



CLEVE HILL SOLAR PARK

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EXTENDED PHASE 1 HABITAT SURVEY

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Cleve Farm - Extended Phase 1 Habitat Survey Report



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1 Summary

There are seven statutory designated sites for nature conservation within 2 km of the study area. Five of the sites are connected to the boundaries of the study area to the west, north and east. There are also seven non-statutory sites for nature conservation within 2km of the Site.

Cleve Farm (hereafter referred to as the Site) is dominated by large arable fields. Intersecting the fields is an extensive network of drainage ditches with common reed (*Phragmites australis*) dominant in many. Each ditch is associated with wide rough grassland margins along their length. Other habitats include a small reedbed in the south where a ditch widens out and areas of bare ground used for agricultural machines. A variety of other habitats occur adjacent to the Site boundary such as extensive reedbed along the northern boundary and houses, hedgerows, and lines of trees along the southern boundary. Much of the eastern boundary of the Site is adjoined by coastal grazing marsh comprising Swale Special Protection Area (SPA) and SSSI habitat.

The proximity of the Site to the internationally and nationally designated bird interest features of the Swale Estuary is illustrated by the extent of the bird records obtained from the desk study (Appendix A).

During the Phase 1 Habitat survey, no species for which the Swale SPA and Ramsar site is designated were recorded. The breeding species for which these designations exist would not be considered likely to be present on the Site due to the dominant habitat type. Wintering bird species would not be expected to be present at the time of the survey. Several species listed on the NERC Act s41 were noted during the Phase 1 Habitat survey including yellow wagtail (*Emberiza citrinella*), skylark (*Alauda arvensis*) and reed bunting (*Emberiza schoeniclus*).

Grass snake (*Natrix natrix*) and signs of water vole (*Arvicola amphibious*) were observed during the Phase 1 Habitat survey. The Site contains suitable habitat to potentially support:

- Breeding birds;
- Passage birds;
- Wintering birds;
- Bats (activity);
- Amphibians including great-crested newts;
- Reptiles;
- Water vole;
- Badgers; and
- Terrestrial and aquatic invertebrates

2 Introduction

AECOM was commissioned in July 2015 by Hive Energy Ltd to undertake an ecological desk study and Extended Phase 1 Habitat survey of the Site, in Graveney, Kent. The purpose of this was to identify any potential constraints or opportunities related to habitats and the presence of protected and/or otherwise notable species in relation to construction and/or operation of the Site.

In addition to the Phase 1 Habitat survey, AECOM was also commissioned by Hive to undertake a suite of species surveys across the site, between 2014 and 2015. Some species surveys, such as badger and wintering birds were undertaken prior to the Phase 1 survey and others, such as water vole, after the Phase 1. Individual results of the various species groups surveyed, are presented within species specific baseline reports.

It is understood that the Site is to be developed for sustainable solar energy. At the time of writing the detailed design regarding the scale and layout of the development has not been determined.

This report is structured as per the following:

- Section 3 of the following report outlines relevant protected species legislation.
- Section 4 details the survey methodology.
- Section 5 details the survey results.
- Section 6 contains a discussion of the findings including the potential for ecological enhancement and recommendations for any further survey work that may be required.

3 Species and Legislation

The purpose of the extended Phase 1 habitat survey was to identify habitats and species present at the Site and recorded any potential for the Site to support protected and/or otherwise notable species or species groups, usually via field signs. Some of these species are protected by legislation, details of which can be found in Appendix C.

4 Methodology

4.1 Ecological Desk Study

The location of statutory designated sites within a 2km radius of the centre of the study area was determined using the Defra Multi-Agency Geographic Information for the Countryside (MAGIC) website.

Existing data of non-statutory designated sites for nature conservation and protected and/or notable species located within 2km of the study area (5km for bats) were obtained from Kent & Medway Biological Records Centre (KMBRC). Species records held by KMBRC arise from a broad range of surveys, including species specific and formal surveys. Records of protected species from within the last 15 years were considered in the baseline.

4.2 Extended Phase 1 Habitat Survey

A survey of the Site was undertaken on the 3rd and 4th of August 2015 by experienced ecologists from AECOM. The aim of the survey was to identify the broad type, quality and extent of habitats present within the Site and to identify the potential for these habitats to support protected and/or otherwise notable species.

The survey was conducted according to the standard Phase 1 Habitat survey methodology (JNCC 2010) and in accordance with best practice; any evidence of protected and/or otherwise notable species were recorded (for further details please see individual protected species reports). The survey included a search for invasive species listed under Schedule 9 of the Wildlife and Countryside Act, such as Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*).

Target notes (TN) were made to provide supplementary information on species composition, features of interest, topography, location of habitats within the boundary of the Site and evidence of management. Notes were also taken of any evidence of the presence of protected or notable fauna. Botanical nomenclature follows Stace (2010).

4.3 Limitations

No limitations to the survey were identified.

5 Results

5.1 Statutory Designated Sites for Nature Conservation

There are eight statutory designated sites for nature conservation within 2 km of the Site, see Table 1 below and Figure 1. Five of those sites are directly adjacent to the boundaries of the Site to the west, north and east.

Table 1. Statutory Designated Sites within 2 km of the Site.

Site Name	Designation	Distance from site and orientation	Reason for Designation
The Swale	Ramsar	Borders Site to North, East and West	The Swale Ramsar site is a wetland of international importance comprising intertidal mudflats, shell-beaches, saltmarshes and extensive grazing marshes. It provides breeding and winter habitats for important assemblages of wetland bird species, particularly wildfowl and waders. It provides habitats for important assemblages of wintering waterfowl, and also supports notable breeding bird populations. The Ramsar regularly supports over 20,000 waterfowl with an average peak count of 57,600 birds which includes populations of seventeen species of migratory waterfowl of international and national importance, two of which are dark-bellied brent goose (counts over 2,000) and dunlin (counts over 13,000).
The Swale	Special Protection Area (SPA)	Borders Site to North, East and West	The Swale Special Protection Area is a wetland of international importance, comprising intertidal mudflats, shell-beaches, saltmarshes and extensive grazing marshes. It provides habitats for important assemblages of wintering waterfowl, and also supports notable breeding bird populations. The SPA regularly supports over 20,000 waterfowl with an average peak count of 57,600 birds which includes populations of seventeen species of migratory waterfowl of international and national importance. Two of which are dark-bellied brent goose (counts over 2,000) and dunlin (counts over 13,000). The marshes also support wintering and occasionally breeding short-eared owls.
The Swale	Site of Special Scientific Interest (SSSI)	Borders Site to North, East and West	The Swale includes the largest remaining areas of freshwater grazing marsh in Kent and is representative of the estuarine habitats found on the north Kent coast. The habitats comprise chiefly mudflats, saltmarsh, and freshwater grazing marsh, the latter being intersected by extensive dykes and fleets. The area is particularly notable for

Site Name	Designation	Distance from site and orientation	Reason for Designation
			the internationally important numbers of wintering and passage wildfowl and waders, and there are also important breeding populations of a number of bird species. Associated with the various constituent habitats of the site are outstanding assemblages of plants and invertebrates.
Outer Thames Estuary	SPA	Within 2 km North East of Site	The site is designated for red-throated divers and their associated habitat; which winter in the Outer Thames Estuary in number of European importance (6,466 individuals, 38% of the GB population, 1989 – 2006/07). Red-throated divers are associated with inshore waters, often occurring with sandy bays, firths and sea lochs, although open coastline is also frequently used. The bulk of red-throated diver distribution is in the east of England with 59% of the UK total estimate between Kent and North Yorkshire, with at least 44% of the UK total in the Greater Thames alone. Liverpool Bay is currently the only other marine area in the UK classified as an SPA for red-throated divers.
The Swale Estuary	Recommended Marine Conservation Zone (rMCZ)	Borders Site to North and West	The site is considered to be a highly biodiverse area, and is important as a spawning and nursery ground for various species. The main channel of the Swale Estuary is subtidal mud and subtidal mixed sediments, which have been identified for protection in the rMCZ to complement the intertidal broad-scale habitats protected by The Swale SSSI and SPA. Subtidal sands and gravels at The Street in Whitstable have also been identified for protection. The site also contains intertidal and subtidal Blue Mussel beds, native oysters, peat and clay exposures (specifically of London Clay), Rossworm (<i>Sabellaria spinulosa</i>) reef and good examples of sheltered muddy gravels.
The Swale	National Nature Reserve (NNR)	1.4 km North	The Swale National Nature Reserve is a grazing marsh that supports significant populations of waterfowl. The main habitat is grazing marsh, coastal areas managed by Elmley Conservation Trust (ECT).
South Bank of The Swale	Local Nature Reserve (LNR)	Borders Site to the North	Thousands of wildfowl and waders, including skylarks, reed warblers, breeding redshanks and sometimes bearded tits and marsh harriers.
Oare Marshes	LNR	0.7 km to the West	Adjacent to the internationally important Swale estuary. Migratory, overwintering and breeding wetland birds. Avocet, redshank,

Site Name	Designation	Distance from site and orientation	Reason for Designation
			<p>snipe, lapwing, water rail, bearded reedling, common tern and garganey all breed here.</p> <p>Migrating species include black-tailed godwit, ruff, little stint, curlew, greenshank, sandpiper and whimbrel. Overwintering species include brent goose, dunlin, wigeon, merlin, hen harrier, short-eared owl, bittern and twite. The saltmarsh supports a unique set of plants tolerant of the salty conditions including golden samphire, sea lavender, sea purslane, sea clover and thrift. Freshwater dykes contain frogbit, reedmace and water plantain.</p> <p>Common seals are often seen in the Swale Estuary.</p>

5.2 Non-Statutory Designated Sites for Nature Conservation

There are seven non-statutory designated sites for nature conservation within 2 km of the study area. See Table 2 below and Figure 1.

Table 2. Non-Statutory Designated Sites within 2 km of the Site.

Site Name	Designation	Distance from Site and orientation
South Swale	Kent Wildlife Trust (KWT) Reserve	Adjacent to the Site to the North
Seasalter Levels	Royal Society for the Protection of Birds (RSPB) Reserve	0.6 km to the East
Oare Marshes	Kent Wildlife Trust Reserve (KWT)	0.7 km to the West
Abbey Fields, Faversham	Local Wildlife Site (LWS)	0.8 km to the South
Graveney Dykes and Pasture	LWS	1.5 km to the South East
Bysing Wood and Oare Gravel Pits	LWS	1.7 km to the South West
Uplees Lake and Marsh	LWS	2.0 km to the West

5.3 Protected and/or otherwise notable species – desk study

A comprehensive table of desk study data of protected and/or otherwise notable species recorded within 2 km of the study area (5 km for bats) is provided within Appendix A.

A summary table of the key species is provided in Table 3 below.

150 protected and/or otherwise notable bird species had desk study records returned as being present on Site or bordering the Site.

Table 3. Summary of Protected and/or Otherwise Notable Species Records (excluding birds)

Common Name	Scientific Name	Date of last record	Nearest record (within 2 km / bordering Site / on-site)	Legal Status and Conservation Aim
Common pipistrelle bat	<i>Pipistrellus pipistrellus</i>	2014	On-site	HabDir; HabRegs; W&CA
Daubenton's bat	<i>Myotis daubentonii</i>	2014	On-site	HabDir; HabRegs; W&CA
Water vole	<i>Arvicola amphibius</i>	2013	On-site	W&CA; NERCS41
Noctule bat	<i>Nyctalus noctula</i>	2014	On-site	HabDir; HabRegs; W&CA; NERCS41
Serotine bat	<i>Eptesicus serotinus</i>	2012	On-site	HabDir; HabRegs; W&CA
Soprano pipistrelle bat	<i>Pipistrellus pygmaeus</i>	2014	On-site	HabDir; HabRegs; W&CA; NERCS41
Badger	<i>Meles meles</i>	2011	Within 2 km	Badger Act
Common lizard	<i>Zootoca vivipara</i>	2014	On-site	W&CA; NERCS41
Grass snake	<i>Natrix natrix</i>	2014	On-site	W&CA; NERCS41
Smooth newt	<i>Lissotriton vulgaris</i>	2000	On-site	W&CA
Adder	<i>Vipera berus</i>	2006	Within 2 km	W&CA; NERCS41
Great crested newt	<i>Triturus cristatus</i>	2012	Within 2 km	HabDir; HabRegs; W&CA; NERCS41
Slow worm	<i>Anguis fragilis</i>	2013	Within 2 km	W&CA; NERCS41
Least lettuce	<i>Lactuca saligna</i>	2011	Bordering Site	W&CA; NR
Fiery clearwing	<i>Pyropteron chrysidiformis</i>	1999	On-site	W&CA

5.4 Phase 1 Habitat Survey

Habitats

The habitats recorded during the Phase 1 Habitat survey are illustrated in Figure 2 and Target Notes associated with the survey are provided in Appendix B of this report.

Cleve Farm is dominated by arable fields with crops, mainly wheat and beans in 2015. The fields are large and extensive. Intersecting the fields are drainage ditches with common reed (*Phragmites australis*) dominant in many. Each ditch is associated with wide rough grassland margins along their length. Other habitats include a small reedbed in the south where a ditch widens out and areas of bare ground used for agricultural machines. A variety of other habitats occur adjacent to the Site boundary such as extensive reedbed along the northern boundary and houses and horticulture,

hedgerows, and lines of trees along the southern boundary. Much of the eastern boundary of the Site is adjoined by coastal grazing marsh comprising Swale SPA habitat, as well as the London Array substation.

