

A585 Windy Harbour to Skippool Improvement Scheme

TR010035

6.8.1 ES Appendix 8.1: Extended Phase 1 Habitat Technical Appendix

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**A585 Windy Harbour to Skippool
Improvement Scheme**
Development Consent Order 201[]

**ES APPENDIX 8.1: EXTENDED PHASE 1
HABITAT TECHNICAL APPENDIX**

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1 INTRODUCTION

1.1 Background

1.1.1 This report provides the findings of the Extended Phase 1 Habitat survey undertaken in support of Highways England's proposed development of the A585 between Windy Harbour and Skippool (hereafter referred to as 'the Scheme').

1.1.2 The aims and objectives of this study were to:

- Identify the presence, or potential presence, of important ecological features (which includes habitats, species and ecosystems) within the study area
- Advise of any implications that presence would have on the Scheme

1.1.3 Impact assessment, the need for mitigation or compensation, and the identification of potential opportunities to enhance the existing ecological baseline, are not included within this report – this can be found in Chapter 8: Biodiversity (document reference TR010035/APP/6.8).

1.2 Report Structure

1.2.1 This report has been subdivided into the following Sections:

- Section 1 and 2: provide the aims and objectives and methodologies adopted
- Section 3: presents the findings of the desk study and habitat survey
- Section 4: summarises the results and provides an appraisal of the habitats within the study area
- Section 5: references

2 METHODOLOGY

2.1 Overview and Study Area

- 2.1.1 This Extended Phase 1 Habitat Report has been prepared in accordance with the report guidance produced by Chartered Institute of Ecology and Environmental Management (CIEEM) (2015) and includes a desk study, field survey and evaluation.
- 2.1.2 Study areas were determined during the options phase, at which time multiple Scheme options were under consideration. The desk study area and subsequent survey area were determined to encompass all potential Scheme options at that time. This report therefore, in some instances, contains information outside of the various study and survey areas discussed herein.

2.2 Desk Study

- 2.2.1 The study area for the desk study (hereafter referred to as the 'Desk Study Area': Figure 8.1.1 at Annex C) included the Draft Order Limits and, in accordance with the Design Manual for Roads and Bridges (DMRB) (Highways Agency, 2008), extended to:
- 30km for Special Areas of Conservation (SACs) designated for bats.
 - 2km for statutory and non-statutory designated sites
 - SAC – not designated for bats
 - Special Protection Areas (SPA)
 - Marine Conservation Zones (MCZ)
 - Sites of Special Scientific Interest (SSSI)
 - National Nature Reserves (NNR)
 - Local Nature Reserves (LNR)
 - 1km for records of protected or notable species
- 2.2.2 Table 2-1 summaries the sources of information used for the desk study and the information obtained.

Table 2-1: Desk Study Data Sources

Source	Information Obtained
Multi-Agency Geographic Information for the Countryside (MAGIC) – magic.defra.gov.uk	International and national nature conservation designated sites, habitats registered on the Priority Habitat Inventory and registered European Protected Species Licence (EPSL) applications
Ordnance Survey (OS) mapping and online aerial imagery	Habitats present and their context within, and connectivity to the wider area. Ecological features potentially not evident on the ground during field surveys
Historic Ordnance Survey Mapping	Earliest available: 1844–1945 1:10,560 Scale OS map – http://www.oldmapsonline.org/
The Lancashire Environment Record Network (LERN)	Records of protected and notable species dating back to 2005, and locations of non-statutory designated sites

Source	Information Obtained
A585 Windy Harbour Junction Improvements: Extended Phase 1 Habitat Survey (Mouchel, 2013)	Habitat information and species records for land within 500m of the Windy Harbour Junction at the eastern end of the Desk Study Area

2.3 Phase 1 Habitat Survey

- 2.3.1 The study area used for the field survey (hereafter referred to as the 'Habitat Survey Area') included the land situated within the Draft Order Limits and all accessible land within a 500m radius (Figure 8.1.3 at Annex C).
- 2.3.2 Site visits were conducted in April, June, July and September 2016 during suitable weather conditions (i.e. clear and dry).
- 2.3.3 The survey comprised a walkover of the Habitat Survey Area and classification of habitats to Phase 1 Habitat Survey standard. The Phase 1 Habitat Survey (Joint Nature Conservation Committee (JNCC), 2010) was extended to include the potential for habitats to support protected / notable species. The Extended Phase 1 Habitat Survey provides information on the habitats and identifies actual or potential presence of legally protected or otherwise notable species or habitats. Habitats were mapped and are shown at an appropriate scale on the Extended Phase 1 Habitat Survey Plan (Figure 8.1.3 at Annex C).
- 2.3.4 Target Notes were included where a detailed description of a particular habitat or species composition was needed, or to highlight a particular feature of interest. Target Notes are provided in Annex A. The survey does not provide a comprehensive list of all species present; however, the DAFOR scale terminology (D=dominant; A=abundant; F=frequent; O=occasional; R=rare) is occasionally used to depict the abundance of flora species. Plant names follow 'New Flora of the British Isles' (Stace, 2011). The common and scientific name of each of the botanical species is provided when first mentioned in the text, but only the common name is stated thereafter. A glossary of all species identified during the field surveys are listed in Annex B.

2.4 Evaluation

- 2.4.1 In addition to establishing the baseline ecological interest within the Habitat Survey Area, the survey intended to identify areas where further surveys may be required, during the appropriate season, details of which are reported separately in Appendices 8.2 – 8.8 (document reference TR010035/APP/6.8.2 – 6.8.8). The potential of habitats within the Draft Order Limits to support legally protected or notable species was assessed from field observations carried out during the walkover and combined with the results of the desk study. The Habitat Survey Area was inspected for the presence of protected species as follows:
- The presence of nesting habitat for breeding birds (such as mature trees, dense scrub, hedgerows and buildings or field margins suitable for ground nesting birds) and evidence of bird nesting including bird song, old nests, faecal marks, etc
 - The presence of features in, and on trees, indicating potential for roosting Bats such as fissures, holes, loose bark and Ivy *Hedera helix* and those associated

with buildings such as cavities, roof voids, hanging tiles, unenclosed soffits etc. Such features were categorised according to their potential for roosting bats using the bat Conservation Trust Good Practice Guidelines (Collins, 2016). Direct evidence such as the presence of bats, staining, droppings and feeding remains was identified

- Evidence of European badger *Meles meles*, including setts, runs, snuffle holes and hairs
- Scrub / grassland mosaic and potential hibernation sites for reptiles
- Suitable habitat for hazel dormice *Muscardinus avellanarius*, such as woodland, scrub and dense, species-rich hedgerows, particularly when connected to suitable habitats across the wider landscape
- Assessment of any ponds that have terrestrial habitat connectivity with the Scheme. Pond assessments included the Habitat Suitability Index following Amphibian and Reptile Groups of the United Kingdom (ARG UK) (2010). Additionally, terrestrial habitats were assessed for their potential to support great crested newts *Triturus cristatus* and other amphibians
- Assessment of waterbodies, such as ditches and streams as to their potential to support European water vole *Arvicola amphibius* or Eurasian otter *Lutra lutra*

2.4.2 The presence or likelihood of occurrence of any legally protected, noteworthy or invasive species was assessed from field observations carried out during the survey and combined with the results of the desk study. This was ranked as follows and relies on habitat suitability and an evaluation of existing data:

- **Negligible** – while presence cannot be absolutely discounted, habitats are very limited or of poor quality for a particular species or species group. There may be no local records identified by the desk study and the surrounding habitats are considered unlikely to support wider populations of a species or species group. The Habitat Survey Area may also be outside, or peripheral to, the known natural range for a species or species group
- **Low** – habitats are of poor to moderate quality for a given species or species group. Desk study returns few or no records, but presence cannot be discounted on the basis of national distribution, the nature of surrounding habitats, habitat fragmentation or recent disturbance, etc
- **Medium** – habitats are of moderate quality providing opportunities for a given species or species group. Desk study reveals local occurrence, or the area is within the national distribution and with suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat isolation, or disturbance
- **High** – habitats are of high quality for a given species or species group. Desk study provides evidence of local occurrence. The area is within or peripheral to a national or regional stronghold or has good quality surrounding habitat and good connectivity
- **Confirmed Presence** – presence confirmed from the current survey or by recent, confirmed records identified by the desk study

3 RESULTS

3.1 Overview

- 3.1.1 Target notes from the application site walkover survey are provided in Annex A and shown on Figure 8.1.3 at Annex C.
- 3.1.2 The Scheme would be situated within Little Singleton, north east of Poulton-le-Fylde, on the coastal plain called 'The Fylde'. The Habitat Survey Area was situated on the edge of the built-up area of Poulton-le-Fylde within a largely agricultural landscape of open, relatively flat, improved grazing pasture. The River Wyre and Main Dyke were situated to the north and south of the Scheme, respectively, and sections of adjacent pasture land was considered likely to be readily flooded from these watercourses.
- 3.1.3 The section of the existing A585 situated within the Habitat Survey Area comprised Mains Lane and Garstang New Road. Residential properties and associated private land were present on both sides of Mains Lane; whereas, Garstang New Road was bound by agricultural fields with the exception of a landfill site to the east.

3.2 Woodland

- 3.2.1 Woodland contributed towards a limited proportion of the Habitat Survey Area, restricted to relatively small blocks within or between agricultural fields and associated with large residential gardens. The woodlands were separated into semi-natural and plantation using the criteria defined by the JNCC (2010); that is, those with greater than 30% of planted trees in the canopy were defined as plantation as opposed to semi-natural. Woodland blocks close to the Scheme are described, below, from east to west; further descriptions and a photograph of these woodlands can be found at Target Notes 3, 10, 19, 20, 21, 22, 23, 24, 28 and 35.
- 3.2.2 All observed woodland within the Habitat Survey Area appeared to have been modified, to some extent, by planting, as Sycamore *Acer pseudoplatanus*, which is not native to Great Britain but is naturalised and very common, and Beech *Fagus sylvatica*, which is not native to the region, were typically abundant within the mature tree cohort.
- 3.2.3 The Scheme extends across a loose band of predominately broadleaved trees on the banks of Main Dyke, immediately north of Skippool Bridge (Target Note 3). The woodland is registered on the Priority Habitat Inventory (PHI) as Deciduous Woodland and historically it extended into Poulton Sewage Works further north; however, the trees within the sewage works were cleared c. 2013 (observation based on aerial photography). The canopy was dominated by semi-mature Sycamore with occasional Crack Willow *Salix fragilis*.
- 3.2.4 To the east, the Scheme extends through Singleton Park which comprised predominately grazed pasture with a series of woodland blocks planted in the late 19th century (first present on the 1891–95 OS map with the exception of one woodland block to the south west of the Park which was present on the 1844–47 OS map). The blocks situated in close proximity of the Scheme (see Target Notes 19, 20, 21, 22, 23 and 24) typically comprised a mature canopy dominated by Sycamore with under-planting of Rowan *Sorbus aucuparia*, Pedunculate Oak *Quercus robur*, Ash *Fraxinus excelsior*. Beech was also widespread. However, one of the woodland blocks also contained mature Scots Pine *Pinus sylvestris* (see Target Note 24), and

a small section of woodland was semi-mature (see Target Note 20).

- 3.2.5 Further east, the Scheme extends adjacent to another block of broadleaved plantation woodland (Target Note 28)

3.3 Scattered Trees

- 3.3.1 Scattered trees were widespread throughout the Habitat Survey Area and commonplace within larger residential gardens, along field margins, and as avenues along roads: see Target Notes 10, 25 and 38 for examples in proximity of the Scheme, but also Target Notes 33 and 34 for examples of hedgerows with trees. Sycamore and Ash were common and widespread, and Alder *Alnus glutinosa* and Willow species *S. fragilis* and *S. cinerea* were localised to ditches and pond edges; however, some of the gardens comprised a wide variety of broadleaved and coniferous trees.

3.4 Hedgerows

- 3.4.1 Hedgerows were common and widespread on field boundaries. These were typically species poor and dominated by Hawthorn *Crataegus monogyna*. Several hedgerows were associated with ditches and a few contained trees. Hedgerows in close proximity of the Scheme are described with a photograph at Target Notes 1, 4, 6, 7, 9, 11, 15–18, 27–31, 33, 34, 36, 37 and 39–42.

