	Cock's-foot	D
Cirsium arvense	Creeping Thistle	A
Phragmites australis	Reed	A
Primula veris	Cowslip	A
Acer campestre	Field Maple	F
Acer pseudoplatanus	Sycamore	F
Arrhenatherum elatius	False Oat-grass	F
Centaurea nigra	Knapweed	F
Cornus sanguinea	Dogwood	F
Corylus avellana	Hazel	F
Crataegus monogyna	Hawthorn	F
Leontodon hispidus	Rough Hawkbit	F
Plantago lanceolata	Ribwort Plantain	F
Salix caprea	Goat Willow	F
Betula sp.	Birch species	O
Cirsium vulgare	Spear Thistle	O
Cynosurus cristatus	Crested Dog's-tail	O
Daucus carota	Wild Carrot	O
Epilobium hirsutum	Great Willowherb	O
Festuca rubra	Red Fescue	O
Galium palustre	Marsh Bedstraw	O
Heracleum sphondylium	Hogweed	O
Holcus lanatus	Yorkshire-fog	O
Lamium album	White Dead-nettle	O
Rosa canina agg.	Dog Rose	O
Schedonorus arundinaceus	Tall Fescue	O
Achillea millefolium	Yarrow	R
Fraxinus excelsior	Ash	R

Target Note 322 - KG280617T001

Substation North Grassland

Arrhenatherum elatius	False Oat-grass	A
Cirsium arvense	Creeping Thistle	A
Holcus lanatus	Yorkshire-fog	A
Centaurea nigra	Knapweed	F
Dactylis glomerata	Cock's-foot	F
Galium verum	Lady's Bedstraw	F
Leucanthemum vulgare	Oxeye daisy	F
Plantago lanceolata	Ribwort Plantain	F
Achillea millefolium	Yarrow	O
Cirsium vulgare	Spear Thistle	O
Daucus carota	Wild Carrot	O
Festuca rubra	Red Fescue	O
Galium palustre	Marsh Bedstraw	O
Heracleum sphondylium	Hogweed	O
Lathyrus pratensis	Meadow Vetchling	O
Lotus corniculatus	Bird's-foot Trefoil	O
Trifolium pratense	Red Clover	O

Target Note 323 - PD200417T016

Ditch with about 1' water. Good macrophyte cover. Large number of tadpoles present.

Festuca sp.	Fescue Species	D
Arrhenatherum elatius	False Oat-grass	A
Glyceria fluitans	Floating Sweet-grass	A
Phragmites australis	Reed	A
Ranunculus aquatilis	Common Water-crowfoot	A
Agrostis stolonifera	Creeping Bent	F
Anthriscus sylvestris	Cow Parsley	F
Callitriche sp.	Water Starwort species	F
Dactylis glomerata	Cock's-foot	F
Enteromorpha sp.	Enteromorpha Species	F
Helminthotheca echioides	Bristly Oxtongue	F
Heracleum sphondylium	Hogweed	F
Plantago lanceolata	Ribwort Plantain	F
Taraxacum officinale agg.	Dandelion	F
Trifolium sp.	Clover sp.	F
Hottonia palustris	Water-violet	O
Medicago lupulina	Black Medick	O
Rubus fruticosus agg.	Bramble	O
Senecio jacobaea	Common Ragwort	O
Sinapis arvensis	Charlock	O
Urtica dioica	Nettle	O

Target Note 324 - TS140916T001

Intact species poor hedge with ditch on south side and common reed border. Recently dredged from south side.

Crataegus monogyna	Hawthorn	D
Rosa canina agg.	Dog Rose	A
Rubus fruticosus agg.	Bramble	A
Sambucus nigra	Elder	A
Prunus spinosa	Blackthorn	F
Urtica dioica	Nettle	F
Salix species	Willow species	R

Target Note 325 - AS180517T001

Semi-improved neutral Grassland (sown mix) (modified).

