



Environmental Statement Volume IV – Appendix 6-1: Phase 1 **Habitat Survey Report**



Document Reference: EN070008/APP/6.4.6.1

Applicant: Chrysaor Production (U.K.) Limited,

a Harbour Energy Company PINS Reference: EN070008 Planning Act 2008 (as amended)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a)

Date: October 2023





PINS Reference	Document Reference	Document Revision	Date
EN070008	EN070008/APP/6.4.6.1	Revision 1	October 2023

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1 Introduction

1.1 Overview

- 1.1.1 Chrysaor Production (U.K.) Limited, a Harbour Energy company, (hereafter 'the Applicant') is applying for a Development Consent Order for the Viking CCS Pipeline project (hereafter the Proposed Development).
- 1.1.2 This Appendix has been prepared to accompany *Environmental Statement (ES) Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)*, which accompanies the application. This Appendix details the methodologies used whilst compiling baseline Phase 1 habitat information. Baseline data presented in this Appendix have been used to inform the assessment presented within *ES Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)*.
- 1.1.3 Separate detailed surveys have been undertaken for selected habitats and protected and notable species identified as potentially being affected by the Proposed Development (either directly impacted or occurring adjacent to proposed working areas or access routes). This further baseline information is provided in the following technical appendices:
 - Bat Survey Report Appendix 6.2 (Application Document 6.4.6.2);
 - Otter and Water Vole Survey Report Appendix 6.3 (Application Document 6.4.6.3);
 - Badger Survey Report (confidential) Appendix 6.4 (Application Document 6.4.6.4);
 - Hedgerow Survey Report Appendix 6.5 (Application Document 6.4.6.5);
 - Aquatic Ecology Survey Report Appendix 6.6 (Application Document 6.4.6.6);
 - Ornithology Survey Report Appendix 6.7 (Application Document 6.4.6.7);
 - Ornithology Survey Report (Confidential version) Appendix 6.8 (Application Document 6.4.6.8); and
 - Arboricultural Impact Assessment Appendix 6.10 (Application Document 6.4.6.10).

1.2 Purpose of this Appendix

- 1.2.1 This Appendix defines the general baseline ecological conditions within the potential zone of influence of the Proposed Development (based on the study areas defined later in this report) and determines the need for detailed habitat and species surveys and assessment work. It provides a record of the initial work undertaken, the findings of these studies, and clarifies which ecological features are likely to be relevant to the subsequent ecological impact assessment (EcIA) of the Proposed Development. This Appendix therefore identifies:
 - Legislation and planning policy relevant to the Proposed Development;
 - Statutory and non-statutory biodiversity nature conservation designations within the potential zone of influence of the Proposed Development;
 - All habitats present within the DCO Site Boundary and adjacent areas where there might be potential for direct or indirect effects from the Proposed Development;
 - The potential of the habitats recorded (where possible and accessible) to support protected and notable species of flora and fauna; and

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 Requirements for relevant follow-up habitat and species surveys to define the ecological baseline.

2 Wildlife Legislation and Planning Policy

2.1 Legislation

- 2.1.1 A framework of international, national and local legislation and planning policy guidance exists to protect and conserve habitats and species. The following wildlife legislation is potentially relevant to the Proposed Development (**Table 1**). This legislation has been considered when gathering baseline data in terms of designated sites, habitats and the potential for protected and notable flora and fauna to be present using the methods described in Section 3.
- 2.1.2 Although the UK is no longer a member of the European Union (EU), all international nature conservation obligations that applied within England on 31 December 2020 remain part of national domestic legislation.

Table 1: Summary of Relevant Legislation

Document	Requirements/Purpose
The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) (Ref 1)	Affords protection to European Protected Species, such as bats and great crested newt (<i>Triturus cristatus</i>), listed on Schedule 2. It is an offence (subject to exceptions) to deliberately capture, kill, disturb or trade in listed animals. In certain circumstances, licences can be granted to permit some actions prohibited under the Act. Regulation 7 the Conservation of Habitats and Species (Amendment) 2017 Regulations requires that competent authorities must take such steps in the exercise of their functions as they consider appropriate to secure the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds as appropriate and having regard to the requirements of Article 2 of the new Wild Birds Directive. This includes the use of planning and development control measures.
Wildlife and Countryside Act 1981 (as amended) (WCA) (Ref 2)	Part 1 of the Act affords general protection to all species of wild bird and specific protection to flora and fauna listed on Schedules 1 (birds protected by special penalties), 5 (other animals) and 8 (flora, fungi and lichens). In certain circumstances, licences can be granted to permit some actions prohibited under the Act. The Act contains measures for preventing the establishment of nonnative species which may be detrimental to native wildlife, including prohibiting the planting and spread of plants listed in Schedule 9.
Environment Act 2021 (Ref 3)	The Environment Act 2021 aims to improve air and water quality, tackle waste, improve biodiversity and make other environmental improvements. Most of the responsibilities under the act rest with public bodies. However, the act also sets a requirement for all DCO developments to achieve a minimum 10% Biodiversity Net Gain, although this will not come into force until such time that the

Document	Requirements/Purpose	
- Document	necessary secondary legislation has been enacted. The Government has indicated that BNG will become mandatory for DCO applications from late 2025.	
Countryside and Rights of Way (CRoW) Act 2000 (Ref 4)	The Act increases powers for the protection and management of SSSIs and places a duty on public bodies to further the conservation and enhancement of SSSIs.	
Natural Environment and Rural Communities (NERC) Act 2006 (Ref 5)	Section 41 (S41) includes a list of habitats and species of principal importance for nature conservation in England which is to be used by decision-makers to guide the implementation of their duties under Section 40 of the Act, so as to have regard to the conservation of biodiversity in England, when carrying out their normal functions.	
Protection of Badgers Act 1992 (Ref 6)	If badger (<i>Meles meles</i>) is present, the legislation may have a bearing on how the future development is implemented. Legislation makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett. In certain circumstances, licences can be granted to permit some actions prohibited under the Act.	
The Hedgerows Regulations 1997 (Ref 7)	The Hedgerow Regulations 1997 introduced protection for countryside hedgerows that are defined as 'important' because they meet specific wildlife or landscape criteria. The assessment has evaluated hedgerows affected by the Scheme by way of field survey, to determine whether any qualify as important under the ecological criteria.	
Salmon and Freshwater Fisheries Act 1975 (Ref 8)	This Act covers regulation of fisheries in England and Wales and includes legislation that covers the introduction of polluting effluents, the obstruction of fish passage (screens, dams, weirs, culverts etc) illegal means of fishing, permitted times of legal fishing and fishing licencing (which covers electric fishing). Under this act any person who causes or knowingly permits to flow, or puts or knowingly permits to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish, shall be guilty of an offence. The act also requires that fish passes are installed on new and rebuilt barriers that affect waters frequented by salmon or migratory trout. In the future, it is likely that fish passage facilities will need to be designed to accommodate all fish species and life stages, with nature-like bypass channels being the most appropriate solution currently available.	
The Eels (England and Wales) Regulations 2009 (Ref 9)	The Eels (England and Wales) Regulations 2009 implement Council Regulation (EC) No 1100/2007 of the Council of the European Union, which required Member States to establish measures for the recovery of the stock of European eel. The regulations apply to England and Wales.	

