

Annex 11.2

South Killingsholme Phase 1
Ecology Survey
(Applied Ecology)



SOUTH KILLINGHOLME PHASE 1 ECOLOGY SURVEY

Report for

**Institute of Estuarine and Coastal Studies
University of Hull**

June 2010

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Signed on behalf of Applied Ecology Ltd:



Dr Duncan Painter
Director

CONTACT DETAILS:

APPLIED ECOLOGY LTD
St. John's Innovation Centre
Cowley Road
Cambridge
CB4 0WS

Tel: 01223 422 116
Fax: 01223 420 844
Mobile: 07725 811 777
Email: info@appliedecology.co.uk



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Appendix 1 Site Location Map

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1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1 Applied Ecology Ltd (AEL) was appointed by the Institute of Estuarine and Coastal Studies (IECS), University of Hull, to undertake a Phase 1 habitat and protected species walkover survey of a land area (hereafter referred to as 'the site' or the 'survey area') adjacent to the south shore of the River Humber estuary to the north of Immingham, north Lincolnshire (approximate central Ordnance Survey grid reference TA166, 186).
- 1.1.2 The primary objective of the survey were to gain an understanding of the habitats and protected animal species potentially present within the development site and a buffer of land around in light of proposals to develop the site. The details and extent of future development proposals are unknown to AEL, and the survey area for the current survey work was provided by IECS as shown in **Appendix 1**.
- 1.1.3 The survey area, measuring approximately 5km², consisted of diverse habitats, which included intertidal mud with small areas of salt marsh, freshwater lagoons and reed swamp; arable and pasture farmland; plantation and semi-natural deciduous woodland; industrial land and extensive areas of hard standing used for storage of imported vehicles.
- 1.1.4 All survey work was carried out by an experienced AEL ecologist (R. Goater MIEEM) in April and May 2010. The Phase 1 habitat and walkover survey took place on 29 and 30 April. The results of this work indicated the potential presence of great crested newt (GCN) and a GCN presence/absence survey was completed during the periods 12 – 14 May, and 17 – 18 May in order to correspond with the peak of the 2010 amphibian breeding season.
- 1.1.5 Weather conditions during all survey periods were suitable for the particular survey being undertaken, though light rain towards the end the first day of the Phase 1 survey hindered the work in a minor way.



2 ASSESSMENT METHODOLOGY

2.1 PHASE 1 HABITAT SURVEY

2.1.1 The entire survey area, apart from relatively small areas where access was not physically possible, was investigated on foot. All habitats present were classified and mapped in the field according to standard Phase 1 categories¹. Target notes were written where explanation of habitat features was deemed necessary and where important features, too small to map accurately in the field, were present. Areas where access was difficult were observed with binoculars and mapped as accurately as possible in the field, and checked while producing a final habitat map against Google Earth aerial images.

2.2 GREAT CRESTED NEWT SURVEY

2.2.1 Several ponds were identified during the walkover survey, which were considered potential breeding sites for GCN. These ponds were subject to a GCN presence/absence survey, as described below.

2.2.2 Guidance for GCN survey has been produced by English Nature². For GCN presence/absence survey EN 2001 recommends that three survey methods should be completed in each water body; torch survey, bottle [or funnel] trapping and egg searching. The guidance suggests that four separate survey visits in suitable weather conditions should be completed between mid-March and mid-June as a reasonable standard of survey effort, with at least two of the visits being completed during the period mid-April to mid-May. This is because there is a risk that GCN may not have reached their breeding ponds in full numbers before mid-April, and because adult GCN may have left their breeding ponds after mid-May depending on local conditions.

2.2.3 In order to assess the size of a GCN breeding population in a pond, a total of six survey visits, with at least three occurring within the mid-April to mid-May survey window, should be completed according to EN 2001. In this instance it was agreed that a six visit survey of ponds found to possess GCN would not be completed given that development of the site may not happen in the near future, and this work could be completed at a later stage as considered necessary moving

¹ JNCC (1993) *Handbook for Phase 1 Habitat Survey – A technique for Environmental Audit*. JNCC. Peterborough.

² English Nature (2001) *Great crested newt mitigation guidelines*. Version August 2001.



forward.

- 2.2.4 A total of seventeen small ponds or other small standing water bodies were identified during the Phase 1 habitat mapping and walkover survey that were considered to be suitable as potential breeding sites for GCN. Of these, access was possible to 11, which were subjected to a four-visit GCN survey.
- 2.2.5 The survey was undertaken during the amphibian breeding season in mid-May by R. Goater who is experienced in this type of survey, under the auspices of a Natural England GCN survey and handling licence no. 20100376. All survey work was completed in air temperatures of 9 degrees Celsius or higher, though air temperature dropped to -1 degree C on the morning of 13 May.

Funnel Trapping

- 2.2.6 Double ended funnel traps (40cm x 20cm, with a 3mm square mesh) were set at regular intervals around the entire perimeter of each water body in order to capture newts. The traps work on the same basis as plastic drinks bottle traps but are larger and have two as opposed to one inverted funnel entrance. The number of traps used was roughly proportional to the range of littoral aquatic habitats present in each water body. The traps were set on the nights of 12/13; 13/14; 17/18; and 18/19 May, each trap with its upper quarter above the water surface in order that trapped animals could easily gulp air from the water surface. They were retrieved and their contents examined soon after dawn each morning in accordance with the recommended trapping times described by English Nature 2001.

Egg Searching

- 2.2.7 A search lasting approximately 15 minutes was made for GCN eggs on suitable submerged aquatic vegetation in all ponds where such vegetation was present and was safely accessible. Searches for GCN eggs were made on each survey visit occasion and were discontinued in individual ponds after a GCN was found.

Torch Light Survey

- 2.2.8 A one million candle power torch (Clulite CB2 Clubman Deluxe) was used to conduct an after dark torchlight survey of all ponds with clear enough water to allow reasonable visibility on the night of 17 May. The survey was undertaken in complete darkness after 22.00 hrs by walking slowly around the perimeter of each water body, where accessible and shining the torch into the water to enable a



count of all newts seen to be made.

2.3 PROTECTED SPECIES WALKOVER SURVEY

- 2.3.1 During the Phase 1 habitat survey, a watching brief was maintained for field evidence of protected animal species and groups, most notably water vole, badger, GCN, reptiles, bats, and birds and for habitats potentially suitable for these animals. Specific searches for field evidence of badger activity were completed in down time during the GCN survey.



3 SURVEY FINDINGS

3.1 PHASE 1 HABITAT SURVEY

- 3.1.1 The Phase 1 habitat map is shown by **Figure 1**, and associated target notes are provided in **Appendix 2**. The accompanying photo-sheet provides a range of representative habitat photographs (no.'s 1-24). A descriptive summary of the habitat types present is provided below.

Standing Water

- 3.1.2 An area of extensive freshwater lagoons (Target Note (TN) 5) fringed by common reed *Phragmites australis*, and with small areas of bare mud was present to the north of the survey area. The lagoons were bisected by a single-track railway line running more or less north-south, and small islands and narrow peninsulas, probably marking defunct field boundaries, were present.
- 3.1.3 A total of 17 ponds, including rectangular, butyl-lined water-stores for fire fighting, flooded field corners, enlarged ditches, flooded woodland floor, a probable bomb crater and shallow floods within disturbed ground were present. Ponds are not target noted on the Phase 1 habitat map for reasons of clarity.