3.5 Scrub and Tall Ruderal

- 3.5.1 Scattered scrub was widespread within the Habitat Survey Area and was typically associated with tall ruderals. Brambles *Rubus fruticosus* agg and Common Nettle *Urtica dioica* were widespread on field margins, within woodlands and on the banks of ponds and watercourses. Scattered Hawthorn and Goats Willow *S. caprea* were common around ponds and along Main Dyke: Hawthorn was occasional along field margins. The latter may be remnant of hedgerows (see Target Note 14) but were included in this category. Additional scrub species that were occasional and widespread along field boundaries included Elder *Sambucus nigra*, Dog-Rose *Rosa canina*, Gorse *Ulex europaeus*, Blackthorn *Prunus spinose*, Common Cleavers *Galium aparine* and Hedge Bindweed *Calystegia sepium*.
- 3.5.2 In addition to widespread Common Nettle, Rosebay Willowherb *Chamerion angustifolium* was locally abundant along ditches and on pond edges.

3.6 Grassland and Arable Fields

- 3.6.1 The grasslands within the Habitat Survey Area have been separated into amenity, improved and semi-improved categories. Short, regularly mown amenity grasslands were widespread and typically associated with residential and commercial areas, and roadside berms (see Target Note 2 for an example).
- 3.6.2 Arable fields were occasional within the Habitat Survey Area. Field margins varied from field to field; they were typically very narrow strips dominated by Common Nettle in fields defined by hedgerows; however, where hedgerows were absent and around ponds, margins were 2–5 m wide. Widespread species included Brambles, Yorkshire Fog *Holcus lanatus*, Perennial Rye-Grass *Lolium perenne*, Cow Parsley *Anthriscus sylvestris*, Hogweed *Heracleum sphondylium*, Dandelion *Taraxacum officinale* agg., Hedge Mustard *Sisymbrium officinale*, Broad-Leaved Dock *Rumex obtusifolius*, Rosebay Willowherb, Field Horsetail *Equisetum arvense*, Redshank

Persicaria maculosa, Common Fleabane *Pulicaria dysenterica*, Red Campion *Silene dioica*, Common Knapweed *Centaurea nigra*, Yarrow *Achillea millefolium*, Lesser Stitchwort *Stellaria graminea*, Common Chickweed *Stellaria media* and Meadow Vetchling *Lathyrus pratensis*.

Improved Grassland

- 3.6.3 Fields of cow-grazed improved pasture occupied the majority of the Habitat Survey Area. These fields were frequently bound by hedgerows and ditches with numerous small ponds scattered throughout.
- 3.6.4 The habitat was characterised by dominant Perennial Rye-Grass with abundant White Clover *Trifolium repens* and Creeping Buttercup *Ranunculus repens*. Yorkshire-Fog, Common Bent *Agrostis capillaris*, Annual Meadow-Grass *Poa annua* and Broad-Leaved Dock were typically frequent to occasional within the sward, Soft Rush *Juncus effuses*, and Meadow Foxtail *Alopecurus pratensis*, Sheep's-Fescue *Festuca ovina* and Italian Rye-grass *Lolium multiflorum* were locally occasional; Field Horsetail was abundant in a few fields to the west of the Habitat Survey Area.
- 3.6.5 As for arable fields, above, field boundaries were typically absent or restricted to very narrow strips along pond edges, hedgerows, ditches or drains, or access tracks. Common Nettle was again widespread and locally dominant within this habitat. In addition to the above-mentioned species, Himalayan [Indian] Balsam *Impatiens glandulifera* was also widespread and locally dominant, particularly to the west of the Habitat Survey Area.

Semi-improved Grassland

- 3.6.6 Semi-improved grasslands within the Habitat Survey Area were species-poor and further separated into neutral and poor semi-improved categories. Poor semi-improved grassland fields comprised a similar species sward as the improved grassland with lesser frequency of Perennial Rye-Grass (but still typically abundant) and the addition of Red Fescue *Festuca rubra* and False Oat-Grass *Arrhenatherum elatius*.
- 3.6.7 Neutral semi-improved grassland was widespread throughout the Habitat Survey Area, but generally restricted to thin strips of field margins, inaccessible for grazing, on banks and along some hedgerows. Additional species recorded in these habitats included Crested Dog's-Tail *Cynosurus cristatus*, Cock's-Foot *Dactylis glomerate*, Creeping Thistle *Cirsium arvense*, Common Daisy *Bellis perenni*, Common Vetch *Vicia sativa*, Common Ribwort Plantain *Plantago lanceolate*, Meadow Buttercup *Ranunculus acris*, Common Sorrel *Rumex acetosa*, Silverweed *Potentilla anserine*, Common Bird's-Foot-Trefoil *Lotus corniculatus*, Field Forget-Me-Not *Myosotis arvensis* and Yarrow *Achillea millefolium*.

3.7 Saltmarsh and Intertidal Mud / Sand

- 3.7.1 Saltmarsh and intertidal mud/sand habitats were associated with the River Wyre and Skippool Creek to the north of the Scheme. The River Wyre corridor comprised extensive areas of this habitat with large expanses of barren mudflats, multiple minor creeks, tidal ponds and marsh vegetation. Saltmarsh habitats comprised abundant Common Cord-Grass *Spartina anglica* and Sea Purslane *Atriplex portulacoides*, with frequent to occasional occurrences of Annual Sea-Blite *Suaeda maritima*, Glasswort *Salicornia* sp., Sea Couch Grass *Agropyron pungens*, Sea Arrowgrass

Triglochin maritima, Sea Lavender *Limonium vulgare*, Common Saltmarsh-Grass *Puccinellia maritima*, Sea Plantain *Plantago maritima*, Sea Wormwood *Artemisia maritima*, Golden-Samphire *Inula crithmoides*, Sea-Milkwort *Glaux maritima*, and rare occurrences of Sea Bindweed *Calystegia soldanella* and Chamomile *Chamaemelum nobile*. Localised areas of Common Reed *Phragmites communis* and rushes *Juncus* sp. were also present within the upper saltmarsh zone.

3.8 Open Water

- 3.8.1 Aquatic habitats present within the Habitat Survey Area comprised the open water of ponds, ditches and river systems with their associated marginal vegetation. The River Wyre extends parallel with the Scheme, just outside of the Habitat Survey Area, approximately 10m north.
- 3.8.2 Skippool Creek and Main Dyke were connected to the River Wyre and extend into the Habitat Survey Area. Skippool Creek (Target Note 43) extended south from the River (and flowed north into the River Wyre) and comprised a steep and barren muddy cutting with small patches of saltmarsh interspersed within grazed semi-improved grassland and scattered scrub. Brambles, Common Nettle, Common Reed, Reed Canary Grass *Phalaris arundinacea*, Creeping Thistle, Cocks-Foot and Hogweed were common on its banks.
- 3.8.3 Main Dyke is a heavily modified tributary of the River Wyre. It measured approximately 3m wide and was culverted beneath the existing A585 and A586 roads. To the north (Target Note 3) Main Dyke contained very little emergent vegetation and was predominantly lined by broadleaved trees, scrub or both. Further south (Target Note 8), Main Dyke's banks supported coarse grassland with ruderals, scattered trees and scrub.
- 3.8.4 Ditches were situated on the margins of many of the agricultural fields within the Habitat Survey Area. Ditches in close proximity of the Scheme are described in Target Notes 7, 9, 12, 25–28, 32 and 41. These ditches varied from shaded channels, devoid of vegetation, when situated beneath hedgerows (such as Target Note 9 and 11) to open, well-vegetated channels (such as Target Note 26 and 32), and from running water to dry. The following species were widespread along the ditches within the Habitat Survey Area: Rosebay Willowherb, Common Nettle, Common Reed, Soft Rush, Reed Canary-Grass, Floating Sweet-Grass *Glyceria fluitans* and Greater Reedmace *Typha latifolia*; Himalayan Balsam was also widespread and locally dominant, particularly along Main Dyke and associated ditches, to the west of the Habitat Survey Area.
- 3.8.5 A total of 128 ponds were identified within the Habitat Survey Area. All ponds were given a reference number and the location of each is highlighted on Figure 8.1.3

3.9 Habitat Summary

- 3.9.1 A summary of the above identified habitats and their status is provided in Table 3-1. Section 41 (S41) Habitats, as listed in the Table 3-1, and species, described in section 4, are habitats and species listed under Section 41 of the Natural Environment Research Council (NERC) Act 2006 as “species of principal importance for the purpose of conserving biodiversity.”

Table 3-1: Summary of Habitats within Habitat Survey Area

Habitat	Status
Semi-natural broadleaved woodland	Nationally common and widespread; occasional within Habitat Survey Area. Restricted to relatively small blocks within or between agricultural fields and associated with large residential gardens. May qualify as Deciduous Woodland S41 Habitat.
Hedgerows	Nationally common and widespread; frequent within Habitat Survey Area, along field boundaries. Hedgerows S41 Habitat.
Broadleaved and mixed plantation woodlands, scattered trees and scrub.	Common and widespread habitat. Frequent and widespread within Habitat Survey Area.
Semi-improved grassland.	Nationally common and widespread; occasional and generally species poor within Habitat Survey Area. Some sections with Habitat Survey Area may qualify (or be restorable to) Lowland meadows S41 habitat.
Arable and other grassland habitats.	Abundant and widespread both nationally and within Habitat Survey Area. Sections of improved grasslands may qualify as Coastal and Floodplain Grazing Marsh S41 Habitat.
Tall ruderals	Small localised patches throughout the Habitat Survey Area.
Saltmarsh and intertidal mud/sand habitats	Restricted nationally and within Habitat Survey Area. Both areas are S41 habitat (Coastal saltmarsh and mudflats, respectively).
River Wyre	Extensive River corridor comprising one of the largest estuarine systems in the UK. Rivers S41 Habitat.
Skippool Creek and Main Dyke	Smaller tributaries of the River Wyre. Extensive habitats supporting a range of species. Rivers S41 Habitat.
Smaller, unnamed tributaries of Main Dyke and small field ditches	Common on field margins. Modified channels; varying condition. Rivers S41 Habitat.
Ponds.	Common and widespread within Habitat Survey Area; varying condition. May qualify as Pond S41 Habitat.

4 DISCUSSION

4.1 Statutory and non-statutory designated sites

- 4.1.1 Four statutory designated sites and 1 recommended designated site were identified; all occupied the same boundary and were centred on the River Wyre which lies to the north of the Scheme. No SACs designated for bats were identified. In addition, 3 non-statutory designated sites were identified within the Desk Study Area. Table 4-1 lists these statutory and non-statutory designated sites, the distance and direction of the sites from the Scheme and their assigned value; the location of these sites is also shown on Figure 8.1.1 at Annex C.