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Document	They give powers to the regulators (the Environment Agency and Natural Resources Wales) to implement recovery measures in all freshwater and estuarine waters in England and Wales. The aim of the regulations is to achieve 40 per cent escapement of adult eels relative to escapement levels under pristine conditions. The measures, as set out in the legislation, by which this is to be achieved are to reduce fishing pressures, improve access and habitat quality and reduce the impact of impingement and entrainment. Under the Regulations, the regulators can serve notice to companies detailing their legal obligation to screen intakes and outfalls for eel and/or to remove or modify obstructions to eel migration. However, it is possible for companies to be granted with exemptions if the costs of works greatly exceeds the benefits. In such a situation it is likely the regulator will seek a package of more cost-effective, "alternative measures".	
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD) (Ref 10)	Activities that have the potential to affect the water environment require a WFD Assessment. Compliance with the WFD means attainment of good ecological status, prevention of deterioration in status, and prevention of failure to achieve future attainment of good status where it is not already achieved within waterbodies. However, Article 4.7 provides legislation for exemption conditions that could allow implementation of schemes that cause deterioration in ecological status, for example for reasons of overriding public interest.	
Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 11)	The Order allows for the enforcement of European Union Regulation No. 1143/2014 on the prevention and management of the introduction and spread of invasive alien plant and animal species within England and Wales. The regulations apply to releases of live specimens and anything they can reproduce from, such as seeds, spores and fragments of plants.	
Standing Advice (Defra, 2014) (Ref 12)	The purpose of standing advice is to guide decision-makers on the determination of proposals with potential to affect protected species. The guidance sets out responsibilities and minimum requirements for survey and mitigation, including requirements for protected plant species.	

National Planning Policy and Guidance

2.1.3 The overarching National Planning Policy for Energy (EN-1) (Ref 13) sets out national policy for energy infrastructure and is part of a suite of National Policy Statements (NPS) issued by the Department of Energy and Climate Change. Part 5.3 relates to biodiversity and requires that an ES clearly sets out any effects on internationally, nationally and locally designated sites of ecological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. It also requires that the applicant shows how the Proposed Development has taken advantage of opportunities to conserve and enhance biodiversity conservation interests.

- 2.1.4 National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref 14), which relates to gas supply infrastructure and gas and oil pipelines, also has some relevance to the Proposed Development. Whilst this NPS only covers those nationally significant infrastructure pipelines that transport natural gas or oil, the information is useful in identifying impacts and good practice mitigation to be considered in applications for pipelines intended to transport other substances.
- 2.1.5 The National Planning Policy Framework (NPPF) (Ref 17) sets out the Government's planning policies for England and how these are to be applied. It identifies overarching objectives, including environmental (such as protecting and enhancing our natural environment and improving biodiversity). The NPPF does not apply directly to NSIP projects but can still be important or relevant to decision making. Chapter 15 of the NPPF 'Conserving and enhancing the natural environment' sets out the requirements to consider in relation to ecology and biodiversity.
- 2.1.6 The Government is currently reviewing and updating the Energy NPSs. It is doing this in order to reflect its policies and strategic approach for the energy system that is set out in the Energy White Paper (December 2020), and to ensure that the planning policy framework enables the delivery of the infrastructure required for the country's transition to net zero carbon emissions. As part of the Energy NPS review process, the Government published a suite of Draft Energy NPSs for consultation on 30 March 2023.
- 2.1.7 The detail of these provisions is subject to consultation and thereafter implementation.
- 2.1.8 **Table 2** provides quotations from national planning policy relevant to ecology and biodiversity and includes information from the Draft Energy NPSs where appropriate.

Table 2: National Planning Policy Relevant to Ecology and Biodiversity

Policy Reference	Policy Context		
National Polic	y Statement		
Overarching Na	ational Policy Statement for Energy (EN-1) (Ref 13)		
5.3.3	"Where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the IPC consider thoroughly the potential effects of a proposed project."		
5.3.4	"The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests".		
National Policy Statement for Gas Supply and Infrastructure and Gas and Oil Pipelines (EN-4) (Ref 14)			
2.21.3	"The ES should include an assessment of the biodiversity and landscape and visual effects of the proposed route and of the main alternative routes considered (see Section 5.9 of EN-1). The application should also include proposals for reinstatement of the pipeline route as close to its original state as possible and take into account any requirements for agreements with the landowner to		

Policy Reference	Policy Context		
	access areas for aftercare and management work. Where it is unlikely to be possible to restore landscape to its original state, the applicant should set out measures to avoid, mitigate, or employ other landscape measures to compensate for, any adverse effect on the landscape."		
2.21.5	"Mitigation measures to protect the landscape and ecology could include reducing the working width required for the installation of the pipeline in order to reduce the impact on the landscape where it will not be possible to fully reinstate the route."		
2.21.6	"In circumstances where the habitat to be crossed contains ancient woodland, trees subject to a Tree Preservation Order, or hedgerows subject to the Hedgerows Regulations 1997, the applicant should consider whether it would be feasible to use horizontal direct drilling under the ancient woodland or thrust bore under the protected tree or hedgerow and the IPC should consider requiring this, where not included in the proposal."		
Draft Overarchir	ng National Policy Statement for Energy (EN-1) (Ref 15)		
5.4.3	"Where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the Secretary of State consider thoroughly the potential effects of a proposed project."		
5.4.4	"The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests. As set out in Section 4.6, the design process should embed opportunities for nature inclusive design. The applicant is encouraged to consider how their proposal can contribute towards Biodiversity Net Gain in line with the ambition set out in the 25 Year Environment Plan. Energy infrastructure projects have the potential to deliver significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains. The scope of potential gains will be dependent on the type, scale, and location of each project."		
Draft National P (EN-4) (Ref 16)	Draft National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref 16)		
2.21.1	"Sections 4.3 and 5.9 of EN-1 sets out the general principles that should be applied in the assessment of biodiversity and landscape and visual impacts. Additional considerations apply during the construction of a pipeline (which, without mitigation, can affect both landscape and ecology). These comprise the effect upon specific landscape elements within and adjacent to the pipeline route, such as grasslands, field boundaries (hedgerows, hedgebanks, drystone walls, fences), trees, woodlands, and watercourses. There will also be temporary visual impacts caused by the need to access the working corridor and to remove flora and soil. The working width of the pipeline will vary		