Swamp

- 3.1.4 Swamps of pure common reed fringed the freshwater lagoons to the north of the site. Common reed also formed a narrow linear band of this habitat (**Photo 1**) (TN12) running from a triangle of reedswamp and scrub (**Photo 2**) (TN11), located at the eastern-most extremity of a hard-standing vehicle store area (TN9) along a water-filled ditch forming the eastern boundary of arable and grass fields to the east of the survey area. Reedswamp (TN2) was also present in a low section of saltmarsh (TN1) at the northern coastal section of the site, and common reed, though not constituting swamp, was a prominent feature of the sparse vegetation of the outer flank of the sea wall for most of its length. A further extensive area of reedswamp (**Photo 3**) (TN24) was present within an area of scattered scrub and semi-improved grassland near the south-east corner of the survey area.
- 3.1.5 Bulrush *Typha latifolia* swamp was present in three locations: a rectangular pond (TN46) in the grounds of the power station to the north-west of the survey area was almost filled with a pure stand of this species; within Burkinshaw's Covert, on the western boundary of the survey area, a small patch grew in an extensive

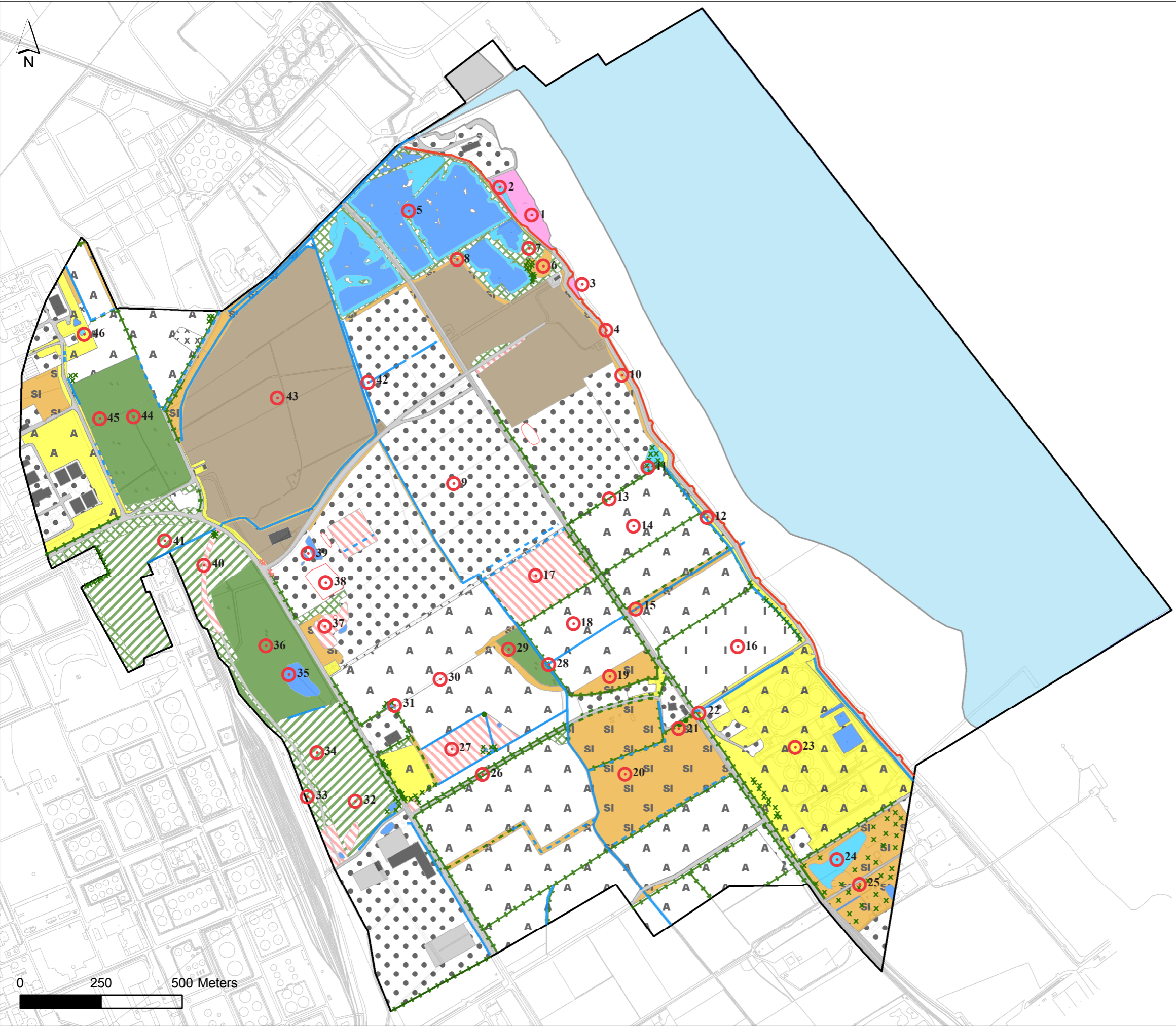


Figure 1
South Killingholme, Hull

Key:

	Broadleaved semi-natural woodland
	Broadleaved plantation woodland
	Dense scrub
	Semi-improved neutral grassland
	Improved grassland
	Amenity grassland
	Tall ruderal
	Arable
	Ephemeral/short perennial vegetation
	Hardstanding, road, track & rail
	Bare ground
	Building
	Swamp
	Continuous saltmarsh
	Inter-tidal
	Species-poor hedge with trees
	Species-poor defunct hedge
	Species-poor intact hedge
	Running water/wet ditch
	Dry ditch
	Wall
	Individual tree (approximate location and number only)
	Scattered scrub
	Scattered introduced shrub
	Scattered ephemeral
	Site boundary
	Spoil
	Tarmac
	Standing water
	Mud

Date of survey:

29 and 30 April 2010

Job reference no:

306

Status:

Final

Drawn by:

LJB

Checked by:

RG





Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22

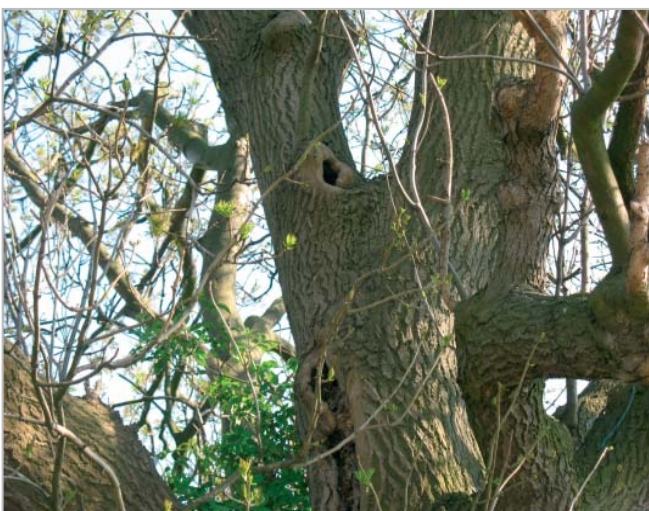


Photo 23

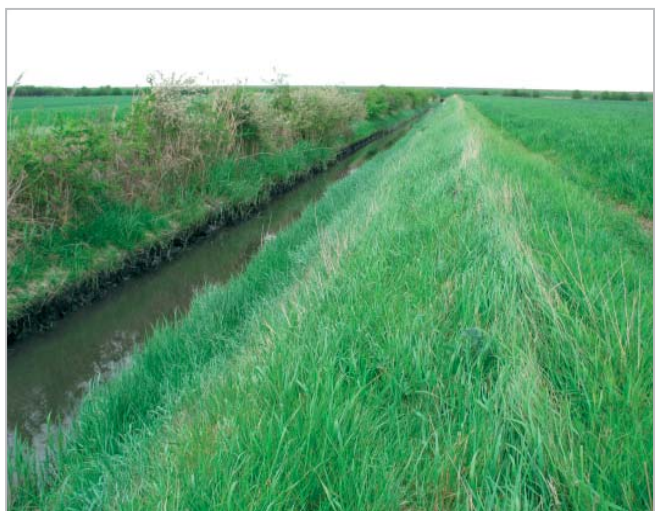


Photo 24



Photo 25 - Pond 1



Photo 26 - Pond 2



Photo 27 - Pond 4



Photo 28 - Pond 6



Photo 29 - Pond 7



Photo 30 - Pond 8



Photo 31 - Pond 9



Photo 32 - Pond 10



Photo 33 - Pond 11



Photo 34 - Pond 12



Photo 35 - Pond 13



Photo 36 - Ponds 15 and 16



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42



area of shallow flood (TN35), and a flooded field edge and hedgerow (TN31) located close to a truck depot on Rosper Road was extensively occupied by this species. Immediately adjacent, a small sea club-rush *Bolboschoenus maritimus* swamp was present in a circular area of impeded drainage, which may once have been a pond.