Table 4-1: Statutory and Non-statutory Designated Sites

Site Name	Reason for Designation	Distance (m) and direction from Scheme
Morecambe Bay and Duddon Estuary SPA (which includes marine components)	The Morecambe Bay and Duddon Estuary SPA is one of the largest estuarine systems in the UK and is fed by 5 main river-channels (the Leven, Kent, Keer, Lune and Wyre) which drain through the intertidal flats of sand and mud, covering approximately 37,404.6ha. It is designated for its populations of breeding, over-wintering and passage birds which are of European importance; assemblages of sea birds and waterfowl which are of international importance (JNCC, 2004). The SPA is also recognised by BirdLife International as an Important Bird Area (IBA; BirdLife International, 2015).	10m north
Morecambe Bay Ramsar site	Migratory waterfowl with Ringed Plover <i>Charadrius hiaticula</i> in internationally important numbers; assemblages of over-wintering birds which are of international importance; populations of breeding, over-wintering and passage birds which are of international importance. The site supports the third largest population of wintering waterfowl in the UK (JNCC, 1996).	10m north
Wyre Estuary SSSI	Ornithological interest; intertidal habitats including saltmarsh (Natural England, 1995).	10m north

Site Name	Reason for Designation	Distance (m) and direction from Scheme
Wyre-Lune recommended Marine Conservation Zone (rMCZ)	Important populations of Smelt <i>Osmerus eperlanus</i> and Eel <i>Anguilla anguilla</i> (Defra, 2012). The site is not yet designated, and Defra have indicated that there is not currently enough evidence to support designation; as such the designation process is currently on hold (The Wildlife Trusts, 2016). The rMCZ is still considered in this assessment in accordance with Highways Agency (2010) as an area which meets selection criteria, but which is not designated.	Adjacent north
Skippool Marsh and Thornton Bank Biological Heritage Site (BHS)	The principal habitats on site comprise un-grazed saltmarsh and relict woodland. Of particular note are Lax-Flowered Sea-Lavender <i>Limonium humile</i> , a nationally scarce plant, and a significant population of Wild Celery <i>Apium graveolens</i> , a species which is included on the Provisional Lancashire Red Data List of Vascular Plants. The site measures approximately 9.05 ha and partially overlaps with the Wyre-Lune rMCZ at Skippool Creek.	Adjacent north
Shard Bridge Field Ditch BHS	The site comprises a longitudinal hollow and ditch supporting saltmarsh vegetation which drains into the immediately adjacent River Wyre and Morecambe Bay SPA. It measures approximately 0.35ha, is flooded by saline water during very high tides and is notable for the occurrence of Long-Stalked Orache <i>Atriplex longipes</i> , a nationally scarce plant.	380m west
River Wyre – Upper Tidal Section BHS	The site comprises a tidal 3km length of the River Wyre with associated mudflats, saltmarsh and grassland, extending to the boundary of the Wyre Estuary SSSI. It contains a variety of saltmarsh species and landward transition species where conditions are less saline. Two species on the Provisional Lancashire Red Data List of Vascular Plants occur here: Sand Leek <i>Allium scorodoprasum</i> and Common Meadow-Rue <i>Thalictrum flavum</i> . The site measures approximately 87ha. The site partially overlaps with the Wyre-Lune rMCZ and is immediately adjacent to the Morecambe Bay SPA and SSSI.	640m north

4.2 S41 Habitats

Deciduous woodland

- 4.2.1 Recognised areas of deciduous woodland S41 habitat were widespread within the Habitat Survey Area but restricted to relatively small blocks associated with agricultural fields.
- 4.2.2 Woodland habitats were relatively rare within the local landscape. Nevertheless, it should be noted that the site check reports generated for these sections of S41 woodland (generated on 22nd November 2016) state that there was '*Low Confidence in Main Habitat Classification*'. The woodlands have been classified as S41 habitats based on their presence on the National Forest Inventory (i.e. perceived longevity).

Coastal Saltmarsh and Mudflats

- 4.2.3 Recognised areas of coastal saltmarsh S41 habitat and mudflats S41 habitat were associated with the River Wyre approximately 340m north of the Scheme. These habitats were situated within the Morecambe Bay SPA, IBA and Ramsar site and the Wyre Estuary SSSI.

Coastal and Floodplain Grazing Marsh

- 4.2.4 An extensive area of coastal and floodplain grazing marsh S41 habitat was associated with Main Dyke (covering the area between Target Notes 5 and 16); coastal and floodplain grazing marsh habitat is particularly important for a number of breeding waders such as Lapwing *Vanellus vanellus* and Curlew *Numenius arquata*, both of which are qualifying species of the Morecambe Bay SPA. This habitat is functionally linked land to the SPA.

Hedgerow

- 4.2.5 A number of hedgerows were identified within the Habitat Survey Area. These were predominately species-poor and dominated by Hawthorn. Nevertheless, they met the criteria for S41 Hedgerow ((following the Biodiversity Reporting and Information Group (BRIG), 2011)).

Pond

- 4.2.6 The survey area contained a number of ponds that may qualify as S41 habitat. For example, supporting species of high conservation importance, such as Great Crested Newt *Triturus cristatus* and Common Toad *Bufo bufo*, qualify ponds as S41 habitats (as per BRIG, 2011). Please refer to Appendix 6.8.2 Great crested newt report for details of amphibian presence. As a worst-case scenario, and for the purpose of this assessment, all ponds have been considered as S41 ponds.

Rivers

- 4.2.7 The rivers S41 habitat description (as per BRIG, 2011) includes a very wide range of types, encompassing all natural and near-natural running waters in the UK (i.e. with features and processes that resemble those in 'natural' systems). Thus, the River Wyre, Skippool Creek, Main Dyke and several unnamed field ditches qualify rivers S41 habitat.

4.3 Protected and notable plants (including fungi)

4.3.1 The desk study identified 2 Local Biodiversity Action Plan (LBAP) species; Kneeled-Fruited Cornsalad *Valerianella carinata* and Bee Orchid *Ophrys apifera*, both situated over 380m from the Scheme (see Figure 8.1.2 at Annex C).

4.3.2 Most habitats located within the Habitat Survey Area were species-poor and considered unlikely to support protected and notable flora. During the Extended Phase 1 Habitat survey, Bluebell *Hyacinthoides non-scripta* was recorded as widespread throughout the mature semi-natural woodland areas. No other notable plants were identified during the current study.

Invasive Flora

4.3.3 The desk study identified 2 records of invasive plant species, both listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). A summary of the records provided and their approximate location in relation to the Scheme is provided in Table 4-2.

Table 4-2: Summary of Invasive Flora Records

Species	No. of records	Year range	Distance (m) and direction of nearest record from Scheme
Rhododendron <i>Rhododendron ponticum</i>	3	2010–2013	270 south
Water Fern <i>Azolla filiculoides</i>	2	2008	490 north west

4.3.4 In addition to the above, Variegated Yellow Archangel *Lamiastrum galeobdolon* subsp. *argentatum* was recorded by Mouchel (2013) adjacent to the Windy Harbour Road/A585/A586 junction at the eastern end of the Scheme. This species is also listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

4.3.5 The following invasive species were recorded during the Extended Phase 1 Habitat Survey:

- Himalayan Balsam was widespread and locally dominant, particularly along Main Dyke and associated ditches, to the west of the Habitat Survey Area
- Japanese Knotweed *Fallopia japonica* was recorded within the woodland at Bankfield Manor (Target Note 35)
- Rhododendron was recorded within the shrub layer of some of the mature woodlands

4.4 Invertebrates

White-clawed Crayfish

4.4.1 No records of White-Clawed Crayfish *Austropotamobius pallipes* were identified during the desk study and the species is thought to be absent. The likelihood of occurrence within the Habitat Survey Area is assessed as negligible.

Aquatic Invertebrates

- 4.4.2 No records of aquatic invertebrates were identified during the desk study. Some of the ponds were assessed as having moderate to good water quality, although it is noted that this assessment alone is not necessarily indicative of high aquatic invertebrate diversity; however, based on the lack of aquatic invertebrate records, the location and nature of most ponds, the likelihood of occurrence is assessed as medium.

Terrestrial Invertebrates

- 4.4.3 Records of several moth species were identified during the desk study (Table 4-3). Most of the records were located within the same locations (see Invertebrate legends 1–4 on Figure 8.1.2 at Annex C) and all are situated greater than 180m north of the Scheme. All identified species are listed under Section 41 of the NERC Act 2006 as “species of principal importance for the purpose of conserving biodiversity” and are summarised within Table 4-3.

Table 4-3: Summary of Terrestrial Invertebrate Records

Species	No. of records	Year range	Distance (m) and direction of nearest record from Scheme
Brown-spot Pinion <i>Agrochola litura</i>	1	2008	480 north
Beaded Chestnut <i>Agrochola lychnidis</i>	7	2010	810 south
Green-brindled Crescent <i>Allophyes oxyacanthae</i>	27	2006–2010	480 north
Ear Moth <i>Amphipoea oculatea</i>	6	2008–2010	480 north
Mouse Moth <i>Amphipyra tragopoginis</i>	118	2008–2010	480 north
Crescent Striped <i>Apamea oblonga</i>	3	2008	480 north
Dusky Brocade <i>Apamea remissa</i>	21	2008–2010	480 north
Garden Tiger <i>Arctia caja</i>	1	2007	480 north
Centre-barred Sallow <i>Atethmia centrigo</i>	12	2008–2009	480 north
Gold Spangle <i>Autographa bractea</i>	2	2006	670 west
Mottled Rustic <i>Caradrina morpheus</i>	19	2005–2011	480 north
Crescent <i>Celaena leucostigma</i>	8	2010	480 north

Species	No. of records	Year range	Distance (m) and direction of nearest record from Scheme
Treble Lines <i>Charanyca trigrammica</i>	1	2007	810 south
Latticed Heath <i>Chiasmia clathrate</i>	1	2005	1,000 south west
Clay Triple-lines <i>Cyclophora linearia</i>	1	2008	810 south
Small Square-spot <i>Diarsia rubi</i>	274	2009–2010	480 north
Figure of Eight <i>Diloba caeruleocephala</i>	9	2010	810 south
Small Phoenix <i>Ecliptopera silaceata</i>	5	2005–2009	480 north
Dusky Thorn <i>Ennomos fuscantaria</i>	7	2007–2008	480 north
Spinach <i>Eulithis mellinata</i>	2	2008	670 west
White-line Dart <i>Euxoa tritici</i>	2	2010	810 south
Ghost Moth <i>Hepialus humuli</i>	6	2006	670 west
Rustic <i>Hoplodrina blanda</i>	76	2005–2010	480 north
Rosy Rustic <i>Hydraecia micacea</i>	110	2009–2011	480 north
Dot Moth <i>Melanchra persicariae</i>	51	2006–2011	480 north
Rosy Minor <i>Mesoligia literosa</i>	4	2005–2008	675 west
Powdered Quaker <i>Orthosia gracilis</i>	4	2007	670 west
Large Wainscot <i>Rhizedra lutosa</i>	8	2007–2010	480 north
Shaded Broad-bar <i>Scotopteryx chenopodiata</i>	8	2006–2011	675 west
White Ermine <i>Spilosoma lubricipeda</i>	62	2005–2008	480 north
Buff Ermine <i>Spilosoma luteum</i>	99	2008–2011	480 north
Blood-vein <i>Timandra comae</i>	2	2008	670 west
Cinnabar <i>Tyria jacobaeae</i>	7	2005–2008	480 north

Species	No. of records	Year range	Distance (m) and direction of nearest record from Scheme
Oak Hook-tip <i>Watsonalla binaria</i>	4	2007–2009	480 north
Sallow <i>Xanthia icteritia</i>	8	2007–2011	480 north
Dark-barred Twin-spot Carpet <i>Xanthorhoe ferrugata</i>	43	2006–2011	480 north

4.4.4 Habitats within the Habitat Survey Area comprised species-poor improved grassland and arable fields, defined by species-poor hedgerows with limited field margins. These were largely deemed suboptimal for a diverse assemblage of terrestrial invertebrates. Habitats considered to have the potential to support a notable assemblage of terrestrial invertebrates included woodland blocks, intact hedgerows, Main Dyke and some of the well-vegetated margins of ponds and ditches.

4.4.5 The presence of notable species within the Desk Study Area was confirmed during the desk study.

4.5 **Fish**

4.5.1 No records of fish species were identified during the desk study. Skippool Creek and Main Dyke may however be of some value for fish.

4.6 **Amphibians**

4.6.1 One-hundred-and-twenty-eight ponds were identified in the Habitat Survey Area, many of which were suitable for supporting a range of amphibian species. Surveys for these species were undertaken and have been reported separately in Appendix 8.2 (document reference TR010035/APP/6.8.2).

4.7 **Reptiles**

4.7.1 Habitats with potential to support reptiles, notably scrub and grassland, were identified during the survey. These habitats were distributed across the Habitat Survey Area and the potential to support reptiles varied markedly. Surveys for reptiles were undertaken and are reported in Appendix 8.3 (document reference TR010035/APP/6.8.3).

4.8 **Birds**

4.8.1 Multiple designated sites for which birds are qualifying features were identified during the desk study. Additionally, the Habitat Survey Area comprises a mosaic of agricultural habitats with potential to support various bird species. Bird surveys were subsequently undertaken and are reported separately in Appendix 8.4 (document reference TR010035/APP/6.8.4)

4.9 **Bats**

- 4.9.1 The Habitat Survey Area comprised a mosaic of habitats of varied potential value to roosting and foraging or commuting bats. Agricultural habitats such as arable fields and grassland were dispersed throughout the Habitat Survey Area and are typically of low value to bats; higher value habitats such as woodland, hedgerows and watercourses were, however, also identified. Bat surveys were subsequently undertaken, the results of which are reported separately in Appendix 8.5 (document reference TR010035/APP/6.8.5).

