Annex 11.1

Able Humber Ports Facility: Extended Phase 1 and Scoping Study

(Just Ecology)

ABLE HUMBER PORTS FACILITY, KILLINGHOLME:

Extended Phase 1 and Scoping Study

Strictly Confidential

Report to Able UK Limited

by

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JUST ECOLOGY

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Notice to Readers

The advice contained in this report is based on the information available and/or collected during the period of study and within the resources available for the project. We cannot completely eliminate the possibility of important ecological features being found through further investigation and/or by survey at different times of the year or in different years. Reference to sections or particular paragraphs of this document taken out of context may lead to mis-representation. JUST ECOLOGY takes care to ensure that balanced advice is provided, based on the information available at the time.

Abbreviations

BAP	Biodiversity Action Plan
BTO	British Trust for Ornithology
DEFRA	Department for the Environment, Food and Rural Affairs
NCC	Nature Conservancy Council
OS	Ordnance Survey
pSAC	Possible Special Area of Conservation
pSPA	Potential Special Protection Area
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SNCI	Site of Nature Conservation Importance
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

Glossary

Algae/Algal	Any of various chiefly aquatic, photosynthetic organisms, ranging in size from single-celled forms to the giant kelp.
Benthic	Occurring at the bottom of a body of water, for example, a seabed, riverbed, or lake bottom.
Coastal squeeze	Pressure on land trapped between sea defences and rising sea levels.
Devensian	The last glacial period (or Ice Age) of the Pleistocene in Britain, between about 80,000 years ago and 10,000 years ago.
Earth heritage	Fossils, minerals or other geological interest
Eutrophication	The gradual increase in nutrients in a body of water
Forb	Non-woody flowering plant that is not a grass, shrub or tree. Most wild and garden flowers, herbs and vegetables are forbs.
Fluviglacial	Formed by the action of both glaciation and river turbulence
Geomorphology	The study of the evolution and configuration of landforms.
Lacustrine	Of or relating to lakes.
Lamprey	Any of various primitive elongated freshwater or anadromous fishes of the family Petromyzontidae, characteristically having a jawless sucking mouth with rasping teeth
Levee	A raised embankment along the edge of a river channel. Natural levees result from periodic overbank flooding, when coarser sediment is immediately deposited because of a reduction in river velocity. Levees are often constructed by humans living in low-lying areas as protection against flooding.
Littoral	The zone between the extreme high-tide and extreme low-tide levels in the sea; also the zone from the shore to the light-compensation level of the sea and lakes
Mosaics	Heterogeneous ecological conditions on a landscape, usually produced by the variable, patchy effects of disturbances; a patchwork of vegetation communities within a landscape as determined by environmental conditions.
Periglacial	Pertaining to processes, conditions, areas, climates, and topographic features occurring at the immediate margins of glaciers and ice sheets, and influenced by cold temperature of the ice.
Pleistocene	The earlier epoch of the Quaternary period or the corresponding system of rocks; 1.6 million-10,000 years ago; the "Ice Age."
Refugia	An area that has escaped ecological changes occurring elsewhere and so provides a suitable habitat for relict species.
Ruderal	Growing in rubbish, poor land, or waste.
Solifluction	The slow creeping of fragmented material such as soil down a slope.
Sublittoral	Of or situated near the seashore; of or relating to an organism living near or just below the low tide level of a shore; lying between the low tide line and the edge of the continental shelf or ranging in depth to about 100 fathoms or 200 meters (660 feet); of or relating

	to the deeper part of a lake below the area in which rooted plants grow.
Substrate	The surface or medium that serves as a base for something.
Vascular plant	A plant with a specialized conducting system (for the transport of water and nutrients) that includes xylem and phloem; includes familiar higher plants such as trees, shrubs, and grasses.

Contents

1. Executive Summary

1.1 JUST ECOLOGY (JE) was commissioned by Able UK to carry out an Extended Phase 1 and Scoping Survey to begin to identify the key ecological receptors that might be affected by port-related development at Killingholme on the Humber Estuary.

1.2 Extended Phase 1 survey was carried out over approximately 800ha, including the study area plus a 500m buffer zone. Desk research was initiated to complement the field survey and help identify the key ecological receptors on site. Desk research will continue until all available information has been gathered and will be reported in any EIS accompanying future planning applications.

1.3 Importantly the site is bordered on the east by two SSSI and the internationally important Humber Estuary. A number of Local Wildlife Sites are also present. Any impact on these statutory and non-statutory sites will need to be carefully assessed.

1.4 Phase 1 habitat descriptions are provided and these are mapped for all accessible/viewable areas. A number of woodland, scrub and wetland areas are identified for further survey.

1.5 Desk research shows that the SSSIs support internationally important bird populations, and several red- and amber-listed bird species of conservation concern occur across the site. Comprehensive bird surveys are underway and will be reported separately.

1.6 Some protected species are known to occur on the site (badger, water vole, bats, barn owl and other breeding birds) whilst others potentially occur in some areas on the basis of the habitat assessments made (great crested newt, reptiles). Areas have been identified for targeted protected species surveys, which will be reported separately.

1.7 Recommendations for further research and surveys have been discussed with Able UK.

1.8 Further studies are underway or have been programmed for the near future and will help with the building of a comprehensive knowledge base from which to determine the potential impacts of any development.

2. Introduction

2.1 Background

2.1.1 JUST ECOLOGY has been commissioned by Able UK Limited to carry out ecological surveys and assessments that will inform the preparation of an Environmental Statement for proposed port related facilities at Killingholme, Humber Estuary, North Lincolnshire.

2.1.2 The report presents the results of an Extended Phase 1 survey of the study area and the preliminary results of desk research in order to 'scope' the potential impacts of the development.

2.1.3 Scoping is the process of determining the content and extent of matters that should be covered in any environmental information to be submitted to the authority from which permission is required for the project to proceed.

2.2 Location and site description

2.2.1 The study area lies 7km north of Immingham, between the villages of North Killingholme and East Halton to the west, and the coastline of the Humber Estuary to the east. The land is within the administrative district of North Lincolnshire Council. Figure 2.1 shows the location of the site and Figure 2.2 shows the individual areas identified as part of the application site (known as areas 2a, 2b, 2c, 3, 4 and 5).

2.2.2 The application site, plus a 500m buffer outside the application site boundary, was included in the study, including some 6.1km of foreshore marking the eastern boundary of the study area.

2.2.3 The site lies within an area of relatively flat countryside with some hedgerows and small blocks of woodland within what has been a generally agricultural landscape, mostly in arable use. Parts of the site are heavily industrialised around existing docks and power stations, whilst high quality wildlife habitat lies adjacent to the application site within North Killingholme Haven Pits SSSI and the mudflats and marshes of Humber Estuary itself.

2.3 Details of the project

2.3.1 It is proposed to create port-related storage facilities and industrial areas with landscaping and conservation areas from south of Killingholme Haven up to the East Halton Skitter. This will involve the erection of several buildings, but much of the land will be used for external storage of goods including, but not limited to, palletised materials, containers and motor vehicles. This will require the construction of large areas of impermeable ground surface. Along the western boundary of the area it is proposed to create a mounded landscape belt in order to screen the site.

2.3.2 The full range of proposed works, as far as it can be detailed at this stage, is as follows:

- Land drainage works compliant with the strategy proposed by the North East Lindsey Drainage Board;
- Re-contouring of sections of the land, both to lessen flood risk in places, and to create screening bunds and landscape features;
- Construction of new access roads and the upgrading of existing highways;
- Development of a landscape belt along the western margin of the application area;
- Conversion of the use of the land currently consented for vehicle storage and distribution, or as agricultural land, to port related storage or industry, but incorporating wildlife areas and areas of woodland;
- Engineering works to the ground within the port related storage areas, to provide them with adequate ground bearing capacity and an impermeable surface;
- Installation of lighting towers and 3m high electrified security fencing around and within the storage areas;
- Erection of B2 and B8 buildings, where appropriate, with sewage treatment facilities and car parking;
- Provision of vehicle wash bays with effluent treatment facilities; and,

- Construction of a pipeline corridor carrying industrial chemicals across part of the site.

3. Methods

3.1 Collation of existing ecological information

3.1.1 Information has been utilised from existing Environmental Statements for parts of the site, and reports, as follows:

- Entec (2003a) presents an Environmental Statement for three areas in the middle of the study area (Figure 3.1). Ecological information presented included discussion of the issues arising from both statutory and non-statutory consultees, and results of survey work by Entec, RPS and a local ornithologist, including Phase 1 survey, bird survey, badger survey and an evaluation of the habitats present for protected species.

- RPS (2005a) reports the results of Phase 1 habitat and scoping survey over a similar, but enlarged, area to that used for the 2003 Entec assessment (Figure 3.1). Their work included a short desk study, external consultations, a Phase 1 habitat survey of the site and a 500m buffer zone, and an evaluation of the habitats present for their potential to support protected species.

- RPS (2005b) was prepared in order to support an application for planning consent on land east of Rosper Road, South Killingholme.

- RPS (2005c) was prepared in order to support an application for temporary planning consent, also for an area of land east of Rosper Road, but for an area slightly to the south of site used in RPS (2005b).

  RPS (2005b) and RPS (2005c) use information from Entec (2003a) and RPS (2005a), up-dated and supplemented, where possible, from desk research, consultations or survey.

3.1.2 A literature search has been undertaken to identify and access relevant publications on the Humber Estuary and the application site, and contacted the following organisations for records of habitats and species they may hold:

- British Trust for Ornithology;
- English Nature;
- Graham Catley (Local Ornithologist);
- Humberside Badger Group;
- Humberside Bat Group;
- Humber Industry Nature Conservation Association;
- Inland Drainage Board;
- Lincolnshire Badger Group;
- Lincolnshire Environmental Records Centre;
- Lincolnshire Herpetofauna Society;
- Lincolnshire Wildlife Trust;
- Lincolnshire Bird Recorder Group; and,
- Royal Society for the Protection of Birds.

3.1.3 The purpose of this desk research was to supplement the fieldwork undertaken and gather information on statutory and non-statutory wildlife sites, habitats or species for the application site and surrounding buffer. Efforts were also made to identify any existing plans or programmes that are relevant to assessing the ecology of the site.

3.2 Extended Phase 1 survey

3.2.1 A Phase 1 habitat survey of the study area and 500m buffer (Figure 3.2) was conducted using the techniques described in JNCC (2003, 2004). The standard outputs from Phase 1 survey include a habitat map and accompanying target-notes that highlight any features of ecological interest.

3.2.2 The Phase 1 survey was supplemented with observations of any evidence for the presence of protected species and an assessment of the potential of the habitats present to support protected species, including mammals, birds, amphibians and reptiles.

3.2.3 All areas of the application site and buffer zone were included except industrial and operational sites enclosed within security fencing, and private properties. These areas are marked on Figure 3.2.

4. Sensitive sites, plans and programmes

4.1 Background

4.1.1 Special sites for wildlife, geology, landscapes and recreation are designated at local, national and international levels. Whenever possible, it is important to protect such sites from deterioration and damage for they are often the best examples of remaining UK habitats and countryside.

4.1.2 Two SSSIs lie adjacent to the application site: the Humber Estuary SSSI and the North Killingholme Pits SSSI. SSSIs are regarded as sites of national importance.

4.1.3 These SSSIs are contained within a series of international designations for the Humber Estuary as a whole, namely:

- The Humber Flats, Marshes and Coast SPA/Ramsar site;
- The Humber Estuary potential SPA;
- The Humber Estuary proposed Ramsar Site; and,

- The Humber Estuary possible Special Area for Conservation (SAC).

4.1.4 This complicated system of international designations for the Humber has arisen because of a phased approach to such designations and a lengthy review, with revised proposals now with Defra (the designating authority) for consideration.

4.1.5 In addition to the national and international site designations, nine Local Wildlife Sites lie within or close to the application site. Local groups, often consisting of the local authority, local wildlife trusts and other interested parties, identify sites of local importance for wildlife, geology, landscape or recreation. 'Local Sites' are identified on the basis of locally developed selection criteria, which aim to identify and protect the most important sites in a local context.

4.1.6 Local Sites include Local Nature Reserves, which are legally designated by local planning authorities. They also include sites known by a variety of other generic names, such as SINCs, SNCIs, County Wildlife Sites (CWS), Biological Sites, Regionally Important Geological Sites *etc.*. These sites are not legally protected though they may be owned or managed by conservation bodies.

4.1.7 As well as actions for the protection for sensitive sites, conservation agencies have also developed additional plans or programmes to protect threatened habitats and species within the wider countryside, such as Natural Area profiles, BAPs, *etc.* Those relevant to the application site are included in the discussion below.

4.2 Sites of Special Scientific Interest

4.2.1 The UK Government designates SSSIs under the Wildlife & Countryside Act (1981) as the very best national examples of sites for wildlife or geology. Two SSSIs lie within close proximity to the application site.

4.2.2 **The Humber Estuary SSSI** lies to the north-east of the site. The Estuary contains a series of nationally important habitats including the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The site is also of national importance on account of the

geological interest at South Ferriby Cliff and for the coastal geomorphology of Spurn.

4.2.3 The Estuary supports nationally important numbers of 22 wintering waterfowl: bittern *Botaurus stellaris*, dark-bellied brent goose *Branta bernicla bernicla*, shelduck *Tadorna tadorna,* wigeon *Anas penelope*, teal *Anas crecca*, pochard *Aythya ferina*, scaup *Aythya marila*, goldeneye *Bucephala clangula*, oystercatcher *Haematopus ostralegus*, avocet, ringed plover *Charadrius hiaticula,* golden plover *Pluvialis apricaria*, grey plover *Pluvialis squatarola*, lapwing *Vanellus vanellus,* knot *Calidris canutus*, sanderling *Calidris alba*, dunlin *Calidris alpina*, black-tailed godwit *Limosa limosa*, bar-tailed godwit *Limosa lapponica*, curlew *Numenius arquata*, redshank *Tringa totanus* and turnstone *Arenaria interpres*.

4.2.4 In addition, nine species of passage waders regularly occur in nationally important numbers on the Humber during periods of migration. These are: ringed plover, grey plover, sanderling, dunlin, ruff *Philomachus pugnax,* black-tailed godwit, whimbrel *Numenius phaeopus*, redshank and greenshank *Tringa nebularia*.

4.2.5 In summer, the Humber Estuary also supports a nationally important assemblage of breeding birds of 'lowland open waters and their margins', including nationally important numbers of bittern, marsh harrier *Circus aeruginosus*, avocet and bearded tit *Panurus biarmicus*. The following species also contribute to the assemblage: little grebe *Tachybaptus ruficollis*, great crested grebe *Podiceps cristatus*, mute swan *Cygnus olor*, shelduck, gadwall *Anas strepera*, shoveler *Anas clypeata*, pochard, tufted duck *Aythya fuligula*, water rail *Rallus aquaticus*, little ringed plover *Charadrius dubius*, snipe *Gallinago gallinago*, redshank, common tern *Sterna hirundo*, cuckoo *Cuculus canorus*, kingfisher *Alcedo atthis*, yellow wagtail *Motacilla flava*, grasshopper warbler *Locustella naevia*, sedge warbler *Acrocephalus schoenobaenus*, reed warbler *Acrocephalus scirpaceus*, and reed bunting *Emberiza schoeniclus*.

4.2.6 The Estuary is also nationally important for a breeding colony of grey seals *Halichoerus grypus*, indeed supporting one of the largest grey seal breeding colonies in England. This colony has a high rate of pup production compared to other UK sites.

4.2.7 Additionally, the Estuary acts as an important migration route for both river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*

between coastal waters and their spawning areas. Both species are present in the estuary to some degree all year round, although numbers increase during summer and autumn periods when migration takes place.

4.2.8 The vascular plant and invertebrate assemblages are also of national significance. Further details and a map of the SSSI can be found in Annex 1.

4.2.9 **North Killingholme Pits SSSI** lies near the coast and on the eastern boundary of the application site. This SSSI has now been included within the consolidated boundary of the Humber Estuary SSSI (as of 21 October 2004), and so the Pits are important in helping to support the features of the Estuary as a whole. These pits are important as large saline lagoons with an exceptionally rich invertebrate fauna, and for their importance as roosting and feeding grounds for waterfowl. A map of the SSSI and the citation is included in Annex 2.

4.2.10 Nine specialist invertebrate species have been recorded within the pits, including the polychaete worm *Alkmaria romijri*, the prawn *Palaemonetes varians*, the molluscs *Hydrobia ventrosa* and *H. neglecta*, and the bryozoan *Conopium seurati*. For several of these species the hydrological regime within the lagoons, including factors such as water levels and salinity, may be critical to their survival.

4.2.11 The Pits are important for the birds that they support. Nationally important numbers of black-tailed godwit regularly occur within the SSSI and large flocks of roosting redshank also occasionally utilise the site. The site also supports a wide variety of breeding birds, for example reed and sedge warblers, and the seed heads of the reeds are a food supply for bearded tit, which occur along the Humber Estuary in nationally important numbers. Bittern are also regular winter visitors. The thick hawthorn scrub provides habitat for a number of species, including a roost of up to five long-eared owls, which also breed in the site.

4.3 International sites

4.3.1 Over 50% of SSSIs in England, by area, are also considered to be internationally important, and may be formally recognised as such under the EC Birds Directive (and designated as SPAs), EC Habitats Directive (designated sites are SAC) or the Ramsar Convention on Wetlands of International Importance (listed sites are Ramsar Sites). SSSI boundaries,

including those of one or more sites, are often adopted for these international designations and SPAs are often also designated at the same time as Ramsar Sites (Stroud *et al.* 2001).

4.3.2 **Humber Flats, Marshes and Coast SPA/ potential SPA**: The SPA designation for the Humber recognises the winter assemblage of waterbirds as being of international (European) significance. The Humber is being designated in phases: Phase 1 was designated in July 1994 and Phase 2 is currently being considered. The designation encompasses the intertidal mudflats, marshes and coastline.

4.3.3 The inner estuary supports extensive areas of reedbed, with areas of mature and developing saltmarsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast, the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. It also supports important breeding populations of terns and raptors in summer. It supports:

- Internationally important populations of regularly occurring Annex I (*EC Directive 79/409/EEC*) species such as little tern (breeding), marsh harrier (breeding), avocet (breeding) and golden plover (wintering);

- Internationally important populations of regularly occurring migratory species such as knot (wintering), lapwing (wintering) and redshank (passage); and,

- An internationally important assemblage of waterfowl (i.e. regularly supports over 20,000 waterfowl in any season).

The citation is included in Annex 3.

4.3.4 Importantly, although parts of the SPA are not yet designated, under Government policy, proposed SPAs are to be given full protection as if already classified.

4.3.5 **Humber Estuary Ramsar Site/proposed Ramsar Site**: Like the SPA, the Ramsar listings on the Humber are progressing in a phased way with Phase 1 designated in July 1994 and Phase 2 currently being considered. This area qualifies as a Ramsar site for supporting:

- An assemblage of threatened coastal and wetland invertebrates;
- A breeding colony of grey seals (70 pups were recorded in 1987);
- An internationally important assemblage of waterfowl (>150,000 waterfowl; many species occurring in nationally and internationally important numbers); and,
- An internationally important population of regularly occurring migratory bird species including sanderling (spring) and ringed plover (spring and autumn).

4.3.6 The Ramsar Information Sheet for Phase 1 is included in Annex 4; Phase 2 information is not yet available.

4.3.7 Although not yet formally designated, for the purpose of considering development proposals affecting them, proposed Ramsar sites should be treated in the same way as classified sites.

4.3.8 **Humber Estuary possible SAC**: The Humber Estuary has also been proposed as an SAC under the Habitats Directive for the following Annex I habitats:

- Estuaries;
- Coastal lagoons;
- Atlantic salt meadows (mid-upper saltmarsh);
- *Salicornia* and other annuals colonising mud and sand (pioneer saltmarsh);
- Mudflats and sandflats not covered by seawater at low tide (intertidal mudflats and sandflats);
- Sandbanks which are slightly covered by water all of the time (subtidal sandbanks);
- Fixed dunes with herbaceous vegetation ('grey dunes');

- Embryonic shifting dunes; and,

- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes').