Policy Reference	Policy Context	
	depending on the surrounding terrain. Temporary impacts could include large excavations where deep pits are needed for boring beneath rivers, roads, and sensitive features."	
2.21.2	"Long term impacts upon the landscape for pipelines are likely to be limited, as once operational the main infrastructure is usually buried. They are likely to include: • limitations on the ability to replant landscape features such as hedgerows or deep-rooted trees over or adjacent to the pipeline; and • structures and indication points necessary to identify the pipeline route and provide it with service access."	
2.21.3	"The ES should include an assessment of the biodiversity and landscape and visual effects of the proposed route and of the main alternative routes considered (see Section 5.10 of EN-1). The application should also include proposals for reinstatement of the pipeline route as close to its original state as possible and take into account any requirements for agreements with the landowner to access areas for aftercare and management work. Where it is unlikely to be possible to restore landscape to its original state, the applicant should set out measures to avoid, mitigate, or employ other landscape measures to compensate for, any adverse effect on the landscape."	
National Plannir	ng Policy Framework (NPPF) (Ref 17)	
Chapter 15	"To protect and enhance biodiversity and geodiversity, plans should: a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and, b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity. When determining planning applications, local planning authorities should apply the following principles: a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees)	

Policy Reference	Policy Context
	should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
	d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.
	The following should be given the same protection as habitats sites: a) potential Special Protection Areas and possible Special Areas of Conservation;
	b) listed or proposed Ramsar sites; and
	c) sites identified, or required, as compensatory measures for
	adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.
	The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site."

Local Planning Policy and Guidance

2.1.9 The following local planning policy is potentially relevant to the Proposed Development (**Table 3**) and has been considered when planning and undertaking the desk based and survey work using the methods described in Section 3.

Table 3: Relevant Local Planning Policies

Policy Document	Policy Reference	Policy Details
Central Lincolnshire Local Plan (CLCP) –	and West Lindse	es the City of Lincoln Council, North Kesteven Council y District Council. Part of the Proposed Development Lindsey District Council; the CLCP replaces the West n.
(CLCP) – Adopted April 2023 (Ref 18)	S60 - Protecting Biodiversity and Geodiversity	All development should: a) protect, manage, enhance and extend the ecological network of habitats, species and sites of international, national and local importance (statutory and non-statutory), including sites that meet the criteria for selection as a Local Site; b) minimise impacts on biodiversity and features of geodiversity value; c) deliver measurable and proportionate net gains in biodiversity in accordance with Policy S61; and

Policy Document	Policy Reference	Policy Details
		d) protect and enhance the aquatic environment within or adjoining the site, including water quality and habitat. Part 1
		Development, which could adversely affect designated sites will only be permitted in exceptional circumstances:
		 Internationally Designated Sites - Development proposals that will have an adverse impact on the integrity of such areas, will not be supported other than in exceptional circumstances, in accordance with the NPPF. Development proposals that are likely to result in a significant adverse effect, either alone or in combination with other proposals, on any internationally designated site, must satisfy the requirements of the Habitats Regulations (or any superseding similar UK legislation).
		 Nationally designated sites - Development proposals within or outside such a site will not normally be supported unless the benefits of the development, at this site, clearly outweigh both the adverse impacts on the features of the site and any adverse impacts on the wider network of nationally protected sites.
		 Locally Designated Sites - Development likely to have an adverse effect on locally designated sites, their features or their function as part of the ecological network, will only be supported where the benefits of the development clearly outweigh the loss, and the coherence of the local ecological network is maintained. Where significant harm cannot be avoided, the mitigation hierarchy should be followed.
		Planning permission will be refused for development resulting in the loss, deterioration or fragmentation of irreplaceable habitats, including ancient woodland and aged or veteran trees, unless there are wholly exceptional reasons and a suitable compensation strategy will be delivered. Part 2
		Development should seek to preserve, restore and recreate priority habitats, ecological networks and the protection and recovery of priority species set out in the Natural Environment and Rural Communities Act 2006, Lincolnshire Biodiversity Action Plan, Lincolnshire Geodiversity Strategy and Local Nature Recovery Strategy.

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Policy Document	Policy Reference	Policy Details
	Reference	Where adverse impacts are likely, development will only be supported where the need for and benefits of the development clearly outweigh these impacts. In such cases, appropriate mitigation or compensatory measures will be required. Part 3 Development should avoid adverse impact on existing biodiversity and geodiversity features as a first principle, in line with the mitigation hierarchy. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated. If full mitigation cannot be provided, compensation will be required as a last resort where there is no alternative. Development will only be supported where the proposed measures for mitigation and/or compensation along with details of net gain are acceptable to the Local Planning Authority in terms of design and location, and are secured for the lifetime of the development with appropriate funding mechanisms that are capable of being secured by condition and/or legal agreement. If significant harm to biodiversity resulting from development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission will be refused.
	S61 - Biodiversity Opportunity and Delivering Measurable Net Gains	Following application of the mitigation hierarchy, all development proposals should ensure opportunities are taken to retain, protect and enhance biodiversity and geodiversity features proportionate to their scale Development proposals should create new habitats, and links between habitats, in line with Central Lincolnshire Biodiversity Opportunity and Green Infrastructure Mapping evidence
	S66 - Trees, Woodland and Hedgerows	Development proposals should be prepared based on the overriding principle that: • the existing tree and woodland cover is maintained, improved and expanded; and • opportunities for expanding woodland are actively considered, and implemented where practical and appropriate to do so.
North Lincolnshire Core Strategy 2006 - 2026	CS1 – Spatial Strategy for North Lincolnshire	Internationally and nationally designated sites of conservation importance of the Humber Estuary and Thorne and Hatfield Moors will be protected and enhanced. In the Humber Estuary areas, a strategic approach to the creation of habitats will be adopted.
(Adopted 2011)	CS16 – North Lincolnshire's	Requires protection of trees and hedgerows.