4.10 **Otter and water vole**

- 4.10.1 The network of watercourses – drainage ditches and rivers – identified had potential to support otter and water vole. Surveys for each species were subsequently undertaken and are reported separately in Appendix 8.7 (document reference TR010035/APP/6.8.7) and Appendix 8.8 (document reference TR010035/APP/6.8.2).

4.11 **Brown Hare**

- 4.11.1 No records of brown hare *Lepus europaeus* were identified during the desk study; however, the species was recorded in 2 locations (SD389394 and SD399394) during the Extended Phase 1 Habitat survey.
- 4.11.2 Brown hares prefer arable farmland (especially land managed for cereals, ley farming and upland pasture), long grasslands, hedgerows, woodland and ditches. Most habitats within the Habitat Survey Area comprised short, improved grassland which would not provide shelter from predators. It is likely that brown hares are more dependent on the small number of arable fields and on the boundary habitats such as the drains, scrub, longer semi-improved grassland and woodland.

4.12 **Hedgehog**

- 4.12.1 No records of hedgehog *Erinaceus europaeus* were identified during the desk study; however, the species is widespread nationally and the Habitat Survey Area provided a range of opportunities in the form of large residential garden networks, woodland blocks, hedgerows and scattered scrub. The likelihood that the species occurs locally is assessed as high.

5 BASELINE CONDITIONS

- 5.1.1 A summary of the ecological receptors identified during the study are provided in Table 5-1. Features for which separate Appendices have been prepared are not included in Table 5-1, but are reported separately in each Appendix.

Table 5-1: Ecological Receptors Identified within the Habitat Survey Area

Ecological Feature	Location relative to Scheme
Morecambe Bay SPA	The application site is situated c. 10m north of the Scheme at its closest location.
Morecambe Bay Ramsar site	The application site is situated c. 10m north of the Scheme at its closest location.
Wyre Estuary SSSI	The application site is situated c. 10m north of the Scheme at its closest location.
Wyre-Lune rMCZ	The application site is situated adjacent north of the Scheme
Skippool Marsh and Thornton Bank BHS	The application site is situated adjacent to the north of the Scheme.
Shard Bridge Field Ditch BHS	The application site is situated c. 900m north west of the Scheme.
River Wyre – Upper Tidal Section BHS	The application site is situated c. 530m north of the Scheme.
Deciduous woodland S41 habitat	Widespread within the Habitat Survey Area but restricted to relatively small blocks. Crossed by the Scheme (thin band of woodland to the west of Old Mains Lane and at Singleton Manor).
Hedgerow S41 habitat	Occasional within Habitat Survey Area; varying condition. The Scheme crosses 15 hedgerows.
Coastal saltmarsh and mudflats S41 habitat	Approximately 10m north of the Scheme, associated with the River Wyre.
Coastal and floodplain grazing marsh S41 habitat	Extensive area associated with Main Dyke. The Scheme passes through the habitat for approximately 1.9km.

Ecological Feature	Location relative to Scheme
Ponds S41 habitat	128 ponds distributed throughout the Survey Area at various distance and directions from the Scheme.
River Wyre (Rivers S41 habitat)	Situated c. 10m north of the Scheme at its closest point.
Skippool Creek (Rivers S41 habitat)	Situated adjacent north of the Scheme within Skippool Marsh and Thornton Bank BHS.
Main Dyke (Rivers S41 habitat)	The Scheme crosses Main Dyke at the Mains Lane/Main Dyke Bridge.
Other Rivers S41 habitat (unnamed tributaries of Main Dyke and small field ditches)	The Scheme crosses 5 unnamed watercourses.
Other (non-S41) habitats including agricultural land, plantation woodland, ephemeral ponds, semi-improved neutral grassland, tall ruderal, scrub and scattered trees	Generally common and widespread habitats.
Notable flora	Two species identified in the desk study, both over 380m from the Scheme. Also present within S41 woodland habitats.
Invasive flora	Japanese Knotweed, Himalayan Balsam, Rhododendron and Variegated Yellow Archangel identified within Desk Study Area.
Aquatic invertebrates	None identified during desk study. Habitats largely unsuitable.
Terrestrial invertebrates	Several species of moth identified during desk study, none of which were located within the Scheme. Habitats largely unsuitable.
Fish	None identified during desk study. Skippool Creek and Main Dyke potentially suitable.

Ecological Feature	Location relative to Scheme
Brown hare	Records within the Habitat Survey Area. Sub-optimal habitats within agricultural land.
Hedgehog	Suitable habitats within proposed land take and Habitat Survey Area.

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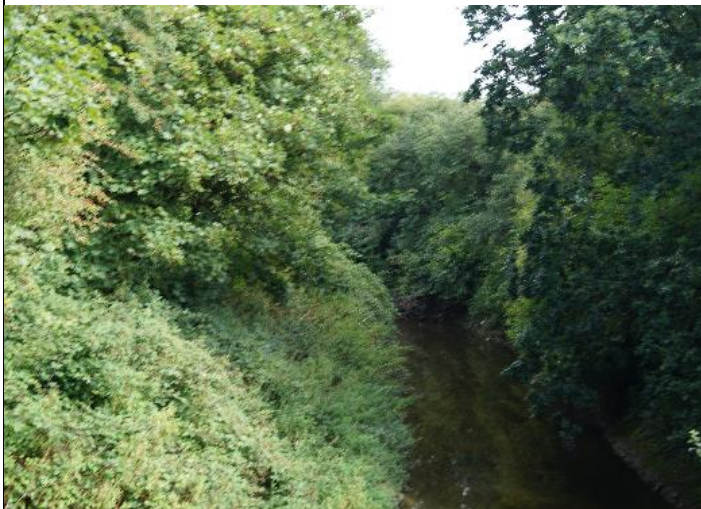

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7 ABBREVIATIONS



Term	Meaning
ARG UK	Amphibian and Reptile Groups of the United Kingdom
BRIG	Biodiversity Reporting and Information Group
DMRB	Design Manual for Roads and Bridges
EPSL	European Protected Species Licence
IBA	Important Bird Area
LBAP	Local Biodiversity Action Plan
LERN	Lancashire Environment Record Network
LNR	Local Nature Reserves
MAGIC	Multi-Agency Geographic Information for the Countryside
MCZ	Marine Conservation Zones
NE	Natural England
NERC	Natural Environment Research Council
NNR	National Nature Reserves
OS	Ordnance Survey
PCF	Project Control Framework
PHI	Priority Habitat Inventory
rMCZ	recommended Marine Conservation Zone
S41	Section 41
SAC	Special Areas of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest



ANNEX A – TARGET NOTES (TN)



TN	Description	Photograph
1	<p>Defunct, species-poor hedgerow situated to the north of the A585 at Breck Road. Dominated by Hawthorn with rare Elder. Variable, unmanaged hedge ranging from approximately 2–4m wide and 2–5m tall.</p> <p>Hedgerow S41 Habitat.</p>	
2	<p>Section of existing A585 to the west of the Scheme, at Breck Road. Wide road section was considered to provide a barrier the movements of some terrestrial animals.</p>	



TN	Description	Photograph
3	<p>Section of Main Dyke to the north of Skippool Bridge (habitats south of the bridge were also similar). Wide, slow-flowing channel (c. 7m wide and 300mm deep) with a muddy substrate. Banks were steep and dominated by Common Nettle, Brambles and Hawthorn scrub. Scattered stands of Himalayan Balsam were also widespread on the banks.</p> <p>A loose band of predominately broadleaved trees and scrub extended along the banks. The woodland was dominated by semi-mature Sycamore with occasional Crack Willow. The shrub layer was scrubby and comprised Hawthorn, Elder and Sycamore saplings; Common Nettle, Hedge Bindweed and Common Cleavers were abundant in the field layer.</p> <p>Woodland was registered on the PHI as Deciduous Woodland S41 Habitat and Main Dyke was Rivers S41 Habitat.</p>	
4	<p>Intact species poor hedgerow to the north of the A585 at Mains Lane. Dominated by Hawthorn, with frequent Sycamore and occasional Hedge Bindweed and Brambles. It was managed to c. 2m tall and 1m wide.</p> <p>Hedgerow S41 Habitat.</p>	



TN	Description	Photograph
5	<p>Derelict building situated to the south of the A585 at Mains Lane. The building had no roof and its walls comprised a mixture of stone, brick and breeze blocks. Hart's-Tongue <i>Phyllitis scolopendrium</i> and Maidenhair Fern <i>Adiantum capillus-veneris</i> were recorded growing on the walls of the building which contained a number of gaps within missing bricks and mortar which offered low bat roosting potential.</p> <p>There were also several scattered trees to the east with low to moderate bat roosting potential.</p>	
6	<p>Small defunct hedgerow situated on the curtilage of a large residential garden to the south of the A585 at Mains Lane. It was dominated by Hawthorn and managed to c. 2.5m tall and 1.5m wide.</p> <p>Hedgerow S41 Habitat.</p>	



TN	Description	Photograph
7	<p>Dense and managed hedgerow situated to the south of the A585. It was dominated by Hawthorn with occasional Elder, Brambles and Gorse, and c. 3m tall and 3m wide.</p> <p>Shallow ditch was situated at its base (< 5cm deep and 30cm wide). It was shaded and devoid of aquatic macrophytes.</p> <p>Hedgerow S41 Habitat.</p>	
8	<p>Section of Main Dyke to the south of the Scheme. Its banks comprised a mixture of scrub (predominately scattered Hawthorn and Brambles but occasionally Willow, and dense or continuous in sections) and grassland with tall ruderals. Its channel was set in a steep cutting (c. 3–4m deep over 10–15m wide) and was c. 2–3m wide and over 0.5m deep in the centre. Macrophytes included: Pondweed <i>Potamogeton natans</i>, Common Reed, Yellow Flag-iris <i>Iris pseudacorus</i>, Common Reedmace and Reed Canary Grass. Patched of Brambles, Common Nettle and Rosebay Willowherb were abundant and widespread on its banks.</p> <p>Main Dyke is a Rivers S41 Habitat. The adjacent fields are also recognised as Coastal and Floodplain Grazing Marsh S41 Habitat.</p>	


TN	Description	Photograph
9	<p>Highly gappy or defunct species-poor hedgerow situated to the south of the A585 along the route of the Scheme. Dominated by Hawthorn with occasional Elder. Unmanaged with open, bushy appearance. Approximately 3–5m tall and 2–3m wide.</p> <p>Shallow ditch at base, channelled water into Main Dyke. The ditch was shaded by Hawthorn with Common Nettle, Common Cleavers and Broad Buckler Fern <i>Dryopteris dilatata</i>, or by Common Reed in hedgerow gaps. Himalayan Balsam was infrequent by widespread. Water was shallow and slow flowing (southern flow; c. 10cm deep and 30cm wide).</p> <p>A few of the Hawthorns within the hedgerow contained cracks and crevices that were assessed to provide low bat roosting potential.</p> <p>Hedgerow S41 Habitat and Rivers S41 Habitat.</p>	
10	<p>Carr Wood. One of the largest woodland blocks within the Habitat Survey Area. The woodland comprised a mixed canopy of mature Sycamore, Ash, Crack Willow and Alder. The understory on the southern edge was dense with Brambles and shrubs which prevented access for detailed survey.</p> <p>The southern boundary was defined by a shallow, slow-flowing stream (easterly flow; c. 10cm deep and 30cm wide) dominated by Himalayan Balsam.</p> <p>Woodland was registered on the PHI as Deciduous Woodland S41 Habitat and ditch with flowing water qualifies as Rivers S41 Habitat.</p>	



TN	Description	Photograph
11	<p>Defunct species-poor hedgerow situated to the south of the A585 along the route of the Scheme. Dominated by Hawthorn with rare Elder. Unmanaged with open, bushy appearance. Approximately 3–5m tall and 2–3m wide. Ditch at base was dry at the time of the survey and lacked aquatic vegetation.</p> <p>Common Nettle was dominant in the field layer with Common Cleavers, Brambles and Fat Hen. Himalayan Balsam was to the north.</p> <p>Hedgerow S41 Habitat.</p>	
12	<p>Field ditch system to the north of Garstang Road. Channel appeared to be managed with straight, shallow (c. 5cm and 30cm wide) and steep banks devoid of aquatic vegetation. The surrounding fields were grazed by cows and sections of the bank were poached. Soft Rush was dominant on the banks with Common Nettle.</p> <p>Rivers S41 Habitat.</p>	



TN	Description	Photograph
13	Two rows of mature Sycamore trees extending along both sides of the A586 at Garstang Road. Historically, they may have been hedgerows as scattered hawthorn stands were present (particularly to the south). Semi-mature Pear <i>Pyrus sp.</i> was also present within the northern avenue further west.	
14	Scattered Hawthorn scrub situated to the south of A586 at Garstang Road along the route of the Scheme. Potentially the remnants of an historic hedgerow field boundary.	