Holcus lanatus	Yorkshire-fog	D
Centaurea nigra	Knapweed	F
Cirsium arvense	Creeping Thistle	F
Festuca pratensis	Meadow Fescue	F
Festuca rubra	Red Fescue	F
Galium mollugo	Hedge Bedstraw	F
Lotus corniculatus	Bird's-foot Trefoil	F
Dactylis glomerata	Cock's-foot	O
Daucus carota	Wild Carrot	O
Galium verum	Lady's Bedstraw	O
Plantago lanceolata	Ribwort Plantain	O
Senecio jacobaea	Common Ragwort	O
Arrhenatherum elatius	False Oat-grass	R
Chamerion angustifolium	Rosebay Willowherb	R
Cirsium vulgare	Spear Thistle	R
Epilobium hirsutum	Great Willowherb	R
Geranium dissectum	Cut-leaved Cranesbill	R
Heracleum sphondylium	Hogweed	R

Lactuca sp.	Lettuce species	R
Leucanthemum vulgare	Oxeye daisy	R
Lychnis flos-cuculi	Ragged Robin	R
Phalaris arundinacea	Reed Canary-grass	R
Plantago major	Greater Plantain	R
Primula veris	Cowslip	R
Ranunculus acris	Meadow Buttercup	R
Rumex acetosa	Common Sorrel	R
Rumex crispus	Curled Dock	R
Rumex obtusifolius	Broad-leaved Dock	R
Sanguisorba officinalis	Great Burnet	R
Silene dioica	Red Campion	R
Sinapis arvensis	Charlock	R
Taraxacum officinale agg.	Dandelion	R
Trifolium pratense	Red Clover	R
Tussilago farfara	Colt's-foot	R
Urtica dioica	Nettle	R
Vicia sativa	Common Vetch	R

Target Note 326 - AS180517T005

Active badger pathway. Encompasses pathways described in: AS180517T003.

Target Note 327 - AS180517T008

Generally applicable to all wet ditches.

Phragmites australis	Reed	D
Typha latifolia	Greater Reedmace	F
Callitriche sp.	Water Starwort species	O
Elodea canadensis	Canadian Pondweed	O
Glyceria fluitans	Floating Sweet-grass	O
Hippuris vulgaris	Mare's-tail	R
Myriophyllum sp.	Water-milfoil species	R

Target Note 328 - LR140916T005

Drain with deep water, approximately 5m in width and with algal blooms on the water surface. The banks are dominated by Phragmites australis and Urtica dioica, cuting is evident on the south bank. Vegetation is managed, banks are steep and difficult to access with common reed overhanging the waters edge. Common reed is growing within the water also. Highly vegetated banks surveyors would need a boat for water vole survey and it may be difficult to survey even then.

Phragmites australis	Reed	D
Glyceria maxima	Reed Sweet-grass	O
Lemna minor	Common Duckweed	O

Target Note 330 - LR140916T004

Patches of tall ruderal vegetation and grasses bound the field and track once the ditches are no longer present.

Target Note 331 - PD290617T003

Arrhenatherum elatius	False Oat-grass	D
Phragmites australis	Reed	D
Carex acutiformis	Lesser Pond-sedge	A
Carex otrubae	False Fox-sedge	A
Cirsium arvense	Creeping Thistle	A
Geranium robertianum	Herb-Robert	A
Plantago lanceolata	Ribwort Plantain	A
Sinapis arvensis	Charlock	A
Alopecurus myosuroides	Black-grass	F
Convolvulus arvensis	Field Bindweed	F
Elytrigia repens	Common Couch	F
Helminthotheca echioides	Bristly Oxtongue	F
Ranunculus repens	Creeping Buttercup	F
Senecio vulgaris	Groundsel	F
Agrostis capillaris	Common Bent	O
Cirsium vulgare	Spear Thistle	O
Dactylis glomerata	Cock's-foot	O
Heracleum sphondylium	Hogweed	O
Lolium perenne	Perennial Ryegrass	O
Phleum pratense	Timothy	O
Senecio jacobaea	Common Ragwort	O
Veronica agrestis	Field Speedwell	O
Rubus fruticosus agg.	Bramble	R

Target Note 332 - AS180517T007

Small area of low-lying ground with marsh vegetation.