Policy Document	Policy Reference	Policy Details
(Ref 19)	Landscape, Greenspace and Waterscape	
	CS17 - Biodiversity	Promotes effective stewardship of North Lincolnshire's wildlife through:
		 Safeguarding national and international protected sites for nature conservation from inappropriate development;
		Appropriate consideration being given to European and nationally important habitats and species;
		 Maintaining and promoting a North Lincolnshire network of local wildlife sites and corridors;
		 Ensuring development protects and enhances features of biological interest;
		 Ensuring development seeks to produce a net gain in biodiversity by designing in wildlife, and ensuring any unavoidable impacts are appropriately mitigated for; and
		 Supporting wildlife enhancements that contribute to the habitat restoration targets set out in the North Lincolnshire's Nature Map and in national, regional and local biodiversity action plan.
North-East Lincolnshire Local Plan (Adopted 2018) (Ref 20)	SO6 – Built, Historic and Natural Environment	Ensure the development needs of the borough are met in a way that safeguards and enhances the quality of the natural environment and ensures that development needs are met in a way that minimises harm. This is to be done by: • Safeguarding designated and protected important
		species and habitats; • Deliver net gains in biodiversity;
		 Deliver development in locations of least environmental value.
	Policy 9 – Habitat Mitigation South Humber Bank	1. Within the mitigation Zone identified on the Policies Map (covering an area of agricultural land on the South Humber Bank between Pyewipe and Immingham), proposals which adversely affect the Humber Estuary SPA/Ramsar site due to the loss of functionally linked land will normally be required to provide their own mitigation in order to comply with the requirements of the Habitats Regulations. 2. The Strategic Mitigation Sites, circa 120 ha, identified on the Policies Map, represent those sites which have been identified to deliver appropriate mitigation which will address the adverse impacts of development within the Mitigation Zone at a strategic level. The identified Mitigation Sites will be safeguarded against development, and appropriate habitat will be delivered and managed on these sites

Policy	Policy	Policy Details		
Policy Document	Policy Reference	Policy Details		
	Note: elice	in accordance with the North East Lincolnshire South Humber Gateway Ecological Mitigation Delivery Plan. 3. Development proposals on greenfield land within the Mitigation Zone will be required to make contributions towards the provision and management of the mitigation sites identified on the Policies Map. Where landowners have contributed to the implementation strategy through the donation of land, the required contribution will be reduced by an equivalent value. 4. The Council will secure such contributions, based on a proportional approach relating to the site area. The formula for the calculation or the relevant contribution is as follows: Contribution (£) = SA x (£MC/ha) The Mitigation Contribution (£MC/ha) will be £11,580/ha. This contribution is not index linked. The Contribution shall be paid when development commences on site, or through agreement with the Council where a phase approach to delivery is accepted by the Council. 5. All other planning requirement will also be expected to be met. 6. On an exceptional basis, independent alternative mitigation proposals will be considered on sites within the identified Mitigation Zone. Proposals should be supported by evidence that demonstrates that the alternative mitigation contributes to the overall mitigation strategy and ensures that the development avoids adverse effects on the integrity of the SPA/Ramsar site, alone or in combination. It will be a requirement of any planning consent that mitigation is implemented prior to the commencement of development.		
	Policy 41 – Biodiversity and Geodiversity	 Regard to biodiversity when considering development proposals seeking specifically to: Establish and secure appropriate management of long-mitigation areas, managed specifically to protect the integrity of internationally important biodiversity sites; Designate Local Wildlife Sites in recognition of particular wildlife value; Protect, manage and enhance international, national and local sites of biological conservation importance, having regard to the hierarchy of designated sites, and the need for appropriate buffer zones; 		

Policy Document	Policy Reference	Policy Details
		 Minimise the loss of biodiversity features, or where loss is unavoidable and justified ensure appropriate mitigation and compensation measures are provided; Create opportunities to retain, protect, restore and enhance features of biodiversity value including priority habitats and species; and Take opportunities to retain, protect and restore the connectivity between components of the Borough's ecological network. Any development which would, either individually or cumulatively, result in significant harm to biodiversity which cannot be avoided, adequately mitigated or as a last resort compensated for, will be refused.
East Lindsey Core Strategy (Adopted 2018) (Ref 21)	Strategic Policy (SP) 24 – Biodiversity and Geodiversity	1. Development proposals should seek to protect and enhance the biodiversity and geodiversity value of land and buildings, and minimise fragmentation and maximise opportunities for connection between natural habitats. 2. The Council will protect sites designated internationally, nationally or locally for their biodiversity and geodiversity importance, species populations and habitats identified in the Lincolnshire Biodiversity Action Plan and the Natural Environment and Rural Communities (NERC) Act 2006. Development, which could adversely affect such a site, will only be permitted in exceptional circumstances: In the case of internationally designated sites, where there is no alternative solution and there are overriding reasons of public interest for the development; In the case of nationally designated sites, there is no alternative solution and the reasons for the development clearly outweigh the biodiversity value of the site; or In the case of locally designated sites, and sites that meet the criteria for selection as a Local Site, the reasons for the development clearly outweigh the need to protect the site in the long term. In exceptional circumstances, where adverse impacts are demonstrated to be unavoidable and development is permitted which would damage the nature conservation or geological value of a site, the Council will ensure that such damage is kept to a minimum and will ensure appropriate mitigation, compensation, or enhancement of the site through the use of planning conditions or planning obligations. Compensation measures towards loss of habitat will be used only as a last resort where there is no

Policy Document	Policy Reference	Policy Details
		alternative. Where any mitigation and compensation measures are required, they should be in place before development activities start that may disturb protected or important habitats and species. Proposals to provide or enhance a site will be supported. 4. Where new habitat is created it should, where possible, be linked to other similar habitats to provide a network of such sites for wildlife. 5. Planning permission will only be granted for development which directly or indirectly leads to loss or harm to ancient woodland or aged or veteran trees, in exceptional circumstances, where the developer can demonstrate that the wider benefits of that loss clearly outweigh the protection of the trees.
	SP 27	1. Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to: a) residential amenity; b) surrounding landscape, townscape and historic landscape, character, and visual qualities; c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area, archaeological site or other heritage asset; d) sites or features of biodiversity or geodiversity importance, or protected species; e) the local economy; f) highway safety; and g) water environment and water quality. 3. Development within or affecting the setting of the Lincolnshire Wolds Area of Outstanding Natural Beauty, and landscape areas defined as highly sensitive within the East Lindsey Landscape Character Assessment, will only be permitted in exceptional circumstances, where the development is in the public interest and considering the following: a) The need for the development, including any national considerations, and the impact of permitting it, or refusing it, upon the local economy; and, b) the cost of, and scope for, developing elsewhere outside the designated area, or meeting the need for it in some other way; and, c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be satisfactorily moderated.