TN	Description	Photograph
15	<p>Predominately intact section of species poor defunct hedgerow situated to the south of A586 at Garstang Road, along the route of the Scheme. The hedgerow was dominated by Hawthorn with occasional Elder and Brambles. Infrequently managed; c. 1.0–2.5m tall and 1.5m wide.</p> <p>Hedgerow S41 Habitat.</p>	
16	<p>Species-poor highly fragmented/defunct hedgerow situated to the south of A586 at Garstang Road, along the route of the Scheme. Dominated by hawthorn with frequent Elder, and occasional Gorse and Brambles; a few Sycamore trees were also present along its route. Managed to 1.5m tall and 1.5m wide.</p> <p>Hedgerow S41 Habitat.</p>	



TN	Description	Photograph
17	<p>Intact, species-poor hedgerow situated to the west of the B5260, along the route of the Scheme. Dominated by Hawthorn with the occasional Sycamore. Managed to c. 1.5m tall by 1m wide. Connected with a small woodland copse to the north.</p> <p>Hedgerow S41 Habitat.</p>	
18	<p>Intact, species-poor hedgerow situated to the east of the B5260, along the route of the Scheme. Dominated by Hawthorn with rare Sycamore. Managed to c. 1.5m tall by 1m wide. Connected with a small woodland copse to the north.</p> <p>Hedgerow S41 Habitat.</p>	



TN	Description	Photograph
19	<p>The largest woodland block within Singleton Park which enclosed the Parks 'Singleton Hall' and 'The Manor' buildings. This woodland has been planted over many years but the bulk of it first appeared in the late 19th century (first present on the 1891–95 OS map). The section of the woodland closest to the Scheme comprised a mature canopy dominated by Sycamore with occasional Ash and Beech and rare Pedunculate Oak, Horse Chestnut and Sweet Chestnut <i>Castanea sativa</i>. The shrub layer comprised semi-mature under-planting of Rowan, Pedunculate Oak, Ash and Beech. The field layer comprised Bluebells, Broad Buckler Fern, Male Fern <i>Dryopteris filix-mas</i>, Pignut <i>Conopodium majus</i>, Brambles and Foxglove; Red Campion, Common Cleavers, Rosebay Willowherb and Common Nettle were abundant in the woodland edge habitats.</p> <p>A shallow ditch with standing water (c. 30cm wide and <5 m deep) extended from north to south through the woodland. Many trees within this woodland provided features suitable to support roosting bats.</p> <p>Recognised Deciduous Woodland S41 Habitat and ditch with flowing water qualifies as Rivers S41 Habitat.</p>	



TN	Description	Photograph
20	<p>Small, fenced-off copse adjacent to Target Note 19, within Singleton Park. The canopy comprised abundant semi-mature Sycamore and Grey Willow. It lacked a shrub layer and the field layer was dominated by Common Nettle with occasional Red Campion and Hedge Mustard.</p>	
21	<p>Same species composition and origin as Target Note 19; situated along the route of the Scheme. Many trees within this woodland provided features suitable to support roosting bats.</p> <p>Recognised Deciduous Woodland S41 Habitat.</p>	



TN	Description	Photograph
22	Circular block of broadleaved woodland plantation situated within the fields to the north of Singleton Park. This broadleaved woodland was planted in the late 19 th century (first present on the 1891–95 OS map). The canopy was dominated by Sycamore with rare Beech and Horse Chestnut. The shrub layer comprised semi-mature under-planting of Rowan with Pedunculate Oak. The field layer was dominated by Common Nettle and Common Cleavers.	
23	Circular block of broadleaved woodland plantation situated within the fields to the north of Singleton Park. This broadleaved woodland was planted in the late 19 th century (first present on the 1891–95 OS map). The canopy was dominated by Sycamore with rare Ash, Lime and Horse Chestnut. The shrub layer comprised semi-mature under-planting of Rowan with Pedunculate Oak. The field layer was dominated by Common Nettle and Common Cleavers on the fringes with Red Campion, Yorkshire Fog, Cocksfoot and Annual Meadow-Grass.	



TN	Description	Photograph
24	<p>Block of mature plantation woodland to the north of Singleton Park. Similar species composition to Target Note 23 (but a later addition; first appearing on the 1909–1910 OS maps) with abundant Scot's Pine to the east and dense Brambles within the field layer. A pond was also situated to the east of the woodland with Goat's Willow on its banks.</p>	
25	<p>Ditch/field margin to the south of the A585 along the route of the Scheme. Very shallow (<5cm) and overgrown in places, with a slight easterly flow. Banks were grassy with Soft Rush, tall ruderals (Common Nettle and Rosebay Willowherb) and scattered Alder trees. Rivers S41 Habitat.</p>	



TN	Description	Photograph
26	<p>Ditch/field margin to the south of the A585, along the route of the Scheme. Approximately 40cm wide and 10cm deep. Banks were grassy with occasional Soft Rush.</p> <p>Rivers S41 Habitat.</p>	
27	<p>Double species-poor hedgerow with dividing ditch to the south of the A585 along the route of the Scheme. Hedgerow was dominated by Hawthorn with rare Dog Rose, Ash and Sycamore.</p> <p>See Target Note 28 for ditch description. Water flowed north through a c. 1m diameter concrete pipe under the A585 here.</p> <p>Hedgerow S41 Habitat and Rivers S41 Habitat.</p>	



TN	Description	Photograph
28	<p>Plantation woodland situated to the east of the Scheme with a mixed canopy of mature Sycamore and Ash. The shrub layer was open with occasional Hawthorn, Beech, Pedunculate Oak, Horse Chestnut, Scots Pine and Rhododendron. The field layer was also sparse with Ivy (which also covered many of the trees), Brambles, Common Nettle, Red Campion, Male Fern and mosses.</p> <p>A ditch and hedgerow defined the southern edge of the woodland and to the west a double hedgerow extended from the woodland. The ditch was c. 5–10cm deep and typically 0.5m wide with westerly flow into a pond situated at the western end of the woodland. The majority of its banks were shaded and macrophytes were rare with sporadic Greater Reedmace. The banks were also shaded with frequent Ivy and occasional Pignut, Herb Robert, Garlic Mustard and mosses.</p> <p>Hedgerow S41 Habitat and Rivers S41 Habitat.</p>	
29	<p>Intact, species-poor hedgerow defining the western curtilage of the A585 at Fleetwood Road. Managed to c. 1m tall by 1m wide and dominated by Hawthorn.</p> <p>Hedgerow S41 Habitat.</p>	



TN	Description	Photograph
30	<p>Intact, species-poor hedgerow defining the northern curtilage of the A586 at Garstang Road. Managed to c. 1m tall by 1m wide and dominated by Hawthorn.</p> <p>Hedgerow S41 Habitat.</p>	
31	<p>Young, species-rich hedgerow on the northern curtilage of the A585 at Garstang New Road. Recently planted at the time of the survey. Comprised a double row of Hawthorn, Blackthorn, Dog Rose, Field Maple <i>Acer campestre</i>, Cherry <i>Prunus sp.</i>, Apple <i>Malus sp.</i> and Hazel <i>Corylus avellana</i> whips.</p> <p>Hedgerow S41 Habitat.</p>	



TN	Description	Photograph
32	<p>Field ditch to the north of the A585 at Garstang New Road. The ditch begins beneath hedgerow and trees (see Target Note 33) where is shallow (<5cm deep and c. 25cm wide), shaded and devoid of vegetation. Further east, the ditch heads north adjacent to an active landfill site where it was dominated by Common Reed with frequent Greater Reedmace and water flowed north within a c. 30cm channel.</p> <p>Rivers S41 Habitat.</p>	
33	<p>Intact hedgerow with trees situated on the northern curtilage of the A585 at Garstang New Road. Predominately managed to c. 1.5m tall and 1m wide but unmanaged in sections (as pictured). Hedgerow was dominated by Hawthorn with occasional Elder, Brambles, Common Ivy, Ash and Sycamore. Tree specimens were sporadic and included occasional Sycamore with rare Willow, Ash and Elder; however, to the west, the hedgerow contained a row of mature Ash trees at approximately 20m spacing.</p> <p>Shallow ditch beneath is described in Target Note 32.</p> <p>Hedgerow S41 Habitat.</p>	

TN	Description	Photograph
34	<p>Intact hedgerow with trees situated on the southern curtilage of the A585 at Garstang New Road. Predominately managed (as pictured) to c. 1.5m tall and 1m wide but unmanaged in sections. Hedgerow was dominated by Hawthorn with occasional Sycamore and rare Elder, Brambles, Common Ivy and Ash. Tree specimens were sporadic and included occasional Sycamore and Ash; however, to the west, the hedgerow contained a row of mature Ash trees at approximately 20m spacing.</p> <p>Hedgerow S41 Habitat.</p>	
35	<p>Mature broadleaved woodland at Bankfield Manor. Canopy comprised abundant Sycamore and Beech with frequent Horse Chestnut and Pedunculate Oak, and rare Crack Willow. The field layer was dense and comprised saplings of the above trees with Hazel, Brambles, Hawthorn, Elder and Holly <i>Ilex aquifolium</i>. The field layer comprised frequent and widespread Bluebell, Ivy, Broad Buckler Fern, Male Fern and Red Campion; small stands of Japanese Knotweed were rare but widespread.</p>	

TN	Description	Photograph
36	<p>Redundant access track off the A585 at Garstang New Road. Intact species-poor hedgerows extend on both sides of the track. These were managed to approximately 1.5m tall and 1m wide and dominated by Hawthorn with occasional Brambles and rare Sycamore and Common Ivy.</p> <p>Hedgerow S41 Habitat.</p>	
37	<p>Intact hedgerow situated to the north of the A585 at Garstang New Road. Managed to approximately 2.5m tall and 1.5m wide. Dominated by Hawthorn with occasional Sycamore and Elder. To the north the hedgerow contained several mature trees that were covered with dense Common Ivy and highly pollarded.</p> <p>Hedgerow S41 Habitat.</p>	

TN	Description	Photograph
38	<p>Row of trees with a scrubby, tall ruderal strip along the northern curtilage of the A585 at Garstang Road. Trees included Sycamore and Ash with occasional Hawthorn and Elder. The field layer comprised abundant Common Nettle, Brambles, Hedge Bindweed, Creeping Thistle and Common Cleavers.</p>	
39	<p>Defunct species poor hedgerow situated to the north of A586 at Garstang Road. Dominated by Hawthorn with rare Sycamore and Brambles. Managed to approximately 0.5m tall and 0.5m wide. Hedgerow S41 Habitat.</p>	

TN	Description	Photograph
40	<p>Unmanaged, variable hedgerow situated on the curtilage of a garden centre, north of A586 at Garstang Road. Defunct/scrubby to the west and intact/dense to the east. Dominated by Hawthorn with frequent Gorse and Brambles and occasional Elder and Goat Willow.</p> <p>Hedgerow S41 Habitat.</p>	
41	<p>Intact, species-poor hedgerow extending along the southern curtilage of the A585 at Mains Lane. Dominated by Hawthorn with occasional Sycamore and Brambles. Managed to approximately 2m tall and 1.5m wide.</p> <p>A thin, shallow (c. 20cm wide and 5–10cm deep) ditch extends from the hedgerow to the south. The ditch appeared to have relatively recently been excavated as its channel and sections of the bank comprised bare soils, with a few typical pioneer species such as Brambles, Common Nettle, Rosebay Willowherb and Hedge Mustard.</p> <p>Hedgerow S41 Habitat.</p>	