Carex otrubae	False Fox-sedge	A
Juncus subnodulosus	Blunt-flowered Rush	F
Lychnis flos-cuculi	Ragged Robin	F
Deschampsia cespitosa	Tufted Hair-grass	R

Target Note 333 - AS180517T006

Specimen oak trees (parkland), fenced off.

Quercus sp.	Oak species

Target Note 334 - CS200417T007

Ditches within arable fields.

Agrostis stolonifera	Creeping Bent	A
Arrhenatherum elatius	False Oat-grass	A
Dactylis glomerata	Cock's-foot	A
Holcus lanatus	Yorkshire-fog	A
Phragmites australis	Reed	A
Poa trivialis	Rough Meadow-grass	A
Alopecurus pratensis	Meadow Foxtail	F
Anthriscus sylvestris	Cow Parsley	F
Cardamine flexuosa	Wavy Bitter-cress	F
Cirsium arvense	Creeping Thistle	F
Elytrigia repens	Common Couch	F
Equisetum arvense	Field Horsetail	F
Festuca rubra	Red Fescue	F
Galium aparine	Cleavers	F
Heracleum sphondylium	Hogweed	F
Lamium album	White Dead-nettle	F
Lolium perenne	Perennial Ryegrass	F
Phleum pratense	Timothy	F
Plantago lanceolata	Ribwort Plantain	F
Poa annua	Annual Meadow-grass	F
Rumex crispus	Curled Dock	F

Rumex obtusifolius	Broad-leaved Dock	F
Taraxacum officinale agg.	Dandelion	F
Urtica dioica	Nettle	F
Apium nodiflorum	Fool's Watercress	O
Carex acutiformis	Lesser Pond-sedge	O
Crataegus monogyna	Hawthorn	O
Geranium dissectum	Cut-leaved Cranesbill	O
Helminthotheca echioides	Bristly Oxtongue	O
Ranunculus aquatilis	Common Water-crowfoot	O
Rosa canina agg.	Dog Rose	O
Rubus fruticosus agg.	Bramble	O
Scrophularia nodosa	Common Figwort	O
Senecio jacobaea	Common Ragwort	O
Trifolium repens	White Clover	O
Veronica agrestis	Field Speedwell	O
Myosotis sylvatica	Wood Forget-me-not	R

Target Note 335 - PD200417T018

Similar vegetation as PD200417T016, but with very little open water, greater Enteromorpha cover and additional macrophyte species.

Festuca sp.	Fescue Species	D
Arrhenatherum elatius	False Oat-grass	A
Enteromorpha sp.	Enteromorpha Species	A
Glyceria fluitans	Floating Sweet-grass	A
Phragmites australis	Reed	A
Ranunculus aquatilis	Common Water-crowfoot	A
Agrostis stolonifera	Creeping Bent	F
Anthriscus sylvestris	Cow Parsley	F
Callitriche sp.	Water Starwort species	F
Dactylis glomerata	Cock's-foot	F
Helminthotheca echioides	Bristly Oxtongue	F
Heracleum sphondylium	Hogweed	F
Hippuris vulgaris	Mare's-tail	F
Plantago lanceolata	Ribwort Plantain	F
Rumex crispus	Curled Dock	F
Taraxacum officinale agg.	Dandelion	F
Trifolium sp.	Clover sp.	F
Berula erecta	Lesser Water-parsnip	O
Hottonia palustris	Water-violet	O
Medicago lupulina	Black Medick	O
Mentha aquatica	Water Mint	O
Rubus fruticosus agg.	Bramble	O
Senecio jacobaea	Common Ragwort	O
Sinapis arvensis	Charlock	O
Urtica dioica	Nettle	O
Caltha palustris	Marsh-marigold	R

Target Note 336 - KG140916T002

The ditch varies in wetness along length. Recently dredged on south side, north side dredged earlier this year. 2-3 inches of water with eastern end containing water plantain, greater reedmace and

Target Note 340 - PD140916T003

Species diverse plantation 15-20 years old.

Carpinus betulus	Hornbeam	F
Sorbus aucuparia	Rowan	F
Acer campestre	Field Maple	O
Cornus sanguinea	Dogwood	O
Euonymus europaeus	Spindle	O
Fraxinus excelsior	Ash	O
Malus domestica	Apple	O
Malus sylvestris	Crab-apple	O
Sorbus intermedia	Swedish Whitebeam	R

Target Note 342 - CS200417T008

Small, recently planted woodland block.