Policy Document	Policy Reference	Policy Details
		 The presumption will be for connecting cables to be placed underground, or use made of existing or replacement infrastructure (of the same size and scale) along existing routes to carry any additional base load cabling. Small scale and micro renewable energy development will be supported where their individual or cumulative impact, when weighed against the benefits, is not considered to have an unacceptable impact on residential amenity; the context and setting of any areas of cultural or historic importance or heritage assets; and local landscape character and visual qualities.

3 Methodology

3.1 Overview

- 3.1.1 This section of the Appendix outlines the methodology used to gather desk study information and baseline Phase 1 Habitat survey data for the Proposed Development, as well as assessing the suitability of habitats to support protected and notable fauna and flora.
- 3.1.2 The technical approach to habitat survey and assessment is based on standard techniques for Phase 1 Habitat survey (Ref 22). The approach to data gathering and delivery of this Appendix is also based on current best practice guidelines for Preliminary Ecological Appraisal (PEA) published by the Chartered Institute for Ecology and Environmental Management (Ref 23).
- 3.1.3 For the purpose of this Appendix, the definition of protected and notable habitats and species is consistent with CIEEM guidance (Ref 23). Protected and notable habitats and species include those listed under Schedules 1, 5 and 8 of the WCA; Schedules 2, 4 and 5 of The Habitats Regulations; species and habitats of Principal Importance for nature conservation in England listed under Section 41 of the NERC Act; and species covered by national or local action plans or Red Data Lists.

3.2 Definition of a Study Area

- 3.2.1 The 'zone of influence' (ZoI) for the Proposed Development is the area over which ecology and biodiversity features may be affected by biophysical changes because of the Proposed Works and associated activities (Ref 26). Therefore, the study areas for baseline data gathering (as described below) were defined on a precautionary basis to obtain sufficient data to determine the ZoI for the purpose of the EcIA.
- 3.2.2 Identification of the ZoI started with an initial scoping of the potential sources of impact and the pathways for impacts on different ecological features. Pathways for impacts are how activities for the Proposed Development lead to environmental changes, which then have effects on ecosystems, habitats and species. Consequently, the determination of the ZoI considers the land required for the Proposed Development and the potential for disturbance and emissions at each phase as described in ES Volume II Chapter 3: Description of the Proposed Development (Application Document 6.2.3).
- 3.2.3 Based on this, the most extensive impact pathways from the Proposed Development are those relating to noise and visual disturbance on species and to legally permissible impacts on terrestrial habitats and species from emissions to air and water. The likely Zol arising from these pathways has been informed by the standard good practice study areas applied in the impact assessments of other disciplines, particularly ES Volume II Chapter 10: Water Environment, Chapter 13: Noise and Vibration (Application Document 6.2.13) and Chapter 14: Air Quality (Application Document 6.2.14).

3.3 Desk Study

- 3.3.1 In March 2022 the Lincolnshire Environmental Records Centre (LERC) was contacted to obtain data for the Desk Study Areas (detailed below) on relevant:
 - Non-statutory designated sites (Local Wildlife Sites (LWS)/Sites of Nature Conservation Importance (SNCIs) within 2km of the Proposed Development; and

- Protected and notable species data within 2km of the Proposed Development.
- 3.3.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (Ref 24) was reviewed for the following information:
 - Statutory sites of ecology and biodiversity conservation importance within 10km of the Proposed Development. These comprise internationally designated and potential/candidate Special Protection Areas (SPAs), Wetlands of International Importance (Ramsar sites) and Special Areas of Conservation (SACs); nationally designated Sites of Specific Scientific Interest (SSSI) and National Nature Reserves (NNRs); and locally designated Local Nature Reserves (LNRs);
 - Species data collected from European Protected Species Licenses and Natural England commissioned great crested newt pond surveys, within 2km of the Proposed Development; and
 - Ancient woodlands within 2km of the Proposed Development.
- 3.3.3 As outlined in *ES Volume IV Appendix 6-11 (Application Document 6.4.6.11)*, the Woodland Trust Ancient Tree Inventory (Ref 25) was reviewed for the presence of any recorded notable, veteran or ancient trees within or immediately adjacent to the DCO Site Boundary.
- 3.3.4 The land at VPI Immingham was surveyed in 2021 and 2022 for a separate project (Ref 27). The applicants for both of these proposed developments have agreed to share data and ecological data obtained for VPI Immingham have been used to help determine habitats and associated species constraints where access was not available for survey work as outlined in the limitations section of this Appendix.
- 3.3.5 The relevant National Character Areas coinciding with the Proposed Development were identified to help determine the prevailing landscape and habitat characteristics, and local priorities for landscape and habitat restoration.
- 3.3.6 Aerial imagery was assessed alongside Ordnance Survey mapping to identify all ponds within 250m of the DCO Site Boundary, in order to help establish if the land within and immediately surrounding the DCO Site Boundary could be used by great crested newts. This species can use suitable terrestrial habitat up to 500 m from a breeding pond (Ref 36), though there is a notable decrease in great crested newt abundance beyond 250 m from a breeding pond (Ref 28).