Tarmac, Bare Ground and Spoil

- 3.1.6 Most of the northern third of the site (TN9 and TN43), used as an imported vehicle storage area comprised these habitats. They were intersected by a railway line and a small number of running water ditches with associated hedgerow and grassland habitats, and a number of buildings (not shown on the Phase 1 map) but for the most part they formed 'pure' habitats. The tarmac areas (**Photo 4**) were free of vegetation but the bare ground (**Photo 5**), formed of rolled materials, was very sparsely colonised in places by newly germinated tall ruderal species and ephemeral/short perennials.
- 3.1.7 Small floods (**Photo 6**) (TN39), which appeared to be more or less permanent, were present to the north-west of the bare ground, and stockpiles of stone and sandy materials (e.g. TN38) were in several places, only one of which was vegetated (TN37) and consequently appeared to be long-term.
- 3.1.8 Relatively small sections of bare ground and tarmac, associated with industrial sites within and on the periphery of the survey area, were also mapped (e.g. **Photo 7**).

Broad-leaved Plantation Woodland

- 3.1.9 Large parts of the woodlands to the west of the survey area consisted of semi-mature hybrid poplar *Populus* sp. plantation (TN41). A heavy shade was cast by these trees and the ground and shrub layers within the plantation were generally sparse except where light entered in small clearings and ride-sides. A southern section of plantation woodland (TN32) was comprised partially of young sycamore *Acer pseudoplatanus*, planted in straight lines. This had species-poor and generally sparse ground and shrub layers in most areas but at the time of survey, much of the otherwise bare ground was covered with newly germinated sycamore seedlings (**Photo 8**).
- 3.1.10 The southern half of the sycamore plantation was planted on large and steep-sided mounds that appeared to be man-made. They were well-drained, providing



potentially attractive locations for badger setts within woodland that appeared to be, in many places, prone to water logging (**Photo 9**). All the survey area's western woodlands, including the broad-leaved plantations, were growing on ground with 'ridge and furrow' topography, indicating their past use as horse- or ox-ploughed arable land.

Broad-leaved Semi-natural Woodland

- 3.1.11 Three separate sections of this habitat were present; Fox Covert and Chase Hill Wood formed a single unit (**Photo 10**) (TN44) in the north-west of the survey area; the middle section of Burkinshaw's Covert (TN36) lay between the two areas of plantation woodland described above; and a small un-named woodland (**Photo 11**) (TN29) lay alongside a main drain and surrounded by farmland in the centre of the survey area.
- 3.1.12 These woodlands were categorised as 'semi-natural' because their trees did not appear to have been planted in straight lines and their structural complexity and species diversity of canopy, ground and under-storey layers was more akin to self-regenerated woodland in contrast to the nearby single species and single age plantation woodlands. Nevertheless, in Fox Covert and Chase Hill Wood, small metal signs indicated that different sections had been planted in the 1800s. This woodland unit, and also Burkinshaw's Covert, were clearly on ridge and furrow ground. The small un-named woodland, though on slightly undulating ground, was thought not to be on ridge and furrow.
- 3.1.13 Badger main setts were found in Burkinshaw's Covert and in Chase Hill Wood, with extensive pathways and foraging signs in Fox Covert. All findings with regard to badger are described below Section 3.3 of this Report.

Scrub

- 3.1.14 Significant areas of scrub habitat, scattered and dense, occurred at the south-eastern extremity of the survey area (TN25) and adjacent to open water habitats in the north-west (**Photo 12**) (TN7), forming a mosaic in association with hedgerows, fringing reedswamp and semi-improved grassland. The dominant scrub species was invariably hawthorn *Crataegus monogyna*, and bramble *Rubus fruticosus* agg. was abundant. These areas provided attractive reptile habitat, where less dense scrub formed a sheltered and sunlit edge with tussocky grassland and reedswamp. Similarly, bankside and banktop scrub (**Photo 13**) (TN33) between the western edge of the survey area's woodlands and railway marshalling yards



off-site, provided many potentially attractive reptile basking locations where its density was too great for sunlight to penetrate.

Salt marsh

- 3.1.15 Intertidal saltmarsh was noted outside the sea wall in the coastal north of the survey area (**Photo 14**) (TN1). Two distinct levels were recognisable by their vegetation, and a short transition zone above the tideline to drier grass-dominated habitats was present. A further very small section of saltmarsh was located a short distance south (TN3). Common cord-grass *Spartina anglica*, a constituent of the lower saltmarsh areas, also occurred very sparsely close to shore in the intertidal mud along the length of the sea wall within the survey area but it was not abundant or dense enough to be categorised as 'saltmarsh'.

Grassland

- 3.1.16 No grassland that was considered to be 'unimproved' was located within the survey area. A range of grass-dominated habitats, differing from each other and all affected by management to some degree, were categorised as semi-improved (e.g. **Photos 15 - 16**) (e.g. TN6, TN19, TN20 and TN25). These were judged to be different in character from fields that appeared to be managed as hay or silage crops (TN16), which were labelled 'improved', and fields of what appeared to be short-term leys, which were judged more akin to arable crops (TN18).
- 3.1.17 Amenity grassland was sown and heavily managed by mowing, the sward being kept short, less than 5cm in most cases. The greatest expanse of this habitat occurred in the south-east of the site, where underground fuel storage tanks and their surrounding land were maintained as a short turf habitat (**Photo 17**) (TN23). To the north-west of the site, large areas of mown grass were present around power station buildings and approach roads; and adjacent to Rosper Road, near the centre of the survey area, was a similar area of short turf managed as a football pitch. A small number of garden lawns (e.g. **Photo 18**) and mown verges adjacent to entrances to the vehicle storage area were also mapped.

Cultivated land

- 3.1.18 Land under arable cultivation was in winter wheat, and in winter-sown oilseed rape (e.g. TN14 and TN30). Fields were virtually weed-free. Two fields in the centre of the survey area (TN18) appeared to be recently cultivated, sown with grass leys, dominated by agricultural grasses and grown for hay or silage. These



exhibited characteristics of arable land more than of grassland and were thus mapped as 'arable'.

Tall herb communities

- 3.1.19 Tall ruderal species were widespread as very small 'edge' habitats associated with bare ground, some areas of semi-improved grassland (e.g. TN24) and a cleared wayleave (**Photo 19**) (TN40) through the site's western woodlands. More extensive sections dominated by tall ruderal species were present on what appeared to be abandoned arable fields (e.g. **Photo 20**) (TN17 and TN27), on a large spoil stockpile (TN37) at the west end of the bare ground vehicle storage site and, close to there, within the same storage site, forming a rectangle of habitat flanking a dry ditch.

Hedgerows and Hedgerow Trees

- 3.1.20 Hedgerows on the site, which formed field boundaries and flanked a large proportion of the single-track railway passing through the survey area were almost invariably hawthorn-dominant (**Photo 21**), indeed many were composed entirely of this species. They were therefore mapped as 'species-poor'. Only the double-hedge (**Photo 22**) (TN26) running both sides of the access road off Rosper Road towards the fuel storage site, was not hawthorn-dominant. This was elm-dominated but still qualified as species-poor owing to the few other native species present.
- 3.1.21 Most of the hedges lacked trees of any sort; the roadside hedge flanking the football pitch adjacent to Rosper Road contained six semi-mature ash *Fraxinus excelsior*, which were too small and young to possess any features attractive to roosting bats. Two roadside mature ash trees near the entrance to the fuel storage site (TN21), one of which did exhibit features potentially attractive to roosting bats (**Photo 23**), were the only other hedgerow trees on the survey site.

Ditches

- 3.1.22 Most of the survey area was drained by strongly flowing drains with one ditch running from the south, and another running from the north, which joined (TN28) adjacent to the site's small central un-named woodland (TN29), flowing from there east north-east to the coast. At the time of survey, the northern section and the post-joining section were polluted with oil or a similar substance (**Photo 24**).
- 3.1.23 The drainage ditches of the vehicle storage area appeared to have been modified



in recent times, since some channels did not fully equate with those shown on the field map. A number of smaller ditches flowed into the main drain, and several permanently dry ditches (not all shown on the Phase 1 habitat map) were present, some within dense hedgerows. All ditches were steep-sided and vegetated with semi-improved grassland. Occasionally, small lengths were characterised by common reed and great bulrush and other streamside vegetation (**Photo 25**).