Anthriscus sylvestris	Cow Parsley	F
Crataegus monogyna	Hawthorn	F
Equisetum arvense	Field Horsetail	F
Heracleum sphondylium	Hogweed	F
Prunus sp.	Cherry species	F
Prunus spinosa	Blackthorn	F
Rosa canina agg.	Dog Rose	F
Viburnum opulus	Guelder-rose	F
Agrostis stolonifera	Creeping Bent	O
Cornus sanguinea	Dogwood	O
Dactylis glomerata	Cock's-foot	O
Festuca rubra	Red Fescue	O
Holcus lanatus	Yorkshire-fog	O
Lolium perenne	Perennial Ryegrass	O
Plantago lanceolata	Ribwort Plantain	O
Salix species	Willow species	O
Taraxacum officinale agg.	Dandelion	O

Target Note 344 - VG140916T003

Band of modified neutral grassland set aside with a dry ditch along the northern edge. Common reed and nettle are dominant on the north edge within and bordering the dry ditch.

Lolium perenne	Perennial Ryegrass	A
Arrhenatherum elatius	False Oat-grass	F
Dactylis glomerata	Cock's-foot	F
Festuca rubra	Red Fescue	F
Holcus lanatus	Yorkshire-fog	F
Urtica dioica	Nettle	F
Cirsium arvense	Creeping Thistle	O
Equisetum arvense	Field Horsetail	O
Heracleum sphondylium	Hogweed	O
Phragmites australis	Reed	O
Prunella vulgaris	Selfheal	O

Target Note 346 - KG030516T001

Small strip of set-aside grassland on field boundary (MG) between arable and ditch.

Lolium perenne	Perennial Ryegrass	D
Heracleum sphondylium	Hogweed	A
Trifolium repens	White Clover	A
Anthriscus sylvestris	Cow Parsley	F
Geranium dissectum	Cut-leaved Cranesbill	F
Helminthotheca echioides	Bristly Oxtongue	F
Lathyrus pratensis	Meadow Vetchling	F
Matricaria discoidea	Pineapple-weed	F
Poa annua	Annual Meadow-grass	F
Cirsium arvense	Creeping Thistle	O

Target Note 347 - PD140916T002

Quite mature ash which might have some bat potential but it was not possible to see right up the length of the trunk due to canopy cover. Assess only if it needs to be removed/disturbed.

Fraxinus excelsior	Ash	O

Target Note 348 - KG030516T002

D6 - Wet ditch, steep banks ~5m. Good emergent aquatic vegetation and high density of bankside vegetation.

Callitriche sp.	Water Starwort species	D
Phragmites australis	Reed	D
Heracleum sphondylium	Hogweed	A
Lolium perenne	Perennial Ryegrass	A
Anthriscus sylvestris	Cow Parsley	F
Cardamine pratensis	Cuckooflower	F
Dactylis glomerata	Cock's-foot	F
Galium aparine	Cleavers	F
Ranunculus sp.	Water-crowfoot species	F
Urtica dioica	Nettle	F
Lamium album	White Dead-nettle	O
Lathyrus pratensis	Meadow Vetchling	O
Mentha aquatica	Water Mint	O
Primula veris	Cowslip	O
Alopecurus pratensis	Meadow Foxtail	R
Cerastium fontanum	Common Mouse-ear	R
Cirsium vulgare	Spear Thistle	R
Crataegus monogyna	Hawthorn	R
Lamium purpureum	Red Deadnettle	R
Veronica chamaedrys	Germander Speedwell	R
Vicia sativa	Common Vetch	R

Target Note 350 - KG030516T003

Collection of stacked, wooden pallets and sheds/containers (1x wooden, 2x tin containers) on hard standing. Adjacent to road. No bat potential - negligible.

Target Note 351 - KG140916T001

Wet, recently dredged ditch, common reed noted on banks. Approximately 5ins water, shallower toward the south end. Water is clear for the most part with an oily film in places.