3.4 Field Survey

- 3.4.1 Surveys were conducted between March 2022 and May 2023 to identify and map the habitats present in the Survey Area (DCO Site Boundary plus a 50m buffer). This survey followed the Phase 1 Habitat Survey methodology as set out by the JNCC (Ref 22). Plant names used in this report follow Stace (Ref 29).
- 3.4.2 This survey was 'extended' to record any evidence of, or potential for, protected or notable species to be present. During the walkover survey, the following protected and notable species were considered:
 - **Badger:** the survey involved searching for signs of badger activity including setts, tracks, snuffle holes and latrines (Ref 30, Ref 31).
 - Bats: searches were made for potential roosting sites for bats within trees and structures (such as building or bridges). Where present, the relative suitability of these for bats was categorised (negligible, low, moderate, high or confirmed roost) (Ref 32);

- Otter (*Lutra lutra*): assessments of watercourses were made to determine their suitability for otter (Ref 33);
- Water vole (*Arvicola amphibius*): assessments of watercourses were made to determine their suitability for water vole (Ref 34);
- Birds: the survey involved assessing the potential of habitats within the Survey Area to support notable species or assemblages of breeding, wintering or migrating birds;
- **Great crested newt:** ponds within the DCO Site Boundary were assessed for their potential to support great crested newt (Ref 35, Ref 36);
- Natterjack toads (Bufo calamita): Dune areas located at Theddlethorpe provide potentially suitable habitat.
- Reptiles: habitats were assessed for their potential to support reptiles (Ref 37, Ref 38);
- Protected or notable species of plants: habitats with suitability to support protected and notable species of plants were identified for further survey; and
- **Invasive non-native plant species (INNPS)** were recorded where encountered with reference to the lists of such species included within Schedule 9 of the WCA.
- 3.4.3 Habitat condition assessments were undertaken using the habitat condition criteria accompanying DEFRA's Biodiversity Net Gain (BNG) Metric. The BNG assessment has been undertaken using Biodiversity Metric 3.0 (Ref 39) in accordance with the accompanying guidance and best practice principles and will deliver 10% net gain of biodiversity units. The assessment is presented in the Biodiversity Net Gain Assessment and Strategy Report submitted in support of the DCO. Further information on the forthcoming legal requirements for the provision of BNG under the Environment Act 2021 are provided in ES Volume IV Appendix 6.10: Biodiversity Matrix (Application Document 6.4.6.10).
- 3.4.4 For the purpose of this Appendix the Survey Area has been divided into five sections. These are listed below in **Table 4** and shown in **Figure 1**.

Table 4: Survey Sections Referred to in this Report

Section	Location
1	Immingham Facility to A180
2	A180 to A46
3	A46 to Pear Tree Lane
4	Pear Tree Lane to Manby Middlegate (B1200)
5	Manby Middlegate (B1200) to Theddlethorpe and down to Mean Water Low Springs

3.5 Limitations

3.5.1 The aim of a desk study is to help characterise the baseline context of the Proposed Development and provide valuable background information that would not be captured by a single site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitat or species does not necessarily mean that the habitat or species does not occur in the desk study area. Likewise, the presence of records for particular habitats and species does not automatically mean that

- these still occur within the area of interest or are relevant in the context of the Proposed Development.
- 3.5.2 Due to land access constraints not all parcels of land were accessed. Where this applied, habitats have been assigned as far as practicable using recent online aerial and street view imagery, and shared data from the Humber Zero project (Ref 27).
- 3.5.3 A number of ponds were not accessed to permit assessment for great crested newt using the Habitat Suitability Index. This is not considered to be a significant limitation, as the Proposed Development is pursuing District Level Licensing (for which an impact assessment and conservation payment certificate has been obtained) which will mitigate for great crested newt and as such, this is not a constraint on the Proposed Development.
- 3.5.4 Due to constraints arising from land access and programme, not all land parcels were surveyed during the optimal season for Phase 1 Habitat survey (May to September). However, as the land required for the Proposed Development is predominantly arable farmland this is not considered a constraint. All habitats of higher ecological value have been surveyed during the optimal survey season or have been recommended for further habitat surveys within the optimal survey season.
- 3.5.5 Due to some surveys being undertaken during sub-optimal season there is a risk that some INNPS populations may not have been found. Prior to construction works a thorough check by suitably qualified ecologists will be required to identify INNPS to prevent the spread of any INNPS due to construction processes. Accordingly, there is no limitation as the appropriate action needed has been identified and will be adopted.
- 3.5.6 Brackenborough Road Verge Local Wildlife Site (LWS) has not been surveyed. This is not a constraint given the Proposed Development avoids the LWS. As such, further survey work is not necessary.
- 3.5.7 The Phase 1 Habitat Survey within Mayflower Wood (within Section 1) was undertaken at a seasonally constrained time and as such it was not possible to collect a detailed plant list. However, this area is due to be avoided through the use of HDD and no direct impacts are anticipated. As such no further surveys are required.
- 3.5.8 The area of coastal floodplain grazing marsh (within section 5) which is a priority habitat was unable to be accessed during the Phase 1 Habitat survey. This area of floodplain grazing marsh will be avoided as transport from the Theddlethorpe Facility with be through the existing LOGGS offshore pipeline to MLWS tide mark. It is anticipated there will be no changes in hydrology (ES Volume II Chapter 11 Water Environment (Application Document 6.2.11)). Therefore, further surveys are not required.

4 Designated Sites

4.1 Desk Study

4.1.1 **Table 5** below shows the designated sites present within the Desk Study Areas, which are also shown on **Figure 2**.

Table 5: Designated Sites within the Desk Study Area

Designated Site	Reason for Designation	Distance to DCO Site Boundary
Statutory Designated	d Sites	
Humber Estuary Ramsar site	The site is internationally important for ecology and biodiversity under the following criteria: Ramsar criterion 1: The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. Ramsar criterion 3: The site supports a breeding colony of grey seal (Halichoerus grypus) and the most north-easterly breeding site in Great Britain for natterjack toad. Ramsar criterion 5: The site supports a non-breeding bird assemblage of international importance (153,934 waterfowl) Ramsar criterion 6: The site supports the following bird species that occur in numbers that are of international importance: Eurasian golden plover (Pluvialis apricaria albifrons subspecies), on passage and wintering; Red knot (Calidris canutus islandica subspecies), on passage and wintering; Dunlin (Calidris alpina alpina subspecies), on passage and wintering; Black-tailed godwit (Limosa limosa islandica subspecies), on passage and wintering; Bar-tailed godwit (Limosa lapponica lapponica subspecies), wintering; Common redshank (Tringa totanus brittanica subspecies) on passage and wintering; and Common shelduck (Tadorna tadorna), wintering. Ramsar criterion 8: The Humber Estuary acts as an important migration route for both river lamprey (Lampetra fluviatilis) and sea lamprey	Within the DCO Site Boundary