TN	Description	Photograph
42	<p>Intact, species-poor hedgerow extending along the northern curtilage of the A585 at Mains Lane. Dominated by Hawthorn with frequent Sycamore and rare Ash and Elder. Bushy, mainly unmanaged hedge (managed adjacent to footpath only) approximately 4m wide and 4–5m tall.</p> <p>Hedgerow S41 Habitat.</p>	
43	<p>Skippool Creek situated to the north of the Scheme within Skippool Marsh and Thornton Bank Biological Heritage Site. Wide, tidal channel connects with the River Wyre.</p>	

ANNEX B – FIELD SURVEYS SPECIES LIST

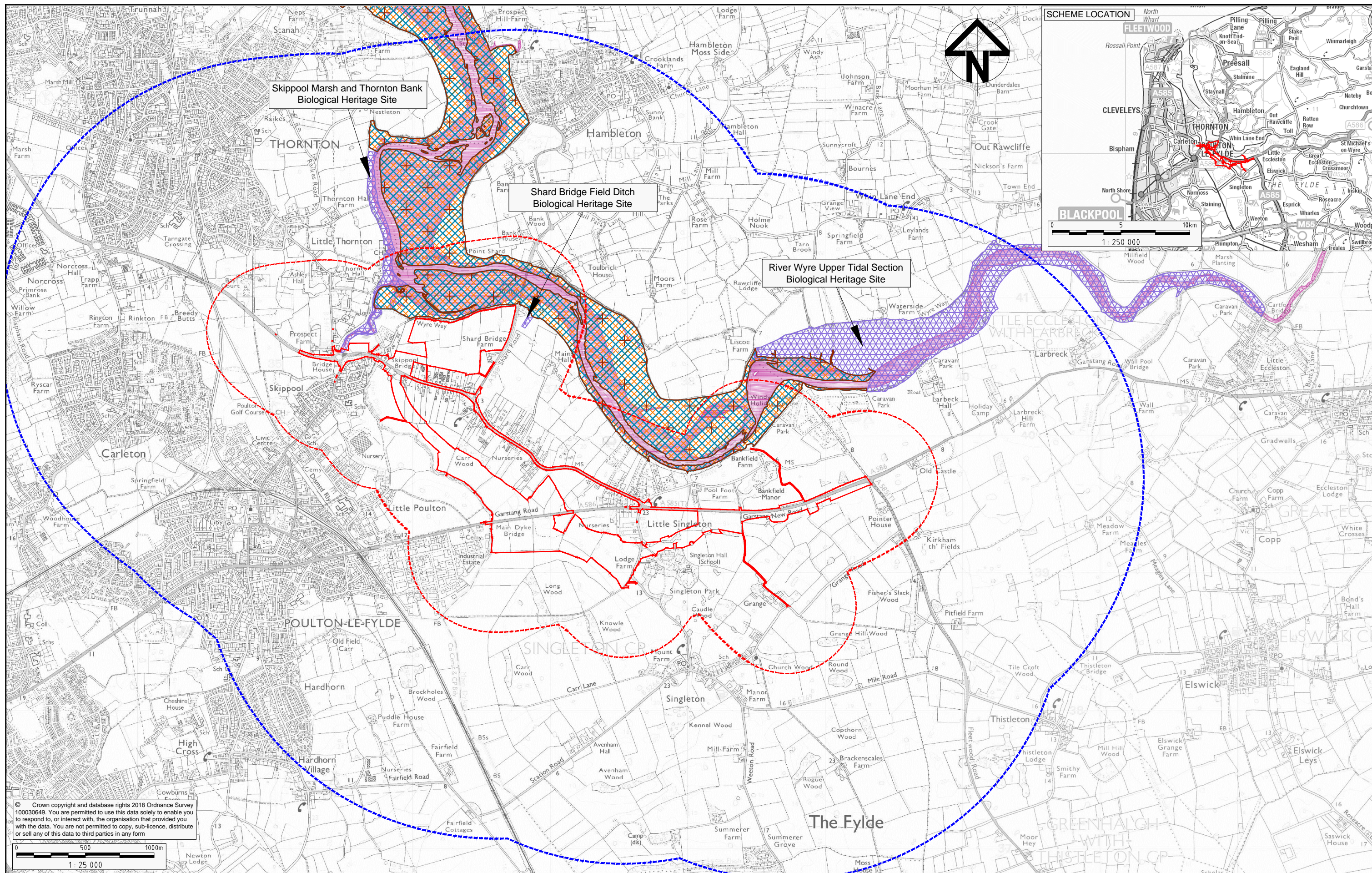
Table 8-1 provides a glossary of all plant species identified during the field surveys. Plant names follow 'New Flora of the British Isles' (Stace, 2011) and are listed in alphabetical order following their common name.

Table 8-1: Field Surveys Species Glossary

Plant species	
Alder <i>Alnus glutinosa</i>	Lesser Celandine <i>Ranunculus ficaria</i>
Annual Meadow-Grass <i>Poa annua</i>	Lesser Stitchwort <i>Stellaria graminea</i>
Ash <i>Fraxinus excelsior</i>	Male-Fern <i>Dryopteris filix-mas</i>
Beech <i>Fagus sylvatica</i>	Maples <i>Acer</i> spp.
Birch <i>Betula</i> spp.	Meadow Buttercup <i>Ranunculus acris</i>
Bittersweet <i>Solanum dulcamara</i>	Meadow Vetchling <i>Lathyrus pratensis</i>
Black Medick <i>Medicago lupulina</i>	Meadowsweet <i>Filipendula ulmaria</i>
Blackthorn <i>Prunus spinosa</i>	New Zealand Pigmyweed <i>Crassula helmsii</i>
Bluebell <i>Hyacinthoides non-scripta</i>	Northern marsh-orchid <i>Dactylorhiza purpurella</i>
Bracken <i>Pteridium aquilinum</i>	Oak <i>Quercus</i> spp.
Brambles <i>Rubus fruticosus</i> agg.	Opposite-Leaved Golden-Saxifrage <i>Chrysosplenium oppositifolium</i>
Broad Buckler-Fern <i>Dryopteris dilatata</i>	Pedunculated Oak <i>Quercus robur</i>
Broad-leaved Dock <i>Rumex obtusifolius</i>	Perennial Rye-grass <i>Lolium perenne</i>
Cat's-Ear <i>Hypochaeris radicata</i>	Pignut <i>Conopodium majus</i>
Cherry Prunus spp.	Pines <i>Pinus</i> sp.
Chickweed <i>Stellaria media</i> agg.	Poplar <i>Populus</i> spp.
Cock's-Foot <i>Dactylis glomerata</i>	Purple-Loosestrife <i>Lythrum salicaria</i>
Cock's-Foot <i>Tussilago farfara</i>	Ragged Robin <i>Lychnis flos-cuculi</i>
Common Bird's-Foot-Trefoil <i>Lotus corniculatus</i>	Red Campion <i>Silene dioica</i>
Common Centaury <i>Centaureum erythraea</i>	Red Clover <i>Trifolium pratense</i>
Common Cleavers <i>Galium aparine</i>	Red Fescue <i>Festuca rubra</i>
Common Daisy <i>Bellis perennis</i>	Redshank <i>Persicaria maculosa</i>
Common Dandelion <i>Taraxacum officinale</i> agg.,	Ribwort Plantain <i>Plantago lanceolata</i>
Common Smoothcap <i>Atrichum undulatum</i>	Remote Sedge <i>Carex remota</i>
Creeping Soft-Grass <i>Holcus mollis</i>	Rosebay Willowherb <i>Chamerion angustifolium</i>
Creeping Thistle <i>Cirsium arvense</i>	Rough Meadow-Grass <i>Poa trivialis</i>
Crested Dog's-Tail <i>Cynosurus cristatus</i>	

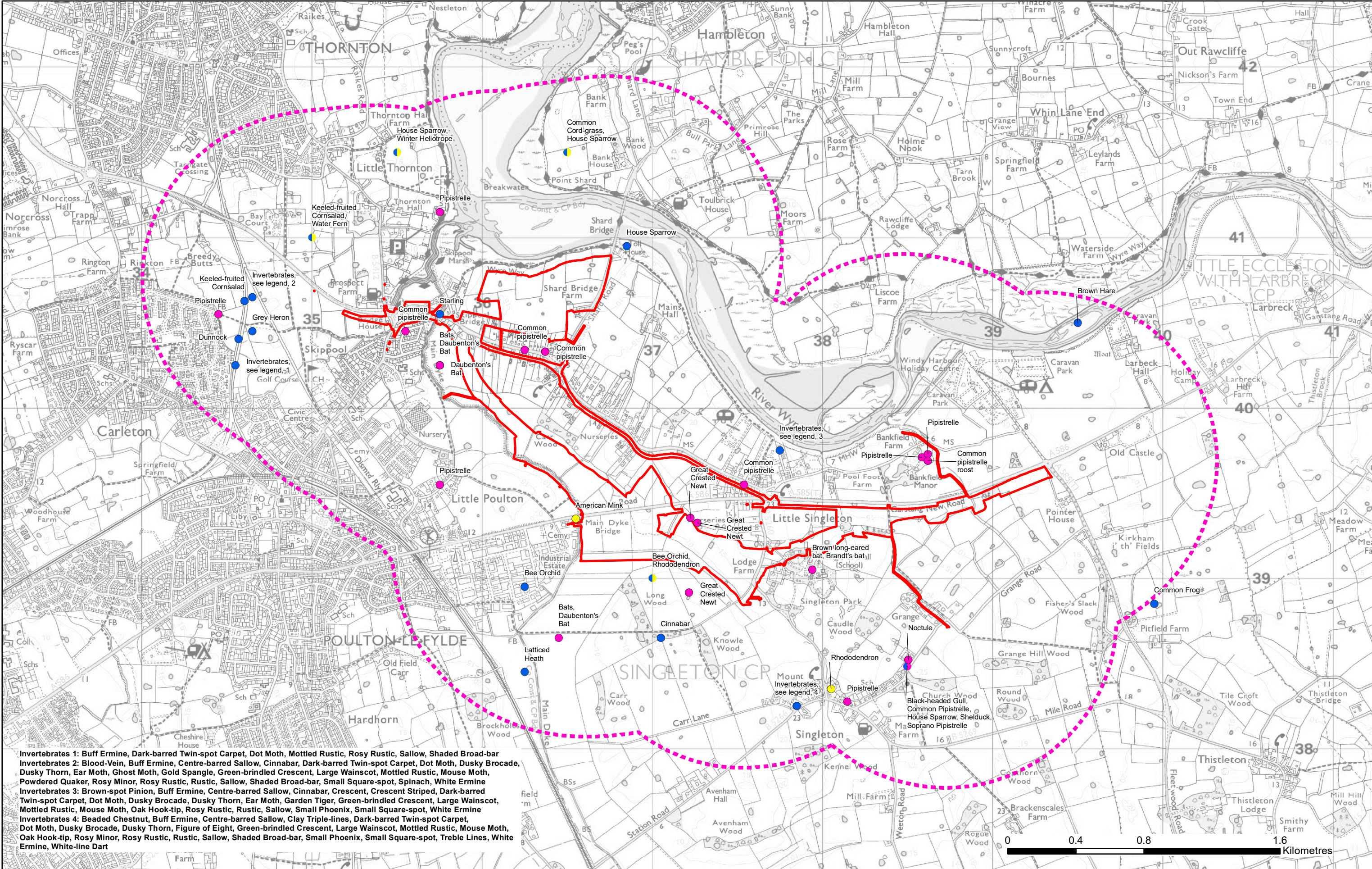
Plant species	
Cuckooflower <i>Cardamine pratensis</i>	Rowan <i>Sorbus aucuparia</i>
Curled Dock <i>Rumex crispus</i>	Scaly Male-Fern <i>Dryopteris affinis</i>
Dog Rose <i>Rosa canina</i>	Scots Pine <i>Pinus sylvestris</i>
Elder <i>Sambucus nigra</i>	Selfheal <i>Prunella vulgaris</i>
Enchanter's-Nightshade <i>Circaea lutetiana</i>	Sheep's Fescue <i>Festuca ovina</i>
European Gorse <i>Ulex europaeus</i>	Shepherd's-Purse <i>Capsella bursa-pastoris</i>
False Oat-Grass <i>Arrhenatherum elatius</i>	Silverweed <i>Potentilla anserina</i>
Fat-Hen <i>Chenopodium album</i>	Soft Rush <i>Juncus effusus</i>
Field Forget-Me-Not <i>Myosotis arvensis</i>	Spear Thistle <i>Cirsium vulgare</i>
Field Pansy <i>Viola arvensis</i>	Square-Stalked Willowherb <i>Epilobium tetragonum</i>
Floating Sweet-Grass <i>Glyceria fluitans</i>	Swan's-Neck Thyme-Moss <i>Mnium hornum</i>
Garlic Mustard <i>Alliaria petiolata</i>	Sweet Vernal Grass <i>Anthoxanthum odoratum</i>
Giant Fescue <i>Festuca gigantea</i>	Sycamore <i>Acer pseudoplatanus</i>
Great Willowherb <i>Epilobium hirsutum</i>	Tall Fescue <i>Festuca arundinacea</i>
Greater Plantain <i>Plantago major</i>	Tufted Vetch <i>Vicia cracca</i>
Greater Reedmace <i>Typha latifolia</i>	Water Soldier <i>stratiotes aloides</i>
Groundsel <i>Senecio vulgaris</i>	Wavy Hair-Grass <i>Deschampsia flexuosa</i>
Guelder-Rose <i>Viburnum opulus</i>	White Clover <i>Trifolium repens</i>
Hawthorn <i>Crataegus monogyna</i>	Wild Cherry <i>Prunus avium</i>
Hazel <i>Corylus avellana</i>	Wild Turnip <i>Brassica rapa campestris</i>
Hedge Bindweed <i>Calystegia sepium</i>	Willow <i>Salix</i> spp.
Hedge Woundwort <i>Stachys sylvatica</i>	Wood Avens <i>Geum urbanum</i>
Hemlock <i>Conium maculatum</i>	Wood Meadow-Grass <i>Poa nemoralis</i>
Hogweed <i>Heracleum sphondylium</i>	Wood Millet <i>Milium effusum</i>
Horse Chestnut <i>Aesculus hippocastanum</i>	Yarrow <i>Achillea millefolium</i>
Horsetail <i>Equisetum arvense</i>	Yellow Flag-Iris <i>Iris pseudacorus</i>
Jointed Rush <i>Juncus articulatus</i>	Yellow Pimpernel <i>Lysimachia nemorum</i>
Larch <i>Larix</i> sp.	Yew <i>Taxus baccata</i>
	Yorkshire Fog <i>Holcus lanatus</i>