The following Phase 1 Habitat types were recorded:

Swamp

The Site is dissected by a network of drainage channels which carry run-off from arable fields within and other land adjacent to the Site (Appendix B – Target Note 1). The ditches drain northwards to a major channel, approximately 10m wide that runs inside the sea wall at the northern limits of the Site. This ditch forms part of the South Bank of the Swale LNR and is a major channel lying immediately outside the Site to the north and west.

Elsewhere, water levels entering the Site are controlled by sluice gates. The ditch profiles across the Site are varied, with main ditch channels 2-3m wide and smaller ditches 0.5-1m. In general, the ditches slope steeply from bank to water's edge at angles of approximately 45 degrees and have high banks to accommodate high water levels. Vegetation is dominated by common reed, which occurs as a dominant species along the majority of the length of the network, allowing only limited areas of open water, where management of the ditches has taken place in the form of reed cutting or dredging. The localised species frogbit (*Hydrocharis morsus-ranae*) was observed in some of the ditches. This species is characteristic of ditches with muddy substrates.



Plate 1: Typical reed-fringed drainage ditch at Cleve Farm (TN1)

Neutral semi-Improved grassland

Semi-improved grassland habitat forms a buffer zone between ditches and arable fields across the majority of the Site, comprising a strip of 4-5m width (Appendix B – Target Notes 2 and 9). Perennial ryegrass (*Lolium perenne*) is abundant in this habitat, with frequent false oat-grass (*Arrhenatherum elatius*), crested dog's tail (*Cynosurus cristatus*) and fescue (*Festuca* sp.) species.

Adjacent to the north and west of the Site lies a 20m strip of semi-improved grassland adjacent to the sea wall. The semi-improved grassland strip is cattle-grazed adjacent to the ditch and forms an embankment rising to meet the sea wall. Immediately adjacent to the sea wall this strip is 1-2m wide and forms an official footpath which is frequently used by walkers, cyclists and dog-walkers (Plate 2).



Plate 2: Semi-improved grassland adjacent to sea wall with Swale Estuary LNR adjacent to the north of the Site.

Tall Ruderal

In some areas, buffer zones between ditches and arable field are more accurately classified as tall ruderal vegetation (Appendix B – Target Notes 2b and 14) rather than semi-improved grassland. Perennial rye grass is again abundant in places, along with annual meadow grass (*Poa annua*), but there is a high proportion of ruderal plants, with abundant cow parsley (*Anthriscus sylvatica*) and common mallow (*Malva sylvestris*) present in places.

Arable Field

The Site is dominated by extensive arable fields, which during the survey were cultivated for wheat, barley and broad bean.



Plate 3: Arable field cultivated for broad bean

Improved Grassland

Improved grassland is not found within the Site, but forms a narrow strip of habitat between Faversham Creek to the west and the main drainage ditch surrounding the Site to the west and north-west (Appendix B - Target Note 15). Species present includes abundant annual meadow grass, with frequent wild oat (*Avena sativa*), bristly oxtongue (*Helminthotheca echioides*) and yarrow (*Achillea millefolium*).

Bareground/Tracks

Although of little ecological value, the track habitat is worthy of recording, due to its extensive nature. The main vehicle access track enters the Site from the south west corner adjacent to Nagden Cottages and winds north between the arable fields and then east along the main ditch at the northern boundary of the Site. A second access track runs from the south of the Site up Cleve Hill Road to Cleve Farm (private access) this track then continues north through the Site and joins with the Nagden Cottages track and also east from Cleve Farm and along the northern boundary of the substation, to the eastern boundary of the Site.



Plate 4: Farm vehicle track along the northern boundary of the Site.

Scattered Trees

The Site is entirely devoid of trees, except along the perimeter of the Site to the south, where lines of broadleaved trees (Appendix B – Target Note 20) are noted. Species present includes frequent pedunculate oak (*Quercus robur*), Italian poplar (*Populus nigra*), silver birch (*Betulus pendula*), Leyland cypress (*Cupressus x leylandii*) and blackthorn (*Prunus spinosa*).

Adjacent to the minor road leading to Cleve Farm from Graveney is a small group of trees and scrub (location of a dried out former agricultural pond) dominated by crack willow (*Salix fragilis*) (Appendix B – Target Note 11). In the south of the Site, immediately below the small reedbed is a small area of wet woodland dominated by mature crack willow (Appendix B – Target Note 16).



Plate 5: Line of trees forming a southern boundary edge of the Site (TN20)

Hedgerows

A short section of species-poor hedgerow occurs along the southern boundary of the Site, abutting the gardens of Warm House.

The south-eastern boundary of the Site from Cleve Hill Farm to the junction with Seasalter Road (TN12) and along the Site boundary to the south west of Seasalter Road is predominantly a more species rich hedgerow with trees. The overall length of these two hedgerow sections is approximately 500m, and the most frequently encountered species are blackthorn, bramble (*Rubus fruticosus*) and common elm (*Ulmus minor*).

Amenity Grassland

Amenity grassland is not found on Site, but occurs immediately adjacent to the Site at Nagden Farm Cottages in the west and Warm House in the south.

Dense Scrub

Small areas of dense scrub occur close to the southern boundary of the Site. These areas were outside of the survey area.

Buildings

Buildings are present outside the Site boundary to the south-east. These comprised metal farm buildings and a small row of brick built houses.

Standing Water

Standing water within the Site is limited to the ditch network. However, seven ponds were identified within 500m of the Site boundary.

5.5 Protected and/or Otherwise Notable Species

The extended Phase 1 Habitat survey and desk study identified potential for protected and/or otherwise notable species to be present at the Site. These are discussed in further detail below.

Birds

The proximity of the Site to the internationally and nationally designated bird interest features of the Swale Estuary is illustrated by the extent of the bird records obtained from the desk study (Appendix A).

During the Phase 1 Habitat survey, species for which the Swale SPA and Ramsar site is designated were not noted – however the breeding species for which these designations exist would not be considered likely to be present on Site. In addition, wintering bird species would not be expected to be present at the time of the survey. Several species listed on the NERC Act s41 were noted during the Phase 1 Habitat survey – including yellow wagtail (*Emberiza citrinella*), skylark and reed bunting.

The network of ditches and the arable fields themselves on Site are considered likely to support breeding bird species.

The field margins may provide habitat suitable for foraging owl species, in particular barn owl (*Tyto alba*) and in winter, possibly short-eared owl (*Asio flammeus*).

It is likely that wildfowl and waders for which the adjacent estuary habitats are designated will utilise the arable fields within the Site for resting and potentially foraging during the winter months, particularly around high tide. The geographic location of the Site also makes it a potentially valuable site for passage migrants.

Bats

The Site offers little possibility for roosting bats as no buildings and very few mature trees are present on Site, and none were observed as having any potential to support roosting bats as they lacked features that may be used. However the extensive ditch network and open arable fields offer foraging habitat for a range of species.

The open, exposed and potentially windswept nature of the landscape may reduce the value of the Site to foraging bats, however, the network of ditches is likely to provide foraging and commuting opportunities. Desk study records indicate that common pipistrelle, soprano pipistrelle, noctule, serotine (*Eptesicus serotinus*) and Daubenton's bat (*Myotis daubentonii*) have been recorded on Site since 2012 with a further four species within 5km of the Site.

Amphibian

Records of great-crested newt occur within 2km of the Site, with the most recent record dating from 2012. The network of ditches may offer a very limited potential opportunity to support great crested newt.

Four water-bodies have been identified as occurring within 500m of the Site and these may also offer opportunity for great crested newts to breed.

The Site in general has limited value for newt species during the terrestrial phases of their life cycle. The ditch margins represent a potential route to hibernacula and potential foraging habitat; however no potential hibernacula were observed. One large mound of spoil was noted (Appendix B – Target Note 5). However, this did not present many gaps/crevices for newts to access the feature.

Reptile

The numerous ditches crossing and surrounding the Site, and the associated marginal vegetation are considered to represent good quality habitat for reptile species, including grass snake, slow worm and common lizard.

Desk study data includes records of grass snake and common lizard on Site in 2014, with slow worm within 2km in 2013.

A juvenile grass snake was observed during the Phase 1 Habitat survey (Appendix B – Target Note 18).

No hibernacula were observed on the Site apart from one small wooden board. One large mound of spoil was noted (Appendix B – Target Note 5). However, this did not present many gaps/ crevices for reptiles to access the structure.

Badger

No sign of badger was encountered during the Phase 1 survey, however this was not a detailed badger survey; AECOM undertook a badger survey of the Site in 2014. No setts or signs of activity were recorded during 2014.. Suitable habitat for badger setts is largely restricted to scrub and tree line habitats associated with inland areas of the Site, particularly areas illustrated by Target Notes 11 and 12 in Appendix B and on Figure 2. The arable fields may also offer foraging habitat for badgers with the ditch banks offering potentially suitable habitat for setts. Badgers were recorded in the desk study from within 2km of the Site in 2011.

Water vole

Evidence of water vole was observed during the Phase 1 Habitat survey in the form of footprints along a field margin in the northwest of the site. Desk study data indicates presence of water vole on Site as recently as 2011. The ditch profiles appear to be suitable for water vole across the entire Site in terms of bank profile, fresh water with low flow and extensive vegetation cover.

Invertebrates

The ditches and marginal habitats were considered to represent good quality habitat for species groups such as *Odonata* (dragonflies and damselflies) that may be associated with such habitats. The location of the Site on the south east coast of England increases the likelihood of uncommon species, more frequently found in continental Europe, being present. Both terrestrial and aquatic habitats are suitable for notable invertebrates.

Away from the ditches, i.e. arable fields, all habitats appear to be of low value to invertebrate species.

Other notable species

A brown hare (*Lepus europaeus*), a NERC s41 and Kent BAP priority species was observed from within one of the arable fields to the north of the substation during the survey (Appendix B – Target Note 6).

6 Discussion and Recommendations

The conclusions reached are based on the assumptions that:

- the extent of the Proposed Development limited to that shown as a red line boundary in Figure 1 and 2; and
- all habitat contained within the red line boundary could be affected by the development.

Due to the potential for protected species to be present there is the potential for legal offences to occur if works proceed without further ecological survey to establish baseline conditions. The potential presence of protected species represents a material consideration in the planning process and therefore all further surveys recommended should be undertaken in advance of any subsequent planning submission. Failure to include this information is likely to result in the rejection of the application.

6.1 Statutory Designated Sites

The Site lies immediately adjacent to The Swale SPA, Ramsar, SSSI and rMCZ site and the South Bank of the Swale LNR. The habitats themselves are of value and form reasons for designations (e.g. freshwater grazing marsh), however, the primary interest of the SPA, Ramsar, SSSI and LNR lies in supporting populations of wildfowl and waders during winter and on passage and also supporting populations of breeding birds.

There is potential for the proposed works to affect these designations during construction and operation. For the SPA and Ramsar it is recommended that under the Conservation of Habitats and Species Regulations (2010), a project-level Habitats Regulations Assessment should be undertaken including (but not necessarily limited to) the Swale Estuary SPA and Ramsar sites.

6.2 Non-Statutory Designated Sites

Although the South Swale KWT reserve borders the Site to the north, it is overlapped by the South Bank of the Swale LNR designation and therefore any effects on the non-statutory designation should be captured and assessed by consideration of statutory designated sites.

6.3 Habitats

Habitat areas within the Site meet criteria of Habitats of Principle Importance under NERC s41. The habitat types present are:

- reedbed; and
- arable field margins.

Additionally, reedbed is a priority habitat listed under the Kent BAP.

Therefore any works that would be likely to result in loss or degradation of these habitats would need to offer mitigation either on the Site or off the Site in the form of like-for-like creation or management of such habitats.

6.4 Species

6.4.1 Birds

The Site is located adjacent to internationally designated wildlife sites where the primary species of concern are birds. During the Phase 1 Habitat survey breeding birds listed as of greatest concern (red listed) under BOCC in the UK were observed to be present and likely breeding, both in arable fields and adjacent ditches.

Due to the size and nature of the Site, species surveys were undertaken concurrently with the Phase 1 Habitat survey. These included breeding, passage and wintering bird surveys, the details of which can be found in Appendix D. The results from the breeding bird survey are reported in *Cleve Farm – Breeding Bird Survey Report* (AECOM, 2016), results from the passage bird survey are reported in *Cleve Farm – Passage Bird Survey Report* (AECOM, 2016) and results from the wintering bird survey are reported in *Cleve Farm – Wintering Bird Survey Report 2013/2014 & 2014/2015* (AECOM, 2016). There is anecdotal information that the Site has supported breeding/roosting barn owl in the recent past, and therefore barn owl surveys were undertaken at the Site. The results from these are reported in *Cleve Farm – Breeding Bird Survey Report* (AECOM, 2016).

6.4.2 Bats

The Site has been determined to have potential to support commuting and foraging bats, and surveys for this species group are reported in *Cleve Farm – Bat Survey Report* (AECOM, 2016). Details of the methods used in these surveys can be found in Appendix D.

6.4.3 Amphibians

Seven water-bodies within 500m of the Site were identified as having potential to support great crested newt. The results from these surveys can be found in *Cleve Farm – Amphibian Survey Report* (AECOM, 2016). Details of the methods used can be found in Appendix D.

6.4.4 Reptiles

The Site is considered to have potential to support widespread reptiles and surveys for these species group are reported in *Cleve Farm – Reptile Survey Report* (AECOM, 2016). Details of the methods used can be found in Appendix D.