Designated Site	Reason for Designation	Distance to DCO Site Boundary
	(<i>Petromyzon marinus</i>) between coastal waters and their spawning areas.	
Humber Estuary SPA	Internationally important for ecology and biodiversity. It is designated for its use by the following Annex 1 species: Avocet (Recurvirosta avosetta) (59 individuals – wintering) Bittern (Botarus stellaris) 4 individuals – wintering Hen harrier (Circus cyaneus) 8 individuals – wintering Golden plover 30,709 individuals – wintering Bar-tailed godwit 2,752 individuals – wintering Ruff (Philomachus pugnax) 128 individuals – passage Bittern 2 booming males – breeding Marsh harrier (Circus aeruginosus) 10 females – breeding Avocet 64 pairs – breeding Little tern (Stema albifrons) 51 pairs – breeding It is also designated for its regular use by migrating birds: Shelduck 4,464 individuals – wintering Knot 28,165 individuals – wintering Marsh 4,362 individuals – wintering Redshank 4,362 individuals – passage Dunlin 20,269 individuals – passage Black-tailed godwit 915 individuals – passage Redshank 7,462 individuals – passage Redshank 7,462 individuals – passage	Within the DCO Site Boundary
Greater Wash SPA with marine components	 Internationally important for ecology and biodiversity. It is designated for its regular populations of the following Annex 1 species: Red-throated diver (<i>Gavia stellata</i>) 1,407 individuals Little gull (<i>Hydrocoloeus minutus</i>) 1,255 individuals Sandwich tern (<i>Sterna sandvicensis</i>) 3,852 pairs 	Within the DCO Site Boundary

Designated Site	Reason for Designation	Distance to DCO Site Boundary
	 Common tern (<i>Sterna hirundo</i>) 510 breeding pairs Little tern 798 pairs Common scoter (<i>Melanitta nigra</i>) 3,449 individuals 	
Saltfleetby- Theddlethorpe Dunes & Gibraltar Point SAC	 Internationally important for ecology and biodiversity. It is designated for its Annex 1 habitats: Shifting dunes along the shoreline with (Ammophila arenaria) Fixed coastal dunes with herbaceous vegetation Dunes with (Hippophae rhamnoides) Humid dune slacks Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: Embryonic shifting dunes. 	Within the DCO Site Boundary
Humber Estuary SAC	Internationally important for ecology and biodiversity. It is designated for its Annex 1 habitats: Estuaries Mudflats and sandflats not covered by sea water at low tide. Habitats present as a qualifying feature, but not a primary reason for selection of this site: Sandbanks which are slightly covered by seawater all the time; Coastal lagoons; Salicornia and other annuals colonizing mud and sand; Atlantic salt meadows; Embryonic shifting dunes; Shifting dunes along the shoreline with marram grass (Ammophila arenaria); Fixed coastal dunes with herbaceous vegetation; and Dunes with sea buckthorn (Hippopha rhamnoides). Species present as a qualifying feature, but not a primary reason for site selection: sea lamprey (Petromyzon marinus); river lamprey (Lampetra fluviatilis); and grey seal (Halichoerus grypus).	1.27 km east

Designated Site	Reason for Designation	Distance to DCO Site Boundary
Saltfleetby – Theddlethorpe Dunes SSSI	Nationally important for ecology and biodiversity. It is designated for its flats, dunes, salt and freshwater marsh which together support an exceptionally rich flora and fauna. There are outstanding assemblages of vascular plants, invertebrates and breeding birds and it is the most north-easterly breeding site in Britain for the Natterjack Toad.	Within the DCO Site Boundary
Humber Estuary SSSI	The Humber Estuary is nationally important. The qualifying habitats comprise the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals, river lamprey and sea lamprey, a vascular plant assemblage and an invertebrate assemblage.	1.29km east
North Killingholme Haven Pits SSSI	Large saline lagoons with an exceptionally rich fauna. The lagoons are important as a roosting and feeding grounds for waterfowl. Nine species of specialist lagoonal species are recorded from the pits include the polychaete worm <i>Alkmaria romijni</i> . Water levels within the lagoons vary and provide expanses of open mud for visiting waterfowl, especially waders. Amongst these are nationally important numbers of black-tailed godwits.	2.35 km north
Swallow Wold SSSI	 Designated for: CG2 - Festuca ovina - Avenula pratensis lowland calcareous grassland; and CG4 - Brachypodium pinnatum lowland calcareous grassland 	2.90 km
Tetney Blow Wells SSSI	Tetney Blow Wells consists of reedbeds together with base-rich fern and swamp vegetation associated with the calcareous water of four large artesian springs.	4.25 km
Muckton Wood SSSI	An example of primary woodland on boulder clay. Alder (<i>Alnus glutinosa</i>) is an unusual feature which replaces the typical oak/ash canopy with hazel (<i>Corylus avellana</i>) understorey in areas	7.02 km west

Designated Site	Reason for Designation	Distance to DCO Site Boundary
	where there is sub-surface water movement towards Muckton Beck.	
Sea Bank Clay Pits SSSI	A series of isolated flooded clay workings of varying size, depth and topography which now support uncommon aquatic plant communities characteristic of the slightly brackish, eutrophic (nutrient-rich) water in addition to extensive reedbeds and a rich marginal wetland flora.	7.69km south east
Swaby Valley SSSI	This glacial overflow valley supports two habitats now scarce in Lincolnshire - floristically diverse, lime-rich marsh and unimproved chalk turf. The marsh borders a stream bisecting the valley floor and the interest of the grassland is increased by the terraced nature of the slopes. Designated for botanical interest.	9.42km south
Calceby Marsh SSSI	An outstanding example of a base-rich marsh.	9.43km south
Saltfleetby – Theddlethorpe Dunes National Nature Reserve (NNR)	Nationally important for ecology and biodiversity. The site is designated for the following ecology and biodiversity features: Beach to intertidal, mudflat to saltmarsh Dunes with Sea buckthorn and other scrubs Ecological ditches and ponds Elm Farm Fixed dunes with herbaceous vegetation (grey dunes) Humid dune slacks and fen community Invertebrate assemblage Nationally scarce plants Natterjack toad Shifting dunes (stand, embryonic to mobile dunes) SPA birds SSSI birds	Within the DCO Site Boundary
Donna Nook NNR	The reserve consists of dunes, slacks and intertidal areas. In winter, there is a breeding colony of grey seals, with more than 2,000 pups born annually.	6.69 km north
Bradley & Dixon Woods LNR	Ancient woodland.	2.27 km north-east
Weelsby Woods Park LNR	A large urban public park and woodland.	5.97 km north-east