Target Note 352 - VG140916T002

Some scattered arable weeds along the field boundaries. No real margins present. Concentrated where TN's are placed. Mostly very little in the way of arable weeds.

Geranium molle	Dove's-foot Cranesbill	F
Helminthotheca echioides	Bristly Oxtongue	F
Matricaria chamomilla	Scented Mayweed	F
Sonchus arvensis	Perennial Sow-thistle	F
Capsella bursa-pastoris	Shepherd's-purse	O
Plantago major	Greater Plantain	O
Poa annua	Annual Meadow-grass	O
Polygonum aviculare	Knotgrass	O
Senecio jacobaea	Common Ragwort	O
Veronica agrestis	Field Speedwell	O
Alopecurus myosuroides	Black-grass	R
Avena fatua	Wild Oat	R
Convolvulus arvensis	Field Bindweed	R
Fallopia convolvulus	Black Bindweed	R
Hordeum murinum	Wall Barley	R
Papaver rhoeas	Common Poppy	R
Persicaria maculosa	Redshank	R
Raphanus raphanistrum	Wild Radish	R
Senecio vulgaris	Groundsel	R
Sisymbrium officinale	Hedge Mustard	R
Thlaspi arvense	Field Pennycress	R
Urtica urens	Annual Nettle	R

Target Note 354 - LR140916T003

CSI-Rev1 west bounding ditch which has been previously surveyed. There are numerous aquatic invertebrates present including leeches, worly gigs and dragonflies. A frog was also observed. Ditch is much drier and more turbid to the south.

Callitriche sp.	Water Starwort species	F
Lemna minor	Common Duckweed	F
Nasturtium officinale	Watercress	O
Phragmites australis	Reed	O

Target Note 356 - KG030516T004

Ditch D8 (and D8?). No aquatic emergent vegetation and low species diversity on bankside vegetation (due to recent dredging), compared to D6 (KG030516T002).

D10 - maintains strip of common reed, as it appears to have been dredged on North side only.

D8 - Highly eutrophic, some slick noted on surface of water for +50% of the ditch.

Lolium perenne	Perennial Ryegrass	D
Phragmites australis	Reed	

Target Note 357 - PD140916T001

Ruderal strip between crop and ditch bank.

Phragmites australis	Reed	D
Arrhenatherum elatius	False Oat-grass	A
Dactylis glomerata	Cock's-foot	F
Festuca arundinacea	Tall Fescue	F
Senecio jacobaea	Common Ragwort	F
Urtica dioica	Nettle	F
Holcus lanatus	Yorkshire-fog	R
Schedonorus arundinaceus	Tall Fescue	

Appendix 21.3.1 Hedgerow Survey Assessment Table

Hedgerow 45 (KG_040416_H1)

Target Note

Hedgerow with poor understorey (mostly bare). Mature hedgerow for the majority, with some evidence of more recent gap planting.

Species List:

Crataegus monogyna	Hawthorn
Sambucus nigra	Elder
Rosa canina agg.	Dog Rose
Cornus sanguinea	Dogwood
Acer campestre	Field Maple
Anthriscus sylvestris	Cow Parsley
Galium aparine	Cleavers
Geranium dissectum	Cut-leaved Cranesbill
Heracleum sphondylium	Hogweed
Urtica dioica	Nettle

Hedgerow Regulations (1997) Schedule 2 Species
Hedgerow Regulations (1997) Schedule 3 Species

Hedgerow Assessment

Date of survey	04 April 2016	**Surveyor**	Kim Gallaher
GPS start of hedgerow	N/A	**GPS end of hedgerow**	N/A
Hedge height	5m	**Hedge width**	3m
Signs of management	N/A		

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants, insects, other)	Unknown
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*			
Hedge length (m)	>200 m	**Sample 1**	**Sample 2**	**Sample 3**	**Schedule 2 species**
Wall/bank along at least half its length?	No	Field Maple	Hawthorn	Hawthorn	
Average of at least one standard tree per 50m?	No	Hawthorn	Dogwood	Dog Rose	
3+ woodland ground flora species (***listed on Sch. 2***) within 1m?	No	Dogwood	Field Maple	Elder	
Ditch along at least half of the hedgerow?	Yes	Dog Rose	Dog Rose	Field Maple	
Parallel hedge within 15m of the hedgerow?	No		Elder		
Gaps less than 10% of hedgerow length?	Yes				
Connection (<10m) with another hedgerow? (1pt each)	0				
Connection (<10m) with a pond? (2pts each)	0				
Connection (<10m) broadleaved woodland? (2pts each)	0				