ANNEX C – DRAWINGS



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KEY:							
— Draft Order Limits		✂ Morecambe Bay Important Bird Area		▨ Wyre Estuary Site of Special Scientific Interest (SSSI)			
- - - 500m Study Area		■ Wyre-Lune Recommended Marine Conservation Zone		▨ Morecambe Bay and Duddon Estuary Special Protection Area (SPA)			
- - - 2km Study Area		+ Morecambe Bay Ramsar Site		▨ Biological Heritage Site			
0	S8	OCT18	S8 - DCO SUBMISSION	JN	KB	NH	
Rev	Status	Rev. Date	Purpose of revision	Drawn	Checked	Approved	

		Client		
Project	A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME		Status	S8 - DCO SUBMISSION
Drawing Title	ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) EXTENDED PHASE 1 HABITAT REPORT: DESIGNATED SITES		Revision	0
Scale	1:25 000 @ A3		Date	OCT 2018
Drawn By	J.NORMAN			
Checked By	K.BURROWS			
Approved By	N.HENDERSON			
PINS No.	TR010035		FIGURE A8.1.1	
Drawing number	HE PN	Originator	Values	Location
HE548643-A585-EAC-SZ_GN000-DR-L-3028				



Invertebrates 1: Buff Ermine, Dark-barred Twin-spot Carpet, Dot Moth, Mottled Rustic, Rosy Rustic, Sallow, Shaded Broad-bar
Invertebrates 2: Blood-Vein, Buff Ermine, Centre-barred Sallow, Cinnabar, Dark-barred Twin-spot Carpet, Dot Moth, Dusky Brocade, Dusky Thorn, Ear Moth, Ghost Moth, Gold Spangle, Green-brindled Crescent, Large Wainscot, Mottled Rustic, Mouse Moth, Powdered Quaker, Rosy Minor, Rosy Rustic, Rustic, Sallow, Shaded Broad-bar, Small Square-spot, Spinach, White Ermine
Invertebrates 3: Brown-spot Pinion, Buff Ermine, Centre-barred Sallow, Cinnabar, Crescent, Crescent Striped, Dark-barred Twin-spot Carpet, Dot Moth, Dusky Brocade, Dusky Thorn, Ear Moth, Garden Tiger, Green-brindled Crescent, Large Wainscot, Mottled Rustic, Mouse Moth, Oak Hook-tip, Rosy Rustic, Rustic, Sallow, Small Phoenix, Small Square-spot, White Ermine
Invertebrates 4: Beaded Chestnut, Buff Ermine, Centre-barred Sallow, Clay Triple-lines, Dark-barred Twin-spot Carpet, Dot Moth, Dusky Brocade, Dusky Thorn, Figure of Eight, Green-brindled Crescent, Large Wainscot, Mottled Rustic, Mouse Moth, Oak Hook-tip, Rosy Minor, Rosy Rustic, Rustic, Sallow, Shaded Broad-bar, Small Phoenix, Small Square-spot, Treble Lines, White Ermine, White-line Dart

LEGEND

- Draft Order Limits
- - - 1km Buffer
- Invasive
- Notable
- Notable/Invasive
- Notable/Protected
- Protected

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chk'd	Appr'd
		OCT 2018	DCO SUBMISSION	JN	LF	NH

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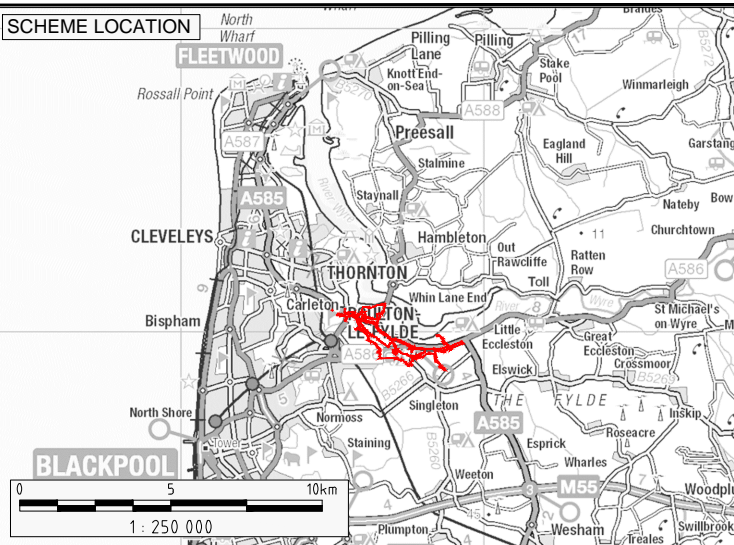
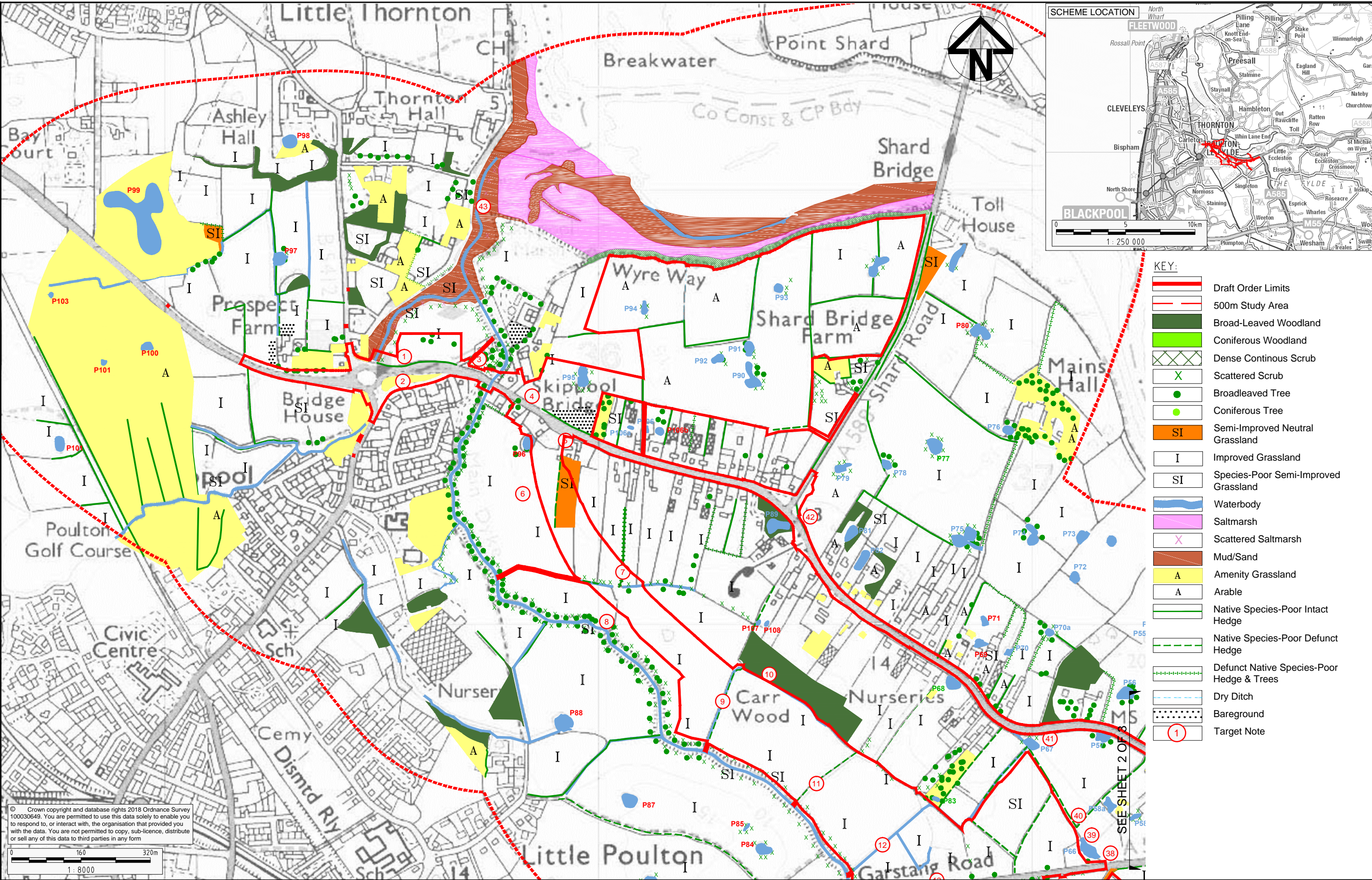


Client
A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Project
ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) BIODIVERSITY - PROTECTED, NOTABLE AND INVASIVE SPECIES RECORDED WITHIN STUDY AREA - DESK STUDY DATA PROVIDED BY LERN

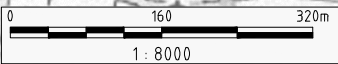
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S8 - DCO SUBMISSION			
Scale	1:20,000		Date OCT 2018
Drawn By	J Norman		
Checked By	K Burrows		
Approved By	N Henderson		
PINS No.	TR010035		FIGURE 8.1.2
Drawing number	HE548643-ARC-EGN-SZ_ZZ_000-DR-LE-3029		

FIGURE 8.1.2

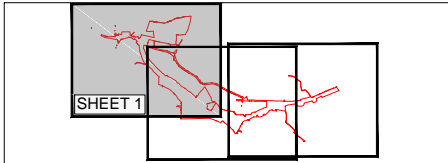


- KEY:
- Draft Order Limits
 - 500m Study Area
 - Broad-Leaved Woodland
 - Coniferous Woodland
 - Dense Continuous Scrub
 - Scattered Scrub
 - Broadleaved Tree
 - Coniferous Tree
 - SI Semi-Improved Neutral Grassland
 - I Improved Grassland
 - SI Species-Poor Semi-Improved Grassland
 - Waterbody
 - Saltmarsh
 - Scattered Saltmarsh
 - Mud/Sand
 - A Amenity Grassland
 - A Arable
 - Native Species-Poor Intact Hedge
 - Native Species-Poor Defunct Hedge
 - Defunct Native Species-Poor Hedge & Trees
 - Dry Ditch
 - Bareground
 - Target Note