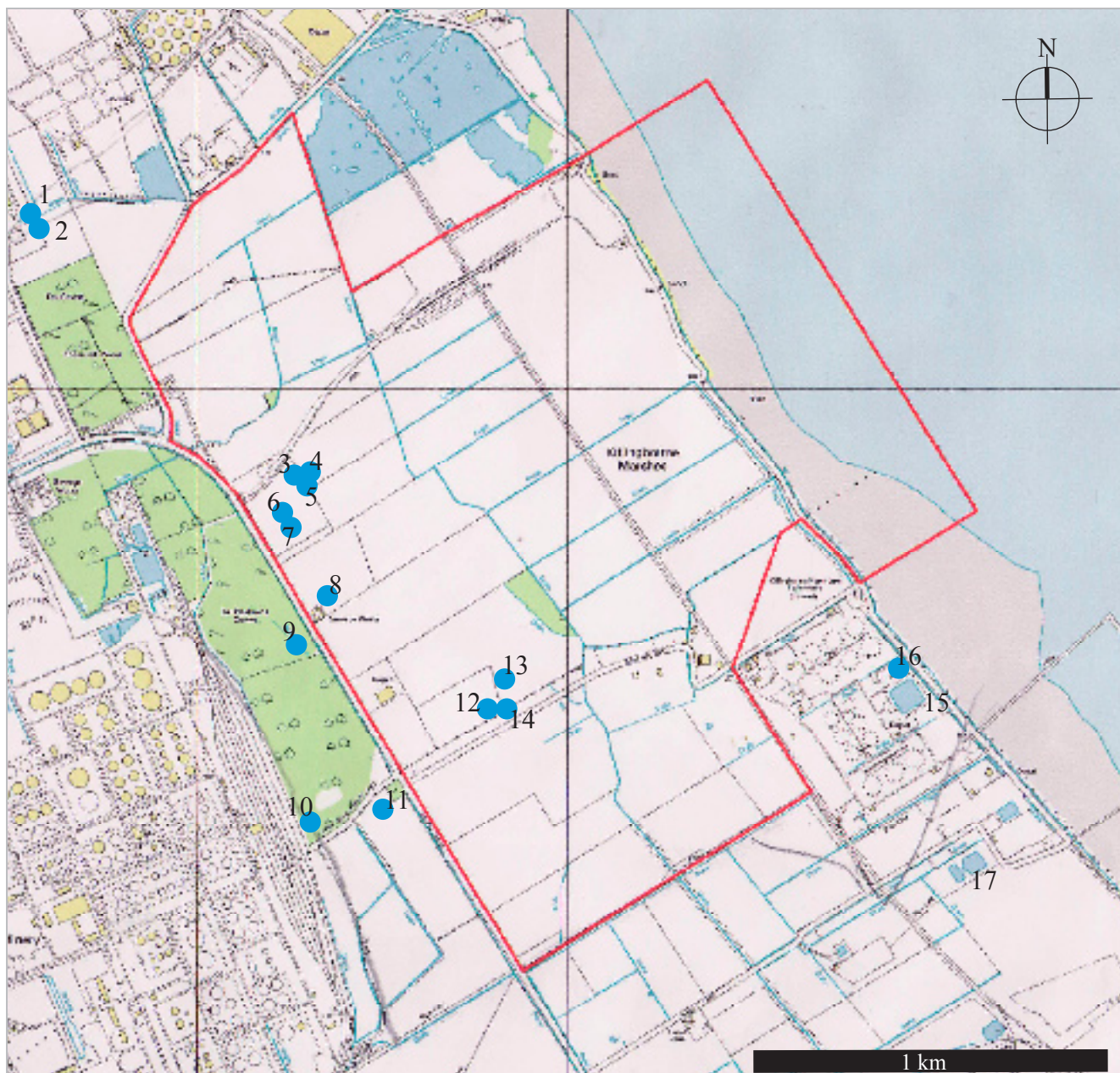
- 3.1.24 Select investigation of the ditch banks revealed that evidence of the presence of water vole was present along many stream banks, including the oil-soaked sides of the main drain. All findings with regard to water vole are given below Section 3.2 of this Report.

3.2 GREAT CRESTED NEWT SURVEY

- 3.2.1 The results of the funnel trapping survey are provided in **Table 1**. Photographs of individual pond are provided in the accompanying photo-sheet (no.'s 25-36).
- 3.2.2 The survey verified that small numbers of GCN were present in two ponds (Ponds 12 and 13). No GCN were captured or seen in any of the nine other water bodies surveyed. The location of all ponds is shown by **Figure 2**

Table 1: Results of GCN survey

Survey dates		12/13 May		13/14 May		17/18 May		18/19 May	
Pond no.	No. of traps	SN	GCN	SN	GCN	SN	GCN	SN	GCN
1	6	-	-	-	-	-	-	-	-
2	5	-	-	-	-	-	-	-	-
3	No survey access								
4	7	-	-	-	-	-	-	-	-
5	No survey access								
6	3	1	-	4	-	2	-	2	-
7	8	-	-	-	-	-	-	-	-
8	5	9	-	3	-	5	-	5	-
9	No survey access								
10	3	9	-	3	-	Not trapped - pond dry			
11	9	-	-	-	-	-	-	-	-
12	7	3	9m; 13 f	2	7 m; 14f	6	4m; 4f	1	6m; 3f
13	4	5	-	9	1m	16	2f	8	1f
14	5	-	-	-	-	-	-	-	-
15	No survey access								
16	No survey access								
17	No survey access								



South Killingholme
Figure 2: Pond locations



- 3.2.3 No GCN eggs were found in any pond searched, including the two ponds where GCN were captured. The torchlight survey did not reveal GCN in any ponds other than Pond 12, where 18 male and one female GCN were seen, all within about 1.5m of the bank. With the exception of Pond 12, which was exceptionally clear, most of the ponds were too turbid and/or weeded to enable torch survey to be conducted effectively. Smooth newt was present in small numbers in five of the 11 water bodies.
- 3.2.4 Ponds 1, 2, 11 and 14 contained very large populations of stickleback and were connected either directly or via piped water to ditches nearby, which would have been the source of the fish. Pond 7 held small numbers of fish and very large numbers of frog tadpoles. The presence of fish, highly predatory on the early stages of GCN, was a possible reason for the absence of GCN in these ponds. Pond 10 dried out, even after recent rain, and though probably permanently damp, was thought unlikely to remain wet for long enough in most years to enable GCN to breed successfully.

3.3 PROTECTED SPECIES WALKOVER SURVEY

Overview

- 3.3.1 Given the site's coastal location, its range of habitats, and its relatively large size, the survey area was considered to be of potential value for a range of protected animal species. In addition to the results of the specific GCN survey reported above, evidence was found in the survey area of the presence of badger and water vole; habitats judged to be potentially suitable for reptiles were numerous and widespread; and the mosaics of lagoon, scrub and semi-improved grassland provided attractive habitats for a range of bird species, including a number of Schedule 1 and Red-listed species. Protected species and species groups are discussed in relation to the survey site in detail, below.

Badger

- 3.3.2 Evidence of badger activity, in the form of setts, latrines, paths and foraging signs was recorded in Burkinshaw's Covert and in the woodland block comprising Fox Covert and Chase Hill Wood.

Burkinshaw's Covert

- 3.3.3 In Burkinshaw's Covert, a 14-hole main sett (TN32), with all holes active, two of



which were very recently excavated was present centred on OS grid reference TA16261, 18093. The diggings (**Photos 37 - 38**) were on both sides of a dry east-west orientated ditch and two well-used latrines were found nearby. Approximately 120m to the north, within the same wood an 8-hole sett (probable subsidiary sett) was present on the edge of a north-south orientated damp ditch. This sett appeared to have been abandoned, with three holes filled with woodland debris and clearly disused, and the other three partially filled but possibly in partial use. The presence of four well-used latrines nearby was clear evidence that badgers were active in the immediate vicinity of this sett. Approximately 40m to the north of this sett, in the same wood, two holes with little spoil had been dug into the south bank of a wet east-west orientated ride-side ditch. No clear evidence that these had been excavated by badgers was found but they were of a size large enough and of a shape to suggest this species. They were classified as outlying setts.