4.3.9 It also qualifies for the River Lamprey and Sea Lamprey, both Annex II species.

4.3.10 This proposed SAC is the subject of consultation and processing for designation. Although not yet formally designated, for the purpose of considering development proposals affecting them, proposed SACs should be treated in the same way as classified SACs.

4.4 Local wildlife sites

4.4.1 There are 9 Local Sites that lie within the study area (including the 500m buffer) and their locations are shown in Figure 4.1. Seven are identified as 'Wildlife Sites' and two are Lincolnshire Wildlife Trust Reserves (Eastfield Road Railway Embankment & Rosper Road Pools, plus North Killingholme Haven Pits).

- Burkinshaw's Covert: A large plantation of Lombardy poplar with an area of ash, silver birch and sycamore. The varied ground flora contains species such as common spotted orchid, agrimony and lords and ladies. There are reports of twayblade and spiny restharrow also.

- Chase Hill Wood: Broadleaved semi-natural woodland with an impressive number of early purple orchids.

- Churchside Fields (in two parts): Part 1 is an old hay meadow supporting ridge and furrow and floods at times. Herb-rich, but over-grazed. Part 2 is a small field between two roads. The field is fairly herb-rich, whilst a muddy ditch in one corner supports some plants of local interest.

- East Halton Disused Railway: This railway is botanically rich and contains species such as spotted orchid, yellow rattle and stone parsley.

- East Halton (also known as 'Scrub Lane Fields'): is a field supporting ridge and furrow with several wet areas. The area is relatively herb-rich and is surrounded by old hedgerows with mature trees.

- Halton Marsh Clay Pits: Much used by anglers but contains some areas of scrub and reedbeds, deeper water areas and some small pools. Plants are typical of marshy and waste ground, with breeding waterbirds present.

- Rosper Road Pools: The reserve consists of a flood-relief reservoir located within wet grassland, and is of great ornithological interest. Some 90 bird species have been recorded including a variety of waterbirds such as garganey, migrant sandpipers, up to 70 ruff in winter and nesting lapwings in summer.

- Swinster Lane Field: Lying to the north of Swinster Lane, this site contains several wet areas and two ponds. The damp areas are of most interest with a diversity of plant species.

- Eastfield Road Railway Embankment: The grassland of this reserve represents a type of habitat with specialist plant species that is now scarce. Plants of interest include bee orchid, yellowwort and restharrow, and over 50 species have been recorded.

4.5 Plans or programmes

Natural area profile

4.5.1 The application site is located within the Humber Estuary Natural Area. Features of the Humber Estuary Natural Area are the high sediment loads in the strongly tidal waters, intertidal nutrient-rich mudflats and sandy beaches that support the rich wildlife of the area (particularly waterfowl), and important coastal habitats comprising saltmarsh, sand dunes, saline lagoons and reedbeds. Inland the area was traditionally farmed as wet pastures although much has been converted to fertile cropland.

4.5.2 Key nature conservation features of National Significance are:

- Coastal saltmarsh;
- Earth heritage;
- Inshore sublittoral sediment;
- Littoral sediment;
- Reedbeds; and,
- Saline lagoons.

4.5.3 Key nature conservation features of Local Significance are:

- Coastal sand dunes (though none exist in the study area).

4.5.4 The key conservation issues in the Natural Area are coastal squeeze (including impacts of erosion and dredging) and various forms of pollution in the water and along the shoreline.

Biodiversity Action Plans

4.5.5 The study area lies within the area covered by the Lincolnshire BAP. This Plan aims to highlight the species and habitats that require positive conservation action in order to maintain and enhance their ecological value and integrity.

4.5.6 The Lincolnshire BAP includes the following Habitat Action Plans of relevance to the application site:

- Saline lagoons;
- Saltmarsh;
- Coastal and floodplain grazing marsh;
- Arable field margins;
- Hedgerows and hedgerow trees;
- Road verges;

- Meadow, pasture and grazing marsh;
- Ponds, lakes and reservoirs;
- Reedbeds;
- Rivers, canals and drains;
- Springs and flushes;
- Churchyards and cemeteries; and,
- Parks and open spaces.

4.5.7 The Lincolnshire BAP also includes the following Species Action Plans of relevance to the application site:

- Bats;
- Brown hare;
- Farmland birds;
- Otter;
- Water vole; and,
- Song thrush.

4.6 Implications & recommendations

4.6.1 The study area lies adjacent to the internationally important Humber Estuary and two SSSIs, and the key receptors for possible impacts include:

- Important and sensitive habitats;
- Breeding, migrating and wintering bird populations;
- Lagoonal and intertidal invertebrates;

- A population of grey seals; and
- Populations of sea and river lampreys.

4.6.2 It will be important to assess the impacts of the proposed development on each of these receptors including impacts with respect to:

- Loss of habitat;
- Habitat deterioration; and,
- Disturbance/displacement of important species.

4.6.3 Consultation with English Nature will be necessary to assess whether the development is likely to have a significant effect on the European interest features of the SPA/SAC, under The Conservation (Natural Habitats, &c.) Regulations 1994. If so, an Appropriate Assessment will be required.

4.6.4 The presence of Local Sites will also be an important consideration. Design and planning will need to seek to avoid (where possible) and minimise impacts on Local Sites.

4.6.5 Significantly adverse impacts on the key features of the Humber Estuary Natural Area, or habitat and species populations being protected and enhanced through the Lincolnshire BAP, is likely to be viewed as inconsistent with the objectives of these plans/programmes, and should therefore be avoided if possible.

5. Phase 1 habitats

5.1 Background

5.1.1 A number of previous Phase 1 surveys have been conducted across the central part of the current survey area (Figure 3.1). Within these areas RPS (2005a) recorded woodlands, plantation and scrub habitats, with young plantations planted over unimproved grassland. Arable fields occupied a large proportion of the survey area. Some arable fields had grassy margins dominated by coarse grasses and forbs, with species such

as hogweed *(Heracleum sphondylium)* and wild angelica *(Angelica sylvestris)* near to the hedgerows. A mixture of ruderal herbs and grasses had partially colonized where some fields had been left fallow. Wetter areas supported species such as great willowherb *(Epilobium hirsutum),* tufted hair-grass *(Deschampsia flexuosa),* hard rush *(Juncus inflexus)* and common reed *(Phragmites australis)*. Improved and species-poor semi-improved grasslands were also present, in addition to a number of more species-rich semi-improved grasslands that were identified.

5.1.2 A number of ponds were located within the survey area of RPS (2005a). North Killingholme Haven Pits SSSI contained saline lagoons with frequent reedbeds with Sea Club-rush present. Common reed was also recorded along the seaward side of the sea wall and in some ditches. Within the SSSI were also two saltmarsh areas with frequent saltmarsh rush, *Juncus gerardii*, and saltmarsh vegetation dominated by sea club-rush, *Bolboschoenus maritimus*, within the saline lagoons. Additional data described by Entec (2003) included plant community details of a small salt marsh of approximately 1.8 ha, adjacent to North Killingholme Haven Pits SSSI.

5.1.3 Boundaries throughout the RPS (2005a) survey area were hawthorn, *Crataegus monogyna*, dominated hedges (often defunct), wet and dry ditches, and fences. A number of hedges in the survey area were classified as species-rich. RPS (2005c) described hedges in detail, highlighting the abundance of bird nests in the taller, mature hedges.

5.1.4 Dredging and skimming of ditch banks have resulted in few aquatic plant species associated with the ditch (RPS 2005c). Those present included bulrush, *Typha,* common reed, sedges *(Carex* sp.), common water starwort *(Callitriche stagnalis)* and fennel pondweed *(Potamogeton pectinatus).* Water vole burrows were reported along the length of the main drain in contrast to all other drains in that area which were considered unsuitable for water voles and had no evidence of their presence.

5.2 Survey results

5.2.1 Extended Phase 1 survey was undertaken during the period 8th to 11th May 2006. All habitats within the study area, and within a 500m buffer of those areas, were mapped and target notes were recorded for features of

ecological interest and evidence of presence or potential for protected species.

5.2.2 The following accounts provide an overview of the habitats present on site, though hedgerows are considered separately in Section 6. A summary of the habitat composition of the potential development areas (2a-2c, 3, 4 and 5) is also provided. Annex 5 contains the target notes. Figures 5.1(a-c) present mapped Phase 1 habitats and also show the positions of target-noted features.

Grassland

5.2.3 Grasslands of conservation interest recorded in the study area and buffer zone comprised semi-improved neutral grasslands and marshy grasslands. These were restricted to a few fields mainly present in the southeast and centre west of the surveyed area. In the southeast, marshy grasslands represent the remnants of coastal grazing marsh. To the centre west, near the villages of North Killingholme and East Halton, marshy grasslands were generally associated with the occurrence of earth works and ridge and furrow (Target notes 05-13, 08-05, 08-07, 08-10). Species associated with moats and marshy furrows were grasses such as meadow foxtail, *Alopecurus pratensis,* marsh foxtail, *Alopecurus geniculatus*, tufted hair-grass, *Deschampsia cespitosa,* and creeping bent, *Agrostis stolonifera* and forbs such as cuckoo flower, *Cardamine pratensis* and creeping buttercup, *Ranunculus repens*.

5.2.4 Ridge and furrow was also present on drier ground without a change in community between ridge and furrow (Target notes 03-11, 05-01 and 08-12). Bare patches on south facing banks associated with ridge and furrow, earthworks and other banks across fields (Target note 15-06) have potential for burrowing invertebrates.

5.2.5 Improved grassland and species poor semi-improved grasslands formed the majority of pastures and were also present in the south east and centre west of the survey area, concentrated between East Halton village and the Power Stations. Other grasslands recorded were amenity grassland around housing areas and landscaped land near industrial sites. Some broad mown road verges were of botanical interest including presence of spurge laurel, *Daphne laureola*, an ancient woodland indicator (Target note 12-01), and common spotted orchids, *Dactylorhiza fuchsii,* (Target note 12-02).

Arable/ruderal

5.2.6 Arable fields were the dominant land use in the survey area, with fields being generally large and with some boundaries removed. A range of farmland birds such as yellowhammers, red-legged partridge and bullfinches were observed in arable fields, and there were particularly large numbers of skylarks. Most fields with crops were planted with wheat or oilseed rape, however several fields were fallow, some close to and in preparation for development of car storage in Area 4. In set aside fields, a number of additional bird species were observed such as lapwings, curlew, linnet and reed bunting (Target notes 03-02, 03-07, 06-05, and 10-01) with high potential for ground nesting birds (lapwing nests were observed), as well as brown hare (Target note 06-06). Other abandoned former arable land, and small pockets of disturbed ground around housing and existing industry, had developed tall ruderal communities in which were observed curlew, lapwings and red-legged partridge (Target notes 06-04, 13-13 and 14-01).

Woodlands, plantations and scrub

5.2.7 Broadleaved woodlands and broadleaved and mixed plantations were only a prominent feature of the landscape of the survey area in the southern half however these habitats were found in disparate small pockets throughout. The only large areas of woodland were Burkinshaw's Covert and Fox Covert alongside Rosper Road and Haven Road respectively. The dominant tree species was ash, *Fraxinus excelsior*, with other species including sycamore, *Acer pseudoplatanus*, and oak, *Quercus*, in the canopy and hawthorn, hazel, *Corylus avellana*, and English elm, *Ulmus procera* in the sub-canopy. Woodland and plantation ground floras were predominantly tall herb communities (dominated by cow parsley, *Anthriscus sylvestris* often with bramble, *Rubra fruticosus* and cleavers, *Galium aparine*), in many instances becoming impenetrable.

5.2.8 Evidence of badgers was found in several areas (Target note 01-06) and further investigation of all woodlands should be carried out. Although most woodlands and plantation were small, some were considered high quality habitat for invertebrates, birds, bats and larger mammals, having dead wood and brash on the ground, standing deadwood with bracket fungi, and dead boughs (Target note 03-04, 08-09).

5.2.9 Scrub, dominated by hawthorn, was present throughout the survey area with extensive coverage along embankments of active railway lines, and filling the cutting of the disused railway line. Several species of fungi were recorded in the disused railway cutting. The variability in density and height of scrub in most areas enhanced the habitat value for birds. Many woodlands and areas of scrub had evidence of badger activity and bird breeding and roosting, and all woodlands and areas of scrub have this potential, particularly those highlighted by target notes.

5.2.10 Scattered trees and scrub were found in the far southeast of the survey area around Marsh Lane, in North Killingholme Pits SSSI and were extensive in the area between the villages of North Killingholme and East Halton, and immediately to the east of East Halton. Scrub was virtually all hawthorns with brambles and often associated with earthworks. This Scattered trees and scrub is good habitat for breeding and roosting birds, bat foraging and cover for mammals.

Wetland

5.2.11 Ditches and re-sectioned streams occurred along field boundaries across the study area, predominantly with water, though dry ditches were found at the time of survey on higher ground in the northwest quarter of the survey area.

5.2.12 Frequent aquatic plant species recorded were fool's water-cress, *Apium nodiflorum,* and water-starwort, *Callitriche* sp., the latter particularly where there was a more saline influence. Common reed was present in ditches or on the banks of ditches near to the coast, notably at Target note 10-06 where the ditch was up to 15m wide with abundant common reed and scattered scrub.

5.2.13 The re-sectioned East Halton Beck adjacent to the northern edge of Area 2a was broad with emergent vegetation and had good potential for water voles. Other ditches providing good habitat for wildlife were concentrated in the far south east of the survey area. These had vegetated banks and therefore good potential for water voles (Target notes 06-03, 13-03) and a water vole was sighted at Target note 13-12. Tadpoles were seen in a ditch at Target note 13-15. In addition a 'plop', distinctive of water voles entering the water, was heard from the ditch at Target note 11-21 near East Halton.

5.2.14 With these exceptions, all other ditches were deep and narrow and often heavily shaded by hedges, and water was generally slow moving or still. Water quality was low, particularly in the low lying areas in the seaward half of the survey area where brown scum indicated eutrophication and algal blooms earlier in the year. In addition, many ditches had been strimmed on both banks for the entire ditch length.

5.2.15 Due to the extensive coverage of drained arable land, pools and other areas of open freshwater were relatively few. The largest area of open freshwater was immediately to the north of the current car storage facilities. Reeds and hawthorn scrub were encroaching on the pools here which have high potential for water voles and amphibians and are likely important for birds (Target note 06-02). The next largest area of open freshwater was Rosper Road Nature Reserve, a large complex of pools with emergent vegetation and hawthorn scrub and again potentially important for water voles, amphibians and birds. At Target note 13-14 was another network of (ephemeral) ponds with abundant birdlife including shelduck, mallard, lapwings and skylark, including ground nesting. Ephemeral pools also existed in conjunction with some fields with marshy grasslands in ridge and furrow and earthworks further inland.

5.2.16 Other ponds notable for wildlife potential, but isolated, were recorded across the survey area. The pond at Target note 05-11 was shaded by white willow, *Salix alba*, and contained tipped rubble, offering potential for amphibians. The possibly newly constructed pond at Target note 08-04 had abundant emergent vegetation and a hedge on the surrounding fenceline, providing plentiful cover for amphibians. The pond at Target note 08-13 was a good potential site for great crested newts. At Target note 09-04 was a large pond with reedbed supporting reed buntings and nesting swans.

5.2.17 North Killingholme Pits SSSI contains a saline lagoon. The SSSI was not mapped as it has been fully described previously (Annex 2). Saline lagoons also occurred in mosaics with saltmarsh at East Halton Skitter.

5.2.18 Coastal squeeze has restricted the areas of saltmarsh to two locations in the survey area. These are at East Halton Skitter and the adjacent estuary of East Halton Beck, and in front of the seawall near North Killingholme Pits SSSI.

5.2.19 Saltmarsh at East Halton Skitter was dominated by sea club rush forming mosaics with saline lagoons. Along the estuary, the saltmarsh formed a narrow shelf between the seawall and bare mud.

5.2.20 Saltmarsh near the SSSI contained sea club-rush, sea arrowgrass, *Triglochin maritima,* common reed and sea couch, *Elytrigia atherica* (dominant in places) (Target notes 10-02 and 10-03). To the south of this saltmarsh were other saltmarsh type communities forming a gradient from the sea wall to the low tide line zone. These were coastal grassland with common reed and sea couch, becoming strand line vegetation with dock, *Rumex* sp., shingle, and then a zone of sea aster, *Aster tripolium*, saltmarsh grading into mud exposed at low tide (Target note 10-04). These zones were patchily found along the seawall to the north and south although never as extensive as at this point.

Built-up areas /gardens /other

5.2.21 Gardens were restricted to the west of the site in the villages of North Killingholme and East Halton, and around the isolated houses north of the disused railway line. A church yard with high potential for reptiles, mammals and birds was noted at Target note 11-17.

5.2.22 Several buildings were targeted for bat roost potential. Derelict brick barns and sheds, often partially roofed with scrub invasion were common in fields around the villages, again with potential for bat and also owl roosts. Bridges across ditches (Target note 16-04) and also over railway lines, may have potential as bat roosts.

5.2.23 Built up areas also included industries in the southern half of the survey area and hard surfaces throughout the port storage facilities. Abandoned areas with refugia (Target notes 08-02 and 16-06) and stony banks in the railway cuttings provide potentially good habitat for reptiles. Fences were used in pony paddocks, in some hedgerows with gaps, and around industrial sites.

5.3 Habitat composition of potential development areas

Area 2a

5.3.1 This area and its 500m buffer zone occupied the whole of the northern half of the survey site. All habitat types described in Section 5.2 are found in

this area with the exception of saltmarsh and saline lagoons, though these are found in the buffer zone. Permanent grassland, trees and scrub are concentrated around East Halton, in the southeast of the area.

5.3.2 On Halton Marshes, the tall gappy hawthorn hedges run perpendicular to the coast. On the higher ground to the west the hedges were less tall. The majority of defunct hedges and removed boundaries were found where arable fields had been amalgamated. Hedges with trees were most common in the south west corner near to the village of East Halton. Hedgerow restoration was taking place with planting of native species in gaps to the west of the road opposite station house (immediately to the north of the disused railway line).

Area 2b

5.3.3 This site contained improved grassland and a part of an arable field, with hedgerow and fence boundaries to fields. Target notes included a large ash tree clad in ivy as a potential bat roost (11-09) and a large dead tree trunk as standing dead wood with crevices, with potential for bats and invertebrates (11-20). The southern field contained scattered trees.

5.3.4 The buffer zone included further large trees with target notes for those with bat roost potential, housing areas, permanent pasture with earth works including marshy ground, and areas of dense and scattered scrub. The species-rich hedge present in the survey was in the buffer zone for area 2b, as were a number of wet ditches with evidence of water voles (Target note 11-21) and derelict barns overgrown with scrub (Target notes 11-10 and 11-11).

Area 2c

5.3.5 This area was an arable field sown with oilseed rape. Boundaries included species poor intact and defunct hedgerows and fencing. A pile of deadwood remained where a large tree had been felled (Target note 09-13). Importantly the buffer zone for this area included a pond with reedbed where a reed bunting and nesting swans were observed (Target note 09-14).

Area 3

5.3.6 This area comprised a strip of land west of and parallel to East Field Road, extending beyond Chase Hill Road to adjoin Area 2a. Within the

area were low wide hedges, permanent grassland, scrub, wet and dry ditches, arable land, and broadleaved semi-natural woodland and bare ground in the railway cutting. Amenity grassland and planted exotic shrubs were present in the ground of industries along the road. One hedge along Nicholson Road contained spurge laurel, an ancient woodland indicator (Target note 12-01). Common spotted orchids were target noted on the verge of East Field Road (12-02).

5.3.7 Other habitats present in the buffer zone were hedges with trees, earthworks with associated scattered and dense scrub, derelict barns with bat and owl roost potential, and large trees clad in ivy with potential for bat roosts. North of Chase Hill Road the area runs parallel to a grassed public access route, across which were many mammal tracks (possibly badger and muntjac). A footpath at Target note 15-05 had tall hedges to either side with tall herb and grass under-storey, with potential for bat foraging, breeding birds and invertebrates.

Area 4

5.3.8 Over half of Area 4 was converted to car storage facilities. The southeast part of the area was set aside arable, in preparation for development. A fresh badger latrine was found at Target note 09-01 near the southern edge of the site. The set aside areas have potential for ground nesting birds. A flowing stream with aquatic vegetation and high sediment load was recorded at Target note 09-02 and further along this was noted water vole potential (Target note 09-04).