6.4.5 Badgers

Habitats within the Site are considered to be potentially suitable for foraging habitat and the creation of setts. A survey of the Site was undertaken in 2014, details of which can be found in *Cleve Farm – Badger Survey Report* (AECOM, 2016).

6.4.6 Water vole

Evidence of water vole has been found on Site, and surveys for these species group are reported in *Cleve Farm – Water Vole Survey Report* (AECOM, 2016).

6.4.7 Invertebrates

The network of ditches across the Site has been determined to have potential to support protected and/or notable terrestrial and aquatic invertebrates, and surveys for this species group are reported in *Cleve Farm – Preliminary Invertebrate Survey Report* (AECOM, 2016).

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Appendix A. Desk Study Data Results

Records requested for 2 km from a central grid reference of TR03916407, with bat records requested for 5 km.

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Mammals					
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	2014		On site	HabDir; HabRegs; W&CA
Daubenton's bat	<i>Myotis daubentonii</i>	2014		On site	HabDir; HabRegs; W&CA
Water vole	<i>Arvicola amphibius</i>	2013		On site	W&CA; NERCS41
Noctule bat	<i>Nyctalus noctula</i>	2014		On site	HabDir; HabRegs; W&CA; NERCS41
Serotine bat	<i>Eptesicus serotinus</i>	2012		On site	HabDir; HabRegs; W&CA
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	2014		On site	HabDir; HabRegs; W&CA; NERCS41
Hedgehog	<i>Erinaceus europaeus</i>	2014		On site	NERCS41
Badger	<i>Meles meles</i>	2011		Within 2 km	Badger Act
Brown long-eared bat	<i>Plecotus auritus</i>	2014		Within 5 km	HabDir; HabRegs; W&CA; NERCS41
Nathusius' pipistrelle bat	<i>Pipistrellus nathusii</i>	2013		Within 5 km	HabDir; HabRegs; W&CA
Natterer's bat	<i>Myotis nattereri</i>	2012		Within 5 km	HabDir; HabRegs; W&CA
Whiskered bat	<i>Myotis mystacinus</i>	2014		Within 5 km	HabDir; HabRegs; W&CA
Birds					
Aquatic warbler	<i>Acrocephalus paludicola</i>	2007	Winter	On site	BirdsDir; NERCS41; BOCC Red
Bar-tailed godwit	<i>Limosa lapponica</i>	2013	Summer / Winter	On site	BirdsDir; BOCC Amber
Black-headed gull	<i>Larus ridibundus</i>	2013	Summer	On site	BOCC Amber

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)	Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
			/ Winter	
Cetti's warbler	<i>Cettia cetti</i>	2013	Summer / Winter	On site W&CA
Curlew	<i>Numenius arquata</i>	2013	Summer / Winter	On Site NERCS41; BOCC Amber
Dunnock	<i>Prunella modularis</i>	2012	Summer / Winter	On site NERCS41; BOCC Amber
Fieldfare	<i>Turdus pilaris</i>	2013	Summer / Winter	On site W&CA; BOCC Red
Gadwall	<i>Anas strepera</i>	2013	Summer / Winter	On site BOCC Amber
Gannet	<i>Morus bassanus</i>	2012	Summer / Winter	On site BOCC Amber
Green woodpecker	<i>Picus viridis</i>	2012	Summer / Winter	On site BOCC Amber
Grey partridge	<i>Perdix perdix</i>	2013	Summer / Winter	On site NERCS41; BOCC Red
Greylag goose	<i>Anser anser</i>	2012	Summer / Winter	On site BOCC Amber
Hen harrier	<i>Circus cyaneus</i>	2013	Summer / Winter	On site BirdsDir; W&CA; NERCS41; BOCC Red
Hobby	<i>Falco subbuteo</i>	2013	Summer / Winter	On site W&CA
House sparrow	<i>Passer domesticus</i>	2012	Summer / Winter	On site NERCS41; BOCC Red
Kestrel	<i>Falco tinnunculus</i>	2012	Summer / Winter	On site BOCC Amber
Lesser spotted woodpecker	<i>Dendrocopus minor</i>	2002	Summer / Winter	On site NERCS41; BOCC Red
Mallard	<i>Anas platyrhynchos</i>	2013	Summer / Winter	On site BOCC Amber
Mistle thrush	<i>Turdus viscivorus</i>	2013	Summer / Winter	On site BOCC Amber
Oystercatcher	<i>Haematopus</i>	2012	Summer	On site BOCC Amber

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)	Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
	<i>ostralegus</i>		/ Winter	
Peregrine	<i>Falco peregrinus</i>	2013	Summer / Winter	On site BirdsDir; W&CA
Pink-footed goose	<i>Anser brachyrhynchus</i>	2012	Winter	On site BOCC Amber
Redshank	<i>Tringa totanus</i>	2013	Summer / Winter	On site BOCC Amber
Redwing	<i>Turdus iliacus</i>	2013	Winter	On site W&CA; NERCS41; BOCC Red
Reed bunting	<i>Emberiza schoeniclus</i>	2012	Summer / Winter	On site NERCS41; BOCC Amber
Ruff	<i>Philomachus pugnax</i>	2013	Summer / Winter	On site BirdsDir; W&CA; BOCC Red
Savi's warbler	<i>Locustella luscinioides</i>	2007	Summer	On site W&CA; NERCS41; BOCC Red
Short-eared owl	<i>Asio flammeus</i>	2013	Summer / Winter	On site BirdsDir; BOCC Amber
Shoveler	<i>Anas dypeata</i>	2013	Summer / Winter	On site BOCC Amber
Skylark	<i>Aluada arvensis</i>	2012	Summer / Winter	On site NERCS41; BOCC Red
Song thrush	<i>Turdus philomelos</i>	2013	Summer / Winter	On site NERCS41; BOCC Red
Spoonbill	<i>Platalea leucorodia</i>	2013	Summer / Winter	On site BirdsDir; W&CA; BOCC Amber
Spotted flycatcher	<i>Muscicapa striata</i>	2013	Summer / Winter	On site NERCS41; BOCC Red
Stock dove	<i>Columba oenas</i>	2013	Summer / Winter	On site BOCC Amber
Swallow	<i>Hirundo rustica</i>	2013	Summer / Winter	On site BOCC Amber
Swift	<i>Apus apus</i>	2013	Summer / Winter	On site BOCC Amber
Teal	<i>Anas crecca</i>	2013	Summer / Winter	On site BOCC Amber

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Turnstone	<i>Arenaria interpres</i>	2013	Summer / Winter	On site	BOCC Amber
Turtle dove	<i>Streptopelia turtur</i>	2013	Summer / Winter	On site	NERCS41; BOCC Red
Whitethroat	<i>Sylvia communis</i>	2012	Summer / Winter	On site	BOCC Amber
Yellow wagtail	<i>Motacilla flava</i>	2013	Summer / Winter	On site	NERCS41; BOCC Red
Arctic skua	<i>Stercorarius parasiticus</i>	2013	Summer / Winter	Bordering site	BOCC Red
Arctic tern	<i>Sterna paradisaea</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Amber
Avocet	<i>Recurvirostra avosetta</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Barn owl	<i>Tyto alba</i>	2013	Summer / Winter	Bordering site	W&CA; BOCC Amber
Barnacle goose	<i>Branta leucopsis</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Amber
Bearded tit (reedling)	<i>Panurus biarmicus</i>	2013	Summer / Winter	Bordering site	W&CA; BOCC Amber
Bewick's swan	<i>Cygnus columbianus</i>	2013	Winter	Bordering site	BirdsDir; W&CA; NERCS41; BOCC Amber
Bittern	<i>Botaurus stellaris</i>	2012	Summer / Winter	Bordering site	BirdsDir; W&CA; NERCS41; BOCC Red
Black redstart	<i>Phoenicurus ochruros</i>	2013	Summer / Winter	Bordering site	W&CA; BOCC Amber
Black tern	<i>Chlidonias niger</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Black-necked grebe	<i>Podiceps nigricollis</i>	2011	Summer / Winter	Bordering site	W&CA; BOCC Amber
Black-tailed godwit	<i>Limosa limosa</i>	2013	Summer / Winter	Bordering site	W&CA; NERCS41; BOCC Red
Black-throated diver	<i>Gavia arctica</i>	2008	Winter	Bordering site	BirdsDir; W&CA; BOCC Amber

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Bluethroat	<i>Luscinia svecica</i>	2011	Summer	Bordering site	BirdsDir; W&CA
Brambling	<i>Fringilla montifringilla</i>	2013	Summer / Winter	Bordering site	W&CA
Common gull	<i>Larus canus</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Common sandpiper	<i>Actitis hypoleucos</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Common scoter	<i>Melanitta nigra</i>	2013	Summer / Winter	Bordering site	W&CA; NERCS41; BOCC Red
Common tern	<i>Sterna hirundo</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Amber
Corn bunting	<i>Miliaria calandra</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Crane	<i>Grus grus</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Amber
Cuckoo	<i>Cuculus canorus</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Dartford warbler	<i>Sylvia undata</i>	2006	Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Dotterel	<i>Charadrius morinellus</i>	2010	Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Dunlin	<i>Calidris alpina</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Red
Eider	<i>Somateria mollissima</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Fulmar	<i>Fulmarus glacialis</i>	2009	Summer / Winter	Bordering site	BOCC Amber
Garganey	<i>Anas querquedula</i>	2013	Summer / Winter	Bordering site	W&CA; BOCC Amber
Golden plover	<i>Pluvialis apricaria</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Amber
Goldeneye	<i>Bucephala clangula</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Grasshopper warbler	<i>Locustella naevia</i>	2012	Summer / Winter	Bordering site	NERCS41; BOCC Red

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Great black-backed gull	<i>Larus marinus</i>	2012	Summer / Winter	Bordering site	BOCC Amber
Great northern diver	<i>Gavia immer</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Great skua	<i>Stercorarius skua</i>	2013	Winter	Bordering site	BOCC Amber
Great white egret	<i>Egretta alba</i>	2012	Summer / Winter	Bordering site	BirdsDir
Green sandpiper	<i>Tringa ochropus</i>	2013	Summer / Winter	Bordering site	W&CA; BOCC Amber
Greenshank	<i>Tringa nebularia</i>	2013	Summer / Winter	Bordering site	W&CA
Grey plover	<i>Pluvialis squatarola</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Grey wagtail	<i>Mtacula cinerea</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Guillemot	<i>Uria aalge</i>	2013	Winter	Bordering site	BOCC Amber
Herring gull	<i>Larus argentatus</i>	2012	Summer / Winter	Bordering site	NERCS41; BOCC Red
Hoopoe	<i>Upapa epops</i>	2012	Summer	Bordering site	W&CA
House martin	<i>Delichon urbica</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Iceland gull	<i>Larus glaucooides</i>	2010	Winter	Bordering site	BOCC Amber
Jack snipe	<i>Lymnocyptes minimus</i>	2012	Summer / Winter	Bordering site	BOCC Amber
Kingfisher	<i>Alcedo atthis</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Kittiwake	<i>Rissa tridactyla</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Knot	<i>Calidris calidris</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Lapland bunting	<i>Calcarius lapponicus</i>	2013	Winter	Bordering site	W&CA; BOCC Amber
Lapwing	<i>Vanellus vanellus</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Leach's petrel	<i>Oceanodroma leucorhoa</i>	2010	Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Lesser black-backed gull	<i>Larus fuscus</i>	2012	Summer / Winter	Bordering site	BOCC Amber
Lesser redpoll	<i>Carduelis cabaret</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Linnet	<i>Carduelis cannabina</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Little egret	<i>Egretta garzetta</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Amber
Little grebe	<i>Tachybaptus ruficollis</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Little gull	<i>Larus minutus</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Little tern	<i>Sterna albifrons</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Manx shearwater	<i>Puffinus puffinus</i>	2012	Winter	Bordering site	BirdsDir; BOCC Amber
Marsh harrier	<i>Circus aeruginosus</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Mediterranean gull	<i>Larus melanocephalus</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Merlin	<i>Falco columbarius</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Montagu's harrier	<i>Circus pygargus</i>	2011	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Osprey	<i>Pandion haliaetus</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Pochard	<i>Aythya ferina</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Puffin	<i>Fratercula arctica</i>	2011	Winter	Bordering site	BOCC Amber
Purple sandpiper	<i>Calidris maritima</i>	2008	Winter	Bordering site	W&CA; BOCC Amber
Quail	<i>Coturnix coturnix</i>	2011	Summer / Winter	Bordering site	W&CA; BOCC Amber

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Razorbill	<i>Alca torda</i>	2008	Summer / Winter	Bordering site	BOCC Amber
Red-breasted goose	<i>Branta ruficollis</i>	2013	Summer / Winter	Bordering site	BirdsDir
Red-necked grebe	<i>Podiceps grisegena</i>	2013	Winter	Bordering site	BOCC Amber
Red-necked phalarope	<i>Phalaropus lobatus</i>	2006	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Red
Redstart	<i>Phoenicurus phoenicurus</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Red-throated diver	<i>Gavia stellata</i>	2013	Summer / Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Ring ouzel	<i>Turdus torquatus</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Ringed plover	<i>Charadrius hiaticula</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Ruddy shelduck	<i>Tadorna ferruginea</i>	2012	Summer / Winter	Bordering site	BirdsDir
Sand martin	<i>Riparia riparia</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Sandwich tern	<i>Sterna sandvicensis</i>	2013	Summer / Winter	Bordering site	BirdsDir; BOCC Amber
Scaup	<i>Aythya marila</i>	2013	Summer / Winter	Bordering site	W&CA; NERCS41; BOCC Red
Shag	<i>Phalacrocorax aristotelis</i>	2012	Winter	Bordering site	BirdsDir; BOCC Amber
Shelduck	<i>Tadorna tadorna</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Shore lark	<i>Eremophila alpestris</i>	2012	Summer / Winter	Bordering site	W&CA; BOCC Amber
Slavonian grebe	<i>Podiceps auritus</i>	2013	Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Smew	<i>Mergus albellus</i>	2013	Winter	Bordering site	BirdsDir; BOCC Amber
Snipe	<i>Gallinago gallinago</i>	2013	Summer / Winter	Bordering site	BOCC Amber