- 3.3.4 Approximately 90m and 120m respectively to the south-east of the active main sett, were two single-hole setts excavated in the steep sides of wooded banks there and which were linked to each other and to the main sett by a single moderately well-worn track. The nearer hole showed a considerable spoil heap, not recently dug, below the hole, which was clearly active, with a well-worn entrance and heaps of rolled-up moss bedding nearby. The further hole showed signs of recent excavation with a very large spoil heap and a well-worn entrance. Given their linkage by a path to the main sett, and their distance from it (less than 150m), these setts were considered to be annexes to the main sett.

Chase Hill Wood/Fox Covert

- 3.3.5 A 17-hole main sett (TN) was present in moderately flat ground in the north-west corner of Chase Hill Wood at OS grid reference TA15595, 19154, (**Photo 39**) with well worn paths leading north and north-east into and beyond Fox Covert. Of the 17 holes, 12 were active, one was in partial use and the other four were disused. Approximately 50m south of the main sett, a single-hole, active sett was located in a bank at the wood's western edge, and close by, just outside the wood, in amenity grassland flanking the approach road to the power station, three collapsed holes, probably created by badgers but apparently used by rabbits, were present. A well-worn track linked these signs of badger activity to the main sett further north.
- 3.3.6 Badger paths led to an area of extensive badger foraging signs in the north-east



corner of Fox Covert, and the paths continued beyond the wood boundary and followed both sides of the hedgerow running north from there, ultimately, near the end of the hedge, entering security-fenced ground beyond the survey area via a number of 'pushes' and excavations under the fence.

- 3.3.7 A well-used badger path (**Photo 40**) exited from the western end of the southern edge of Chase Hill Wood, crossed the main road (named Chase Hill Road) and entered the north end of the poplar plantation across a muddy ditch where badger footprints were seen and via dense scrub at the north end of Burkinshaw's Covert. A very thorough investigation of both ends of this path was unable to locate continuing tracks or other badger evidence into either woodland.

Water Vole

- 3.3.8 Not all ditches were searched exhaustively for evidence of the presence of water vole owing to lone-worker safety considerations. Nevertheless, enough evidence was found to indicate that a full survey of this species would be necessary prior to any development proposed for the site being carried out assuming that the ditch network may be impacted by the development.
- 3.3.9 Water vole presence was confirmed by the finding of characteristic burrows, droppings, and in one case, distinctively chewed stems of grasses and other stream side plants, in three locations (TN22, TN15 and TN42), with their respective OS grid references as follows:
- TA17448, 18261 - Burrows and latrines (**Photo 41**) on both sides of a clean water ditch between the railway line and the entrance to the fuel store site;
 - TA17248, 19143 - Burrows in oil-soaked banks of polluted main drain running east from railway line, and latrines on oil-polluted mud at water's edge, as well as on top of a concrete pipe (**Photo 42**) taking water under a vehicle crossing point;
 - TA16429, 19265 - Burrows and chewed plant stems in clean water ditch within the bare ground area of the vehicle storage site.
- 3.3.10 Given these results, which are not based on a full and thorough search, one could expect water vole to be present on most of the site's watercourses.



Reptiles

- 3.3.11 No reptiles were observed during the walkover survey. However, the narrow linear habitats along the sea wall (TN10) (which include reed swamp, scrub and roadside semi-improved grassland); the scrub, semi-improved tussocky grassland and reed swamp interfaces in the survey area's north-eastern corner (TN6 and TN7); similar habitats in the site's south-eastern extremity (TN25); open areas of scattered scrub and hedgerow along the railway line; and scrub areas along the way-leave adjacent to the western woodland areas (TN33) are five specific and extensive habitat areas considered to be of potential value to reptiles. The most likely species to be found are common lizard, grass snake and slow-worm.

Birds

- 3.3.12 An exhaustive survey for breeding birds was not carried out, but the presence of bird species encountered during the walkover survey was noted.
- 3.3.13 Two Schedule 1 bird species were observed within the site during the walkover survey. Little ringed plover was present throughout the survey period on the bare ground section of the vehicle storage site, which offered typical breeding habitat for this species. Kingfisher was seen in flight over lagoons to the north of the survey area but no evidence was found of its breeding on the site.
- 3.3.14 Barn owl (also a Schedule 1 species) was not seen on the site but communication with personnel at the fuel storage site to the south-east of the survey area indicated that it regularly nested in a small building there. Access was not possible for the surveyor to check for signs of barn owl presence, such as pellets and droppings.
- 3.3.15 Two Red-listed species were also seen; song thrush was present in Fox Covert, and skylark was noted singing in a very few areas of arable land, over both, oilseed rape and winter wheat.



4 EVALUATION AND RECOMMENDATIONS

4.1 EVALUATION

Habitats

- 4.1.1 The following evaluation is based on the findings of the Phase 1 habitat survey and does not take account of any wildlife designations or protected animal species that could be present within or close to the site. The location of wildlife sites and the presence of protected animal species would need to be assessed in order to confirm this evaluation.
- 4.1.2 The majority of the dominant habitat types present are considered to be of low value in botanical and nature conservation terms. This includes for example large areas of hard-standing, bare ground, arable land, and improved grassland, which either lack semi-natural vegetation cover or support species-poor and common place vegetation assemblages.
- 4.1.3 Features of greatest ecological value within the context of the site included hedgerows, open water habitats (including ponds), reed and swamp fringes, salt marsh, wet ditches, and semi-natural woodland. However, these higher value habitats represent relatively poor examples of their type, being plant species-poor and in a degraded condition due to the ill-effects of nearby agricultural and industrial land use practices. In summary, none of the habitats present were of high individual botanical or nature conservation value, and their value in ecological terms lies mainly in the habitat conditions they provide associated wildlife for foraging and shelter.

Great Crested Newt

- 4.1.4 The presence of great crested newt (GCN) has been confirmed in two on-site ponds (Ponds 12 and 13). The loss of these ponds, or of GCN friendly terrestrial habitat (e.g. hedgerows, woodland, rough grassland) within 500m of these ponds could result in significant adverse impacts on GCN. Subject to future development proposals, a Natural England issued European Protected Species development licence would probably be required to enable clearance of GCN friendly habitats and/or to complete other development related works within this 500m zone. In this case an appropriate mitigation strategy for GCN would need to be drawn-up, and an EPS licence applied for once planning permission for the development has been granted.



- 4.1.5 In order to gain an EPS licence a six visit GCN survey would be required to enable a GCN population size estimate to comply with best practice survey guidelines, but as highlighted previously, this is not strictly necessary to inform development planning moving forward.

Other Protected Species

- 4.1.6 The presence of badger and water vole within the site was confirmed during the walkover survey. In addition, habitats judged to be potentially suitable for reptiles were numerous and widespread, and the mosaics of lagoon, scrub and semi-improved grassland provided attractive habitats for a range of bird species, including a number of Schedule 1 and Red-listed species. The importance of the site for these animal groups would need to be confirmed by specific survey.

4.2 RECOMMENDATIONS

- 4.2.1 Further protected species survey work may be required depending upon the extent of future development within the site. The surveys of highest priority can be summarised as follows:

- Reptile survey using artificial refugia of any reptile friendly habitat likely to be adversely impacted by development during the reptile active season April to September – with a minimum of seven repeat visits to assess reptile presence/absence.
- Water vole survey of drainage ditches impacted by development proposals during the active season (April to September).
- Bat survey of any buildings to be lost to development to assess roosting use during the main active season May-August in accordance with current Bart Conservation Trust best practice guidance.