5.3.9 The buffer zone for this area contains the SSSI, saltmarsh, broadleaved plantation, arable fields including set aside, and marshy grassland with ephemeral ponds.

Area 5

5.3.10 The main land use in Area 5 is arable (some set aside in which many farmland and wading birds were noted), improved grassland and poor semi-improved grassland. Some grasslands were marshy. A ditch with water vole potential was noted within this area (Target note 13-12). Ephemeral pools in set aside land were rich in birdlife and supported ground nesting birds (Target note 13-14). In addition to set aside arable, a feature of this area was abandoned ground with tall ruderal communities. There were also two copses of trees within the area with potential for breeding birds and mammals (Target note 13-11).

5.3.11 Habitats in the buffer zone include Burkinshaw's Covert, swamp and marshy grasslands, scrub and Rosper Road Pools Nature Reserve.

5.4 Implications & recommendations

5.4.1 Whilst some parts of the study area are of low interest for wildlife, some parts are of higher interest and include pockets of saltmarsh, brackish lagoon, set aside fields, ridge and furrow with marshy grasslands, and areas of woodland and scrub. Within these areas, and elsewhere on site, lie features that may be significant in supporting important wildlife species, such as breeding birds, bats, amphibians and reptiles.

5.4.2 Habitats within the SSSIs were judged to be important by default, and some of the areas identified as Local Sites contain habitats that are botanically interesting or scarce.

5.4.3 Outside of these areas there were no areas that were obviously especially botanically rich but nevertheless there were areas that comprise of habitats highlighted as important in the Lincolnshire BAP, such as woodlands, hedgerow, scrub, reedbed and meadow pasture & grazing marsh.

5.4.4 Approximately eight areas have been identified for further botanical survey in order to gather information on the quality of the habitats present, and assess the relative importance of these habitats in the context of the Lincolnshire BAP.

6. Hedgerows

6.1 Background

6.1.1 Whilst hedgerows were the subject of preliminary assessment during the Phase 1 survey, they are considered separately because important hedgerows are protected by law. Any development which may therefore impact on important hedgerows requires careful consideration. Guidance on determining importance is provided in the Hedgerows Regulations 1997.

6.1.2 Existing information on hedgerows shows that the area surveyed by RPS (2005a) contained hedges throughout although most were classified as defunct. Trees such as ash were present in hedges to the west of that survey area, and a number of hedges were classified as species-rich. Shrubs recorded were dominated by hawthorn and also included blackthorn, *Prunus spinosa*, elder, *Sambucus nigra*, brambles and rose, *Rosa* sp.

6.2 Legal protection

6.2.1 The Hedgerows Regulations 1997 aim to protect important hedgerows in the countryside in England and Wales by controlling their removal through a system of notification. The scheme covers hedgerows that are on or adjoin land used for agriculture or forestry, the breeding or keeping of horses, ponies or donkeys, common land, village greens, SSSI, or Local Nature Reserves, but does not apply to garden hedges.

6.2.2 Removal of a hedgerow is permitted under the Regulations if it is required for certain purposes, such as (following notification) gaining access to land. In this case, the person removing the hedge may be required to fill the opening by new planting within eight months.

6.2.3 Before removing any stretch of hedgerow to which these Regulations apply, notification must be given to the local planning authority (a "hedgerow removal notice"). The planning authority will make a decision as to whether to allow the removal of a hedgerow or to issue a "hedgerow retention notice" for all or part of the hedgerow in question. A retention notice may be issued if the hedgerow is found to be "important according to the criteria set out in the Regulations".

6.3 Survey methodology

6.3.1 Hedgerows were the subject of preliminary assessment during the Phase 1 survey to identify those in need of a full survey in due course. This involved mapping all hedges and classifying as intact or defunct, species rich or species poor, and with or without trees. This was carried out by walking representative lengths of all hedges to assess the number of woody species present, assessing the integrity of the hedge and recording

the presence of trees in the hedge. Presence of five or more woody species classifies the hedge as species rich.

6.4 Survey results

6.4.1 Hedgerows were the predominant field boundary type throughout the survey area, often running adjacent to and overhanging wet or dry ditches. The dominant species was hawthorn and in places hedges were several metres wide, verging on dense scrub. Hedgerows with trees, mainly ash, were increasingly common towards the west of the site. A number of these were target-noted due to ivy cladding, crevices and holes in dead boughs offering potential for roosting bats.

6.4.2 One hedge in the buffer zone between the villages of North Killingholme and East Halton had five or more woody species present and was mapped as species-rich (Target note 11-22). These species included hawthorn, blackthorn, ash, hazel and English elm, also with bramble and rose.

6.4.3 All other hedges were species poor, however the tall gappy structure of many hedges added to the habitat value for birds and invertebrates. This structure was particularly characteristic of the hedges on Halton Marshes to the north of the survey area. Tracks through hedgerows and across ditches were the main sources of evidence of large mammals, with target notes taken of possible badger and muntjac. Many hedgerows were defunct or removed in arable dominated areas.

6.5 Implications & recommendations

6.5.1 Only one of the hedgerows in the study area, and falling within the buffer zone, was determined to be species rich. This should be the subject of further survey should it be affected by the proposed development.

6.5.2 The remainder of the hedgerows were classified as defunct or relatively species poor.

7. Protected species

7.1 Birds and habitat for birds

Background

7.1.1 Unlike for other animal groups (see below), there is a reasonable knowledge of the birdlife of the study area, and specifically the coastal habitats that border the site. The birdlife present can, for convenience, be divided into two main groups of birds: (a) coastal birds, mainly waders (shorebirds) and wildfowl (ducks, geese and swans); and, (b) inland birds, mainly farmland and woodland birds. Of course the two groups are not mutually exclusive in that coastal birds may occur on inland fields when roosting and feeding, and inland birds may feed in coastal habitats. However this division is used in the summary of existing information that follows.

Coastal birds

7.1.2 As is clear from Section 4, the internationally important Humber Estuary and the North Killingholme Haven Pits SSSI are important for the bird populations they support at all times of the year. Any impact from the development, may trigger a requirement for an appropriate assessment.

7.1.3 Whilst the importance of the Estuary as whole is well established, it is important to assess the relative importance of the shoreline adjacent to the development site, both as a foraging and roosting area for waterbirds. Entec (2003a) and RPS (2005a) used the citations from the Estuary and SSSIs to describe the importance of the areas in general terms, but did not provide any information on the distribution of waterbirds along the shoreline.

7.1.4 Foraging birds on the coastline would usually be counted at low tide. Catley (2000) reports the results of the first estuary-wide low tide bird counts of waterbirds on the Humber, undertaken during September 1998 to August 1999. These data are summarized in Table 7.1, and provide insight into the numbers of birds that forage along this stretch of the coastline.

Table 7.1: Maximum numbers of waterfowl species recorded in four sectors of the Estuary during 1998-99, and the corresponding proportion of the Estuary totals

Sector	Species	Winter Maximum Count	% Estuary Total	Spring Maximum Count	% Estuary Total	Autumn Maximum Count	% Estuary Total
H	Mute Swan	0	0.0	0	0.0	9	3.6
	Teal	54	**5.6**	19	**7.7**	0	0.0
	Mallard	80	**6.4**	40	**11.0**	44	3.7
	Ringed Plover	29	**6.1**	7	**5.0**	35	3.2
	Golden Plover	1100	3.0	0	0.0	552	3.5
	Lapwing	2385	**10.9**	0	0.0	90	2.5
	Dunlin	458	2.8	0	0.0	0	0.0
	Whimbrel	0	0.0	0	0.0	2	4.8
	Curlew	194	**10.2**	229	**7.7**	200	**5.9**
	Redshank	0	0.0	0	0.0	11	3.3
	Turnstone	51	**9.9**	0	0.0	16	3.8
I	Ringed Plover	14	2.8	6	3.1	0	0.0
	Lapwing	1540	**7.1**	0	0.0	140	4.7
	Ruff	0	0.0	4	**100.0**	0	0.0
	Black-tailed Godwit	0	0.0	0	0.0	20	2.4
	Curlew	45	3.1	23	4.7	0	0.0
	Whimbrel	0	0.0	0	0.0	3	**7.1**
	Common Sandiper	0	0.0	0	0.0	1	**7.1**
	Turnstone	13	2.1	29	**7.2**	0	0.0
J1	**Ringed Plover**	167	**33.1**	8	**5.8**	32	2.9
	Lapwing	647	2.4	0	0.0	0	0.0
	Black-tailed Godwit	0	0.0	0	0.0	340	**36.4**
	Whimbrel	0	0.0	0	0.0	2	4.8
	Curlew	0	0.0	11	2.3	0	0.0
	Redshank	90	2.6	0	0.0	0	0.0
	Turnstone	0	0.0	31	**25.2**	0	0.0
JJ	Wigeon	68	2.8	0	0.0	0	0.0
	Teal	29	4.0	0	0.0	0	0.0
	Mallard	0	0.0	24	4.5	101	**12.8**
	Shoveler	19	**38.0**	11	**21.6**	11	**5.4**
	Lapwing	242	3.1	0	0.0	164	4.5
	Black-tailed Godwit	0	0.0	0	0.0	267	**31.6**

N.B. The Killingholme site lies in the Inner-South Sector of the Humber Estuary, with sub-sectors H, I, JJ and J1 together encompassing the shoreline of the site. Sector boundaries shown in Figure 7.1. Sector JJ is North Killingholme Haven Pits.

7.1.5 These data indicate that the shoreline adjacent to the site supports significant proportions (>5%) of the Estuary totals of several species during the low-tide period (including teal, mallard, shoveler, ringed plover, lapwing, curlew, ruff, turnstone, black-tailed godwit, whimbrel, common

sandpiper), in all seasons. Furthermore the data show that the birds are quite widely distributed across all sectors. Similar data from 2003-04 (confirms the importance of these sectors of the shoreline for these waterbird species (Table 7.2; from Mander & Cutts 2005).

Table 7.2: Maximum numbers of waterfowl species recorded in four sectors of the Estuary during 2003-04.

Sector	Species	Winter Maximum Count	Spring Maximum Count	Autumn Maximum Count
H	Bar-tailed Godwit	15	2	15
	Black-tailed Godwit	1	0	55
	Curlew	278	35	263
	Dunlin	416	0	57
	Golden Plover	19	0	73
	Lapwing	3600	2	45
	Mallard	131	31	269
	Redshank	48	12	18
	Ringed Plover	73	22	36
	Sanderling	97	0	5
	Shelduck	6	27	1
	Teal	0	0	22
	Turnstone	542	45	113
I	Black-tailed Godwit	0	0	24
	Curlew	3	3	11
	Dunlin	81	0	38
	Lapwing	625	0	66
	Mallard	9	17	2
	Redshank	57	7	34
	Ringed Plover	2	7	4
	Shelduck	6	21	4
	Turnstone	5	24	24
J (J1 & J2)	Black-tailed Godwit	0	0	961
	Curlew	77	34	13
	Dunlin	223	0	124
	Lapwing	875	0	0
	Mallard	22	27	2
	Redshank	69	1	100
	Ringed Plover	0	0	5
	Shelduck	2	30	0
	Teal	25	0	0
	Turnstone	22	0	16
JJ	Avocet	0	4	2
	Black-tailed Godwit	0	4	927
	Curlew	18	5	5
	Lapwing	224	0	211
	Mallard	18	8	30

Sector	Species	Winter Maximum Count	Spring Maximum Count	Autumn Maximum Count
	Redshank	25	12	15
	Shelduck	0	6	0
	Teal	62	6	16

N.B. Sector J includes what was previously J1 and J2 in the 1998-99 survey. Sector boundaries shown in Figure 7.1.

7.1.6 As noted above these data provide useful insights into the occurrence of particular species and their distribution whilst feeding along the shoreline next to the study area. Roosting distributions are also important, especially as birds concentrated in high tide roosts may be particularly vulnerable to disturbance in comparison to birds distributed more widely across mudflats at low tide. Data have been requested from the Wetland Bird Survey 'core counts' (Collier *et al.* 2005) in order to assess the use of this stretch of the coast by roosting birds.

7.1.7 These data provide a picture of bird usage of the shoreline at particular states of tide, but it is also important to establish whether any of the coastal bird populations for which this coastline is important make significant use of the inland areas of the development site. There is relatively little data available on this aspect, though Entec (2003a) report the results of winter bird counts in 2000/01 and 2001/02 on the fields immediately to the west of North Killingholme Haven Pits SSSI. These pastures supported low numbers of wintering waterbirds (mallard, teal, lapwing, dunlin, ruff, curlew and redshank), and it was noted that curlew also feed extensively across pasture fields to the south of the site.

Inland birds

7.1.8 In addition to the (mainly) waterbirds for which the Estuary and the North Killingholme Haven Pits SSSI are important, other species of birds are likely to breed, migrate and/or winter across parts of the site. These would be mainly farmland and woodland birds, and it is important to know about the species present, their numbers and distribution.

7.1.9 Entec (2003a) reported the results of a Common Birds Census for breeding birds across two small areas adjacent/immediately inland from North Killingholme Haven Pits SSSI. They reported that a number of Species of Conservation Concern (RSPB 2002) breed throughout this

area, including red-listed[1] (grey partridge, reed bunting, tree sparrow, house sparrow, bullfinch, song thrush, linnet and yellowhammer) and amber-listed (kestrel, cuckoo, swallow, meadow pipit, yellow wagtail, dunnock) species.

7.1.10 ORPS (2005a) added further important birds to the list when undertaking their Phase 1 and scoping survey, including additional red- (skylark, starling, willow tit, kingfisher, turtle dove) and amber- (curlew, lapwing, snipe, willow warbler) listed species, though they did not distinguish between breeding and non-breeding birds. The importance of a flock of c.40 tree sparrows seen on site was highlighted, the authors suggesting that this population may be of national importance.

7.1.11 Breeding bird surveys of a 500m strip of inland habitat adjacent to the coast in March 2006 (Brooks 2005a-c) recorded up to 37 species, including high priority birds such as skylark, linnet, reed bunting, grey partridge and song thrush, with breeding behaviour exhibited by some.

Legal protection

7.1.12 In Britain, all wild birds are granted legal protection under the Wildlife & Countryside Act 1981, the Bern Convention and the EC Birds Directive. This legislation protects the birds, their eggs and nests whilst being built or in use.

7.1.13 Legal protection makes it an offence to intentionally kill, injure, take or have in possession any wild bird or egg. It is also an offence to intentionally damage or destroy the nest of any wild bird whilst it is being built or in use.

Implications & recommendations

7.1.14 The ornithological interest of the site and adjacent areas is very significant indeed with national and international site designations existing in part or whole because of the birds, and threatened and declining bird species recorded in the surveyed parts of the site. Comprehensive bird data will be required including:

[1] Red list species, identified by *Birds of Conservation Concern*, are those whose population or range is rapidly declining, recently or historically, and those of global conservation concern.

- Breeding bird survey data for all parts of the site;
- Wintering bird survey data for all parts of the site;
- Collation of knowledge of key roosting and feeding sites; and,
- Investigation of the use of the site by nocturnal species, in particular owls.

7.1.15 Surveys and research to address these information needs was commenced in May 2006 and will be reported separately.

7.1.16 If any vegetation removal is needed as part of the development, clearance should always take place outside of the breeding season for birds and quickly re-instated or compensated for through appropriate habitat creation. Proposals for actions to minimise disturbance, for example to wintering waterbirds in adjacent wetland areas, should be developed. Discussions with English Nature and an Appropriate Assessment will be required (see also Section 4).

7.2 Protected mammals

7.2.1 The analysis of previous environmental reports (*e.g.* Entec 2003a, RPS 2005a-c) and other publications for the Humber has indicated that several protected mammal species occur, or are likely to occur, within or adjacent to the study area, including badger, water vole, various bat species, brown hare and the grey seal.

7.2.2 The following accounts summarise any existing information on these species and present the results of the Extended Phase 1 survey, where these species were recorded and habitats assessed for the potential to support protected mammal species.

Badgers

7.2.3 Both the Humberside and Lincolnshire badger groups have previously been approached for information on badgers within the study area but no responses have been received (Entec 2003a; RPS 2005a-c). RPS

(2005a) indicates that badgers have been reported from Burkinshaw's Covert and their Phase 1 survey revealed the presence of eight active or partially active badger setts within their survey area. Six disused setts were also noted. RPS concluded that probably two badger social groups occurred within their survey boundary area.

Legal protection

7.2.4 Badgers receive legal protection under the Protection of Badgers Act 1992. This act makes it illegal to wilfully kill, injure or take any badger, or attempt to do so, and it is an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett.

7.2.5 Restrictions are placed on works close to badger setts regarding the use of heavy machinery, digging, tree planting, *etc.*, and all setts should have a protection zone in which no works are to be carried out. The required size of this zone varies with the type of works that are being undertaken. Application for a licence from English Nature or Defra may be required for works that may threaten or disturb badgers.

7.2.6 Legislation also restricts actions that would deter badgers from entering their setts during the breeding season, except in extreme emergencies. The breeding season is from the start of December to the end of June. Therefore, the best time to deal with issues involving badgers is from July to November inclusive.

7.2.7 Badgers must be a material consideration as part of planning applications as required by PPS9 (*Planning Policy Statement 9: Biodiversity and Geological Conservation*). Planning authorities are obliged to attach appropriate planning conditions or enter into planning obligations to secure the protection of badgers.

Survey methodology

7.2.8 Field evidence of badgers during the Phase 1 survey of the study area and 500m buffer were recorded by the authors. Field evidence recorded included the presence of badger pathways, hair, latrines, footprints or sett entrances. The authors mapped such evidence where it was present and recorded whether the field signs were fresh, to indicate current occupancy of the area by badgers.

Survey results

7.2.9 The field evidence for badgers has been mapped in Figure 7.3.

7.2.10 Badgers were confirmed to have been present from the extreme north of the site to the south. Apart from the sett in the north, which was not judged to be in use, badgers appear to be currently concentrated along the railway and in the vicinity of the power stations, Chase Hill Wood and Burkenshaw's Covert.

7.2.11 In addition to setts, badger latrines, paths and runways were recorded as well as evidence of foraging in several areas.

Implications & recommendations

7.2.12 The presence of badgers on site means that a detailed, but targeted, badger survey is required, with six areas identified for systematic search. The status of any setts located should be assessed and a report provided for the purpose of consultations with English Nature. The best time for survey is the winter period (November to March), when any vegetation which may conceal setts has died back.

7.2.13 If it were considered that any badgers would be affected then the developer will be required to either: modify the development proposals; or propose appropriate mitigation. This will be needed prior to any application for planning permission, after which a licence from English Nature would be required should the work still affect setts and/or disturb badgers. Consultations with English Nature will be required once a detailed badger survey has been completed.

<u>Water vole</u>

7.2.14 A dramatic decline in the numbers of water voles nationally, and the resulting fragmentation of populations, has been the cause of considerable national concern. It was once a very common species, but a loss of perhaps 94% of formally occupied water vole sites by the year 2000 makes this the most dramatic population decline of any British

mammal this century. It follows that particular attention is being paid to the water vole in determining planning applications.

7.2.15 Records of water voles exist from North Killingholme Haven Pits SSSI (RPS 2005c). Scoping by Entec (2003a) indicated that water voles are known to be widespread in the general area. They indicated that approximately 5% of the ditches they considered were thought to be suitable for the species.

7.2.16 Entec (2003b) carried out a field survey of water voles over a relatively small area in April 2003. Concentrations of water voles were found in the wet ditches immediately adjacent and close to the power station, but no suitable habitat or signs of water vole were found in the central block of land.

7.2.17 In the Phase 1 survey reported by RPS (2005a) a number of drainage ditches with the potential to support water vole were identified. RPS (2005c) reported that water voles were found within the central Internal Drainage Board ditch within their 'Area E' (see RPS 2005c).

Legal protection

7.2.18 In April 1998, water voles were given legal protection under Schedule 5 of the Wildlife & Countryside Act (1981) (and updated by the Countryside and Rights of Way Act 2000). This inclusion in the Act protects the water vole's places of shelter or protection, but not the voles themselves. Legal protection makes it an offence to deliberately damage, destroy or obstruct access to any structure or place that water voles use for shelter or protection, or to disturb water voles while they are using such places.