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Snow bunting	<i>Plectrophenax nivalis</i>	2013	Winter	Bordering site	W&CA; BOCC Amber
Spotted redshank	<i>Tringa erythropus</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Starling	<i>Sturnus vulgaris</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Tree pipit	<i>Anthus trivialis</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Twite	<i>Carduelis flavirostris</i>	2012	Winter	Bordering site	NERCS41; BOCC Red
Velvet scoter	<i>Melanitta fusca</i>	2013	Winter	Bordering site	W&CA; BOCC Amber
Water pipit	<i>Anthus spinoletta</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Wheatear	<i>Oenanthe oenanthe</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Whimbrel	<i>Numenius phaeopus</i>	2013	Summer / Winter	Bordering site	W&CA; BOCC Red
Whinchat	<i>Saxicola rubetra</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Whooper swan	<i>Cygnus cygnus</i>	2013	Winter	Bordering site	BirdsDir; W&CA; BOCC Amber
Wigeon	<i>Anas penelope</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Willow warbler	<i>Phylloscopus trochilus</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Woodcock	<i>Scolopax rusticola</i>	2013	Summer / Winter	Bordering site	BOCC Amber
Yellowhammer	<i>Emberiza citrinella</i>	2013	Summer / Winter	Bordering site	NERCS41; BOCC Red
Yellow-legged gull	<i>Larus michahellis</i>	2009	Summer / Winter	Bordering site	BOCC Amber
Baillon's crake	<i>Porzana pusilla</i>	2001	Summer	Within 2 km	BirdsDir
Barred warbler	<i>Sylvia nisoria</i>	2005	Winter	Within 2 km	BirdsDir

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Bee-eater	<i>Merops apiaster</i>	2004	Summer	Within 2 km	W&CA
Black-winged stilt	<i>Himantopus himantopus</i>	2008	Summer	Within 2 km	BirdsDir; W&CA
Brent goose	<i>Branta bernicla</i>	2013	Summer / Winter	Within 2 km	BirdsDir; NERCS41; BOCC Amber
Bullfinch	<i>Pyrrhula pyrrhula</i>	2013	Summer / Winter	Within 2 km	NERCS41; BOCC Amber
Common crossbill	<i>Loxia curvirostra</i>	2009	Summer / Winter	Within 2 km	W&CA
Firecrest	<i>Regulus ignicapillus</i>	2012	Winter	Within 2 km	W&CA; BOCC Amber
Glaucous gull	<i>Larus hyperboreus</i>	2005	Summer / Winter	Within 2 km	BOCC Amber
Glossy ibis	<i>Plegadis falcinellus</i>	2010	Winter	Within 2 km	BirdsDir
Goshawk	<i>Accipiter gentilis</i>	2005	Winter	Within 2 km	W&CA
Honey buzzard	<i>Pernis aprivorus</i>	2013	Summer / Winter	Within 2 km	BirdsDir; W&CA; BOCC Amber
Kentish plover	<i>Charadrius alexandrius</i>	2002	Summer	Within 2 km	W&CA
Little bittern	<i>Ixobrychus minutus</i>	2000	Summer	Within 2 km	BirdsDir; W&CA
Little ringed plover	<i>Charadrius dubius</i>	2013	Summer / Winter	Within 2 km	W&CA
Meadow pipit	<i>Anthus pratensis</i>	2012	Summer / Winter	Within 2 km	BOCC Amber
Nightingale	<i>Luscinia megarhynchos</i>	2013	Summer / Winter	Within 2 km	BOCC Amber
Pied flycatcher	<i>Ficedula hypoleuca</i>	2009	Winter	Within 2 km	BOCC Amber
Pintail	<i>Anas acuta</i>	2013	Summer / Winter	Within 2 km	BOCC Amber
Purple heron	<i>Ardea purpurea</i>	2012	Summer / Winter	Within 2 km	BirdsDir; W&CA
Red kite	<i>Milvus milvus</i>	2014	Summer / Winter	Within 2 km	BirdsDir; W&CA; BOCC Amber

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)		Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Red-backed shrike	<i>Lanius collurio</i>	2007	Summer / Winter	Within 2 km	BirdsDir; W&CA; BOCC Red
Sooty shearwater	<i>Puffinus griseus</i>	2009	Winter	Within 2 km	BOCC Amber
Spotted crane	<i>Porzana porzana</i>	2013	Summer / Winter	Within 2 km	BirdsDir; W&CA; BOCC Amber
Squacco heron	<i>Ardeola ralloides</i>	2007	Summer	Within 2 km	BirdsDir
Temminck's stint	<i>Calidris temminckii</i>	2013	Summer / Winter	Within 2 km	W&CA
Tree sparrow	<i>Passer montanus</i>	2010	Summer / Winter	Within 2 km	NERCS41; BOCC Red
Tufted duck	<i>Aythya fuligula</i>	2013	Summer / Winter	Within 2 km	BOCC Amber
White stork	<i>Ciconia ciconia</i>	2013	Summer / Winter	Within 2 km	BirdsDir
White-fronted goose	<i>Anser albifrons</i>	2013	Summer / Winter	Within 2 km	NERCS41
Wood sandpiper	<i>Tringa glareola</i>	2013	Summer / Winter	Within 2 km	BirdsDir; W&CA; BOCC Amber
Wood warbler	<i>Phylloscopus sibilatrix</i>	2002	Summer	Within 2 km	NERCS41; BOCC Red
Wryneck	<i>Jynx torquilla</i>	2013	Summer / Winter	Within 2 km	W&CA; BOCC Red
Herptiles					
Common lizard	<i>Zootoca vivipara</i>	2014		On site	W&CA; NERCS41
Grass snake	<i>Natrix natrix</i>	2014		On site	W&CA; NERCS41
Smooth newt	<i>Lissotriton vulgaris</i>	2000		On site	W&CA
Adder	<i>Vipera berus</i>	2006		Within 2 km	W&CA; NERCS41
Common frog	<i>Rana temporaria</i>	2012		Within 2 km	W&CA
Common toad	<i>Bufo bufo</i>	2004		Within 2 km	W&CA; NERCS41
Great crested newt	<i>Triturus cristatus</i>	2012		Within 2 km	HabDir; HabRegs; W&CA; NERCS41

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)	Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Slow worm	<i>Anguis fragilis</i>	2013	Within 2 km	W&CA; NERCS41
Plants				
Small Alison	<i>Alyssum alyssoides</i>	2012	Within 2 km	W&CA
Least lettuce	<i>Lactuca saligna</i>	2011	Bordering site	W&CA; NR
Dwarf eelgrass	<i>Zostera (Zosterella) noltei</i>	2010	On site	NS
Saltmarsh goosefoot	<i>Chenopodium chenopodioides</i>	2014	Within 2 km	NS
Oak-leaved goosefoot	<i>Chenopodium glaucum</i>	2013	Within 2 km	NS
Perennial glasswort	<i>Sarcocornia perennis</i>	2010	On site	NS
Yellow glasswort	<i>Salicornia fragilis</i>	2011	On site	NS
Shiny glasswort	<i>Salicornia nitens</i>	2011	Within 2 km	NS
Glaucous glasswort	<i>Salicornia obscura</i>	2011	Within 2 km	NR
One-flowered glasswort	<i>Salicornia pusilla</i>	2011	Within 2 km	NS
Shrubby sea-blite	<i>Suaeda vera</i>	2005	Within 2 km	NS
Red hemp-nettle	<i>Galeopsis angustifolia</i>	2002	Within 2 km	NS
Small-leaved sweet briar	<i>Rosa agrestis</i>	2011	On site	NS
Divided sedge	<i>Carex divisa</i>	2013	On site	NS
Stiff saltmarsh-grass	<i>Puccinellia rupestris</i>	2011	On site	NS
Bulbous meadow-grass	<i>Poa bulbosa</i>	2003	Within 2 km	NS
Early meadow-grass	<i>Poa infirma</i>	2013	Within 2 km	NS
Bulbous foxtail	<i>Alopecurus bulbosus</i>	2013	On site	NS
Rye brome	<i>Bromus secalinus</i>	2012	Within 2 km	NS
Sea barley	<i>Hordeum marinum</i>	2013	Bordering site	NS

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)	Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Dittander	<i>Lepidium latifolium</i>	2011	On site	NS
Grape-hyacinth	<i>Muscari neglectum</i>	2011	Within 2 km	NR
Toothed medick	<i>Medicago polymorpha</i>	2004	Within 2 km	NS
Sea clover	<i>Trifolium squamosum</i>	2013	On site	NS
Marsh-mallow	<i>Althaea officinalis</i>	2013	Within 2 km	NS
Golden-samphire	<i>Inula crithmoides</i>	2013	On site	NS
Slender hare's-ear	<i>Bupleurum tenuissimum</i>	2012	On site	NS
Hog's fennel	<i>Peucedanum officinale</i>	2013	On site	NR
Punctelia jeckeri	<i>Punctelia jeckeri</i>	2014	Within 2 km	NS
Invertebrates				
Thrift neb	<i>Aristotelia brizella</i>	2005	On site	NN
Shrill carder bee	<i>Bombus (Thoracobombus) sylvorum</i>	2014	On site	NN
Bombardier beetle	<i>Brachinus (Brachinus) crepitans</i>	2012	On site	NN
-	<i>Calathus (Calathus) ambiguus</i>	2012	On site	NN
Sea-wormwood leafhopper	<i>Chlorita viridula</i>	2011	On site	NN
-	<i>Dicheirotichus obsoletus</i>	2010	On site	NN
-	<i>Enochrus halophilus</i>	2013	On site	NS
-	<i>Hydrovatus clypealis</i>	2013	On site	NS
-	<i>Lasioglossum (Evyiaeus) puncticolle</i>	2000	On site	NN
-	<i>Melieria picta</i>	2012	On site	NN
-	<i>Ophonus (Ophonus) ardosiacus</i>	2014	On site	NN

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)	Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
-	<i>Pseudaplemonus limonii</i>	2014	On site	NN
Fiery clearwing	<i>Pyropteron chrysidiformis</i>	1999	On site	W&CA
-	<i>Rhantus (Rhantus) frontalis</i>	2010	On site	NS; NN
-	<i>Crypticus quisquilius</i>	2012	Bordering site	NN
Adonis' ladybird	<i>Hippodamia (Adonia) variegata</i>	2011	Bordering site	NN
-	<i>Opatrum sabulosum</i>	2012	Bordering site	NN
Salt-marsh grass-veneer	<i>Pediasia aridella</i>	2001	Bordering site	NN
Long-legged tabby	<i>Synaphe punctalis</i>	2001	Bordering site	NN
-	<i>Volucella zonaria</i>	2014	Bordering site	NN
-	<i>Agabus (Gaurodytes) conspersus</i>	2013	Within 2 km	NS; NN
-	<i>Andrena (Micrandrena) minutuloides</i>	2000	within 2 km	NN
-	<i>Anthraxus consputus</i>	2009	Within 2 km	NN
-	<i>Aulonium trisulcus</i>	2010	Within 2 km	NN
-	<i>Badister (Baudia) dilatatus</i>	2011	Within 2 km	NN
Large garden bumble bee	<i>Bombus (Megabombus) ruderatus</i>	2011	Within 2 km	NN
Hill cuckoo bee	<i>Bombus (Psithyrus) rupestris</i>	2013	Within 2 km	NN
-	<i>Carpelimus halophilus</i>	2013	Within 2 km	NN
-	<i>Chaetarthria seminulum</i>	2009	Within 2 km	NS
-	<i>Chrysolina oricalcia</i>	2014	Within 2 km	NN
Sea-aster colletes bee	<i>Colletes (Colletes) halophilus</i>	2013	Within 2 km	NN
-	<i>Colobaea bifasciella</i>	2000	Within 2 km	NN
-	<i>Crossocerus (Crossocerus) distinguendus</i>	2000	Within 2 km	NN