- 4.2.2 Other survey work that may be considered necessary, in terms of fully informing development impacts and mitigation planning would include the following:

- Breeding bird survey with particular emphasis on confirming breeding presence of Schedule 1 species within the Phase 1 land area during the period April to August.
- Badger territory mapping (Feb-April) where significant habitat loss impacts on badger setts/territories may occur in order to inform the

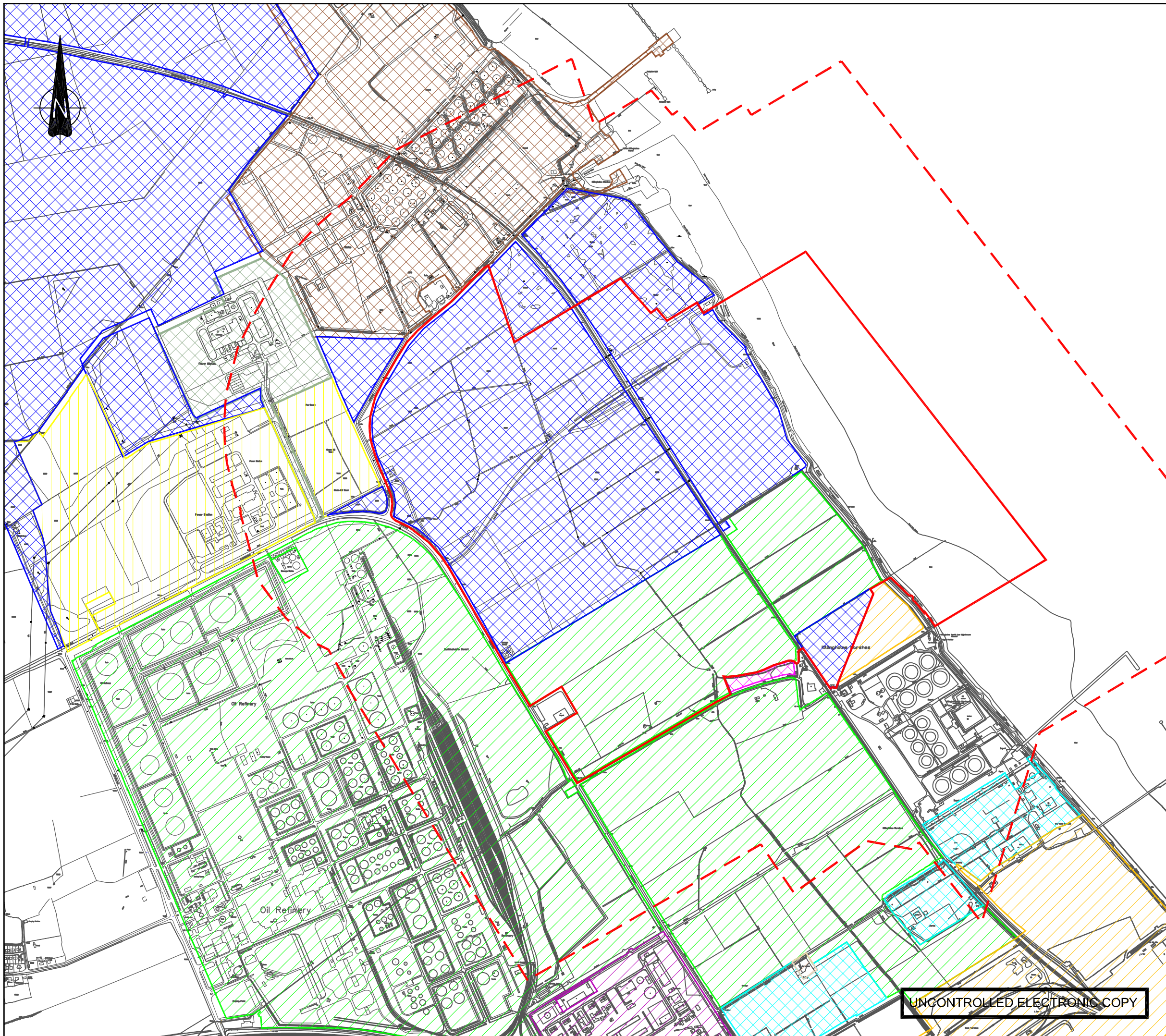


impact of the development on territory loss and enable badger mitigation e.g. sett relocation to be planned.

- Six visit population assessment of GCN ponds during the main GCN breeding period April-May to inform any future EPS licence application and mitigation planning.



Appendix 1 Survey Area Map




- KEY:**
- HABITAT SURVEY BOUNDARY (243ha)
 - 500m BUFFER ZONE
 - ABLE UK LAND OWNERSHIP
 - TOTAL UK LIIMITED
 - HUMBER SEA TERMINAL
 - ASSOCIATED BRITISH PORTS
 - BETHANY JAYNE LIMITED
 - EON UL LTD
 - CONOCO LTD
 - CENTRICA GENERATION LTD
 - CONOCOPHILLIPS LTD

A	16-03-10	FOR APPROVAL	RK	RC	RC
Rev.	Date	Description	BY	CHD	APP

Client: ABLE UK Ltd

Project: ABLE HUMBER PORT
MULTI USER TERMINAL

Title: MUT PHASE 1 HABITAT SURVEY
BOUNDARY OPTION 1



Able UK Ltd
Able House
Billingham
Teesside UK
TS23 1PX

Tel: +44-(0)1642 806080
Fax: +44-(0)1642 655655
email: info@ableuk.com
www.ableuk.com

FOR APPROVAL

CAD Ref. F:\Sites\HRO\Drawings\2010\HRO\92000

Scale	Drawn	Checked	Approved
1:12,500@A3	R Keirl	R Cram	R Cram
Date	16-03-10	16-03-10	16-03-10

Drawing No. KI - 92017 A

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Appendix 2

Phase 1 habitat survey target notes



Target note 1 - Intertidal saltmarsh. Lower saltmarsh below man-made sea wall, dominated by sea club-rush *Bolboschoenus maritimus* with frequent sea arrowgrass *Triglochin maritimum* occasional saltmarsh grass *Puccinellia* sp. and rare English scurvy-grass *Cochlearia anglica*. Upper saltmarsh dominated by sea couch *Elytrigia atherica* with occasional thrift *Armeria maritima*, and sea aster *Aster tripolium* in lower areas. Narrow transition zone to sea wall, sea couch dominant with frequent tall ruderals including teasel *Dipsacus fullonum* and hogweed *Heracleum sphondylium*, and locally abundant hoary cress *Lepidium draba*. Bramble *Rubus fruticosus* in patches against sea wall.

Target note 2 - Common reed *Phragmites australis* dominant swamp in wet channel within saltmarsh.

Target note 3 - Small section of intertidal saltmarsh dominated by saltmarsh grass with frequent English Scurvy-grass *Cochlearia anglica*. Occasional common cord-grass *Spartina anglica* in the intertidal mud below and within the saltmarsh. Sea arrowgrass *Triglochin maritimum*, sea plantain *Plantago maritima* and annual seablight *Suaeda maritima* frequent in the upper zone. Sea beet *Beta vulgaris* ssp. *maritima* occasional within a sea couch dominated transition zone above a narrow shingle beach and tideline to the sea wall.

Target note 4 - Sea wall running s the full length of the survey area coast. It is approximately 1m higher than the road level, is approximately 0.75m wide, and, on the outside, slopes at an angle down to the tidal zone. It is concrete and stone-faced. Loose rocks form a 'beach' of varying width at the foot of the wall. The outer face of the wall is sparsely vegetated for much of its length with common reed *Phragmites australis*, growing through joints between the stones, and occasional bramble and willow *Salix* sp. scrub.

Target note 5 - Freshwater lagoons fringed with extensive common reed *Phragmites australis* swamp and small areas of bare mud, and with numerous small islands, some unvegetated, some reed-fringed and some with improved grassland, enriched by roosting and loafing waterfowl. Dense hawthorn *Crataegus monogyna* dominated scrub present on narrow peninsulas and along all lagoon boundaries.

Target note 6 - Semi-improved grassland dominated by tussocky false oat-grass *Arrhenatherum elatius* and edged with dense bramble *Rubus fruticosus* agg. and scattered hawthorn *Crataegus monogyna* scrub. Tufted hair-grass *Deschampsia cespitosa* frequent, with occasional Yorkshire-fog *Holcus lanatus* and cock's-foot *Dactylis glomerata*. Tall ruderals, frequent within the sward, included wild teasel *Dipsacus fullonum*, hemlock *Conium maculatum*, curled dock *Rumex crispus*, creeping thistle *Cirsium arvense*, hogweed *Heracleum sphondylium*, common nettle *Urtica dioica* and great willowherb *Epilobium hirsutum*.