7.2.19 Water voles must be a material consideration as part of planning applications as required by PPS 9, and planning authorities are obliged to attach appropriate planning conditions or enter into planning obligations to secure the protection of water voles.

Survey methodology

7.2.20 Any field evidence of water voles was recorded during the authors' Phase 1 survey, including the presence of burrows, latrines, footprints *etc.*. Such evidence was mapped where it was present and identified watercourses that were potentially suitable for water voles within the survey area. The

suitability of each was assessed, recording the presence or not of ideal characteristics such as slow-flowing and sufficiently deep water, richly vegetated margins and banks, and suitable bank profiles for burrowing.

Survey results

7.2.21 The areas judged to be suitable for water vole have been mapped, and where field evidence was recorded, in Figure 7.4.

7.2.22 Several watercourses were identified as having the potential to support water voles, located mainly in the north and north-east of the site and also in the south and south-east of the site. The occasional ditch in the west and south-west parts of the site were also identified as potentially supporting water voles.

Implications & recommendations

7.2.23 The presence of water voles on site means that a detailed, but targeted, water vole survey is required, with five areas identified for systematic search. This survey can be undertaken during the April to August period, although dense summer vegetation, and access problems, can prevent a thorough survey from taking place. The survey therefore needs to be prioritized.

7.2.24 Should water voles be located in areas that will be impacted by the development, due attention should be paid to their presence and appropriate actions to safeguard them should be planned. This will involve detailed consideration of: avoiding the impact by design; exclusion from development areas; trapping, removal and release; or habitat enhancement to offset the impacts of adverse effects. Discussion with English Nature will be required.

7.2.25 It should not be forgotten that water voles may be indirectly influenced through changes to the hydrology and water quality across the site, factors that will need to be considered in any mitigation package.

Bats

7.2.26 Bat populations have suffered major declines nationally over the last century, probably because of a loss of roost sites and a decrease in insect prey. Being widespread, bats are an important consideration in any impact assessment.

7.2.27 Entec (2003a) noted that both Chase Hill Wood and Burkinshaw's Covert provide good bat habitat, but concluded that roosting and foraging habitat for bats was very limited across the parts of the study area that they researched. The Humberside Bat Group was contacted for information during the compilation of RPS (2005a) and provided nine records of bats within a 3.5km radius of the centre of their study area. Unfortunately, none of the records were particularly useful in pin-pointing known roosts or key foraging areas. RPS (2005a) noted that existing hedgerows across the site may provide good foraging habitat for bat species, and several areas of woodland and trees were identified as having potential to support roosting bats.

Legal protection

7.2.28 All British species of bats are protected under Schedule 5 of the Wildlife & Countryside Act (1981) (as updated by the Countryside and Rights of Way Act 2000), the Conservation Regulations 1994 and the EC Habitats Directive. Under the EC Habitats Directive the UK is obliged to protect sites that are important for bats and to identify and protect important feeding areas for bats from damage or disturbance.

7.2.29 It is an offence to intentionally injure or disturb a bat or to damage or obstruct access to a place used for shelter or protection by bats. This includes houses and outbuildings and applies throughout the year, whether bats are present or not at the time of survey or work being carried out.

7.2.30 Bats must be a material consideration as part of planning applications, as required by PPS 9. Planning authorities are obliged to attach appropriate planning conditions or enter into planning obligations to secure the protection of bats.

7.2.31 Any building is a potential roost site, and tree holes, crevices or loose bark are favoured roost sites for a number of species. Where bats may be present, it is the developer's responsibility to check for evidence of bats and to consult with English Nature should bats be suspected. Where damage, destruction or obstruction to a bat roost site is unavoidable then a licence is needed from Defra. Licence applications need to be accompanied by full planning permission.

Survey methodology

7.2.32 During their Phase 1 survey, the authors plotted the positions of potentially good bat roosting trees, or groups of trees, as well as buildings or other structures that may support roosting bats. It was recorded whether they had good or only poor potential for roosting bats, based on the extent of hollows, crevices, loose bark on trees and access points to buildings. The existence of suitable feeding habitat nearby was also taken into account, noting though some bat species may travel large distances between roosts and feeding sites (*e.g.* noctule).

Survey results

7.2.33 Maps of habitats and features with bat potential are contained in Figure 7.5.

7.2.34 Chase Hill Wood and Burkinshaw's Covert are potentially important bat habitats, whilst several small copses, hedgerows and ditches are likely to be important as feeding areas or commuting routes. Wetland areas of potential significance as feeding areas were noted also, including North Killingholme Haven Pits SSSI and Rosper Road Pools.

7.2.35 A large number of trees, as well as some buildings and bridges, were noted as having moderate to good potential for supporting bat roosts. These are scattered across the site, with a notable concentration along the mid-western boundary of the study area.

Implications & recommendations

7.2.36 Potential bat roost sites have been identified that need to be surveyed for bats, whilst foraging surveys are also recommended to assess the relative importance of the site in providing feeding opportunities. These surveys

are best undertaken during the June to August period when bats are at their most active.

7.2.37 Should roosting bats be located, consultation with English Nature will be necessary and a licence from Defra may be needed if the bats are likely to be disturbed.

7.2.38 Proposals to avoid, minimise and mitigate any impacts on both foraging and roosting bats will need to be developed.

Other protected mammals

7.2.39 As noted in Section 4, the Humber Estuary supports an important colony of grey seals. The Ramsar Information Sheet (Annex 4) indicates that the estuary holds Britain's most south-easterly breeding colony, with a peak November count of pups in recent years of 70 in 1987. Though important, this coastal species is unlikely to be affected by this land-based development.

7.2.40 Returning to the drier parts of the site, RPS (2005a) considered the area suitable for brown hares but did not record any. The brown hare is a BAP species nationally and is the subject of a Species Action Plan within the Lincolnshire BAP. During the Phase 1 survey, a single brown hare was recorded in the north of the site (Target note 06-06), thus confirming their presence on site. However, the results suggest they are scarce on site as this was the only hare recorded across the entire study area and buffer zone.

7.2.41 There was no evidence for the presence of the dormouse within any parts of the site and no areas of habitat were flagged as being particularly suitable for this species.

7.3 Habitat for Great Crested Newts

Background

7.3.1 The great crested newt is afforded strict legal protection in Britain, largely because of an endangered status in Europe. The British population, which is important in a European context, has declined dramatically over

the last century, hence the strict legal protection now afforded to them. Developers are therefore obliged to ascertain their status and distribution within areas that may be affected by any proposed projects.

7.3.2 Entec (2003a) assessed two ponds that were identified as having potential to support great crested newts but neither were considered to be very suitable. RPS (2005a) approached the Lincolnshire Herpetological Society for records of amphibians but received no response. In their Phase 1 survey, RPS (2005a) concluded that there was generally little potential across their study area for protected amphibian species due to the brackish nature of most of the waterbodies, presence of fish, and limited areas of suitable terrestrial habitat. However five ditches and one small pond were identified as having the potential to support great crested newts.

Legal protection

7.3.3 Great crested newts are fully protected under Schedule 5 of the Wildlife & Countryside Act (1981) (as updated by the Countryside and Rights of Way Act 2000), the Bern Convention and the EC Habitats Directive. The legislation protects the animals themselves and their places of shelter, which may extend 500m from the breeding pond.

7.3.4 Any development or maintenance works in areas used by great-crested newts will require a licence from Defra. Licence applications need to be accompanied by full planning permission.

Survey methodology

7.3.5 During the Phase 1 survey, any watercourses, ponds or lakes with the potential to support newt populations, were plotted and assessed for their suitability for great crested newts, *i.e.* whether permanently dry or wet; with or without aquatic weeds, presence of fish, ducks *etc.*. For areas that were considered to be potential great crested newt sites, the relative suitability of the terrestrial habitat for foraging and hibernation was also recorded. The aim was to identify areas requiring further survey effort.

Survey results

7.3.6 Waterbodies with the potential to support newt populations have been mapped in Figure 7.6.

7.3.7 A total of 5 waterbodies (ponds, ditches) were considered to have the potential to support newt populations. These are distributed in the west, mid and south of the study area.

7.3.8 Additionally, tadpoles were recorded within the ditch at Target note 13-15, and frogs and toads were recorded under plastic sheeting at Target note 16-03.

Implications & recommendations

7.3.9 Five areas have been identified that have good potential to support amphibians and possibly the great crested newt. An additional six areas (one pond and five ditch sections) were identified by RPS (2005a) as potentially suitable for newts and these areas will be re-assessed. Great crested newt surveys are reported separately

7.3.10 Should great crested newts be found, plans for impact minimisation and mitigation will need to be developed. This may involve re-design, translocation of breeding populations, or mitigation through habitat enhancements in areas away from the development. Discussions with English Nature will be required and a licence from Defra may be needed.

7.4 Habitat for reptiles

Background

7.4.1 Entec (2003a) assessed the potential of their study areas to support reptiles but concluded that the sites had little potential for them. RPS (2005a) approached the Lincolnshire Herpetological Society for records of reptiles but received no response. RPS (2005a) identified a number of areas that could potentially support common lizard, slow worms and/or grass snakes, including quite extensive areas of rough grassland, scattered scrub and some woodland edges.

Legal protection

7.4.2 The four relatively widespread reptiles of Britain – the adder, grass snake, slow worm and common lizard – receive partial protection under Schedule 5 of the Wildlife & Countryside Act (1981) (as updated by the Countryside and Rights of Way Act 2000), making it an offence to knowingly kill or injure any of these species.

7.4.3 Though these species are not a material consideration in planning applications, a developer has an obligation to take reasonable precautions to ensure that works planned will not cause damage or disturbance to reptiles. Taking measures to establish whether reptiles occur on land earmarked for development, where suitable reptile habitats occur, can satisfy this requirement.

7.4.4 Reptiles can be removed from a development site in compliance with the Wildlife and Countryside Act (1981) prior to the commencement of construction works. Where significant numbers of reptiles are found during such works the development would have to stop whilst the reptiles are removed. Small numbers can usually be dealt with without much delay.

Survey methodology

7.4.5 Areas of suitable habitat for reptiles in the survey area and 500m buffer zone were plotted, focusing especially on areas with a sunny disposition, with a mosaic of bare and vegetated ground, with rocky to stony substrates, and suitable niches for shelter, protection and basking. Wetland areas with suitability for grass snakes were noted.

Survey results

7.4.6 The areas with the greatest potential to support reptile populations have been mapped in Figure 7.7.

7.4.7 RPS (2005a) identified more areas as potentially suitable for reptiles than in this Phase 1 survey. These areas will be re-assessed.

7.4.8 The areas identified were mainly located in the south-east of the study area with a few isolated areas of habitat also in the west and south-western parts.

7.4.9 It should be noted that, in addition to these areas, much of the active railway line is suitable for reptiles, though probably more disturbed than is ideal.

Implications

7.4.10 At least eight areas, plus the railway line, have been identified as suitable for 'drier-habitat' reptiles (slow worms, common lizards and adders if they were present); and some of the wet ditches, pools and pond areas have the potential to support grass snakes.

7.4.11 A detailed survey for reptiles should be undertaken involving the checking of natural and placed artificial refugia in selected areas. However this would need to be timed to correspond with the best survey periods for reptiles, *i.e.* April to June, and September.

7.4.12 Should reptiles be found, and if agreed by English Nature, then they should be protected from danger caused by development works either by avoiding an impact or removing them to a secure receptor site, perhaps of artificial construction, and preferably close to where they are found.

7.5 Fish

7.5.1 As noted in Section 4, the Humber Estuary acts as an important migration route for both river and sea lampreys between coastal waters and their spawning areas. Spawning takes place in March to July at sites with clean, flowing water with a loose gravel and pebble substrate. They return to the sea during autumn and winter.

7.5.2 The sea lamprey is found mainly throughout the coastal river systems of East Anglia, the South-West and the south and east of Scotland. The Yorkshire Ouse and Derwent systems have seen notable increases in the 1990s (Davies *et al.* (2004). The river lamprey is widespread with a range that overlaps the sea lamprey, but it is also recorded in Angelsey, Lincolnshire and southern countries.

7.5.3 There are seemingly no records of either sea or river lamprey close to the study area according to the records collated by Davies *et al.* (2004). Further, given the habitat preferences of these species, whilst lampreys

will no doubt occur in the Humber Estuary they seem unlikely to be attracted to the wet ditches and waterbodies of the study area.

8. Discussion & Recommendations

8.1.1 Table 8.1 provides a summary of the key ecological receptors identified by Entec (2003) and RPS (2005a) and updated on the basis of this report. These are:

- The internationally and nationally important wildlife sites and those of importance in a local context;
- The important habitats within the wildlife sites;
- The bird populations both on and off site; and,
- The presence of a protected mammal species (badger, water vole and brown hare) and possible presence of protected amphibian and reptile species.

8.1.2 As noted in Section 3.1, consultations are underway in order to continue to compile relevant information on the ecology of the study area and adjacent areas.

8.1.3 Further survey and data gathering is needed as part of the EIS in order to fully access the direct and indirect impacts of the proposed development, including:

- Research and consultation with the custodians of the nearby protected sites in order to determine and quantify any likely impacts on important and sensitive habitats and the interest features of those site, including breeding, migrating and wintering bird populations;
- Collation of the information necessary in order for the Competent Authority to carry out an Appropriate Assessment regarding impacts on the European interest features of the SPA/SAC;
- Targeted habitat survey to determine the 'quality' of some of the habitat patches on site, but excluding the habitats within SSSIs which are considered as being important on account of their designation;

- Survey of one hedgerow considered to be species rich, if this hedge is likely to be affected by the development;

- Collect breeding and wintering bird survey data for all parts of the site, and identify key roosting and feeding sites;

- Carry out detailed, but targeted, survey in the areas identified for protected species, as follows:

  - Badger: six areas, November to March.
  - Water vole: five areas, April to August.
  - Bats: c.20 sites, June to August, plus foraging transects.
  - Great crested newt: 10 areas, April to June.
  - Reptiles: c.8 sites, plus the railway line, April to June, and September.

- Continue to record the presence of brown hares during the above surveys in order to establish status and distribution;

- Consider what protected species licences are likely to be required and ensure data collection is sufficient to inform these applications; and,

- Consult English Nature/Defra on protected species issues as and when required.

Table 8.1: Ecological receptors

Study	Wildlife sites: international	Wildlife sites: national	Wildlife sites: non-statutory	Key habitats & protected plants	Protected animal species	Key information gaps
Entec (2003)	Humber Flats, Marshes and Coast SPA (Phase 1).	North Killingholme Haven Pits SSSI.	8 SNCIs (local sites of high nature conservation value).	Important habitats within wildlife sites. No habitats of particular conservation importance occur on site.	*Mammals* - water voles & bats a possibility.	Water vole survey.
	Humber Flats, Marshes and Coast Ramsar site (Phase 1).				*Birds* - Birds of Conservation Concern breeding on site, including red-listed species. Important concentrations of breeding and wintering waterfowl.	
	Humber Flats, Marshes and Coast pSAC.				*Amphibians* - Great crested newt unlikely though not confirmed.	
					Reptiles - Reptiles unlikely though not confirmed.	
RPS (2005a)	International sites (as above), plus: Humber Flats, Marshes and Coast pSPA (Phase 2) & Humber Flats, Marshes and Coast pRamsar site (Phase 2).	North Killingholme Haven Pits SSSI.	8 SNCIs (local sites of high nature conservation value) (from Entec 2003).	Important habitats within wildlife sites. Some species-rich hedges on site.	*Mammals* - water voles present; bat records nearby, and some trees with potential for bats identified; badger present on site (8 active or partially active setts).	Hedgerow survey, veteran tree survey, water vole survey, great crested newt survey, connectivity of foraging areas for badgers.

Study	Wildlife sites: international	Wildlife sites: national	Wildlife sites: non-statutory	Key habitats & protected plants	Protected animal species	Key information gaps
		Humber Estuary SSSI.			*Birds* - Birds of Conservation Concern breeding on site, including red-listed species. Important concentrations of breeding and wintering waterfowl. *Amphibians* - Great crested newt unlikely though not confirmed. *Reptiles* - Areas potentially good for reptiles identified, but presence not confirmed.	
RPS (2005b)	International sites (as above).	National sites (as above).	Local sites (as above).	No new information.	*Mammals* - No new information. *Birds* - No new information. *Amphibians* - No waterbodies with the potential to support Great crested newts identified. *Reptiles* - No new information.	Not specified.
RPS (2005c)	International sites (as above).	National sites (as above).	13 SNCIs (local sites of high nature conservation value).	Bluebell in some woodlands.	*Mammals* - water vole, badger & bat records nearby; water vole confirmed as present. *Birds* - No new information. *Amphibians* - No new information. *Reptiles* - No new information.	

Study	Wildlife sites: international	Wildlife sites: national	Wildlife sites: non-statutory	Key habitats & protected plants	Protected animal species	Key information gaps
Just Ecology (2006)	International sites (as above).	National sites (as above).	Awaiting information	Important habitats within wildlife sites. One species-rich hedge within the buffer zone.	*Mammals* - water voles present; bat records nearby, and some trees, buildings & other structures with potential for bats identified; badger and brown hare present on site. *Birds* - Birds of Conservation Concern breeding on site, including red-listed species. Important concentrations of breeding and wintering waterfowl. *Amphibians* - Waterbodies suitable for Great crested newts identified. Concentrations of frogs and toads occur on site. *Reptiles* - Reptiles possible in several areas.	Badger, Water vole, bats, great crested newt and reptiles survey. Breeding and wintering bird information.

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10. Appendices

Annex 1: Humber Estuary SSSI

Site name: Humber Estuary

County: East Riding of Yorkshire, Kingston upon Hull, North Lincolnshire, North East Lincolnshire and Lincolnshire.

District: East Riding of Yorkshire, Kingston upon Hull, North Lincolnshire, North East Lincolnshire and East Lindsey

Status: Site of Special Scientific Interest (SSSI) notified under Section 28C of the Wildlife and Countryside Act 1981, as inserted by Schedule 9 to the Countryside & Rights of Way Act 2000.

Local Planning Authority: East Riding of Yorkshire Council, Kingston upon Hull Council, North Lincolnshire Council, North East Lincolnshire Council, Lincolnshire County Council and East Lindsey District Council

National grid reference: TA 216 184 **Area:** 37000.59 ha

Ordnance Survey sheet: **1:50,000:** 106, 107, 112, 113
1:10,000: SE 72 NW, NE, SW, SE; SE 81 NW, NE, SW, SE; SE 82 NE, SW, SE; SE 92 NW, NE, SW, SE; TA 02 NW, NE, SW, SE; TA 11 NE; TA 12 NW, NE, SW, SE; TA 20 NE; TA 21 NW, NE, SW, SE; TA 22 SW; TA 30 NW, NE, SW, SE; TA 31 NW, NE, SW, SE; TA 40 NW, SW; TA 41 NW, SW; TF 49 NW, NE, SE.

Date of notification: 3 February 2004

Reasons for Notification:

The Humber Estuary is a nationally important site with a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The site is also of national importance for the geological interest at South Ferriby Cliff (Late Pleistocene sediments) and for the coastal geomorphology of Spurn. The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals *Halichoerus grypus*, river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*, a vascular plant assemblage and an invertebrate assemblage.

General description:

Estuary

The Humber Estuary is a large macro-tidal coastal plain estuary with high suspended sediment loads, which feed a dynamic and rapidly changing system of accreting and eroding intertidal and subtidal mudflats, sandflats, saltmarsh and reedbeds. The estuary supports a full range of saline conditions from the open coast to the limit of saline intrusion on the tidal rivers of the Ouse and Trent. The range of salinity, substrate and exposure to wave action influences the estuarine habitats and the range of species that utilise them. These include a breeding bird assemblage, winter and passage waterfowl, river and sea lamprey, grey seals, vascular plants and invertebrates.

The extensive mud and sand flats support a range of benthic communities, which in turn are an important feeding resource for birds and fish. Wave exposed sandy shores are found in the outer/open coast areas of the estuary. These change to the more moderately exposed sandy shores and then to sheltered muddy shores within the main body of the estuary and up into the tidal rivers.