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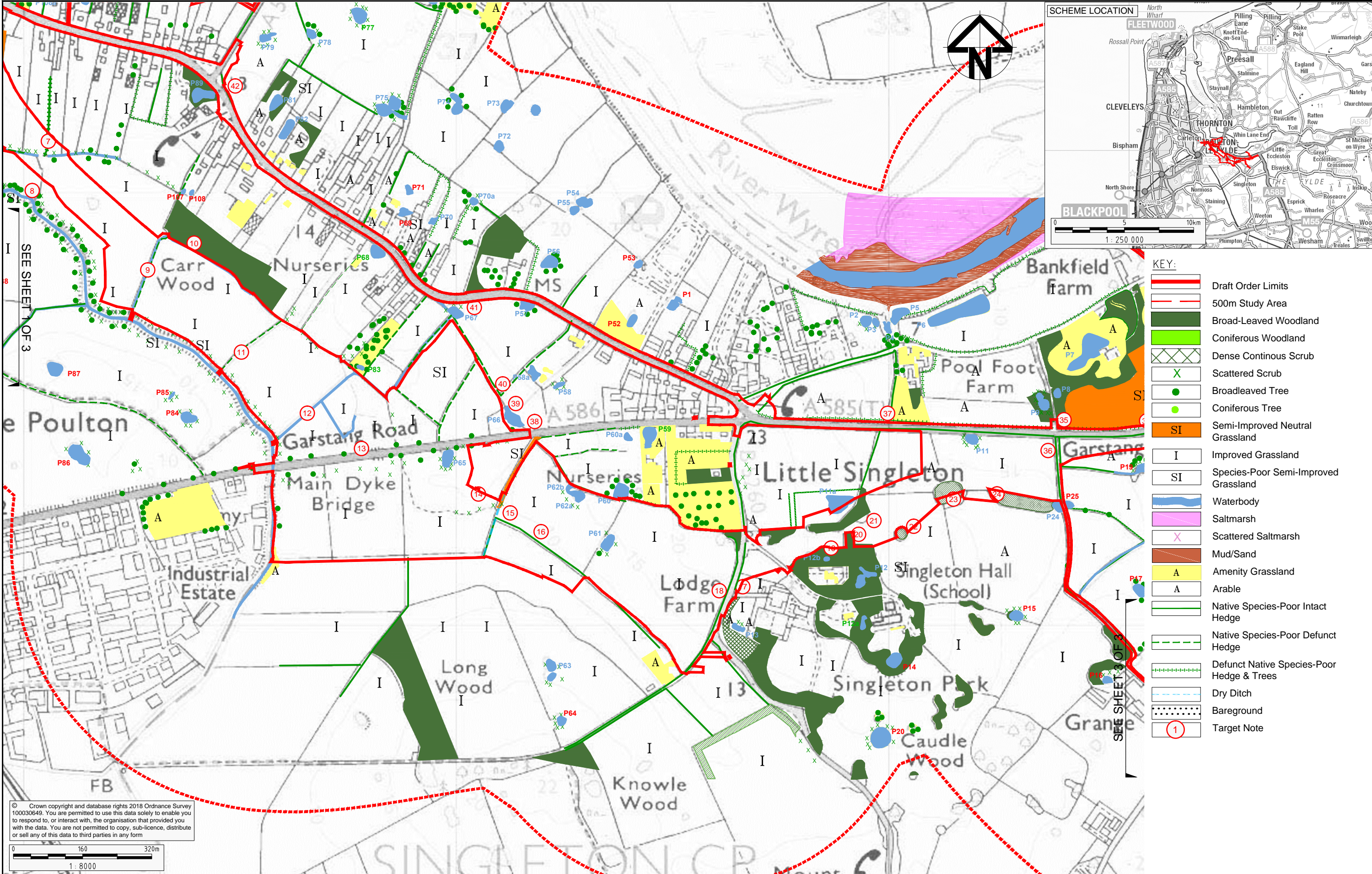
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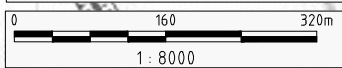
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Project
A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME
Drawing Title
ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) EXTENDED PHASE 1 HABITAT REPORT: PHASE 1 HABITAT SURVEY RESULTS SHEET 1 OF 3

Status	S8 - DCO SUBMISSION	Revision	0
Scale	1:8 000 @ A3	Date	OCT 2018
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	N.HENDERSON		
PINS No.	TR010035	FIGURE	A8.1.3
Drawing number	HE548643-A585-EAC-SZ_GN000-DR-L-3030		

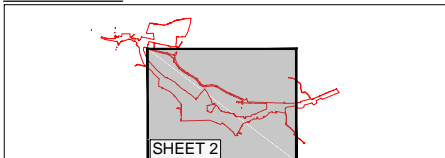
P00	S8	OCT18	FINAL	JN	KB	NH
Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Apprv'd



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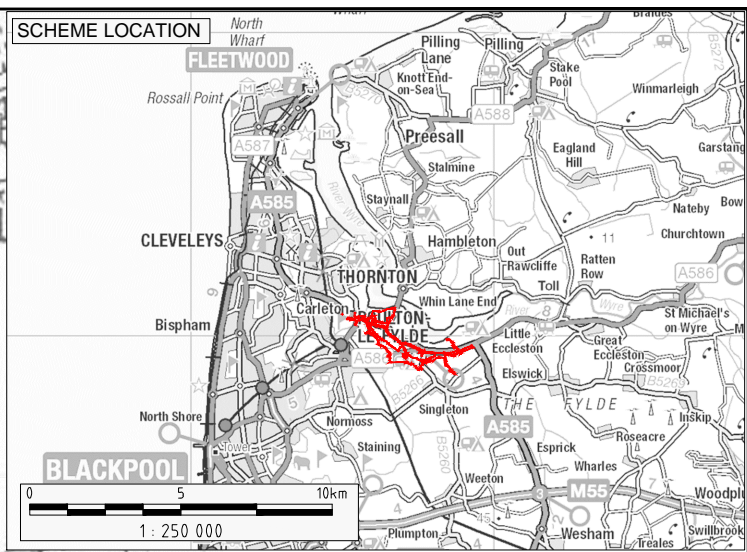
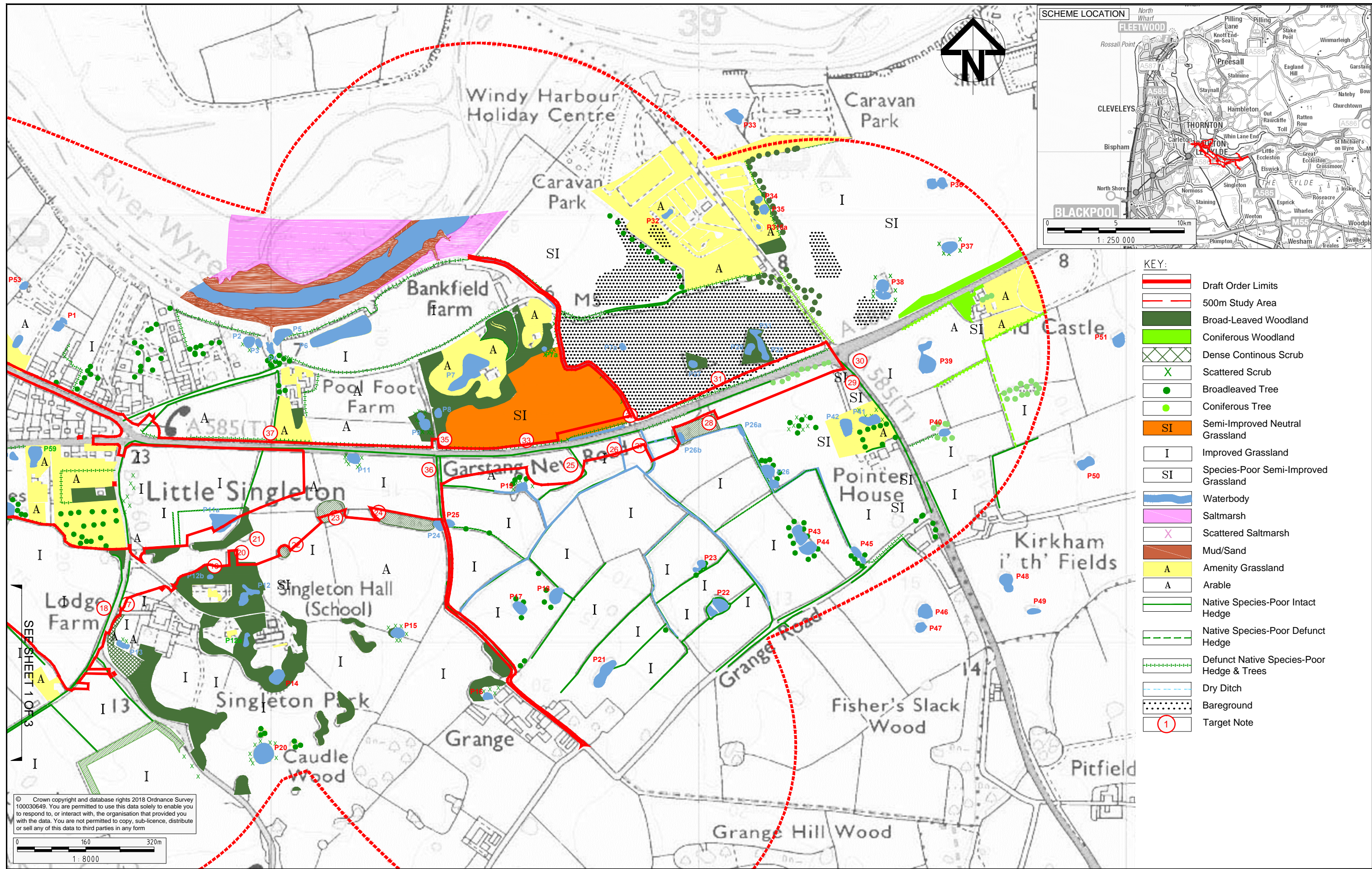
KEY PLAN:



Project A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME
Drawing Title ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) EXTENDED PHASE 1 HABITAT REPORT: PHASE 1 HABITAT SURVEY RESULTS SHEET 2 OF 3

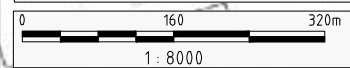
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Scale	1:8 000 @ A3	Date	OCT 2018
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	N.HENDERSON		
PINS No.	TR010035	FIGURE	A8.1.3
Drawing number	HE548643-A585-EAC-SZ_GN000-DR-L-3030		

Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Apprv'd
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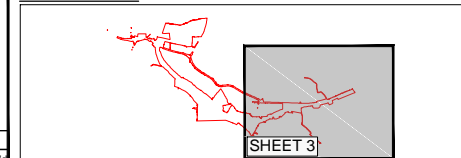


- KEY:
- Draft Order Limits
 - 500m Study Area
 - Broad-Leaved Woodland
 - Coniferous Woodland
 - Dense Continuous Scrub
 - Scattered Scrub
 - Broadleaved Tree
 - Coniferous Tree
 - Semi-Improved Neutral Grassland
 - Improved Grassland
 - Species-Poor Semi-Improved Grassland
 - Waterbody
 - Saltmarsh
 - Scattered Saltmarsh
 - Mud/Sand
 - Amenity Grassland
 - Arable
 - Native Species-Poor Intact Hedge
 - Native Species-Poor Defunct Hedge
 - Defunct Native Species-Poor Hedge & Trees
 - Dry Ditch
 - Bareground
 - Target Note

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KEY PLAN:



Project A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME
Drawing Title ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) EXTENDED PHASE 1 HABITAT SURVEY RESULTS SHEET 3 OF 3

Status	S8 - DCO SUBMISSION	Revision	0
Scale	1:8 000 @ A3	Date	OCT 2018
Drawn By	J.NORMAN		
Checked By	K.BURROWS		
Approved By	N.HENDERSON		
PINS No.	TR010035	FIGURE	A8.1.3
Drawing number	HE548643-A585-EAC-SZ_GN000-DR-L-3030		

Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Appr'd
0	S8	OCT18	S8 - DCO SUBMISSION	JN	KB	NH

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