Target note 7 - Dense continuous hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus* agg. scrub, becoming scattered where it grades to semi-improved grassland. Scrub along edges of lagoons edged with common reed *Phragmites australis* swamp.

Target note 8 - Semi-improved grassland banks forming edge of vehicle storage area, with false oat-grass *Arrhenatherum elatius* dominant, Yorkshire-fog *Holcus lanatus*, rough meadow-grass *Poa trivialis* and smooth meadow-grass *P. pratensis* frequent, and cock's-foot *Dactylis glomerata* and annual meadow-grass *Poa annua* occasional. Abundant tall ruderals germinating within the sward, including common nettle *Urtica dioica*, hemlock *Conium maculatum*, bristly oxtongue *Picris echioides*, charlock *Sinapsis arvensis* and black mustard *Brassica nigra*. Top of grassed banks planted with hedge species, including hazel *Corylus avellana*, field maple *Acer campestre*, hawthorn *Crataegus monogyna*, and dog-rose *Rosa canina* agg.

Target note 9 - Bare ground composed of rolled hardcore, stones and similar materials with a very sparse flora of ephemeral species and newly germinated ruderals including frequent common stork's-bill *Erodium cicutarium* agg., weld *Reseda luteola*, rosebay willowherb *Chamerion angustifolium*, charlock *Sinapis arvensis*, shepherd's-purse *Capsella bursa-pastoris*, scentless mayweed *Tripleurospermum inodorum* and the grasses Yorkshire-fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, common bent *A. capillaris*, annual meadow-grass *Poa annua*, red fescue *Festuca rubra* and, rare black-grass *Alopecurus myosuroides*.

Target note 10 - A linear 1.5m-4m wide semi-improved grassland strip between the sea-defence road and the fenced boundary of the car storage area. This was false oat-grass *Arrhenatherum elatius* dominant, with frequent cock's-foot *Dactylis glomerata* and common reed *Phragmites australis*, and tall ruderals within the sward including hogweed *Heracleum sphondylium*, willowherb *Epilobium* spp., creeping thistle *Cirsium arvense*, mugwort *Artemisia vulgaris* and hemlock *Conium maculatum*. Bramble scrub was very sparsely scattered long this feature.

Target note 11 - Common reed *Phragmites australis* dominated swamp in field corner with scattered hawthorn *Crataegus monogyna* scrub, some dense and some scattered within the reedswamp. Blackthorn *Prunus spinosa* and dog-rose *Rosa canina* agg. were occasional components of the scrub.

Target note 12 - Boundary habitat features between fields and sea defence road. Fields bounded by unmanaged hawthorn *Crataegus monogyna* hedge which becomes more or less derelict towards the south. Elder *Sambucus nigra* and dog-rose *Rosa canina* agg. are rare constituents of this hedge. A water-filled ditch, approximately 2m wide with a broad fringe



of common reed *Phragmites australis*, runs the full length. Running uphill between this linear hedge/ditch/swamp feature and the road is a steep bank of regularly mown amenity grassland with a range of grasses including perennial rye-grass *Lolium perenne*, red fescue *Festuca rubra*, common bent *Agrostis capillaris* and smooth meadow-grass *Poa pratensis*.

Target note 13 - Species poor, infrequently trimmed or untrimmed hedgerows forming boundaries between fields and the railway line. All are hawthorn *Crataegus monogyna* dominant with all other hedge species, elder *Sambucus nigra*, dog-rose *Rosa canina* and blackthorn *Prunus spinosa*, rare.

Target note 14 - Arable fields of winter wheat forming almost pure stands with a very small range of common arable weeds including shepherd's-purse *Capsella bursa-pastoris*, common field speedwell *Veronica persica*, common groundsel *Senecio vulgaris* and red dead-nettle *Lamium purpureum* all of which were occasional.

Target note 15 - Latrine and burrow evidence of the presence of water vole along a polluted major drain taking water from whole site west of the railway line.

Target note 16 - Improved grassland permanent pasture for hay or silage. Soft-brome *Bromus hordeaceus* agg. dominant. Broad-leaved and curled dock *Rumex crispus*, cow parsley *Anthriscus sylvatica*, hogweed *Heracleum sphondylium* and smooth sow-thistle *Sonchus oleraceus* occasional throughout much of the sward. Other grass species included perennial rye-grass *Lolium perenne*, smooth meadow-grass *Poa pratensis*, Yorkshire-fog *Holcus lanatus*, cock's-foot *Dactylis glomerata*, and common bent *Agrostis capillaris*. A narrow strip of this grassland extended north into western edge of the field to the north, parallel with the railway.

Target note 17 - Tall ruderal dominated field, which appeared to be arable reversion, dominated by mosaic of tall ruderals including bristly ox-tongue *Picris echioides*, curled dock *Rumex crispus*, broad-leaved dock *R. obtusifolius* and great willowherb *Epilobium hirsutum*, with tussocky false oat-grass *Arrhenatherum elatius*, tufted hair-grass *Deschampsia cespitosa* and creeping bent *Agrostis stolonifera* grassland. Patches of bulrush *Typha latifolia*, hard rush *Juncus inflexus*, and common reed *Phragmites australis* characterised small areas of impeded drainage within the field.

Target note 18 - Short-term grass leys north-east of the small wood are categorised as arable. Meadow foxtail *Alopecurus pratensis* dominant with abundant perennial ryegrass *Lolium perenne* and soft-brome *Bromus hordeaceus* agg.

Target note 19 - Triangle of infertile semi-improved grassland, Yorkshire-fog *Holcus lanatus*



dominated grassland, likely to be arable reversion. Dandelion *Taraxacum officinale* agg., ribwort plantain *Plantago lanceolata*, creeping buttercup *Ranunculus repens*, spear thistle *Cirsium vulgare* and hogweed *Heracleum spondylium* were all frequent within the sward.

Target note 20 - Cattle-grazed semi-improved grassland permanent pasture with a sward of Yorkshire-fog *Holcus lanatus*, cock's-foot *Dactylis glomerata*, perennial ryegrass *Lolium perenne* and meadow foxtail *Alopecurus pratensis*, with tufted hair-grass *Deschampsia cespitosa* locally abundant in the northern corner and occasional elsewhere. Forbs within the sward included dandelion *Taraxacum officinale* agg., white clover *Trifolium repens*, common nettle *Urtica dioica*, daisy *Bellis perennis*, common mouse-ear *Cerastium fontanum* and common sorrel *Rumex acetosa*, with the arable weed, fool's parsley *Aethusa cynapium* occasional on areas of more open sward.

Target note 21 - Two mature ash *Fraxinus excelsior* hedgerow trees. The western tree exhibited holes potentially leading to rot cavities that gave the tree medium bat-roost potential.

Target note 22 - Evidence of the presence of water vole. Burrows and latrines on both sides of a water-filled ditch.

Target note 23 - Amenity grassland area not surveyed closely. This was a partially underground fuel store, consisting almost entirely of frequently mown amenity grassland-covered tanks with small buildings and small areas of concrete and tarmac hard standing and roadways (some not shown on the Phase 1 habitat map). Barn owls was said to regularly nest in a small disused railway building on the site.

Target note 24 - Dense common reed *Phragmites australis* swamp within area of scattered scrub and tussocky semi-improved grassland.

Target note 25 - Dense bramble with scattered and dense hawthorn *Crataegus monogyna* scrub. Open areas within scrub with frequent tufted hair-grass *Deschampsia cespitosa* and false oat-grass *Arrhenatherum elatius* tussocks and frequent tall ruderals including great willowherb *Epilobium hirsutum*, creeping thistle *Cirsium arvense* and wild teasel *Dipsacus fullonum*, with rare common ragwort *Senecio jacobaea*. Suitable habitat for reptiles.

Target note 26 - Elm *Ulmus* sp. dominated hedgerows with a dry ditch both sides of the road. Improved grassland to the north was divided into heavily grazed horse-paddocks. Occasional elder *Sambucus nigra*, dog-rose *Rosa canina* agg. and hawthorn *Crataegus monogyna* were present within the hedge, and frequent tall elm stems up to 20cm diameters at breast height.