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)	Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
-	<i>Demetrius (Risophilus) imperialis</i>	2008	Within 2 km	NN
-	<i>Enochrus bicolor</i>	2013	Within 2 km	NS
Long-horned bee	<i>Eucera (Eucera) longicornis</i>	2014	Within 2 km	NN
-	<i>Gyrinus paykulli</i>	2009	Within 2 km	NS
-	<i>Haliphus (Liaphlus) mucronatus</i>	2009	Within 2 km	NS; NN
-	<i>Heterocerus obsoletus</i>	2013	Within 2 km	NS
-	<i>Homoneura tesquae</i>	2005	Within 2 km	NN
-	<i>Hygrotus (Coelambus) parallelogrammus</i>	2013	Within 2 km	NS; NN
-	<i>Lasiochaeta pubescens</i>	2000	Within 2 km	NN
-	<i>Lasioglossum (Evylaeus) malachurum</i>	2005	Within 2 km	NN
-	<i>Lasioglossum (Evylaeus) pauxillum</i>	2005	Within 2 km	NN
-	<i>Liparus coronatus</i>	2012	Within 2 km	NN
-	<i>Longitarsus ballotae</i>	2010	Within 2 km	NN
-	<i>Longitarsus dorsalis</i>	2014	Within 2 km	NN
Stag beetle	<i>Lucanus cervus</i>	2011	Within 2 km	W&CA; NN
-	<i>Macropsis glandacea</i>	2005	Within 2 km	NN
-	<i>Microdynerus exilis</i>	2014	Within 2 km	NN
Large velvet ant	<i>Mutilla europaea</i>	2013	Within 2 km	NN
-	<i>Nicrophorus interruptus</i>	2013	Within 2 km	NN
-	<i>Nomada fucata</i>	2005	Within 2 km	NN
-	<i>Nysson trimaculatus</i>	2000	Within 2 km	NN
-	<i>Ochthebius (Ochthebius) pusillus</i>	2009	Within 2 km	NS
Cramp-ball fungus weevil	<i>Platyrhinus resinosus</i>	2010	Within 2 km	NN

Common Name	Scientific Name	Date of last record (Birds – Summer / Winter Visitor)	Nearest record (within 2 km / bordering site / on site)	Legal Status and Conservation Aim
Sulphur pearl	<i>Sitochroa palealis</i>	2012	Within 2 km	NN
-	<i>Stenolophus skrimshiranus</i>	2010	Within 2 km	NN
-	<i>Stenus (Stenus) pusillus</i>	2009	Within 2 km	NN
Flecked general	<i>Stratiomys singularior</i>	2014	Within 2 km	NN
Long-horned soldier	<i>Vanoyia tenuicornis</i>	2005	Within 2 km	NN
Bloody cranesbill weevil	<i>Zacladus exiguous</i>	2013	Within 2 km	NN

Key

Acronym	Legislation Description
HabDir	The Habitats Directive 1994
HabRegs	The Conservation of Habitats and Species Regulations 2010 (as amended)
Birds Dir	The Birds Directive 2009; Annex 1 Threatened Bird Species
W&CA	The Wildlife and Countryside Act 1981 (as amended); Schedule 1 (birds), Schedule 5 (all other species), Schedule 8 (plants)
NERCS41	The Natural Environment and Rural Communities Act 2006 Section 41 Listed Species of Principle Importance
BOCC Red	Birds of Conservation Concern Red Listed Species
BOCC Amber	Birds of Conservation Concern Amber Listed Species
NR	Nationally Rare Species
NS	Nationally Scarce Species
NN	Nationally Notable Species
Badger Act	The Protection of Badgers Act 1992

Appendix B. Phase 1 Target Notes and Species List

TN1 – Ditch system with reedbed (off site)

Species		DAFOR
Common name	Scientific name	
Common club rush	(<i>Scirpus lacustris</i>)	R
Corn parsley	(<i>Petroselinum segetum</i>)	R
Common reed	(<i>Phragmites australis</i>)	D
Reedmace	(<i>Typha angustifolia</i>)	O
Frogbit	(<i>Hydrocharis morsus-ranae</i>)	O
Duckweed	(<i>Lemna</i> sp.)	F
Water plantain sp.	(<i>Alisma</i> sp.)	O
Fools watercress	(<i>Apium nodiflorum</i>)	O
Watercress	(<i>Rorippa nasturtium-aquaticum</i>)	O

TN2 – Semi-improved grassland along ditch networks

Species		DAFOR
Common name	Scientific name	
Perennial rye grass	(<i>Lolium perenne</i>)	A
Creeping thistle	(<i>Cirsium arvense</i>)	F
Crested dogs tail	(<i>Cynosurus cristatus</i>)	F
Fescue sp.	(<i>Festuca</i> sp.)	F
Oat grass sp.	(<i>Avenula</i> sp.)	F
Wild carrot	(<i>Daucus carota</i> ssp. <i>Carota</i>)	F
Salsify	(<i>Tragopogon pratensis</i>)	F
Birds foot trefoil	(<i>Lotus corniculatus</i>)	O
Bristly ox tongue	(<i>Helminthotheca echioides</i>)	O
Broad leaved dock	(<i>Rumex obtusifolius</i>)	O
Cocks foot	(<i>Dactylis glomerata</i>)	O
Creeping buttercup	(<i>Ranunculus repens</i>)	O
Curled dock	(<i>Rumex crispus</i>)	O
Fat hen	(<i>Chenopodium album</i>)	O
Red clover	(<i>Trifolium pratense</i>)	O
Small cats tail	(<i>Phleum pratense</i> ssp. <i>Bertolonii</i>)	O
Soft brome	(<i>Bromus hordeaceus</i> ssp. <i>Hordeaceus</i>)	O
Soft rush	(<i>Juncus effusus</i>)	O
Spear thistle	(<i>Cirsium vulgare</i>)	O
Timothy	(<i>Phleum pratense</i>)	O
Vetch sp.	(<i>Vicia</i> sp.)	O
Wall barley	(<i>Hordeum murinum</i>)	O
Cranesbill sp.	(<i>Geranium</i> sp.)	R
Goat's-beard	(<i>Tragopogon pratensis</i> agg.)	R
Golden melilot	(<i>Melilotus latissimus</i>)	R
Great lettuce	(<i>Lactuca virosa</i>)	R
Scentless mayweed	(<i>Tripleurospermum inodorum</i>)	R
Shepherd's-purse	(<i>Capsella bursa-pastoris</i>)	R
Smooth sow thistle	(<i>Sonchus oleraceus</i>)	R

TN2b – Tall Ruderal vegetation along ditch networks

Species		DAFOR
Common name	Scientific name	
Annual meadow grass	(<i>Poa annua</i>)	F
Black horehound	(<i>Ballota nigra</i>)	F
Bramble	(<i>Rubus fruticosus</i>)	O
Common mallow	(<i>Malva sylvestris</i>)	O
Common nettle	(<i>Urtica dioica</i>)	O
Cow parsley	(<i>Anthriscus sylvestris</i>)	O
Creeping cinquefoil	(<i>Potentilla reptans</i>)	O
False oat grass	(<i>Arrhenatherum elatius</i>)	O
Field bind weed	(<i>Convolvulus arvensis</i>)	O
Great willowherb	(<i>Epilobium hirsutum</i>)	O
Greater plantain	(<i>Plantago major</i>)	O
Knotgrass sp.	(<i>Polygonium sp.</i>)	O
Oat sp.	(<i>Avena sp.</i>)	O
Rape	(<i>Brassica napus</i>)	O
Ragwort	(<i>Senecio jacobaea</i>)	O
Tufted vetch	(<i>Vicia cracca</i>)	O
Wall barley	(<i>Hordeum murinum</i>)	O
Burdock sp.	(<i>Arctium sp.</i>)	R
Caper spurge	(<i>Euphorbia lathyris</i>)	R
Common field speedwell	(<i>Veronica persica</i>)	R
Common fleabane	(<i>Pulicaria dystenterica</i>)	R
Common orache	(<i>Atriplex patula</i>)	R
Common poppy	(<i>Papaver rhoeas</i>)	R
Fat hen	(<i>Chenopodium album</i>)	R
Field horsetail	(<i>Equisetum arvense</i>)	R
Field maple	(<i>Acer campestre</i>)	R
Great mullein	(<i>Verbascum Thapsus</i>)	R
Hawthorn	(<i>Crataegus monogyna</i>)	R
Hemlock	(<i>Conium maculatum</i>)	R
Hogweed	(<i>Heracleum sphondylium</i>)	R
Meadow vetchling	(<i>Lathyrus pratensis</i>)	R
Mugwort	(<i>Artemisia vulgaris</i>)	R
Redshank	(<i>Persicaria maculosa</i>)	R
Scarlet pimpernel	(<i>Anagallis arvensis</i>)	R
Sea couch grass	(<i>Elymus pycnanthus</i>)	R
Teasel	(<i>Dipsacus fullonum</i>)	R
Traveller's joy	(<i>Clematis vitalba</i>)	R
Weld	(<i>Reseda sp.</i>)	R
White clover	(<i>Trifolium repens</i>)	R
Willowherb sp.	(<i>Epilobium</i>)	R

TN 3 – Arable

Note: Each species below is found in separate fields

Species		DAFOR
Common Name	Scientific Name	
Wheat	(<i>Triticum aestivum</i>)	D
Broad bean	(<i>Vicia faba</i>)	D
Barley	(<i>Hordeum vulgare</i>)	D

TN 4 – Ponds in general

Ponds with great crested newt potential – man made waterfowl scrapes and two new ponds within the sub-station land.

TN5 – Mound of spoil

Possible reptile/amphibian hibernacula, although seems well sealed with no holes due to weathering.

TN6 – Brown Hare seen

TN7 – Treeline of mature leylandii

TN8 – Treeline of immature silver birch

TN9 – Semi-improved grassland strip at end of field

Species		DAFOR
Common Name	Scientific Name	
Bristly ox tongue	(<i>Helminthotheca echioides</i>)	A
Hogweed	(<i>Heracleum sphondylium</i>)	A
False oat grass	(<i>Arrhenatherum elatius</i>)	F
Great willowherb	(<i>Epilobium hirsutum</i>)	F
Perennial rye grass	(<i>Lolium perenne</i>)	F
Yorkshire fog	(<i>Holcus lanatus</i>)	F
American willowherb	(<i>Epilobium ciliatum</i>)	O
Black medick	(<i>Medicago lupulina</i>)	O
Bramble	(<i>Rubus fruticosus</i>)	O
Broad leaved dock	(<i>Rumex obtusifolius</i>)	O
Common fleabane	(<i>Pulicaria dystenterica</i>)	O
Creeping thistle	(<i>Cirsium arvense</i>)	O
Fescue sp.	(<i>Festuca sp.</i>)	O
Hard rush	(<i>Juncus inflexus</i>)	O
Hedge bindweed	(<i>Calystegia sepium</i>)	O
Ragwort	(<i>Senecio jacobaea</i>)	O
Scentless mayweed	(<i>Tripleurospermum inodorum</i>)	O
Vetch sp.	(<i>Vicia sp.</i>)	O
Wild carrot	(<i>Daucus carota ssp. Carota</i>)	O
Agrimony	(<i>Agrimonia eupatoria</i>)	R
Birds foot trefoil	(<i>Lotus corniculatus</i>)	R
Creeping buttercup	(<i>Ranunculus repens</i>)	R
Salix sp.	(<i>Salix sp.</i>)	R
Knotted hedge parsley	(<i>Torilis nodosa</i>)	R

TN10 – Overgrown Gappy Hedgerow

Species		DAFOR
Common Name	Scientific name	
Blackthorn	(<i>Prunus spinosa</i>)	F
Bramble	(<i>Rubus fruticosus</i>)	F
Common nettle	(<i>Urtica dioica</i>)	F
Bristly ox tongue	(<i>Helminthotheca echioides</i>)	O
Broad leaved dock	(<i>Rumex obtusifolius</i>)	O
Common mallow	(<i>Malva sylvestris</i>)	O
Creeping thistle	(<i>Cirsium arvense</i>)	O
Elder	(<i>Sambucus nigra</i>)	O
Fat hen	(<i>Chenopodium album</i>)	O
Hawthorn	(<i>Crataegus monogyna</i>)	O
Ivy	(<i>Hedera helix</i>)	O
Pedunculate oak	(<i>Quercus robur</i>)	O
Scentless mayweed	(<i>Tripleurospermum inodorum</i>)	O
Sow thistle	(<i>Sonchus sp.</i>)	O
Cut-leaved cranesbill	(<i>Geranium dissectum</i>)	R

Dog rose	(<i>Rosa canina</i>)	R
Doves-foot cranesbill	(<i>Geranium molle</i>)	R

TN11 – Overgrown and dried out farm pond, now with scrub and trees

Species		DAFOR
Common Name	Scientific name	
Crack willow	(<i>Salix fragilis</i>)	D
Ash	(<i>Fraxinus excelsior</i>)	O
Burdock sp.	(<i>Arctium sp.</i>)	O
Common nettle	(<i>Urtica dioica</i>)	O
Elm	(<i>Ulmus minor</i>)	O
Hogweed	(<i>Heracleum sphondylium</i>)	O
Italian poplar	(<i>Populus nigra</i>)	O
Ivy	(<i>Hedera helix</i>)	O

TN12 – Intact Hedgerow

Species		DAFOR
Common Name	Scientific Name	
Blackthorn	(<i>Prunus spinosa</i>)	A
Elm	(<i>Ulmus minor</i>)	A
Bramble	(<i>Rubus fruticosus</i>)	F
Hawthorn	(<i>Crataegus monogyna</i>)	O
Dog rose	(<i>Rosa canina</i>)	R
Lords and ladies	(<i>Arum maculatum</i>)	R