The lower saltmarsh of the Humber is dominated by common cordgrass *Spartina anglica* and annual glasswort *Salicornia* communities. Low to mid marsh communities are mostly represented by sea aster *Aster tripolium*, common saltmarsh grass *Puccinellia maritima* and sea purslane *Atriplex portulacoides* communities. The upper portion of the saltmarsh community is atypical, dominated by sea couch *Elytrigia atherica* (*Elymus pycnanthus*) saltmarsh community. In the upper reaches of the estuary, the tidal marsh community is dominated by the common reed *Phragmites australis* fen and sea club rush *Bolboschoenus maritimus* swamp with the couch grass *Elytrigia repens (Elymus repens)* saltmarsh community. On the southern coastal fringe of the estuary on the north Lincolnshire coast, a wide range of saltmarsh communities are present. Good height zonations are found, with levee development along creeks creating extensive depressions holding waterlogged saltmarsh types. Upper saltmarsh is common here. These saltmarsh communities are an integral part of the functioning dynamic estuarine system. They provide nutrients for the mudflats and sandflats, and feeding and roosting areas for nationally important numbers of ducks, geese and waterfowl.

Saline lagoons

Within the Humber Estuary SSSI there are good examples of four of the five physiographic types of saline lagoon. These are the isolated lagoon at Humberston Fitties, the silled lagoon at Northcoates 'Point A', the percolation lagoon at Northcoates 'Point B', and the sluiced lagoons at Blacktoft Sands. These lagoons support a number of notable lagoon specialist species including the lagoon sand shrimp *Gammarus insensibilis*, the amphipod *Gammarus chevreuxi,* the chironomid midge *Glyptotendipes barbipes* and a breeding colony of avocets *Recurvirostra avosetta*.

Sand dunes

The sand dunes within the Humber Estuary are features of the outer estuary on both the north and south banks particularly on Spurn and along the Lincolnshire coast south of Cleethorpes. Examples of both strandline, foredune, mobile, semi-fixed dunes, fixed dunes and dune grassland occur on both banks of the estuary and along the coast. Native sea buckthorn *Hippophae rhamnoides* scrub also occurs on both sides of the estuary. The nationally scarce, bulbous meadow grass *Poa bulbosa* is found on the sand dunes at Cleethorpes, and the nationally scarce suffocated clover *Trifolium suffocatum* is found at Spurn.

Standing waters

The most extensive area of standing waters on the Humber occurs at Barton and Barrow. The complex of disused clay pits vary in size and salinity, and are a mosaic of open waters. Similar pits occur at other locations on the estuary, such as at Faxfleet and Haverfield Pits. The pits support important breeding birds such as marsh harriers *Circus aeruginosus* and bittern *Botaurus stellaris*, and provide roosting and feeding areas for waterfowl.

Geology and geomorphology

Approximately one kilometre of the cliff and foreshore at South Ferriby, on the southern shore of the Humber provides exposures of Pleistocene sediments resting upon chalk. The sediments consist of tills (boulder clay) interbedded with silts and gravels, and underlain by chalk rubble resting on solid chalk. Resting upon these sediments are poorly stratified sandy chalk gravels, interpreted as solifluction deposits formed during periglacial conditions. These deposits are of importance as they lie in a marginal area between north-east England and East Anglia, as well as within the Humber Gap, the evolution of which has controlled drainage development in this part of England. Although the glacial origin of some of the sediments has long been recognised, isolated patches of gravels with ripple-marked upper surfaces have been interpreted both as raised beach deposits and more recently as the possible remains of a lacustrine beach formed at the margin of the glacial Lake Humber. The most recent studies suggest that these gravels had a fluvio-glacial origin, and that all the sediments date from the Late Devensian glaciation. The interpretation of this succession of sediments is crucial for interpreting and understanding the Late Pleistocene history of this part of Yorkshire and Lincolnshire. As this succession shows rapid lateral variation, it may be expected that new features, that might lead to a revised interpretation will be exposed as the cliff recedes further.

Spurn is an outstanding example of a dynamic spit system, very unusual, if not unique in Europe, in that the massive supply of sediment resulting from the erosion of the Holderness coast to the north has enabled it to extend across the mouth of a macrotidal estuary. There exists an exceptionally long historical map record and written accounts extending back to the 7th Century A.D. This record indicates that the spit continuously shifts its location in response to ongoing erosion of the Holderness coast. The area immediately to the north of Spurn is of interest as the 'foundation' to which the spit is attached and is representative of the eroding cliffs of Holderness that supply sediment to sustain the spit. The site is also of interest because of the relationship between the orientation of the coast to the prevailing wave climate and the orientation of the spit in relation to the eroding shoreline of Holderness.

Wintering and passage waterfowl species

The estuary regularly supports 22 species of wintering waterfowl in nationally important numbers. These are bittern, dark-bellied brent goose *Branta bernicla bernicla*, shelduck *Tadorna tadorna,* wigeon *Anas penelope*, teal *Anas crecca*, pochard *Aythya ferina*, scaup *Aythya marila*, goldeneye *Bucephala clangula*, oystercatcher *Haematopus ostralegus*, avocet, ringed plover *Charadrius hiaticula*, golden plover *Pluvialis apricaria*, grey plover *Pluvialis squatarola*, lapwing *Vanellus vanellus,* knot *Calidris canutus*, sanderling *Calidris alba*, dunlin *Calidris alpina*, black-tailed godwit *Limosa limosa*, bar-tailed godwit *Limosa lapponica*, curlew *Numenius arquata*, redshank *Tringa totanus* and turnstone *Arenaria interpres*.

In addition, nine species of passage waders regularly occur in nationally important numbers on the Humber Estuary. These are: ringed plover, grey plover, sanderling, dunlin, ruff *Philomachus pugnax,* black-tailed godwit, whimbrel *Numenius phaeopus,* redshank and greenshank *Tringa nebularia*.

Wintering waterfowl and passage waders are widely distributed throughout the site, the distribution of individual species reflecting habitat distribution and species ecology. For example, the sandier sediments of the outer estuary are characterised by an assemblage including knot and grey plover, while the largest concentrations of wigeon are found in the saltmarshes of the upper estuary. At high tide, large mixed flocks are concentrated into key roost sites which are at a premium due to the combined effects of extensive historical land claim, coastal squeeze and the acute lack of grazing marsh and grassland on both banks of the estuary.

Breeding bird assemblage of lowland open waters and their margins

The Humber Estuary supports a breeding bird assemblage of lowland open waters and their margins, including nationally important numbers of bittern, marsh harrier *Circus aeruginosus*, avocet and bearded tit *Panurus biarmicus*. Breeding bitterns first returned to the estuary in 2000, following an absence of over 20 years, and breeding avocets were first recorded here in 1992. The numbers of avocets in particular have increased substantially in recent years. The following species also contribute to the assemblage: little grebe *Tachybaptus ruficollis*, great crested grebe *Podiceps cristatus*, mute swan *Cygnus olor*, shelduck, gadwall *Anas strepera*, shoveler *Anas clypeata*, pochard, tufted duck *Aythya fuligula*, water rail *Rallus aquaticus*, little ringed plover *Charadrius dubius*,

snipe *Gallinago gallinago*, redshank, common tern *Sterna hirundo*, cuckoo *Cuculus canorus*, kingfisher *Alcedo atthis*, yellow wagtail *Motacilla flava*, grasshopper warbler *Locustella naevia*, sedge warbler *Acrocephalus schoenobaenus*, reed warbler *Acrocephalus scirpaceus*, and reed bunting *Emberiza schoeniclus*. The distribution of the breeding species that make up the assemblage is concentrated within (although not restricted to) the clay pits, lagoons and reedbeds at Far Ings – Barton, Read's Island and Blacktoft Sands.

Grey seals
The Humber Estuary supports one of the largest grey seal breeding colonies in England with a high rate of pup production compared to other UK sites.

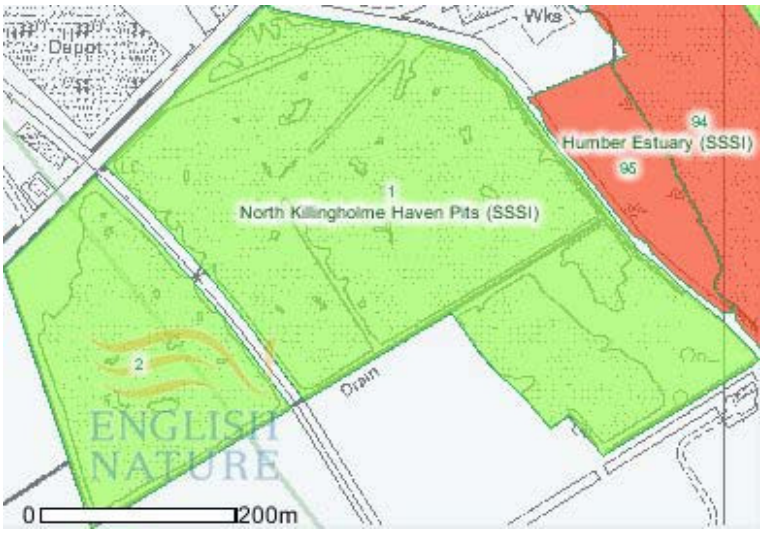
River lamprey and sea lamprey
The Humber Estuary acts as an important migration route for both river lamprey and sea lamprey between coastal waters and their spawning areas. Both species are present in the estuary to some degree all year round, although numbers increase during summer and autumn periods when migration takes place.

Vascular plant assemblage
The site supports an important vascular plant assemblage, including at least ten nationally scarce species. These are characteristic of coastal and wetland habitats. They are bulbous foxtail *Alopecurus bulbosus,* bulbous meadow-grass, divided sedge *Carex divisa,* sea buckthorn, slender hare's-ear *Bupleurum tenuissimum,* spiral tasselweed *Ruppia cirrhosa,* rush-leaved fescue *Festuca arenaria,* curved hard-grass *Parapholis incurva,* suffocated clover and sea clover *Trifolium squamosum.* Common couch sub-species *Elytrigia repens ssp. arenosa* has also been included as a notable taxon. In addition, the Humber is of phytogeographical interest, with several scarce species of vascular plant occurring at or close to the northern or southern limits of their range on the east coast of Britain.

Invertebrate assemblage
Assemblages of terrestrial and aquatic invertebrates are well represented across the Humber Estuary and its hinterlands. These include many scarce and threatened species across a range of taxa, especially the Coleoptera and Lepidoptera. For example, the sand dunes at Spurn support the ground beetle *Amara lucida*, the white colon moth *Sideridis albicolon* and the shore wainscot moth *Mythimna litoralis*.

Saltmarshes such as those at Welwick provide foraging grounds for the solitary bee *Colletes halophilus,* which is closely associated with the flowers of sea aster *Aster tripolium.* Sea aster is also the larval food plant for the starwort moth *Cucullia asteris*. Further upstream, brackish and freshwater reedbeds support the reed-beetle *Donacia clavipes* and the silky wainscot moth *Chilodes maritimus*, both of which are associated with common reed. Areas of willow *Salix* spp. scrub within reedbeds are also important and are the larval food plant of the cream-bordered green-pea moth *Earias clorana*. Fully aquatic species include the water beetles *Agabus conspersus* and *Helophorus fulgidicollis*.

Annex 2: North Killingholme Haven Pits SSSI



COUNTY: LINCOLNSHIRE

SITE NAME: NORTH KILLINGHOLME HAVEN PITS

DISTRICT: NORTH LINCOLNSHIRE

Status: Site of Special Scientific Interest (SSSI) notified under section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: Glanford Borough Council

National Grid Reference: TA 165198

Area: 20.61 ha

Ordnance Survey Sheet 1:50,000: 113

1:10,000:

Date Notified (Under 1949 Act):

Date of Last Revision:

Date Notified (Under 1981Act): 1996

Date of Last Revision:

Other Information:

1. Saline lagoons are listed as a priority habitat under the EC Habitats and Species Directive.

2. Parts of the Humber Estuary are designated as a Special Protection Area and Ramsar Site.

Description and Reasons for Notification

North Killingholme Haven Pits are situated adjacent to the Humber Estuary near Immingham on the south bank. The main reasons for notification of these pits are their importance as large saline lagoons with an exceptionally rich fauna, and their significance as roosting and feeding grounds for waterfowl, which occur in internationally important numbers in the Humber Estuary in winter.

The site comprises three pits of differing size and salinity, both factors, which contribute to its national and local importance. Nine species of specialist lagoonal species recorded from the pits include the polychaete worm *Alkmaria romijni,* which is known from just four sites in Great Britain. Other species of note include the prawn *Palaemonetes varians*, the molluscs *Hydrobia ventrosa* and *Hydrobia neglecta* and the bryzoan *Conopium seurati*. The number of specialist lagoonal species is exceptionally high in North Killingholme Haven Pits and particularly so for their latitude.

Water levels within the lagoons vary and provide expanses of open mud for visiting waterfowl, especially waders. Amongst these are nationally important numbers of black-tailed godwits, which have visited the site in increasing numbers since the late 1980's. There are also occasional visits by large flocks of roosting redshank. These visitors indicate that North Killingholme Haven Pits form an integral part of the estuarine feeding and roosting opportunities for the internationally important populations of winter waterfowl for which the Humber Estuary is noted.

The lagoons are fringed with common reed *Phragmites australis* and sea club-rush *Scirpus maritimus* and this fringe provide valuable feeding and breeding grounds for a range of summer migrants such as reed and sedge warblers. The seed heads of the reeds are also a food supply for bearded tit, which occur along the Humber Estuary in nationally important numbers. Bittern are also regular winter visitors.

The site id fringed in places with thick hawthorn scrub which also provides important bird habitat, including a roost of up to five long-eared owls which also breed here and are of particular local importance.

Annex 3: Humber Flats, Marshes and Coast SPA (Phases 1 and 2)

SPA description (information as published 2001)

Country	England
Unitary Authority	East Riding of Yorkshire, North Lincolnshire, North-east Lincolnshire
SPA status	Classified 28/07/1994
Latitude	53 37 58 N
Longitude	00 00 39 W
SPA EU code	UK9006111
Area (ha)	15202.53
Component SSSI/ASSIs	Humber Flats and Marshes: Barton and Barrow Clay Pits Humber Flats and Marshes: Pyewipe and Cleethorpes Coast Humber Flats and Marshes: Spurn Head to Saltend Flats Humber Flats and Marshes: The Grues Humber Flats and Marshes: Upper Humber North Lincolnshire Coast

Humber Flats, Marshes and Coast SPA is located on the east coast of England, and comprises extensive wetland and coastal habitats within the Humber Estuary. The estuary drains a catchment of some 24,240 square kilometres and provides the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (7.2 m) and approximately one-third of the estuary is exposed as mud- or sand-flats at low tide. The inner estuary supports extensive areas of reedbed with areas of mature and developing saltmarsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast, the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The estuary supports important numbers of

waterbirds (especially geese, ducks and waders) during the migration periods and in winter. It also supports important breeding populations of terns and raptors in summer.

Qualifying species

This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

During the breeding season;

Little Tern *Sterna albifrons*, 63 pairs representing at least 2.6% of the breeding population in Great Britain

Marsh Harrier *Circus aeruginosus*, 11 pairs representing at least 6.9% of the breeding population in Great Britain (Count as at 1995)

Over winter;

Bar-tailed Godwit *Limosa lapponica*, 1,593 individuals representing at least 3.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

Bittern *Botaurus stellaris*, 2 individuals representing at least 2.0% of the wintering population in Great Britain (5 year mean 91/2-95/6)

Golden Plover *Pluvialis apricaria*, 29,235 individuals representing at least 11.7% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

Hen Harrier *Circus cyaneus*, 20 individuals representing at least 2.7% of the wintering population in Great Britain (5 year peak mean 1984/5-1988/9)

This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

On passage;

Redshank *Tringa totanus*, 5,212 individuals representing at least 2.9% of the Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)

Sanderling *Calidris alba*, 1,767 individuals representing at least 1.8% of the Eastern Atlantic/Western & Southern Africa - wintering population (2 year mean May 1993 - 1994)

Over winter;

Dunlin *Calidris alpina alpina*, 23,605 individuals representing at least 1.7% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6)

Knot *Calidris canutus*, 33,848 individuals representing at least 9.7% of the wintering Northeastern Canada/Greenland/Iceland/Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

Redshank *Tringa totanus*, 4,452 individuals representing at least 3.0% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)

Shelduck *Tadorna tadorna*, 4,083 individuals representing at least 1.4% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

Assemblage qualification: A wetland of international importance.

The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl

Over winter, the area regularly supports 187,617 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Mallard *Anas platyrhynchos*, Golden Plover *Pluvialis apricaria*, Bar-tailed Godwit *Limosa lapponica*, Shelduck *Tadorna tadorna*, Knot *Calidris canutus*, Dunlin *Calidris alpina alpina*, Redshank *Tringa totanus*, Cormorant *Phalacrocorax carbo*, Dark-bellied Brent Goose *Branta bernicla bernicla*, Bittern *Botaurus stellaris*, Teal *Anas crecca*, Curlew *Numenius arquata*, Pochard *Aythya ferina*, Goldeneye *Bucephala clangula*, Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Lapwing *Vanellus vanellus*, Sanderling *Calidris alba*, Black-tailed Godwit *Limosa limosa islandica*, Wigeon *Anas penelope*, Whimbrel *Numenius phaeopus*.

Annex 4: Humber Flats, Marshes and Coast Ramsar Site (Phase 1)

Information Sheet on Ramsar Wetlands

1. Name and address of the compiler of this form:
Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
E mail: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:
28 July 1994

3. Country:
UK (England)

4. Name of the Ramsar site:
Humber Flats, Marshes and Coast (Phase 1)

5. Map of site included:
a) hard copy (required for inclusion of site in the Ramsar List): *yes* _ -or- *no* _
b) digital (electronic) format (optional): Yes

6. Geographical coordinates (latitude/longitude)**:**
53 37 58 N 00 00 39 W

7. General location:
Nearest town/city: Grimsby
The Humber Estuary is located in the north-east Midlands of England on the east coast bordering the North Sea

Administrative region: Humberside, Lincolnshire

8. Elevation (average and/or max. & min.) (metres)**: 9. Area** (hectares)**:** 15202.53
Min. No information available
Max. No information available
Mean No information available

10. Overview:
The Humber Estuary drains a catchment of some 24,240 square kilometres and is the site of the largest single input of freshwater from Britain into the North Sea. It has the second highest tidal range in Britain (7.2 m) and approximately one third of the estuary is exposed as mud or sand flats at low tide. The inner estuary supports extensive areas of reedbed with areas of mature and developing salt marsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The Estuary regularly supports internationally important numbers of waterfowl in winter and internationally important breeding populations in summer.

11. Ramsar Criteria:
3, 4, 5, 6

12. Justification for the application of each Criterion listed in 11. above:

Ramsar criterion 3
Holds Britains most south-easterly breeding colony of grey seal *Halichoerus grypus*. The peak November count of pups in recent years was 70 in 1987.

Ramsar criterion 4
Staging area for many passage birds in spring and autumn. Of particular note are the internationally important populations of ringed plover *Charadrius hiaticula* during the spring and autumn migration periods and sanderling *Caldris alba* during the spring passage period.