Average Woody Species (Schedule 3)	4
Does this hedge meet the wildlife and countryside criteria for Importance?	**NO**

Appendix 21.4.1 Ditch Habitat Suitability Survey Method

Ditch Habitat Suitability Survey Method

The standard HSI was developed for ponds. There is no standard suitability assessment method available or being development for ditch habitats. In a review of amphibian survey reports (available on line) that included survey of ditches, all either did not assess suitability or applied the HSI and acknowledged that the resultant index would be biased.

The HSI is based upon pond characteristics which cannot be applied readily to a ditch system due to its linear and interconnected nature. One example would be SI2, the surface area of water provided by the waterbody. Using the example of pond area, a pond's surface area to perimeter ratio will be significantly different to that of a ditch with the same water surface area. The perimeter provides the marginal habitats most frequently used for breeding, while the water surface area is considered, in ponds at least, to be a determinant of the magnitude of biological productivity. The full application of the HSI calculation method for ditches is therefore unlikely to provide an accurate assessment of the ditches' suitability for GCN breeding. This is confirmed in the context of area, for example, by a European study[8] (Ref 21-30) which assessed the spatial and temporal variability of aquatic habitats used by amphibians (including four UK species; *Triturus cristatus, Lissotriton vulgaris, Rana temporaria* and *Bufo bufo*). This study found no relationship between the occupation of drainage ditches with the area of water within the ditch.

Another SI that illustrates the inappropriateness of applying the full pond HSI calculation to ditches is pond dispersion (SI8). For the purposes of this survey, ditches have been individually identified by distinguishing ditches at junctions and sharp bends (circa 90 degrees). This is to allow effective recording and mapping. However, the vast majority of these ditches are interconnected, therefore forming parts of a larger water feature. Treating each individually referenced ditch as an independent waterbody would artificially inflate the pond dispersion index, which calculates the pond density within 1km of the object pond.

It is therefore proposed to formulate a simplified suitability score for ditches within the site, by recording set characteristics of every ditch:

- DC.1 Water permanence (estimated in the field)
- DC.2 Vegetation presence (estimated in the field)
- DC.3 Fish presence (estimated in the field, if visible)
- DC.4 Shade (estimated in the field)
- DC.5 Water quality (estimated in the field)

[8] Hartel T., Bancila R. and Cogalniceanu D. (2011) *Spatial and temporal variability of aquatic habitat use by amphibians in a hydrologically modified landscape.* Freshwater Biology 56: 2288-2298

Water fowl presence has not been included as a Ditch Characteristic. Although it is included in the standard pond HSI because water fowl may affect vegetation used for egg laying or water quality characteristics, the large availability of ditch habitats means that water fowl do not gather in sufficient numbers to have an impact. This is borne out through observations during the bird surveys and habitat surveys. As such it is not considered a key consideration, although the presence of water fowl will be recorded.

The length, width and (where possible) depth of each ditch will also be recorded (using a mix of GIS and field observations) to further describe the ditch.

Ditch characteristics DC1 to DC5 are likely to be most influential in the suitability of a ditch for breeding amphibians. These five characteristics will therefore be used to establish the suitability score for the ditches. Values for each characteristic will simply be positive or negative. The only characteristic to have a weighting applied will be water permanence, as this will prevent successful breeding while other characteristics may only limit successful breeding. The scoring matrix to assess ditch suitability is proposed as follows:

Ditch Characteristic	Negative Measure	Score	Positive Measure	Score
Permanence	Dry or Dries annually	-2	Wet (even water distribution, water level >5cm deep)	+1
Vegetation	No suitable egg laying plants present	-1	Suitable egg laying plants present	+1
Fish	Present	-1	Absent	+1
Shade	Shaded (>60% shaded, 1m from shore)	-1	Not shaded (>40% open 1m from shore)	+1
Water quality	Poor (e.g. evidence of pollution or enrichment)	-1	Moderate / Good (no evidence of pollution or enrichment)	+1

For the purposes of this survey, a key objective is to locate breeding populations of GCN, as these sites will be the focal points of GCN distribution across the survey area. Therefore, ditches found to have an overall positive or neutral score using the five Ditch Characteristics will be subject to a full GCN survey. Ditches found to have an overall negative score will be scoped out of subsequent surveys.