TN13 – Mature pedunculate oak with DBH 50 cm

TN14 – Tall Ruderal vegetation

Species		DAFOR
Common Name	Scientific Name	
Cow parsley	(<i>Anthriscus sylvatica</i>)	A
Common mallow	(<i>Malva sylvestris</i>)	A
Bristly ox tongue	(<i>Helminthotheca echioides</i>)	O
Common nettle	(<i>Urtica dioica</i>)	O
Perennial rye grass	(<i>Lolium perenne</i>)	A
Mugwort	(<i>Artemisia vulgaris</i>)	O
Broad leaved dock	(<i>Rumex obtusifolius</i>)	O
Creeping thistle	(<i>Cirsium arvense</i>)	O
Hogweed	(<i>Heracleum sphondylium</i>)	O
Ribwort plantain	(<i>Plantago lanceolata</i>)	O
Cocks foot	(<i>Dactylis glomerata</i>)	O
Curled dock	(<i>Rumex crispus</i>)	O
Spear thistle	(<i>Cirsium vulgare</i>)	O
False oat grass	(<i>Arrhenatherum elatius</i>)	O
Bramble	(<i>Rubus fruticosus</i>)	O
Scentless mayweed	(<i>Tripleurospermum inodorum</i>)	O
Black medick	(<i>Medicago lupulina</i>)	O
Yarrow	(<i>Achillea millefolium</i>)	O
Wall barley	(<i>Hordeum murinum</i>)	R
Wild oat	(<i>Avena sativa</i>)	O
Greater plantain	(<i>Plantago major</i>)	O
Creeping cinquefoil	(<i>Potentilla reptans</i>)	O
Pineapple weed	(<i>Matricaria discoidea</i>)	R
Birds foot trefoil	(<i>Lotus corniculatus</i>)	R

TN15 – Improved grassland footpath

Species		DAFOR
Common Name	Scientific Name	
Annual meadow grass	(<i>Poa annua</i>)	A
Bristly ox tongue	(<i>Helminthotheca echioides</i>)	F
Wild oat	(<i>Avena sativa</i>)	F
Yarrow	(<i>Achillea millefolium</i>)	F
Birds foot trefoil	(<i>Lotus corniculatus</i>)	O
Cow parsley	(<i>Anthriscus sylvatica</i>)	O
Creeping buttercup	(<i>Ranunculus repens</i>)	O
Greater plantain	(<i>Plantago major</i>)	O
Hawkweed sp.	(<i>Hieracium sp.</i>)	O
Red clover	(<i>Trifolium pratense</i>)	O
Red dead nettle	(<i>Lamium purpureum</i>)	O
Ribwort plantain	(<i>Plantago lanceolata</i>)	O
Scentless mayweed	(<i>Tripleurospermum inodorum</i>)	O
Soft brome	(<i>Bromus hordeaceus</i> ssp. <i>Hordeaceus</i>)	O
Wall barley	(<i>Hordeum murinum</i>)	O
Autumn hawkbit	(<i>Scorzoneroides autumnalis</i>)	R
Fennel	(<i>Foeniculum vulgare</i>)	R
Goats beard	(<i>Tragonpogon dubius</i>)	R
Wild carrot	(<i>Daucus carota</i> ssp. <i>Carota</i>)	R

TN16 – Wet woodland/scrub at end of large open ditch section

Species		DAFOR
Common Name	Scientific Name	
Crack willow	(<i>Salix fragilis</i>)	A
Ivy	(<i>Hedera helix</i>)	F
Italian poplar	(<i>Populus nigra</i>)	F
Pedunculate oak	(<i>Quercus robur</i>)	O

TN17 – Freshly ploughed agricultural field

TN18 – Juvenile grass snake seen

TN19 – Digging in soil, possible badger, but likely rabbit

TN20 – Deciduous tree line

Species		DAFOR
Common Name	Scientific Name	
Pedunculate oak	(<i>Quercus robur</i>)	F
Italian poplar	(<i>Populus nigra</i>)	F
Blackthorn	(<i>Prunus spinosa</i>)	F
Norway spruce	(<i>Picea abies</i>)	R
Hawthorn	(<i>Crataegus monogyna</i>)	O
Bramble	(<i>Rubus fruticosus</i>)	O

Key:

The 'DAFOR' scale of abundance is commonly used in botanical surveying and indicates the prevalence of species in the habitats indicated based on percentage cover.

D = Dominant
 A = Abundant
 F = Frequent
 O = Occasional
 R = Rare

Appendix C. Wildlife Legislation

C.1 Bats

All UK native bat species and their roosts (whether bats are present or not) are protected under the Conservation of Habitats and Species Regulations (2010) and under the Wildlife and Countryside Act 1981 (as amended). Taken together, under this legislation it is an offence to:

- Deliberately, intentionally or recklessly capture, injure or kill a bat;
- Damage/destroy a breeding site or resting place of a bat (N.B. this is an offence whether the Act is deliberate or not);
- Deliberately, intentionally or recklessly disturb a bat; or
- Intentionally or recklessly disturb access to any structure which a bat uses for shelter or protection.

A bat roost is defined as “any structure or place, which is used for shelter or protection” or a “breeding site or resting place”. Because bats commonly use the same roosts at particular times of the year after periods of absence, the roost is protected whether or not bats are resident.

Given the above legislation the potential presence of bats at a site represents a material consideration in the planning process. Even where planning permission is not required there is still a legal responsibility placed on the developer to ensure that a Natural England licence is obtained to cover any works that have the potential to result in an offence under the above legislation.

Seven of the UK bat species are listed as Priority Species under Section 41 of the Natural Environment and Rural Communities Act (2006) (NERC s41), namely, the barbastelle bat (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteini*), noctule bat (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*). Soprano pipistrelle and common pipistrelle (*Pipistrellus pipistrellus*) are also listed as a Kent BAP priority species.

C.2 Amphibians

C.2.1 Great Crested Newt

Great crested newt (*Triturus cristatus*) is afforded full protection under the Wildlife and Countryside Act (1981 as amended) and the Conservation of Habitats and Species Regulations (2010).

Through the implementation of these Regulations, it is an offence to deliberately capture, injure, disturb or kill a great crested newt, or to deliberately take or destroy its eggs. It is also an offence to deliberately or recklessly damage, destroy or obstruct access to any structure which a great crested newt uses for shelter or protection. This protection includes both the breeding pond itself and terrestrial habitat utilised for foraging and hibernation which may be distant from the breeding pond.

Great crested newt habitat is widely considered to extend up to 500m (the accepted maximum roaming distance) from a breeding pond where areas of connective suitable habitat exist.

The great crested newt is listed as both a NERC s41 priority species and as a Kent Biodiversity Action Plan (KBAP) priority species.

C.2.2 Common amphibians

The four common amphibians, common frog (*Rana temporaria*), common toad (*Bufo bufo*), palmate newt (*Lissotriton helveticus*) and smooth newt (*Lissotriton vulgaris*) have no legal protection other than that provided by subsection 9.5 of the Wildlife & Countryside Act (1981 as amended) which makes it an offence to sell them. However, general animal welfare guidelines do apply (i.e. causing an animal to suffer unnecessarily).

Common toad is listed as a priority Species under NERC S41 and under the Kent BAP, based on its rapid decline over the last 25 years, with a species action plan prepared.

C.3 Widespread Reptiles

The four common reptile species with the potential to occur on the Site, namely grass snake (*Natrix natrix*), slow worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*) and adder (*Vipera berus*) are all protected under the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill or injure these species.

All four species are listed as priority species under NERC s41 and the Kent BAP.

C.4 Birds

All birds in the UK are protected under the EC Directive on the Conservation of Wild Birds 2009 (2009/147/EC) and Part 1 Section 1(1) of the Wildlife and Countryside Act 1981 (as amended). This gives protection to all species of wild bird from deliberate;

- killing, injuring or taking birds or their young and keeping in captivity;
- egg collecting or destroying eggs; and
- taking, damaging or destroying nests in use or being built.

Specially protected birds are listed in Annex 1 of the Directive. Many are afforded protection by designation of land as Special Protection Areas (SPA). Special protection is also afforded to species listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). These birds are rare, endangered, declining or vulnerable species. In addition to the protection afforded to all bird species, it is an offence to cause reckless or intentional disturbance to the specially protected Schedule 1 listed species when they are building nests.

Bird species are also listed as species of principal importance for conservation in England under Section 41 of the Natural Environment and Rural Communities Act (2006) (NERC). Bird species listed under Section 41 of the NERC Act are to be given material consideration during planning.

Birds are also categorised according to their level of conservation concern as indicated by their population status and stability. These are known as the Birds of Conservation Concern (BOCC) Red, Amber and Green lists (Eaton, M. *et al.* 2015). The lists categorise species according to their level of conservation concern as indicated by their population status and stability. Where these species are present, their conservation status should be taken into account in determining the likely impacts of proposed projects and plans.

Red list species are:

- those that are 'Globally Threatened' according to IUCN (International Union for Conservation of Nature and Natural Resources) criteria;
- those whose population or range has declined rapidly in recent years; and
- those that have declined historically and not shown a substantial recent recovery.

Amber list species are:

- those with an unfavourable conservation status in Europe;
- those whose population or range has declined moderately in recent years;
- those whose population has declined historically but made a substantial recent recovery;
- those with limited populations and low breeding rates, and;
- those with internationally important or localised populations.

Green list species are not of conservation concern and include all other commonly occurring birds in the UK. Several introduced species are not accorded Red, Amber or Green status.

Skylark (*Alauda arvensis*), reed bunting (*Emberiza schoeniclus*), song thrush (*Turdus philomelos*), linnet (*Carduelis cannabina*) and turtle dove (*Streptopelia turtur*) are all listed as Kent BAP priority species.

C.5 Badgers

Badgers and their setts receive protection under the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981 (as amended). Under the above legislation it is an offence to:

- wilfully kill, injure or ill-treat a badger;
- cruelly ill-treat a badger, or
- damage, destroy or obstruct access to a sett or any part thereof.

A badger sett is defined in the legislation as any structure or place, which displays signs indicating current use by a badger.

C.6 Water vole

Water voles (*Arvicola amphibius*) are protected under the Wildlife and Countryside Act 1981 (as amended).

This legal protection makes it an offence to intentionally kill, injure or take water voles, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection, and intentionally or recklessly disturb water voles whilst occupying a place used for that purpose.

The water vole is listed as a species of principal importance in England under NERC s41. Water vole is also listed as a Kent BAP priority species.

C.7 Invertebrates

Certain species of invertebrates that may be found in coastal grazing marsh and associated ditch habitats receive legal protection under the Schedule 5 of Wildlife and Countryside Act 1981 (as amended) and additionally species listed under NERC s41 are to be given material consideration during planning.

Appendix D. Further Species Surveys

D.1 Bird surveys

Breeding bird surveys should be undertaken over two seasons (late March to July), with at least four visits per season, covering the habitats on Site and immediately adjacent to the Site. Surveys would follow an adaptation of the British Trust for Ornithology's Common Birds census (CBC) (Marchant, 1983), recording the presence and behaviour of all birds encountered, followed by mapping of individual territories.

Wintering bird surveys would be undertaken following an adaptation of the BTOs Wetlands Bird Survey and Winter Farmland Bird Survey, with monthly counts over the peak winter period (November to early March), covering two seasons. Each month, three surveys would be undertaken to cover:

- Low tide – species utilising the Swale estuary and the Site itself would be observed from vantage points along the sea wall commencing one hour prior to low tide and completing one hour after low tide;
- High tide - species utilising the Swale estuary and the Site itself would be observed from vantage points along the sea wall commencing one hour prior to high tide and completing one hour after high tide; and
- Farmland – a transect route across the fields would be followed to determine usage of the Site footprint by wintering species.

Passage bird surveys would follow a similar transect route used for breeding and wintering farmland species surveys and would comprise three visits per season for two seasons, undertaken between September and October.

Barn owl surveys involve surveyors positioned at suitable vantage points around the Site, on four occasions between April and July (although barn owls may breed in any month of the year, these are optimal months for survey), in order to observe for presence of hunting owls from one hour before dusk until one hour after dusk.

D.2 Bat surveys

Transect visits will be undertaken on three separate visits when bats are active between May and September, to include at least one visit during the optimum period of June to August. The current guidelines are that at least one of the three surveys should comprise dusk and pre-dawn surveys within one 24-hour period. Survey will cover the period from 15 minutes before sunset to two hours after sunset. Following one of the dusk surveys surveyors will return to the Site to repeat the transects from two hours before sunrise to sunrise.

The activity survey would involve surveyors walking a predetermined transect route around the Site, incorporating features with potential for use by roosting, commuting or foraging bats. Records of bat activity would be made using bat echolocation detectors (Petterson D-240x time expansion and Batbox Duet frequency division detectors). Any additional activity encountered whilst walking between points would also be noted.

The echolocation calls detected will be recorded to digital MP3 recorders and analysed using BatSound V4.2.1 software.

SM2BAT+ automated bat echolocation detectors should also be placed on Site for a minimum of five nights each month on three occasions between May and September. Data would be recorded onto a SD card for subsequent echolocation call analysis using Analook software.

D.3 Amphibian surveys

The seven water-bodies identified during the Phase 1 Habitat survey and a sample of the network of ditches within 500m of these ponds should be subject to survey on four separate visits between mid-March and the end of June, with at least two visits between mid-April and mid-May, in accordance with Natural England's Great Crested Newt Mitigation Guidelines (English Nature, 2001). A minimum of three out of four available survey methods, namely torchlight search, bottle-trapping, netting and/or egg searching would be employed during each visit, in accordance with the standard methodologies for great crested newt survey. If great-crested newts are encountered a further two survey visits would be required in order to determine population size (of the six total visits, at least three must then be undertaken between mid-April and mid-May).

Presence, sex, life stage and numbers would be recorded for great crested newt and also common frog, common toad, smooth newt and palmate newt.