Ramsar criterion 5
Assemblages of international importance:
Over winter the area regularly supports:
152926 waterfowl (5 year peak mean 1991/92-1995/96)

Ramsar criterion 6

Species occurring at levels of international importance (as identified at designation):
During the breeding season the area regularly supports:
Little Tern, *Sterna albifrons* (Eastern Atlantic (breeding))
230 individuals, representing an average of 0.3% of the breeding population (Source period not collated)

Over winter the area regularly supports:
Bar-tailed Godwit, *Limosa lapponica* (Western Palearctic (wintering))
1593 individuals, representing an average of 1.4% of the population (5 year peak mean 1991/92-1995/96)
Curlew, *Numenius arquata* (Europe (breeding))
2423 individuals, representing an average of 0.7% of the population (5 year peak mean 1991/92-1995/96)
Dark-bellied Brent Goose, *Branta bernicla bernicla* (Western Siberia/Western Europe)
2553 individuals, representing an average of 0.9% of the population (5 year peak mean 1991/92-1995/96)
Dunlin, *Calidris alpina alpina* (Northern Siberia/Europe/Western Africa)
23605 individuals, representing an average of 1.7% of the population (5 year peak mean 1991/92-1995/96)
Golden Plover, *Pluvialis apricaria* (North-western Europe (breeding))
29235 individuals, representing an average of 1.6% of the population (5 year peak mean 1991/92-1995/96)
Grey Plover, *Pluvialis squatarola* (Eastern Atlantic (wintering))
1338 individuals, representing an average of 0.8% of the population (5 year peak mean 1991/92-1995/96)
Knot, *Calidris canutus* (North-eastern Canada/Greenland/Iceland/Northwestern Europe)
33848 individuals, representing an average of 9.8% of the population (5 year peak mean 1991/92-1995/96)
Redshank, *Tringa totanus* (Eastern Atlantic (wintering))
4452 individuals, representing an average of 2.5% of the population (5 year peak mean 1991/92-1995/96)
Shelduck, *Tadorna tadorna* (North-western Europe)
4083 individuals, representing an average of 1.4% of the population (5 year peak mean 1991/92-1995/96)

Species occurring at levels of international importance (as identified post-designation):
On passage the area regularly supports:
Ringed Plover, *Charadrius hiaticula* (Europe/Northern Africa (wintering))
>1500 individuals, representing an average of 3.2% of the population (5 year peak mean, 1984/5-1988/9)

13. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation)**:**

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.
a) biogeographic region: Atlantic

b) biogeographic regionalisation scheme (include reference citation):
Council Directive 92/43/EEC

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Ramsar Information Sheet: 7UK077 Page 4 of 9 **Humber Flats, Marshes and Coast (Phase 1)**

14. Physical features of the site:
Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.
Soil & geology alluvium, clay, clay, gravel, limestone, limestone/chalk, mud, mud, neutral, sand, sand, sandstone, sandstone/mudstone, sedimentary, shingle, shingle Geomorphology and landscape cliffs, coastal, estuary, floodplain, intertidal sediments (including sandflat/mudflat), islands, lowland, shingle bar
Nutrient status eutrophic
pH circumneutral
Salinity brackish / mixosaline, fresh, saline / euhaline
Soil mainly mineral
Water permanence usually permanent
Summary of main climatic features No information available.

15. Physical features of the catchment area:
Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).
No information available

16. Hydrological values:
Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.
Shoreline stabilisation and dissipation of erosive forces

17. Wetland types
Marine/coastal wetland
Code Name % Area
E Sand / shingle shores (including dune systems) 11.3
F Estuarine waters 1.9
G Tidal flats 61
H Salt marshes 24.6
Tp Freshwater marshes / pools: permanent 1.2

18. General ecological features:
Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

Much of the intertidal area of the Humber Estuary consists of mudflats with fringing saltmarsh. There are smaller areas of intertidal sand flats, sand dunes and shingle. The saltmarsh is both eroding and accreting; cord grass *Spartina anglica* is a major colonising species. In areas of reduced salinity such as the Upper Humber there are extensive areas of common reed *Phragmites australis* with some sea club-rush *Bolboschoenus maritimus*. Mid-level saltmarsh tends to be much more floristically diverse, and in the higher level marsh with its dendritic network of drainage channels, salt pans and borrow pits grasses dominate with thrift *Armeria maritima* where the marsh is grazed by cattle and sheep. Extensive areas of eel grass *Zostera marina and Z. nolti* grow at Spurn Bight. Behind the sandflats of the Cleethorpes coast the mature sand-dune vegetation contains some locally and nationally rare species including chestnut flat sedge *Blysmus rufus*, bulbous meadow grass *Poa bulbosa* and dense silky-bent *Apera interrupta*. The sand dunes, which cap the shingle spit that forms Spurn Peninsula are dominated by marram grass *Ammophila arenaria* and patches of dense sea buckthorn *Hippophae rhamnoides*.

19. Noteworthy flora:
Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*
None.

20. Noteworthy fauna:
Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds
Species currently occurring at levels of national importance:
Over winter the area regularly supports:
Goldeneye, *Bucephala clangula* (North-western/Central Europe)
272 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1991/92-1995/96)
Hen Harrier, *Circus cyaneus* 20 individuals, representing an average of 2.7% of the GB population (5 year peak mean 1984/5-1988/9)
Lapwing, *Vanellus vanellus* (Europe (breeding))
30403 individuals, representing an average of 2% of the GB population (5 year peak mean 1991/92-1995/96)
Oystercatcher, *Haematopus ostralegus* (Europe & Northern/Western Africa)
5149 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1991/92-1995/96)
Pochard, *Aythya ferina* (North-western/North-eastern Europe)
1009 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1991/92-1995/96)
Ruff, *Philomachus pugnax* (Western Africa (wintering))
14 individuals, representing an average of 2% of the GB population (5 year peak mean 1991/92-1995/96)
Sanderling, *Calidris alba* (Eastern Atlantic/Western & Southern Africa (wintering))
546 individuals, representing an average of 2.4% of the GB population (5 year peak mean 1991/92-1995/96)

Spotted Redshank, *Tringa erythropus* (Europe/Western Africa)
3 individuals, representing an average of 2.5% of the GB population (5 year peak mean 1991/92-1995/96)
Teal, *Anas crecca* (North-western Europe)
1362 individuals, representing an average of 1% of the GB population (5 year peak mean 1991/92-1995/96)
Wigeon, *Anas Penelope* (Western Siberia/North-western/North-eastern Europe)
4941 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1991/92-1995/96)

Mammals.
Halichoerus grypus.

21. Social and cultural values:
Aesthetic
Archaeological/historical site
Conservation education
Current scientific research
Fisheries production
Livestock grazing
Non-consumptive recreation
Sport fishing
Sport hunting
Tourism
Traditional cultural
Transportation/navigation

22. Land tenure/ownership:
Ownership category On-site Off-site
Non-governmental organisation + +
Local authority, municipality etc. +
National/Crown estate +
Private + +
Public/communal +

23. Current land (including water) use:
Activity On-site Off-site Scale
Nature conservation + + Large-scale
Tourism + + Large-scale
Recreation + + Large-scale
Research + + Small-scale
Fishing: (unspecified) + + Large-scale
Fishing: commercial + + Large-scale
Fishing: recreational/sport + + Large-scale
Gathering of shellfish + + Small-scale
Bait collection + + Small-scale
Permanent arable agriculture + Large-scale
Grazing (unspecified) + + Large-scale
Hunting: recreational/sport + + Large-scale
Industrial water supply + + Large-scale
Industry + + Large-scale
Sewage treatment/disposal + + Large-scale
Harbour/port + + Large-scale
Flood control + + Large-scale
Mineral exploration + + Small-scale
Oil/gas exploration + + Small-scale

Transport route + + Large-scale
Urban development + Large-scale
Non-urbanised settlements + Small-scale

24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:
Activity On-site Off-site Scale
No factors reported

25. Conservation measures taken:
Conservation measure On-site Off-site
SSSI/ASSI + +
SPA + +
Land owned by a NGO for nature conservation + +
Management agreement + +
Site management statement/plan implemented +

26. Conservation measures proposed but not yet implemented:

27. Current scientific research and facilities:
Fauna.
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
SMP Birds of the Estuaries counts.

Environment.
Institute of Estuarine & Coastal Studies, Hull: various
Humber Observatory: coastal processes.
Industrial Concerns: monitoring eg BP, Tioxide.
EA monitoring: various
Shoreline management plans. - Environment Agency
Geomorphological studies.

28. Current conservation education:
There is an education project run by the Humber Wildfowl Refuge Committee. There is also the Cleethorpes Discovery Centre and Spurn Bird Observatory on the site.

29. Current recreation and tourism:
Activities, Facilities provided and Seasonality.
Sailing: marinas at Brough, Winteringham, Hull, Grimsby and South Ferriby.
Bathing etc: Cleethorpes (some 6m visitors/yr).
Walking: throughout, beach fishing, match sea-fishing.
Tourist amusement activities: Cleethorpes.
Bird watching: throughout but particularly at Blacktoft Sands RSPB reserve.

30. Jurisdiction:
Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

31. Management authority:
Designations Manager, English Nature, Site Designations & Monitoring Unit, SST, Northminster House, Northminster Road, Peterborough, PE1 1UA

32. Bibliographical references:

Site-relevant references

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Annex 5: Phase 1 target notes

Map 1

Target note number	Description
1	Wide drainage ditch with emergent vegetation – good water vole potential. Needs surveying from water
2	2 Shelduck, 7 Curlew
3	Grey heron feeding in ditch
4	Kestrel seen, showing hovering hunting behaviour
5	Saltmarsh mosaic with lagoons
6	Possible badger sett and snuffle holes, may be occupied by Fox at present time

Map 2 – no target notes present

Map 3

Target note number	Description
1	Patches of impeded drainage, foxtails and Deschampsia cespitosa (Tufted hair-grass) present. 3 Curlew observed
2	Set aside at the moment. Curlew seen flying over (circling)
3	Arable set aside
4	Ash, Sycamore, oak in canopy – potential for birds and bats, some old and dead boughs. Hazel, Hawthorn, elm in sub canopy. Lots of dead wood/brash, some standing. Tall herb understory - Cow parsley, ivy and Hairy brome. Large mammal tracks, deer hoof print
5	Very large tree, standing dead wood – bat potential, also bracket fungi present
6	Large Ash tree with many cracks/crevices and rotting away from base – bat and invertebrate potential. Photo
7	Lapwing flew up from set aside field
8	Ditch is not deep or flowing - does not require water vole survey
9	Water has algal scum (brown foam), many holes in bank. Photo. Also photo to north from track bridge
10	Several Red-legged partridges flying up from wheat
11	Ridge and furrow

Map 4

Target note number	Description
1	Large number of Skylarks present many showing singing display flights

Map 5

Target note number	Description
1	Ridge and furrow. Scattered hawthorn bushes – possibly old boundary lines
2	5 to 15m thick dense scrub margin A21 over dry ditch and up bank (earth works) with possible large mammal tracks. Potential for breeding birds
3	2 houses with ridge tiles, missing tile over 50 years old – moderate potential for bats
4	Garden with possible old orchard trees
5	Railway cutting with tall scrub. Some parts impenetrable possible badger setts, squirrel present
6	Stink horns (≈15) on disused rail line other fungi present (photos)
7	Possible old sett – no badger activity. Possible rabbit use
8	Badger sett, hair found, 4 holes, activity in vicinity including latrine and snuffle holes
9	Second sett, active, 3 entrances, hair found
10	Caltha palustris (Marsh marigold) in ditch
11	Pond shaded by Salix alba, pile of rumble – potential for amphibians
12	Yellowhammer in hedge
13	Ridge and furrow. Deschampsia cespitosa (Tufted hair-grass) in furrows
14	Mammal track over ditch – large deer hoof print

Map 6

Target note number	Description
1	Grey heron flew up from wet ditch next to sea wall path
2	Ponds overgrown with reed with scattered scrub, some patches of more continuous scrub – water vole potential
3	Water vole potential, step banked ditch, well vegetated with some aquatic macrophytes
4	Red-legged partridges flew up from tall ruderal edge next to path
5	Set aside arable field containing birds – lapwing, curlew, skylark, linnet and reed bunting
6	Brown hare observed in field
7	Disused railway line, dense scrub, breeding bird potential, roosting and feeding potential for bats, potential for badgers with long banks for sett building, impenetrable scrub

Map 7 - no target notes present

Map 8

Target note number	Description
1	Line of broadleaved trees
2	Good reptile potential. Piles of debris, refuges in the form of dumps. Scrub, rough grassland and basking areas
3	Very dense woodland, potential for breeding birds - impenetrable
4	Pond, emergent vegetation. Typha etc. potential for newts, hedge on fence round pond - cover
5	Deep ridge and furrow - very wet in furrows
6	Marshy grassland around ephemeral pond
7	Ridge and furrow field
8	Derelict buildings. Potential for bats and owls but no access due to dense scrub
9	Dense broadleaved woodland with lots of fallen dead wood - good for inverts
10	Marshy grassland/inundation area. Field generally wet. Ridge and furrow
11	Line of trees
12	Ridge and furrow
13	Potential for Great crested newt in pond

Map 9

Target note number	Description
1	Badger latrine, fresh
2	Fairly quick flowing stream with fairly high sediment load, some aquatic vegetation
3	Abandoned/set aside - ground nesting bird potential
4	Water vole potential - none seen
5	Low potential for reptiles in recent (less than 5 yrs) spoil
6	Lapwing observed
7	Emergent common reed in ditch
8	Open water - no vegetation in water - sparse bankside vegetation ≈10% cover
9	Yellowhammer on fence then flew south
10	Car park/storage area
11	Site being actively developed for car storage
12	Modern building with low potential for bats and birds, barge board tight fitting roof tiles
13	Pile of dead wood left after mature tree (2m circumference) felled - good invert habitat
14	Open water with reedbed - mute swan, nesting in reed, pair of shelduck in water. Reed bunting also present
15	Disused house, dilapidated, barge boards, ridge tiles, flashing,

	missing roof tiles, moderate potential for bats, swallows entering via missing doors and windows
16	Tidal section of stream
17	Newly planted hedge along removed boundary
18	Copse with no ground flora present, song thrush anvil with many snail shells present

Map 10

Target note number	Description
1	Abandoned/set aside arable with skylark and reed bunting, potential for ground nesting birds
2	Sea club-rush, sea arrowgrass, common reed, sea plantain, red fescue
3	Sea couch dominant
4	From sea wall to sea H84 coast grassland – common reed, sea couch H5 strandline vegetation – Rumex sp. H3 H26 sea aster H11
5	Common reed with scattered scrub. Good bird habitat eg warblers and bunting (not seen)
6	Deep ditch behind sea wall with abundant common reed, 5-15m wide, some scattered scrub

Map 11

Target note number	Description
1	Scattered scrub. Breeding bird potential. Variable height, dense patches
2	Mammal track through hedges straight across bridleway Muntjac hoof prints in ditches
3	Mammal path across bridleway, tuft of hair on hedge over path ≈40cm off ground – Muntjac?
4	Mammal path across bridleway. Muntjac hoof print in mud in middle of track
5	Mammal path from east hedge to centre of track. Possible badger hair on vegetation
6	Ash in hedge with holes in trunk and branches potential for bats and owls
7	Ivy clad Ash tree in hedge potential for roosting bats
8	Another ivy clad Ash tree in hedge potential for roosting bats
9	Another ivy clad Ash tree in hedge potential for roosting bats
10	Derelict shed – potential bat roost/barn owl
11	Derelict building, covered in scrub – potential for bats/owls
12	Wood with breeding bird potential – nest observed
13	Mammal track through ditch

14	Derelict building. Potential for bats and owls
15	Large ash tree. Broken boughs and crevices
16	Rookery
17	Church yard. Potentially good for reptiles
18	Large tree clad in ivy potential for roosting bats
19	Pair of bullfinches in hedge
20	Large dead tree trunk – standing dead wood and crevices
21	Plop heard – distinctive of water vole entering water
22	A species rich hedge containing six woody species

Map 12

Target note number	Description
1	Spurge laurel – ancient woodland indicator. Photo taken. Under hedge with trees on road verge TA 1518 1747
2	Common spotted orchids growing on verge
3	J36 water treatment containers surrounded by J12. Square building in the middle with flat roof covered in felt. Barge boards around edge some (low) potential for bats

Map 13

Target note number	Description
1	Scrub – good bird and reptile habitat (pic2 + poss3) – example of hedge (pic 4) ditch
2	Red-legged partridge x2
3	Ditch with water vole potential
4	Small mature copse, elms. Some piles of debris – good for reptiles opens on to dense scrub and tall ruderals
5	Shelduck x6 and skylark present
6	Large ditch with water and mallard
7	(pic 5) Hedge with stagnant ditch and c. 5m wide, good for breeding birds. Hawthorn, blackthorn, field rose and bramble
8	Ditch with submerged aquatic plant (sample taken)
9	Hogweed
10	Buildings with no bat potential
11	Copse with potential for breeding birds and mammals. Dominated by ash. Also oak, sycamore, hawthorn, maple, elder, blackthorn, elm. Ground flora of fern and cleavers
12	Water vole seen going into deep ditch , wet flowing water, emergent vegetation including Glyceria
13	Lapwing
14	Field water table at surface and several ephemeral ponds supporting abundant birdlife including: Shelduck, lapwing, mallards, skylark. Tall ruderals including willowherb, marsh foxtail. Nesting site present.
15	Standing water ditch with tadpoles

16	Old Killingholme lighthouse, Bat potential?

Map 14

Target note number	Description
1	4 curlews in tall ruderal vegetation

Map 15

Target note number	Description
1	Breeding bird potential, tall hedges and trees near woods, dense hawthorn
2	Possible reptile habitat along railway embankment - south facing areas
3	Breeding bird potential in dense wide hawthorn hedge
4	Water vole potential although no evidence seen. Large input of silt to stream
5	Footpath with hedges to either side and grass/tall herbs understory/path. Potential for breeding birds, foraging bats and inverts. Photo taken
6	Banks across grassland (south facing) may be more species rich. Bare patches may have potential for burrowing inverts and reptiles
7	Large tree (not veteran) Ash, with cracks, dead boughs and hollows (photo) Potential for bats.
8	Old gnarled scattered trees with bat potential
9	Spurge laurel in hedge both sides of road. TA1504 1743. Large mammal tracks straight across road and through hedges