Target note 27 - An apparently abandoned field with dense low growing bramble *Rubus fruticosus* agg. in its southern corner. A tussocky sward with abundant Yorkshire-fog *Holcus lanatus*, false oat-grass *Arrhenatherum elatius* and creeping bent *Agrostis stolonifera* was dominated by tall ruderals including frequent rosebay willowherb *Chamerion angustifolium*, great willowherb *Epilobium hirsutum*, common fleabane *Pulicaria dysenterica*, creeping thistle *Cirsium arvense*, curled dock *Rumex crispus*, clustered dock *R. conglomeratus*, and bristly oxtongue *Picris echioides*. Willow *Salix* sp. saplings and burnet rose *Rosa pimpinellifolia* were rare. Two ponds were present within scrub on the southern edge of this field, and a small circular, common reed *Phragmites australis* fringed pond was present at its eastern extremity.

Target note 28 - The main ditch draining the site from the north and the south joined here and flowed eastwards to issue at the coast. At the time of survey the water and the steep, false oat-grass *Arrhenatherum elatius* dominated banks were polluted with a black oil-like substance. No plant growth or animal life was present within the channel, though evidence of water vole was present elsewhere along this ditch. The water channel was approximately 2m wide and 0.5m deep in a ditch 4m wide and 2.5m deep.

Target note 29 - Mature and semi-mature poplar *Populus* sp., ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus* woodland with rare beech *Fagus sylvatica* appearing to be self-sown, with an understorey of elder *Sambucus nigra*, hawthorn *Crataegus monogyna* and elm *Ulmus* sp. Cleavers *Galium aparine* and nettle *Urtica dioica* dominated much of the ground layer, where sycamore *Acer pseudoplatanus* seedlings and lords-and-ladies *Arum maculatum* were frequent and rare respectively. Much of the woodland floor was heavily shaded bare earth.

Target note 30 - Arable fields, in winter-sown oilseed rape.

Target note 31 - A field edge with scattered hawthorn *Crataegus monogyna* scrub on a bank and impeded drainage, forming a shallow pond extending across the field boundary ditch, almost entirely colonised by bulrush *Typha latifolia*. A small area of sea club-rush *Bolboschoenus maritimus* swamp was also present nearby, associated with the same flooded area.

Target note 32 - Broad-leaved sycamore *Acer pseudoplatanus* (to the south) and poplar *Populus* sp. (to the north) plantation woodland with a dense ground layer of moss and newly germinated sycamore seedlings under the sycamore-dominated section, and a sparse to occasionally dense understorey of blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna* in well-lit areas, and occasional elder *Sambucus nigra*, especially along its eastern edge. A shallow, heavily shaded flood area under hawthorn and blackthorn scrub, with



abundant bramble *Rubus fruticosus* agg., great willowherb *Epilobium hirsutum* and bittersweet *Solanum dulcamara*, and occasional hard rush *Juncus inflexus*, was present in the south-east corner. A damp area of ground, recently cleared of bulrush *Typha latifolia* and hard rush was present in the south-west corner, where tall ruderals, including abundant wood dock *Rumex sanguineus* and great willowherb were colonising.

Target note 33 - A linear feature of dense and scattered scrub on a high bank screening the woodland from the marshalling yards beyond the survey area boundary. Dense bramble *Rubus fruticosus* agg. was dominant, with frequent hawthorn *Crataegus monogyna* (and poplar suckers to the north), occasional grey willow *Salix cinerea* and rare common gorse *Ulex europaea*. Tall ruderal and short perennial species had colonised bare ground within the scrub. These included frequent wild teasel *Dipsacus fullonum*, bristly oxtongue *Picris echioides* and great willowherb *Epilobium hirsutum*, and black medick *Medicago lupulina*, creeping cinquefoil *Potentilla reptans* and bird's-foot-trefoil *Lotus corniculatus*.

Target note 34 - A 14-hole active badger main sett within Burkinshaw's Covert.

Target note 35 - Long-term shallow flooded willow woodland within Burkinshaw's Covert. Semi-mature crack willow *Salix fragilis* was the dominant woodland in and around the flooded area. Many of the trees were dead and fallen. A small area of bulrush *Typha latifolia* swamp was present in the north-west corner.

Target note 36 - Broad-leaved semi-natural woodland with abundant sycamore *Acer pseudoplatanus*, frequent ash and a sparse shrub layer of hawthorn *Crataegus monogyna*, elm *Ulmus* sp. and young sycamore. Dense bramble was frequent in less shaded areas, and a sparse ground layer of cleavers *Galium aparine*, wood dock *Rumex sanguineus*, common nettle *Urtica dioica* and rough meadow-grass *Poa trivialis* was present.

Target note 37 - A vegetated spoil stockpile with common nettle *Urtica dioica* dominant and other tall ruderals frequent, including the crucifers, charlock *Sinapis arvensis*, winter-cress *Barbarea vulgaris*, black mustard *Brassica nigra* and shepherd's-purse *Capsella bursa-pastoris*. Hemlock *Conium maculatum* and colt's-foot *Tussilago farfara* were occasional. In places, the lower flanks of the slopes were semi-improved grassland, dominated by false oat-grass *Arrhenatherum elatius*, and with abundant common couch *Elytrigia repens*, soft-brome *Bromus hordeaceus* agg. and occasional cock's-foot. Two areas of standing water, apparently formed by the partial blocking of a ditch by the stockpile, were present at its base. These were rich in a charophyte species and lesser pondweed *Potamogeton pusillus*.

Target note 38 - Stockpiles of earth and stony material, which were virtually unvegetated, were present in a number of places on the bare ground of the vehicle storage site.



Target note 39 - Three shallow, sandy-bottomed oligotrophic pools with clear water. Two were without vegetation. Lesser pondweed *Potamogeton pusillus* grew in the largest pond, providing food for a non-nesting pair of mute swans. The Schedule 1 bird, little ringed plover was present in this area, which provided attractive breeding habitat for this species.

Target note 40 - A broad expanse of tall ruderal species growing along a wayleave associated with an electricity supply line. Bristly oxtongue *Picris echinoides* and great willowherb *Epilobium hirsutum* were abundant.

Target note 41 - Broad-leaved poplar *Populus* sp. plantation lying on ridge and furrow, with occasional ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus*. An understorey of frequent young sycamore and re-grown elm *Ulmus* sp. was present. Bramble was locally abundant and dense along the sunlit edges. Much of the woodland floor was bare earth, but cleavers *Galium aparine*, rough meadow-grass *Poa trivialis* and ivy *Hedera helix* were occasional, and wood dock *Rumex sanguineus*, common nettle *Urtica dioica*, hairy sedge *Carex hirta* and lords-and-ladies *Arum maculatum* were rare.

Target note 42 - Evidence of the presence of water vole, in the form of latrines, characteristically chewed plant stems and burrows near water level in this unpolluted section of ditch was found here.

Target note 43 - Extensive area of tarmac used as a vehicle storage site.

Target note 44 - Broad-leaved semi natural woodland on old ridge and furrow topography. In the canopy, ash *Fraxinus excelsior* was dominant, with beech *Fagus sylvatica* and elm *Ulmus* sp. frequent and Scots pine *Pinus sylvestris* rare. A moderately dense understorey of abundant elm and frequent young sycamore *Acer pseudoplatanus* was present. Holly *Ilex aquifolium* was rare. Cleavers *Galium aparine* was locally dominant in the ground layer, and wood dock *Rumex sanguineus*, common nettle *Urtica dioica*, rough meadow-grass *Poa trivialis* and ivy *Hedera helix*, were frequent. In more open sections and along rides, lords-and-ladies *Arum maculatum*, self-heal *Prunella vulgaris*, creeping buttercup *Ranunculus repens* and wild angelica *Angelica sylvestris* was frequent, and goldilocks buttercup *Ranunculus auricomus* was locally abundant over small areas.

Target note 45 - Location of a 17-hole badger main sett, with 12 holes active, one partially used and four disused.

Target note 46 - Bulrush *Typha latifolia* swamp in a square pond within power station grounds.