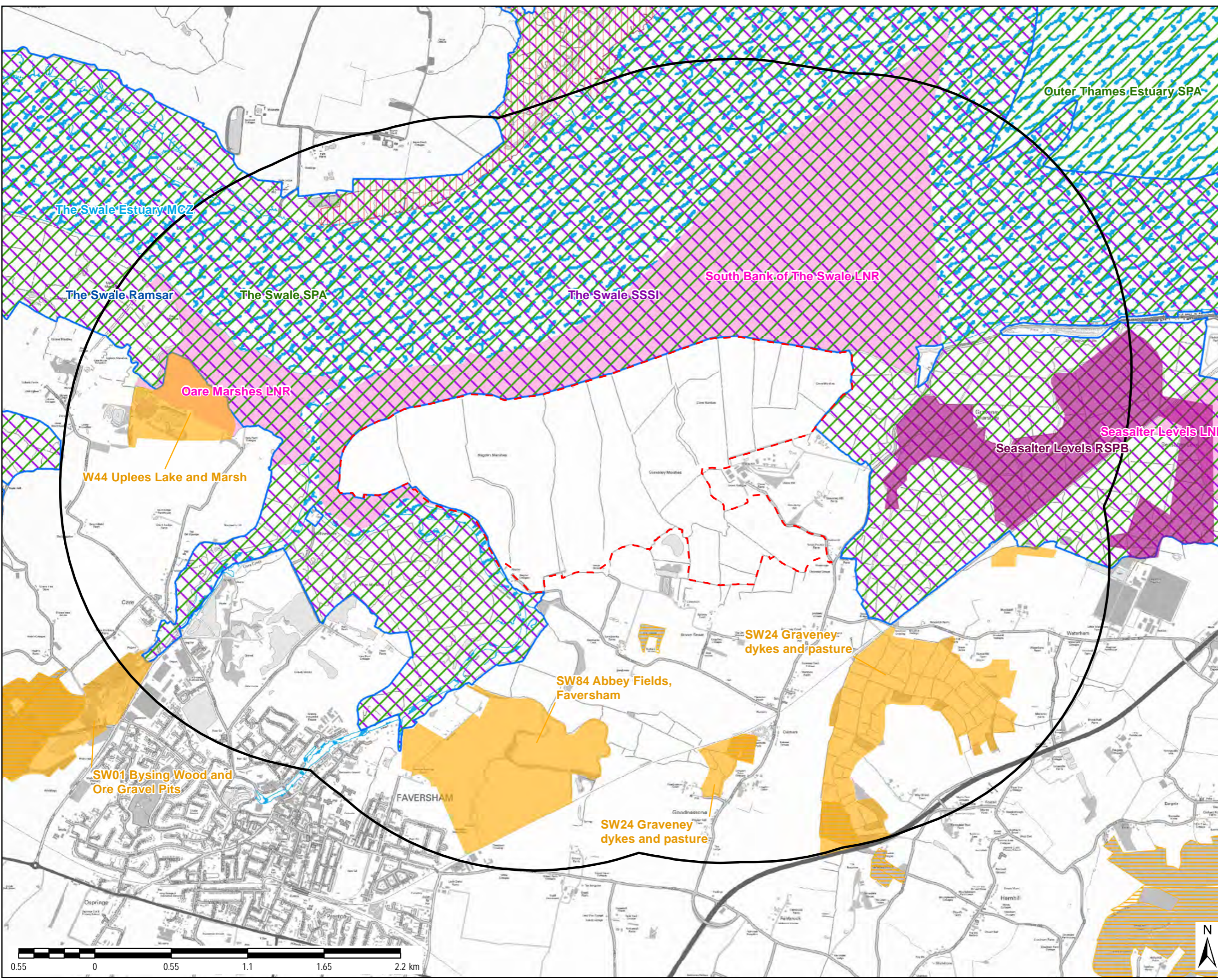
D.4 Reptile Surveys

The surveys will involve placing artificial reptile refugia (corrugated tin and/or felt mats) at a suitable density around the Site in suitable habitat in accordance with accepted guidance (Froglife, 1999). After a period of two weeks to allow refugia to 'bed in', a series of seven visits would be undertaken to record presence of reptile species sheltering under or basking on the refugia. Visits would be undertaken during April/May or September, when conditions are most favourable for recording reptiles.

Presence, life stage and numbers would be recorded and mapped.

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- LEGEND**
- Site boundary
 - Site boundary 2km buffer
 - RSPB reserve
 - Local Wildlife Site
 - Ramsar
 - Special Protection Area (SPA)
 - National Nature Reserve (NNR)
 - Site of Special Scientific Interest (SSSI)
 - Local Nature Reserve (LNR)
 - Ancient Woodland
 - Marine Conservation Zone



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Purpose of Issue: **FINAL**

Client: **CLEVE HILL SOLAR PARK LIMITED**

Project Title: **CLEVE FARM**

Drawing Title: **DESIGNATED SITES FOR NATURE CONSERVATION**

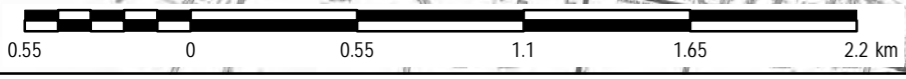
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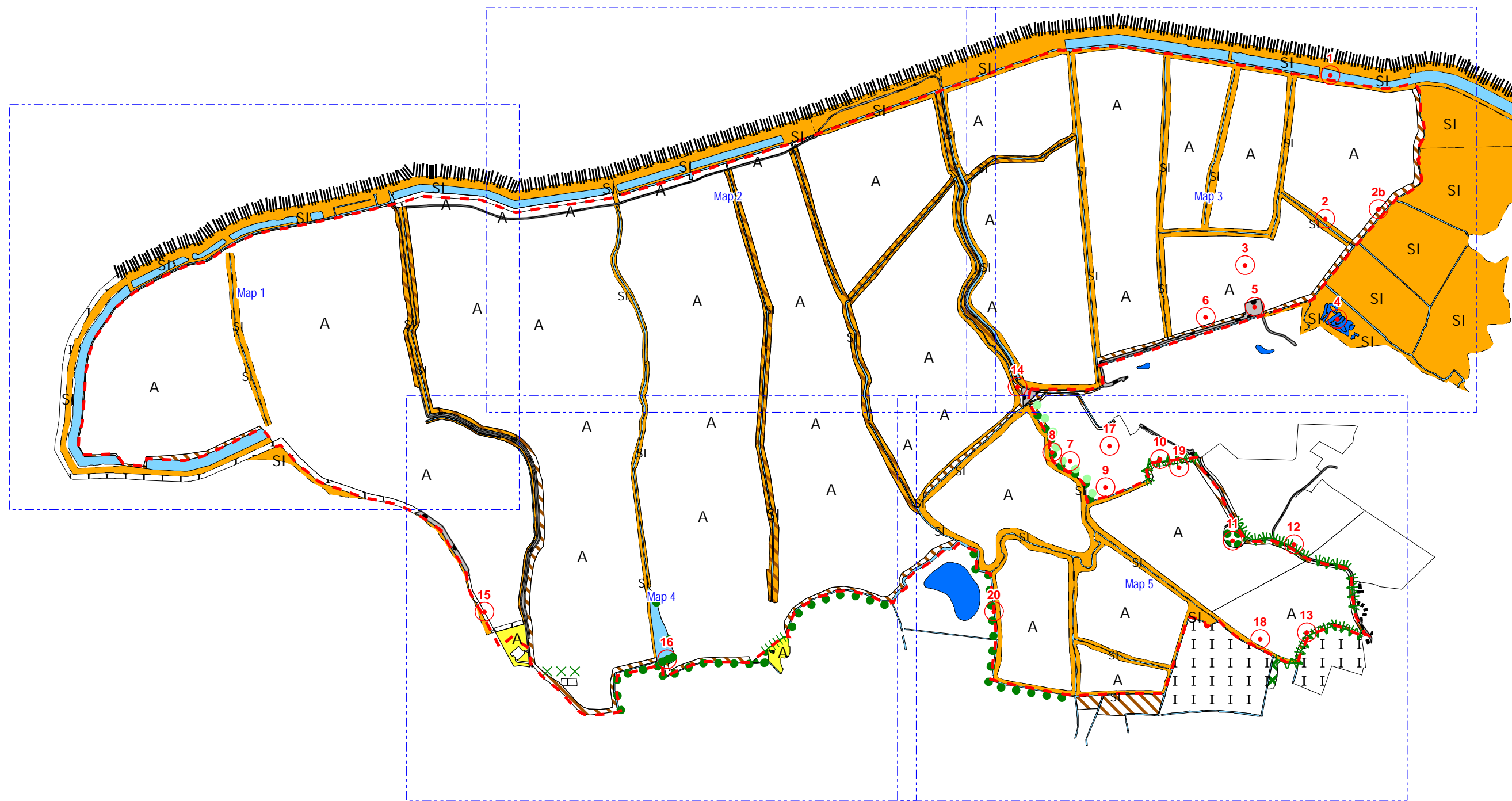
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LEGEND

- Site boundary
- Target note
- Broadleaved parkland /scattered tree
- Coniferous parkland /scattered tree
- × Scrub - scattered
- Artificial sea wall
- W Hedge with trees - native species-rich
- H Hedge with trees - species-poor
- W Intact hedge - native species-rich
- Bare ground
- Buildings
- Cultivated/disturbed land - amenity grassland
- Cultivated/disturbed land - arable
- Improved grassland
- Neutral grassland - semi-improved
- Other tall herb and fern - ruderal
- Scrub - dense/continuous
- Standing water
- Swamp



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Purpose of Issue: **FINAL**

Client: **CLEVE HILL SOLAR PARK LIMITED**

Project Title: **CLEVE FARM**

Drawing Title: **PHASE 1 HABITAT SURVEY OVERVIEW**

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LEGEND

- Site boundary
- Target note
- Broadleaved parkland /scattered tree
- Coniferous parkland /scattered tree
- × Scrub - scattered
- Artificial sea wall
- W Hedge with trees - native species-rich
- H Hedge with trees - species-poor
- W Intact hedge - native species-rich
- Bare ground
- Buildings
- Cultivated/disturbed land - amenity grassland
- Cultivated/disturbed land - arable
- Improved grassland
- Neutral grassland - semi-improved
- Other tall herb and fern - ruderal
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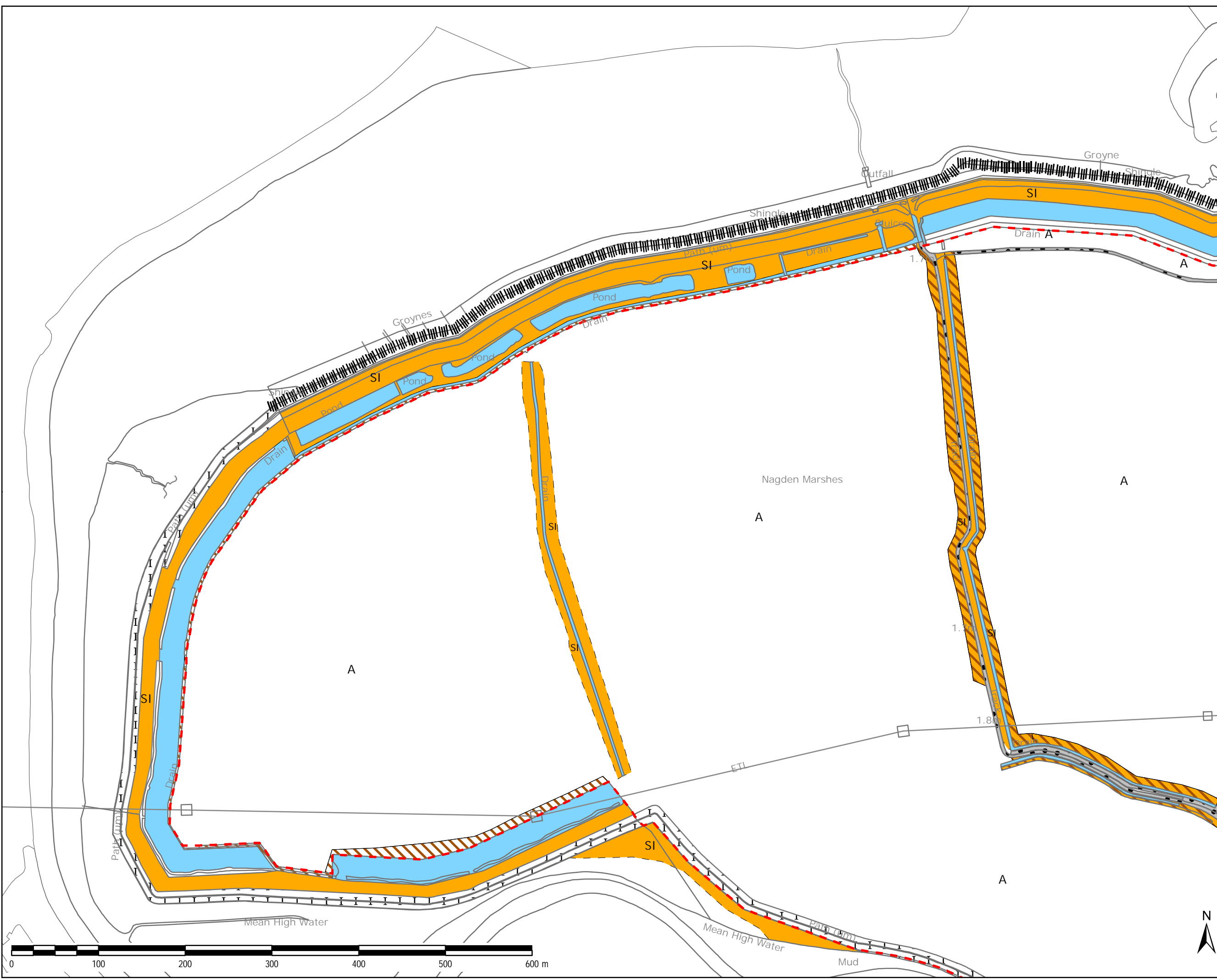
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PHASE 1 HABITAT SURVEY MAP 1