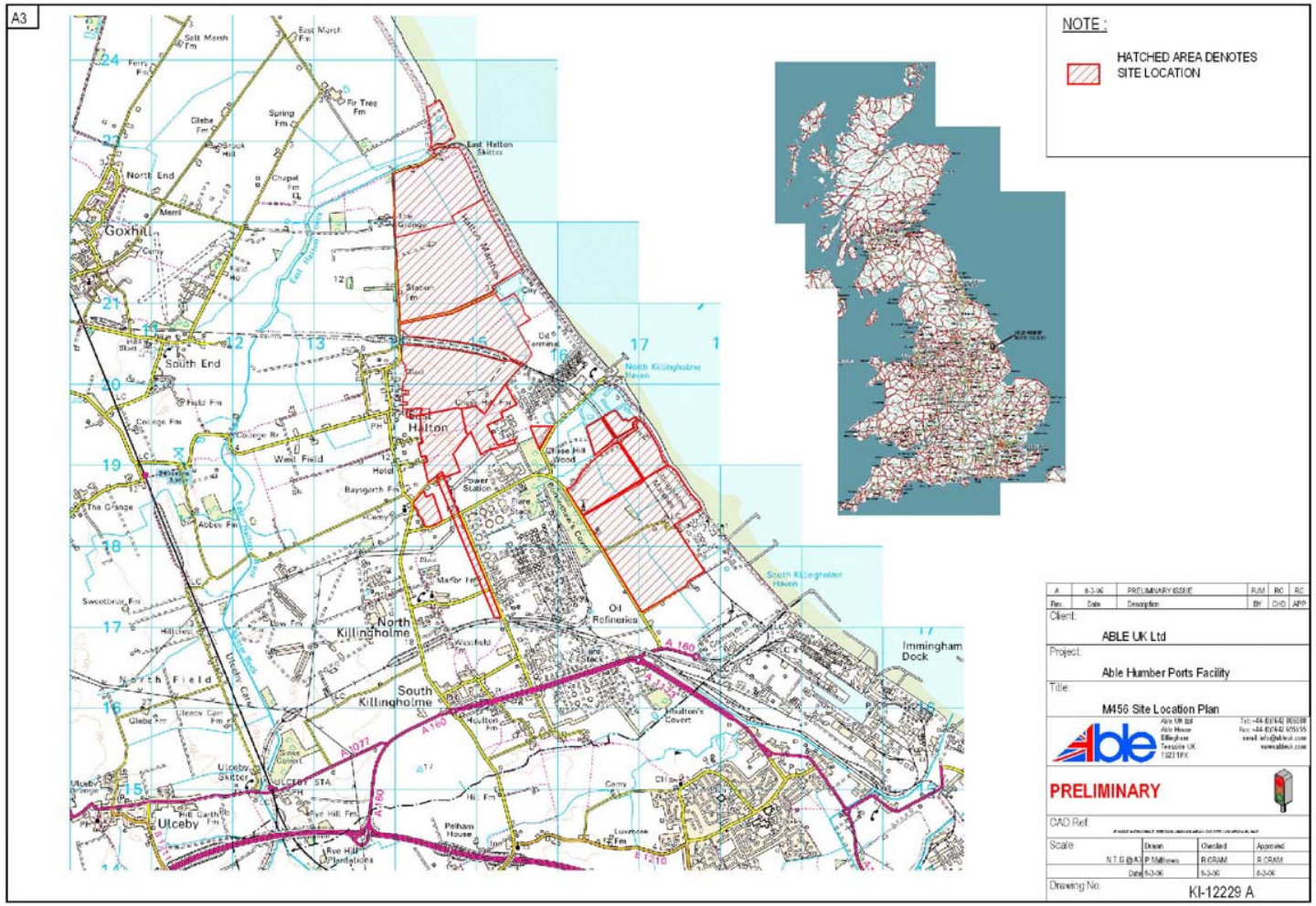
Map 16

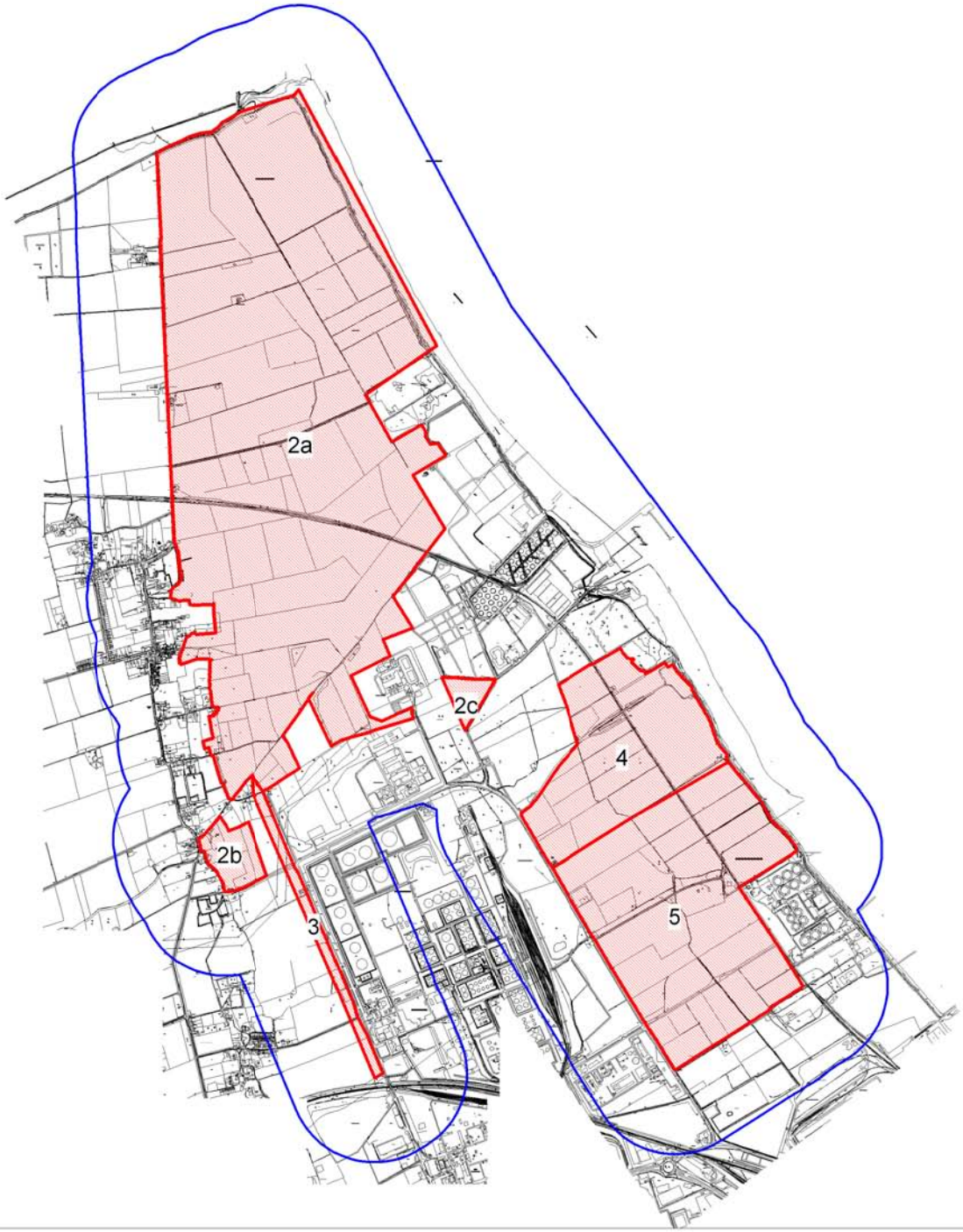
Target note number	Description
1	Pools - areas of open water. Rosper road pools nature reserve, with emergent vegetation and hawthorn scrub margins and island
2	Large wide ditch, flowing water c. 2.5m wide, steep sloping banks with several burrows, potential for water voles
3	Common frogs and toads recorded under plastic sheeting
4	2 bridges about 20m apart. Brick construction with crevices and therefore bat potential for first. Second corrugated iron less potential
5	Scrub patch rough grassland and marshy area good reptile potential
6	Numerous piles of debris - wood and rubble - good reptile potential in scrubby areas
7	Marshy grassland. Improved. Meadow foxtail, sweet vernal grass, Yorkshire fog, meadow buttercup, false oat grass, probably cut for silage

11. Figures

List of figures

Figure 2.1: Site location (courtesy of Able UK)





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Project:

Killingholme, Humberside

Title:

Individual compartments included as part of the application site

Map:

Figure 2.2

Legend:

Numbered compartments

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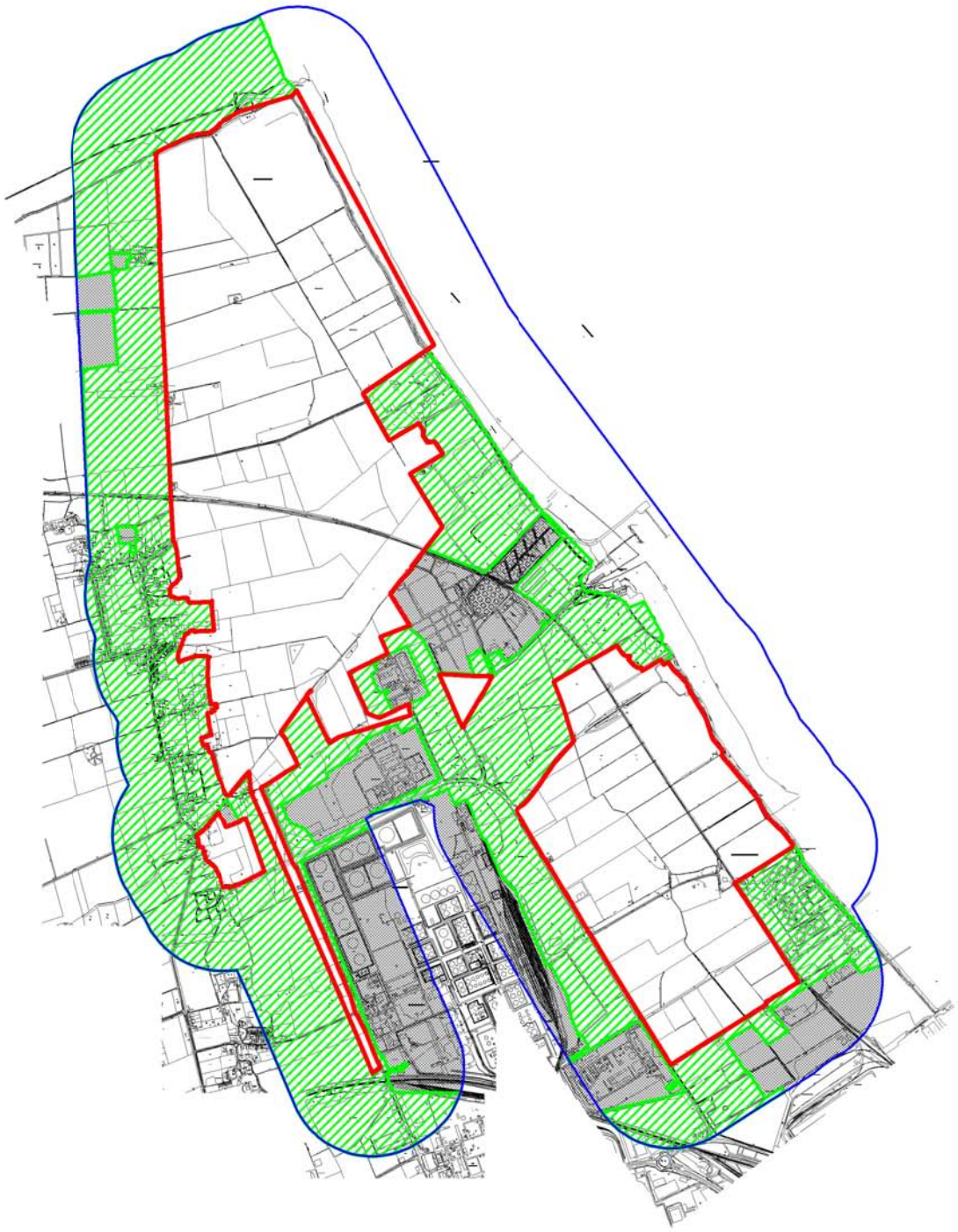
Areas of the application site surveyed/assessed by Entec (2003a) and RPS (2005a-c)

Map:

Figure 3.1

Previous survey areas

- Entec 2003
- RPS 2005a
- RPS 2005a and 2005b buffers
- RPS 2005b
- RPS 2005c



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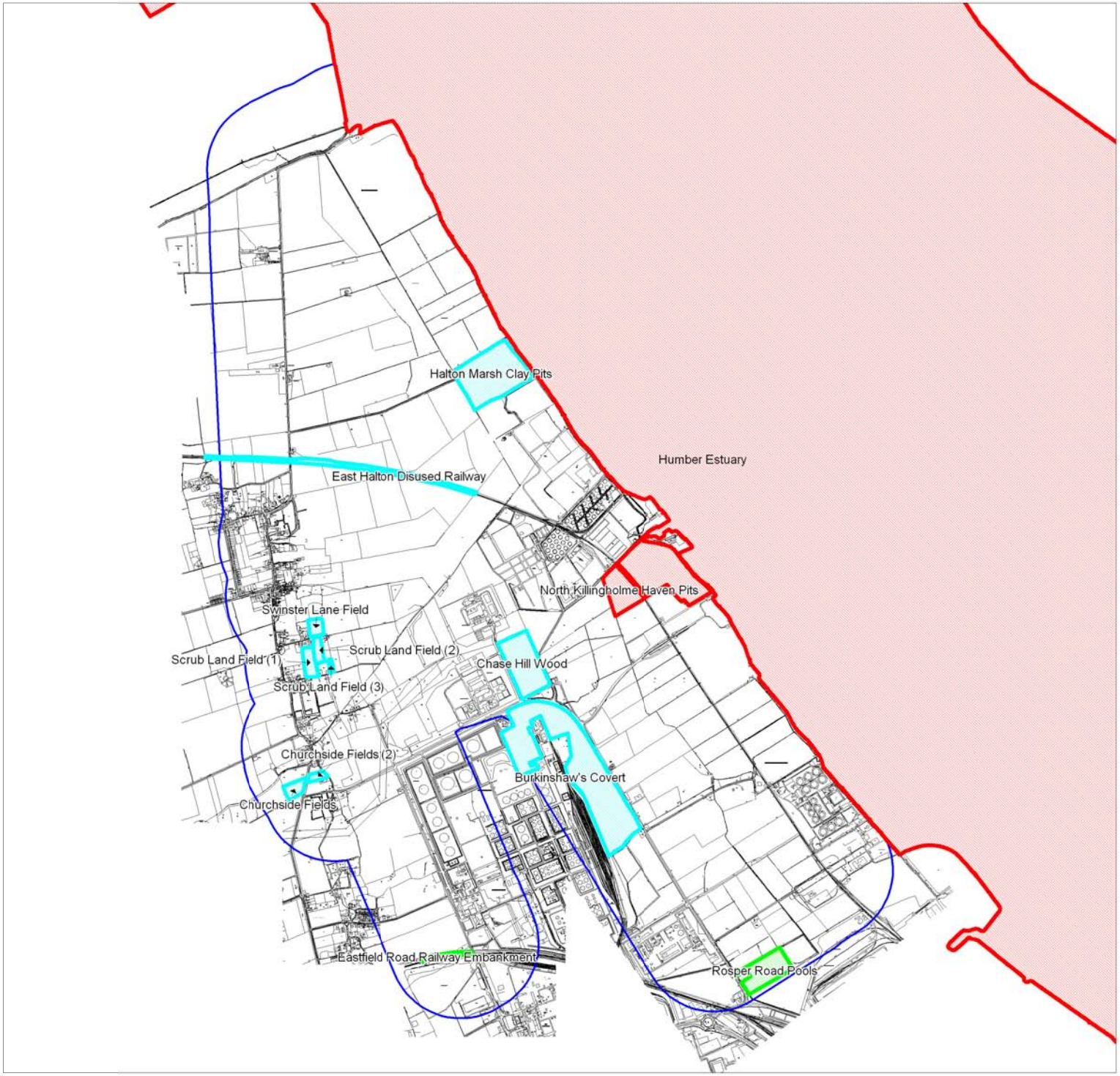
Study area, 500m buffer and areas of the site where field survey was not possible

Map:

Figure 3.2

Areas of survey

- Application site - areas with complete access
- 500m buffer
- Access via public rights of way only
- No access



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SSSIs and local wildlife sites in and around the application site

Map:

Figure 4.1

SSSIs and local wildlife sites

- LWT Reserve
- SSSI
- Wildlife Site

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Phase 1 survey and target note locations with codes

Map:

Figure 5.1a

Phase 1 linear features

- Standing water
- Running water
- Species poor intact hedge
- Defunct hedge
- Species poor defunct hedge
- Species rich hedge with trees
- Species poor hedge with trees
- Fence
- Dry ditch
- Boundary removed
- Sea wall

Phase 1 habitats

- Broadleaved woodland
- Broadleaved plantation
- Mixed plantation
- Dense scrub
- Semi improved neutral grassland
- Improved grassland (I)
- Marsh/marshy grassland
- Poor semi-improved grassland (SI)
- Tall ruderal
- Swamp
- Standing water
- Spoil
- Arable (A)
- Amenity grassland
- Ephemeral/short perennial
- Buildings, car park and hard standing
- Bare ground
- No access

- Broadleaved tree
- Scattered scrub

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Title:

Phase 1 survey and target note locations with codes

Map:

Figure 5.1b

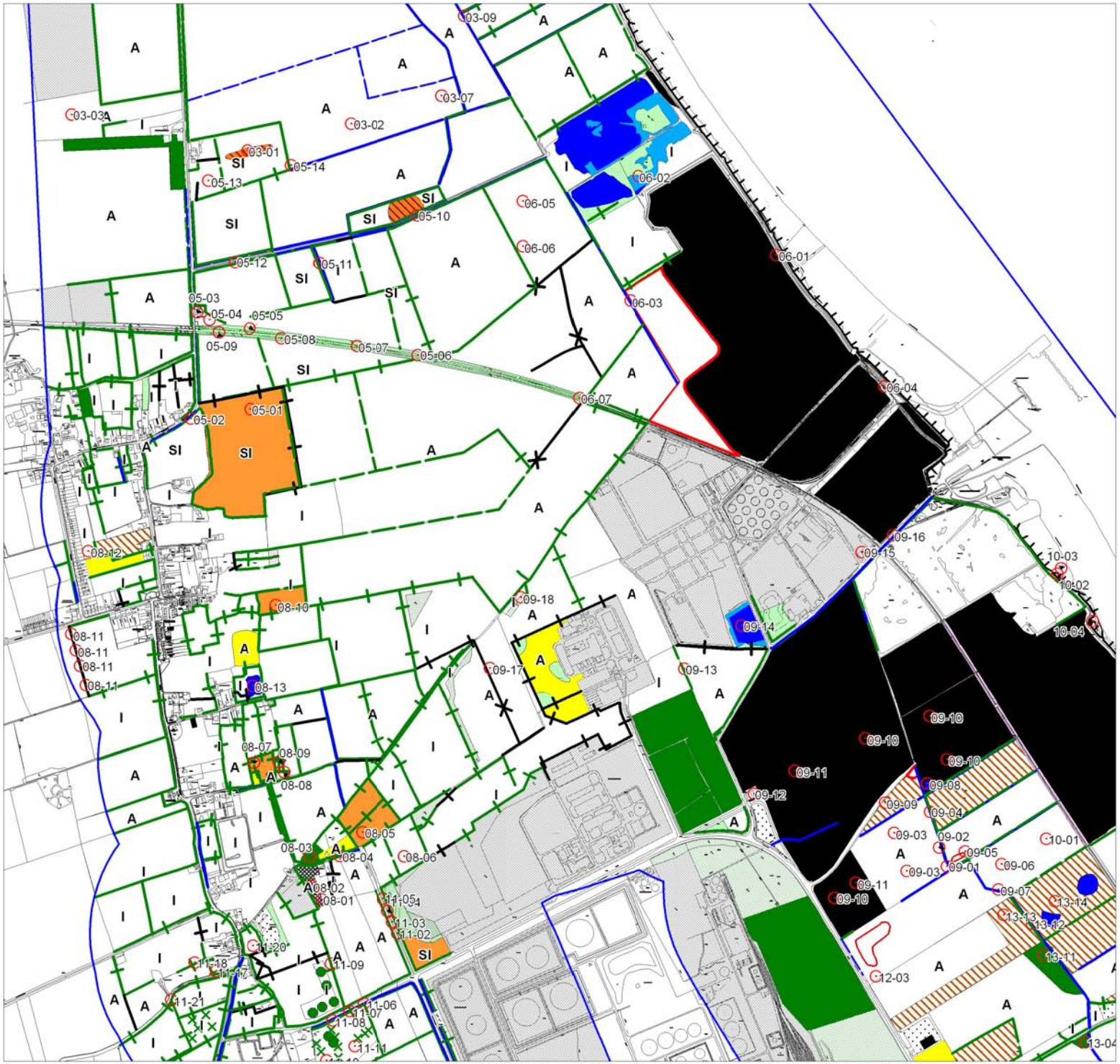
Phase 1 linear features

- Standing water
- Running water
- Species poor intact hedge
- Defunct hedge
- Species poor defunct hedge
- Species rich hedge with trees
- Species poor hedge with trees
- Fence
- Dry ditch
- Boundary removed
- Sea wall

Phase 1 habitats

- Broadleaved woodland
- Broadleaved plantation
- Mixed plantation
- Dense scrub
- Semi improved neutral grassland
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Tall ruderal
- Swamp
- Standing water
- Spoil
- Arable
- Amenity grassland
- Ephemeral/short perennial
- Buildings, car park and hard standing
- Bare ground
- No access

- Broadleaved tree
- Scattered scrub



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Title:

Phase 1 survey and target note locations with codes

Map:

Figure 5.1c

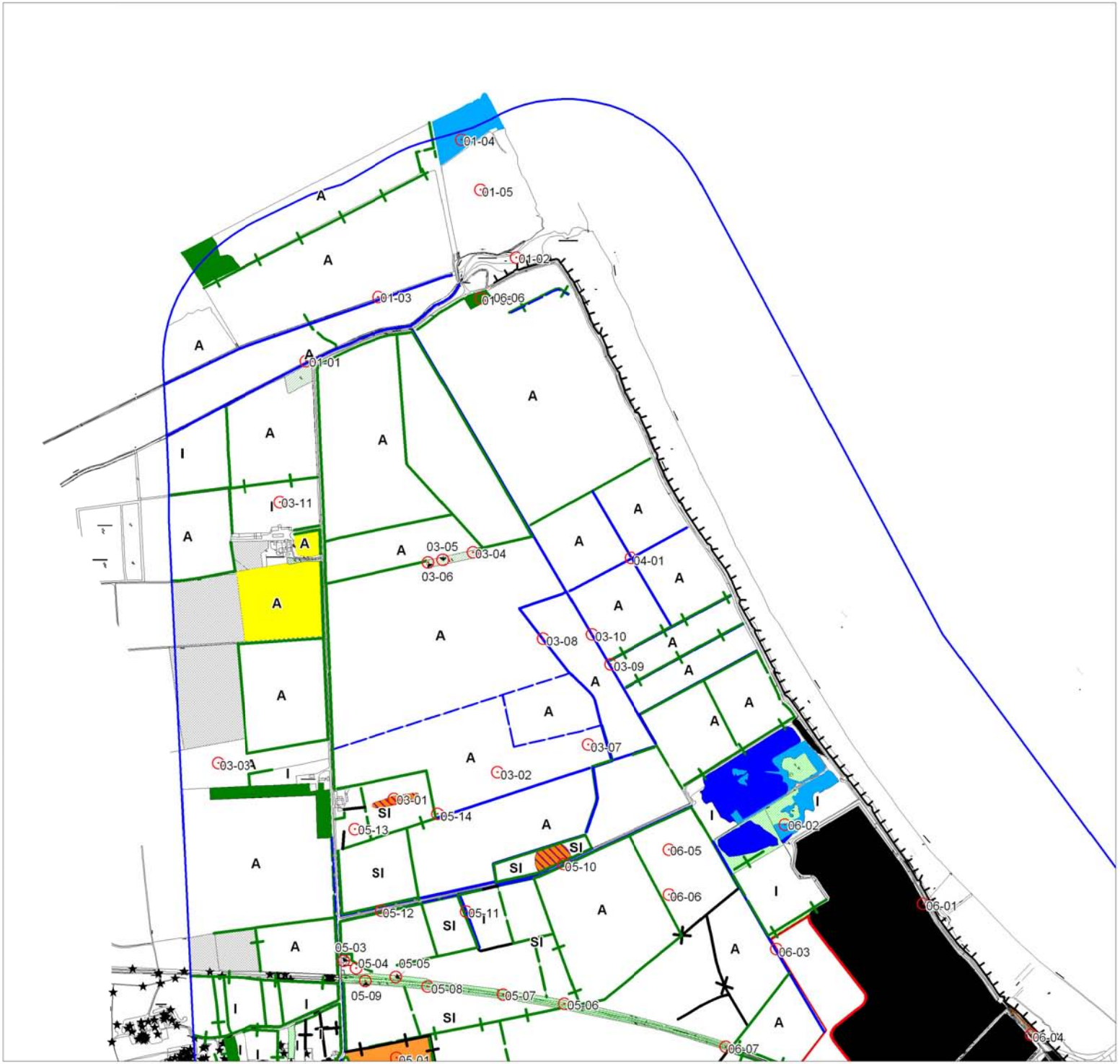
Phase 1 linear features

- Standing water
- Running water
- Species poor intact hedge
- Defunct hedge
- Species poor defunct hedge
- Species rich hedge with trees
- Species poor hedge with trees
- Fence
- Dry ditch
- Boundary removed
- Sea wall

Phase 1 habitats

- Broadleaved woodland
- Broadleaved plantation
- Mixed plantation
- Dense scrub
- Semi improved neutral grassland
- Improved grassland (I)
- Marsh/marshy grassland
- Poor semi-improved grassland (SI)
- Tall ruderal
- Swamp
- Standing water
- Spoil
- Arable (A)
- Amenity grassland
- Ephemeral/short perennial
- Buildings, car park and hard standing
- Bare ground
- No access

- Broadleaved tree
- Scattered scrub



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Phase 1 survey and target note locations with codes

Map:

Figure 5.1d

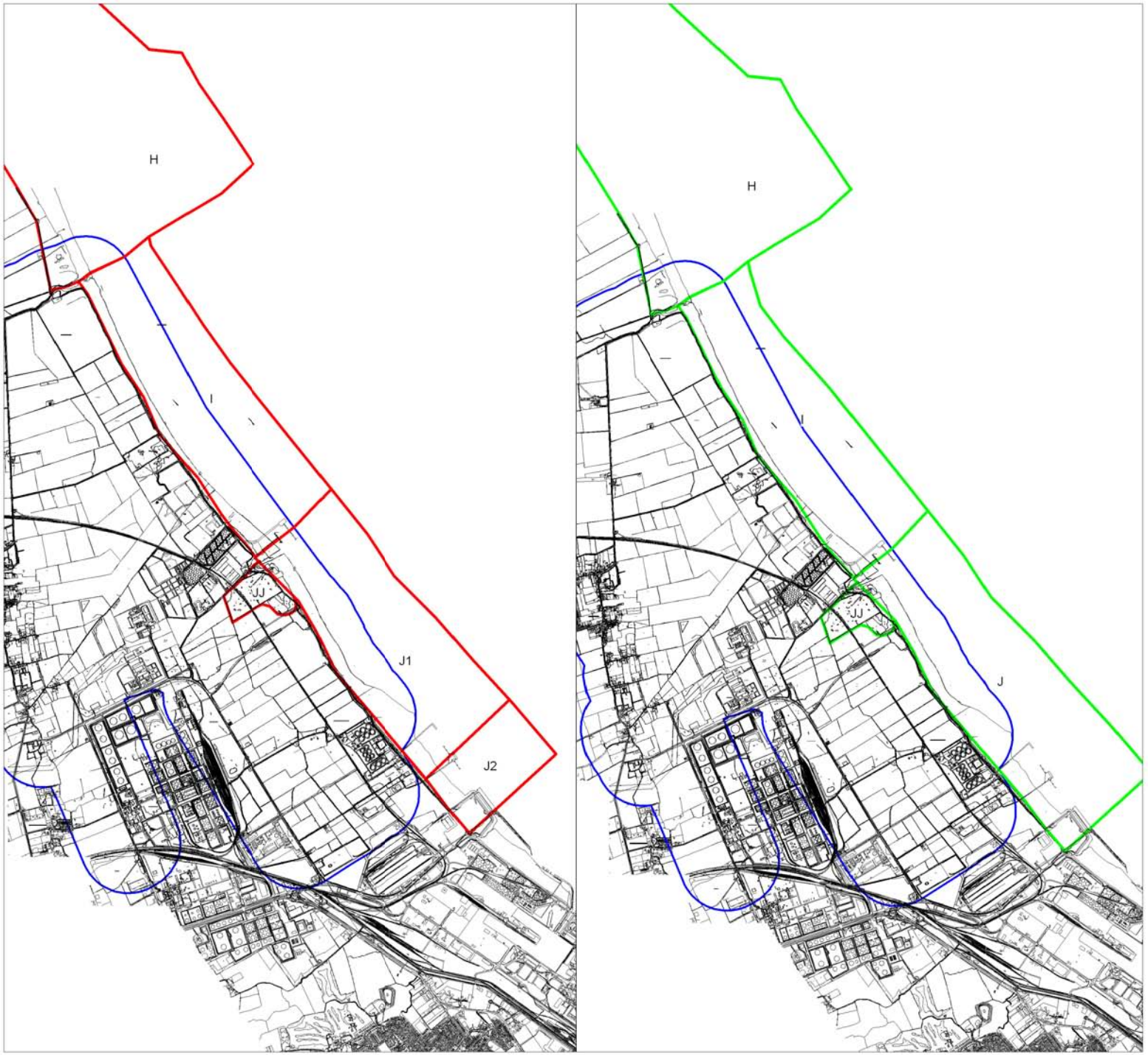
Phase 1 linear features

- Standing water
- Running water
- Species poor intact hedge
- Defunct hedge
- Species poor defunct hedge
- Species rich hedge with trees
- Species poor hedge with trees
- Fence
- Dry ditch
- Boundary removed
- Sea wall

Phase 1 habitats

- Broadleaved woodland
- Broadleaved plantation
- Mixed plantation
- Dense scrub
- Semi improved neutral grassland
- Improved grassland (I)
- Marsh/marshy grassland
- Poor semi-improved grassland (SI)
- Tall ruderal
- Swamp
- Standing water
- Spoil
- Arable (A)
- Amenity grassland
- Ephemeral/short perennial
- Buildings
- Bare ground
- No access

- Broadleaved tree
- Scattered scrub



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Sectors used for low-tide counts of waterfowl on the Humber Estuary during 1998-99 and 2003-04

Map:

Figure 7.1

Low tide count sectors by year

1998-1999 sectors

2003-2004 sectors

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Sectors used for high-tide counts of waterfowl on the Humber Estuary during 1999/2000 to 2003/2004

Map:

Figure 7.2

High tide coun

Sectors

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Title:

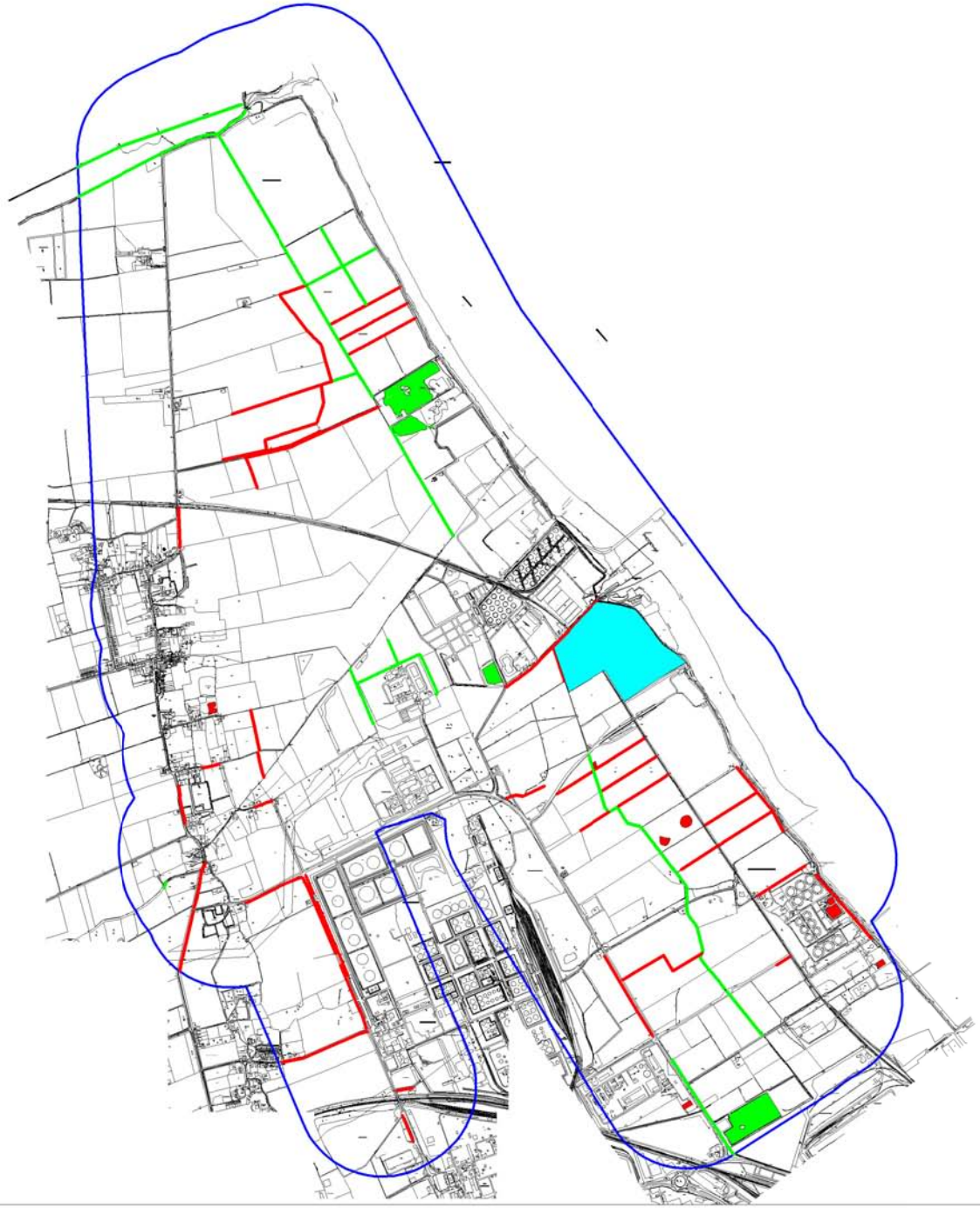
Phase 1 survey results - Badger

Map:

Figure 7.3

Badger evidence

- Areas known to support badgers
- Latrine
- Potential for badger
- Probable badger hair
- Sett considered not in use
- Sett in use



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Title:

Phase 1 survey results - Water vole

Map:

Figure 7.4

Areas for Water vole

- Area known to support water voles
- Little or no potential
- Medium to good potential

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Title:

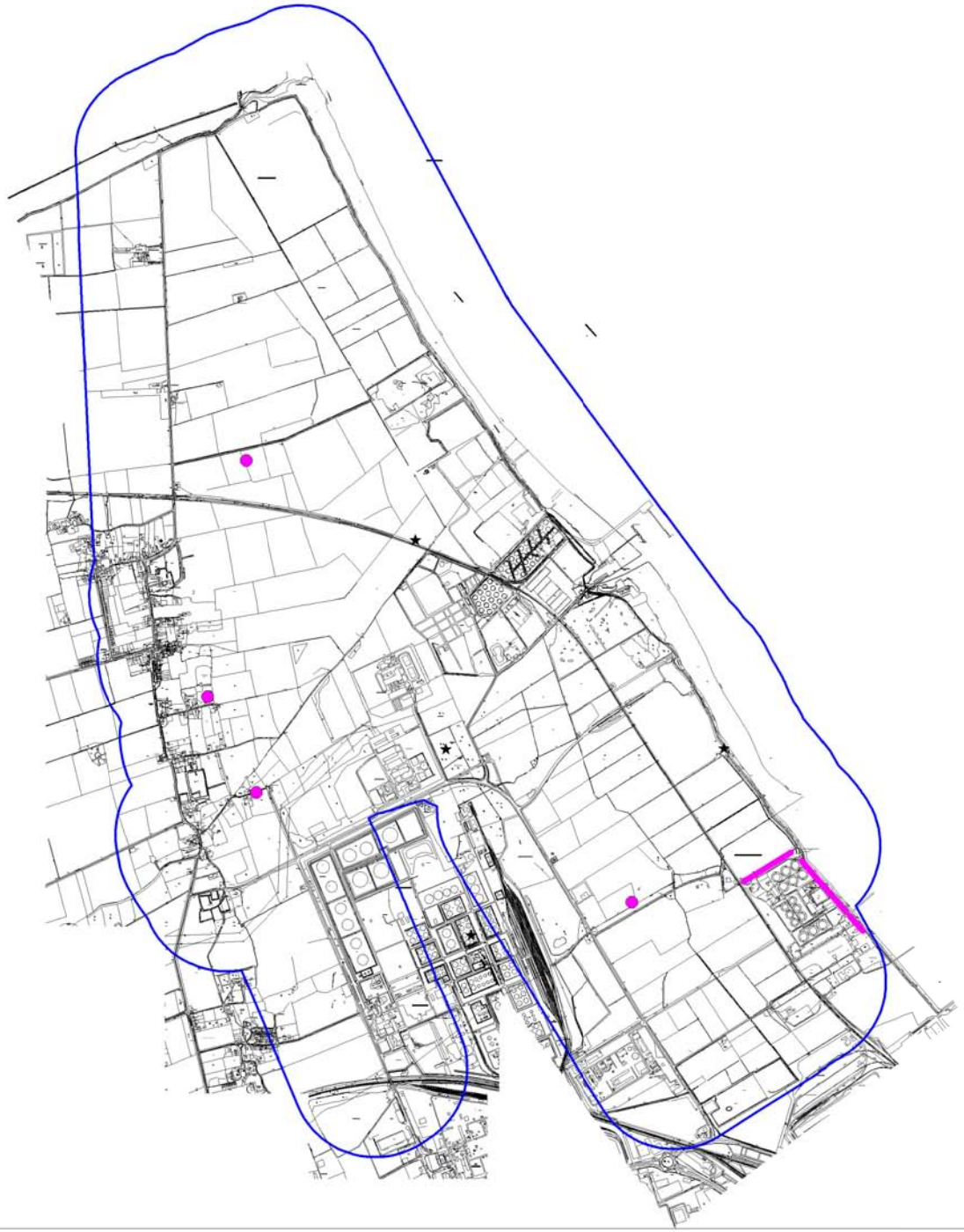
Phase 1 survey results - Bats

Map:

Figure 7.5

Legend:

- Low roost potential
- Moderate roost potential
- Potentially important areas for bats



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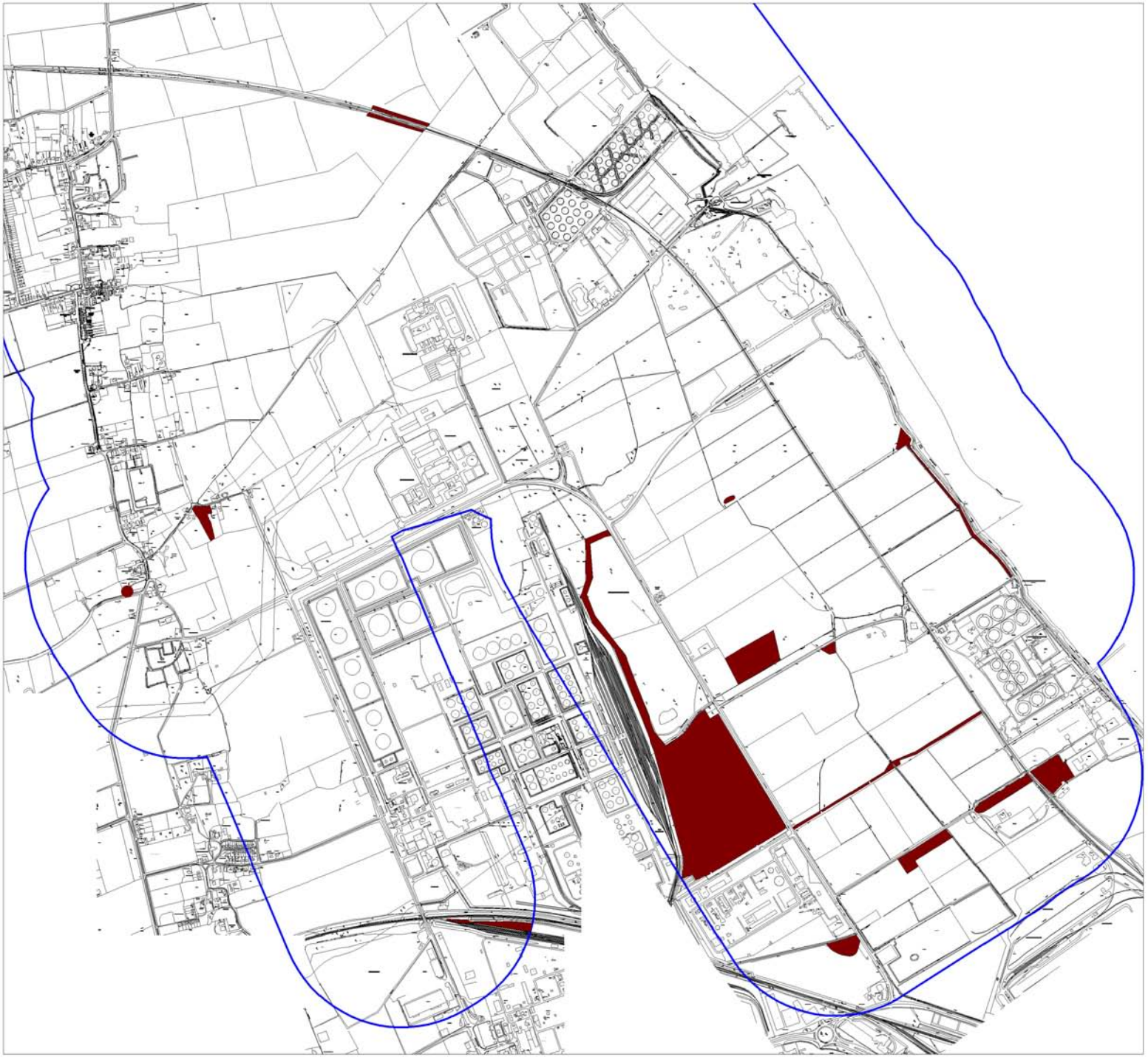
Title:

Phase 1 survey results - Great crested newt

Map:

Figure 7.6

● Areas judged to have medium to good potential to support Great crested newts



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Title:

Phase 1 survey results - Reptiles

Map:

Figure 7.7

Legend:

Areas judged to have medium to good potential to support reptiles