It is recognised that this scoring system does not replicate the standard pond HSI which was tested against a wide ranging pond dataset. The aforementioned lack of standard data on suitability data for ditches means this is not possible at this time. However, it will provide a consistent and efficient characterisation of ditches in respect of amphibian breeding requirements.

Current guidelines (English Nature 2001[9]) (Ref 21-12) state that "*surveys should not entail undue site damage or disturbance to the population*". Ditches found to be inaccessible to survey, by merit of being enclosed by hedgerows on both sides, will be excluded from survey.

[9] English Nature (2001) *Great crested newt mitigation guidelines.* English Nature, Peterborough

Appendix 21.8.1 Winter Bird Survey Dates and Weather Conditions

Table 21.8.1 Winter Bird Survey Weather Data

Visit	Date (DD/MM/YYYY)	Min. Start Temp (°C)	Max. End Temp (°C)	Visibility (Range)	Cloud (Range)	Wind Speed (Range)	Rain (Range)
2014-2015							
1	15/12/2014	8	N/A	N/A	N/A	2-3	N/A
2	28/12/2014	5	N/A	N/A	N/A	1-2	N/A
3	13/01/2015	6	N/A	4	N/A	2-3	4
4	28/01/2015	9	4	4-3	8-4	4-6	1
5	11/02/2015	5	N/A	4	8	1-2	0
6	25/02/2015	4	10	1-4	5-7	1-3	0
7	10/03/2015	4	12	4	1-2	1-3	0
8	25/03/2015	3	10	4	0-6	1-3	0
9	14/04/2015	10	19	4	0-2	0-4	0-3
10	27/04/2015	4	18	4	0-1	1-2	0
2015-2016							
1	31/10/2015	10	15	3-4	7-3	1-3	0
2	11/11/2015	12	17	4	3-7	0-4	0-4
3	29/11/2015	7	12	4	7-8	4-9	0-1
4	13/12/2015	2	6	2-4	8	1-3	0-1
5	23/12/2015	7	10	4	0-1	3-6	0
6	17/01/2016	-1	5	4	1-7	1-2	0
7	27/01/2016	13	16	4	1-8	3-6	0-1
8	12/02/2016	0	9	4	5-7	1-3	0
9	24/02/2016	-2	7	4	0-4	1-3	0
10	12/03/2016	4	12	3-4	8-0	2-3	0
11	24/03/2016	7	11	4	7-8	3-4	0-2
12	09/04/2016	7	12	4	4-8	3	0-1
13	19/04/2016	11	13	4	3-2	3	0
	20/04/2016	12	12	4	1	3-4	0
	21/04/2016	9	13	4	3-4	3-4	0
	22/04/2016	9	11	4	7	3-4	0

Appendix 21.9.1 Breeding Bird Survey Dates and Weather Conditions

Table 21.9.1 Breeding Bird Survey Weather Data								
Transect	Visit	Date (DD/MM/YYYY)	Min. Start Temp (ºC)	Max. End Temp (ºC)	Visibility (Range)	Cloud (Range)	Wind Speed (Range)	Rain (Range)
2015-2016								
CS	1	19/04/2016	10	11	4	1-3	3	0
CS	2	18/05/2016	13	14	4	8	4	0-2
CS	3	21/06/2016	21	N/A	4	7	1	0
2016-2017								
17	1	03/04/2017	6	12	3-4	2-8	1	0
	1	04/04/2017	12	13	4	7-8	1-2	0
	2	08/05/2017	9	9	4	7-8	N/A	0
	3	05/06/2017	13	14	4	2-8	2-4	0

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