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LEGEND	
	Site boundary
	Target note
	Broadleaved parkland /scattered tree
	Coniferous parkland /scattered tree
	Scrub - scattered
	Artificial sea wall
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
	Intact hedge - native species-rich
	Bare ground
	Buildings
	Cultivated/disturbed land - amenity grassland
	Cultivated/disturbed land - arable
	Improved grassland
	Neutral grassland - semi-improved
	Other tall herb and fern - ruderal
	Scrub - dense/continuous
	Standing water
	Swamp

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LEGEND

- Site boundary
- Target note
- Broadleaved parkland /scattered tree
- Coniferous parkland /scattered tree
- × Scrub - scattered
- Artificial sea wall
- ∩∩∩∩ Hedge with trees - native species-rich
- ||||| Hedge with trees - species-poor
- ∩∩∩∩ Intact hedge - native species-rich
- Bare ground
- Buildings
- A Cultivated/disturbed land - amenity grassland
- A Cultivated/disturbed land - arable
- I Improved grassland
- SI Neutral grassland - semi-improved
- / / / / / Other tall herb and fern - ruderal
- X X X X Scrub - dense/continuous
- Standing water
- Swamp

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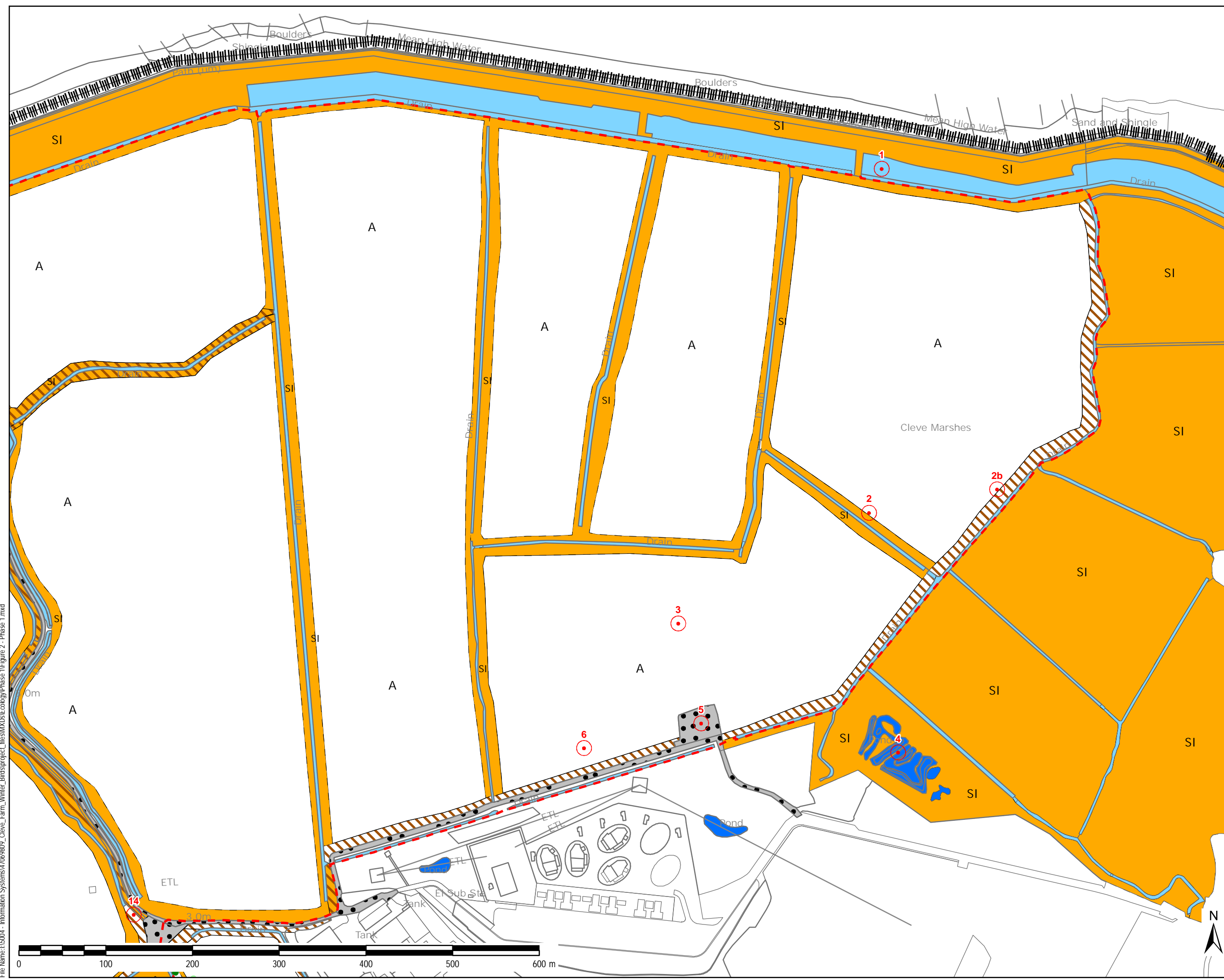
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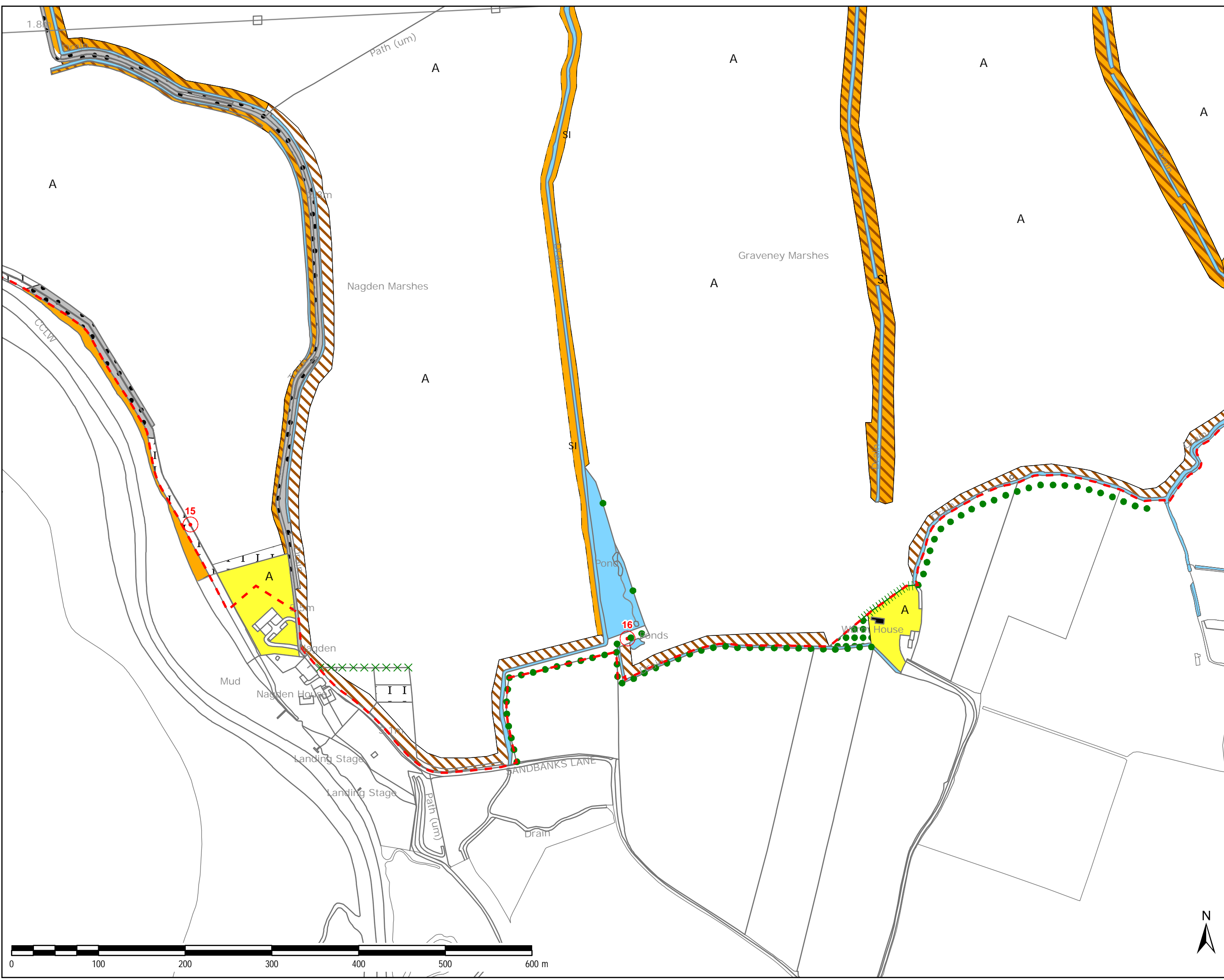
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LEGEND	
	Site boundary
	Target note
	Broadleaved parkland /scattered tree
	Coniferous parkland /scattered tree
	Scrub - scattered
	Artificial sea wall
	Hedge with trees - native species-rich
	Hedge with trees - species-poor
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	Bare ground
	Buildings
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	Standing water
	Swamp

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LEGEND

- Site boundary
- Target note
- Broadleaved parkland /scattered tree
- Coniferous parkland /scattered tree
- × Scrub - scattered
- Artificial sea wall
- ∩∩∩∩ Hedge with trees - native species-rich
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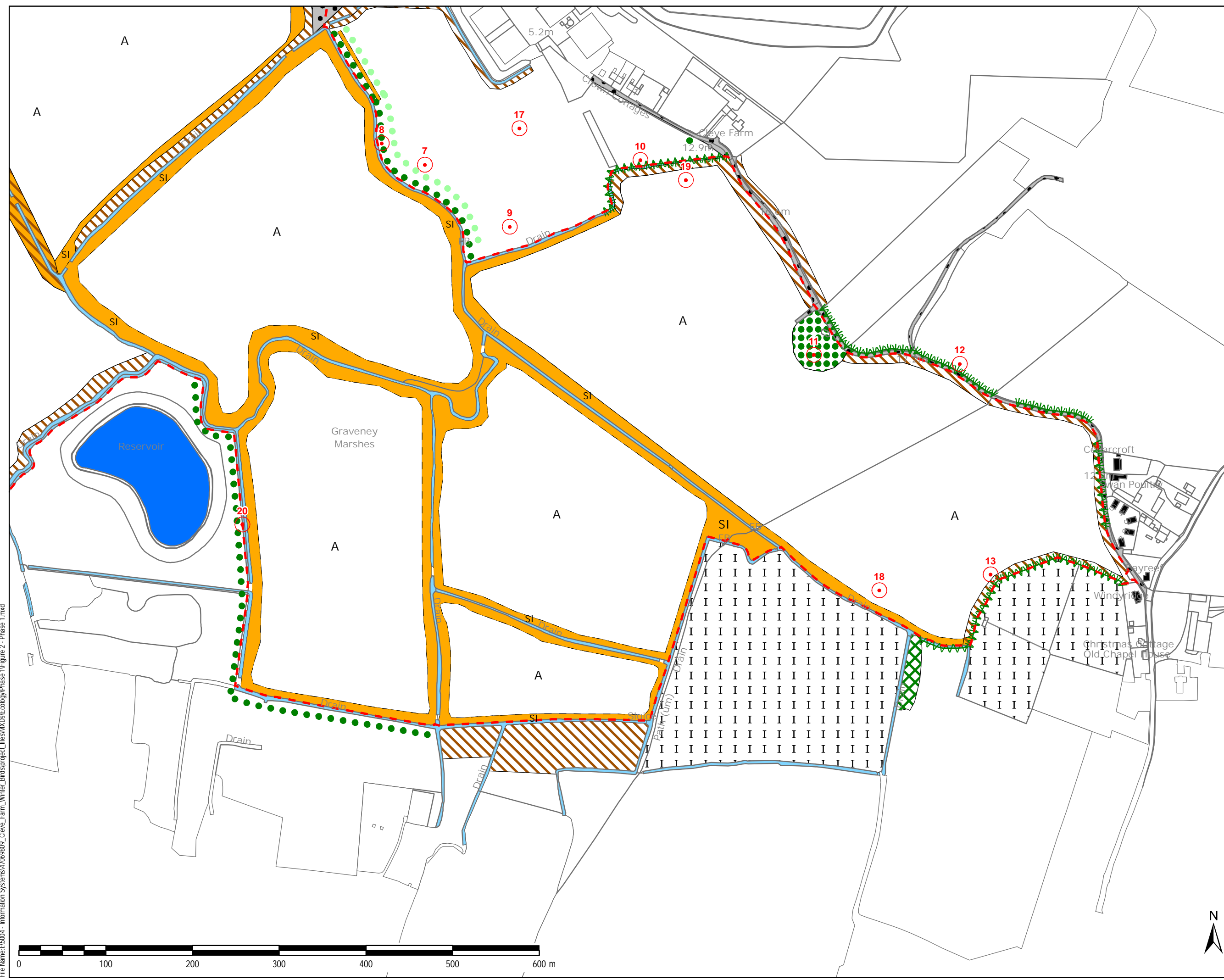
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