Designated Site	Reason for Designation	Distance to DCO Site Boundary		
Cleethorpes Country Park LNR	A 64-hectare country park which includes a lake, wetland, woodland, grassland, hedgerows and scrub habitats.	6.52 km north-east		
Cleethorpes LNR	Habitats include saltmarshes, mud flats, sand dunes and sand banks.	8.62 km north-east		
Non-Statutory Design	Non-Statutory Designated Sites			
Great Eau LWS	Designated for its woodland, wet woodland, running water, and habitat mosaic.	Within the DCO Site Boundary		
Waithe Beck East LWS	Designated for its standing water and mosaic of standing water, neutral grassland and flowing water.	Within the DCO Site Boundary		
River Freshney Headwaters LWS	Designated for its wetland habitat.	Within the DCO Site Boundary		
Long Eau East SNCI	Designated for its wetland with a biodiverse species assemblage and habitat mosaic.	Within the DCO Site Boundary		
Great Eau SNCI	Designated for its woodland, wet woodland, running water, and habitat mosaic.	Within the DCO Site Boundary		
Brackenborough Road Verge LWS	Designated for its species rich neutral grassland.	5m east		
Rosper Road Pools LWS	Designated for its standing water with botanical interest.	45m east		
Red Leas Lane Verge LWS	Unimproved calcareous grassland, damp grassland.	84m north- west		
Brackenborough Wood LWS	Designated for its structurally diverse woodland.	216m west		
Mablethorpe North Dunes LWS	Designated for its dune habitats.	217 south		
Long Eau West SNCI	Designated for its running water and its wetland habitat with biodiverse species assemblage.	281m west		
Irby Dales LWS	Designated for its mosaic of species rich neutral and calcareous grassland.	371m west		
Homestead Park Pond LWS	Designated for its species rich neutral grassland.	374m east		
Roxton Wood LWS	Designated for its woodland.	490m west		
Saltbyfleet- Theddlethorpe Dunes LWT	The reserve contains tidal sand and mudflats, salt and freshwater marshes and sand dunes.	517m north		
Mayflower Wood Meadow LWS	Designated for its species rich neutral grassland.	591m north		

Designated Site	Reason for Designation	Distance to DCO Site Boundary
Medieval Village of Beesby LWS	Designated for its mosaic of species rich neutral and calcareous grassland.	605m south
Burkinshaw's Covert LWS	Designated for its species rich wet woodland and neutral grassland.	881m north
Station Road Field LWS	Designated for its mosaic of species rich neutral grassland and species rich calcareous grassland.	882m north- west
Long Eau East LWS	Designated for its wetland and associated species assemblage, and habitat mosaic.	1.05km north-east
Long Eau, West LWS	Designated for its running water with biodiverse species assemblage and its wetland with a biodiverse species assemblage.	1.06km north-east
Irby Holmes Wood LWS	Designated for its plantation on ancient woodland.	1.09km south-west
Roxton Wood Road Verges LWS	Designated for its species rich neutral grassland.	1.12km south-west
Eastfield Road Railway Embankment LWS	Designated for its species rich neutral grassland and species rich calcareous grassland.	1.13km north-west
Irby Dales Wood West LWS	Designated for its plantation on ancient woodland.	1.27km west
Great Carlton Wetlands LWS	Wetland habitats – no further information available.	1.30km west
Manby Wetlands LWS	Designated for its species rich neutral grassland, running or standing water with botanical interest, and its botanically interesting wetland areas.	1.54km south-west
Helen House Farm Grassland LWS	Grassland – no further information available.	1.67km south-east
Stallingborough Meadow LWS	Designated for its standing water with botanical interest.	1.72km east
Stallinborough Meadows East LWS	Designated for its species rich neutral grassland.	1.84km east

5 Habitats

5.1 Desk Study

- 5.1.1 The Proposed Development is located within three National Character areas (NCA) (Ref 40) defined below.
- 5.1.2 The section at the northernmost area of the Proposed Development around Immingham is located in Humber Estuary NCA (Ref 41), defined as "a low-lying estuarine landscape, with extensive stretches of intertidal habitats including mudflats, salt marsh and reedbeds, coastal dunes and wetlands along the side of the estuary... The adjacent land has largely been reclaimed, resulting in large fields bounded by ditches, which form high-quality arable cropping land. There is very little woodland in the rural areas, where the many ditches form important networks linking the few other semi-natural habitats"
- 5.1.3 The section along the western area of the Proposed Development is located within Lincolnshire Wolds NCA (Ref 42), defined as "rolling agricultural land dominated by a west-facing chalk escarpment approximately 50 m high. The area is characterised by a range of varied yet unified features including open arable plateau hill tops, chalk escarpments, deep dry valleys with sinuous beech woods and isolated ash trees punctuating the skyline."
- 5.1.4 The majority of the Proposed Development is located within Lincolnshire Coasts and Marshes NCA (Ref 43) defined as "a wide coastal plain which extends from Barton-upon-Humber in the north, across to Grimsby at the mouth of the Humber and south to Skegness... The wide coastal plain incorporates three distinctively different but closely interconnected areas which run broadly parallel with the edge of the Wolds. To the west is the Middle Marsh which comprises a softly undulating arable landscape with a greater number of woodlands and hedgerows than other areas. To the east lies the Outmarsh, an open landscape of arable land, mixed with rich pasture divided by narrow dykes... and the open, wild and ever-changing landscape of the coast itself, which is subject to continuous erosion and accretion. It has extensive stretches of intertidal habitats including salt marsh, coastal dunes and wetlands".
- 5.1.5 The desk study returned two records of ancient woodland (an irreplaceable habitat) with the Desk Study area as summarised in **Table 6**.

Table 6: Ancient Woodland within the Desk Study Area

Area of Ancient Woodland		Distance from DCO Site Boundary
Irby Holmes Wood (also designated as an LWS)	Section 3	1.09km south-west
Irby Dales Wood (also designated as an LWS)	Section 2	1.27km west

5.1.6 No records for veteran and ancient trees were returned as part of the desk study. However a number of trees with veteran potential were identified by the tree survey (ES Volume IV Appendix 6-11 (Application Document 6.4.6.11)), which are identified on the Tree Constraints Plan, Annex A of ES Volume IV Appendix 6-11 (Application Document 6.4.6.11).

5.1.7 The desk study results indicate the presence or potential presence of a variety of terrestrial priority habitats as summarised in **Table 7**. The presence and relevance of these habitats to the Proposed Development was considered further when undertaking the habitat surveys.

Table 7: Notable Terrestrial Habitats within the Desk Study Area

Habitat/Flora Feature	Reason for Conservation Interest	Section Habitat Occurs in
Coastal and floodplain grazing marsh	Priority habitat (NERC Act S41)	Section 5
Deciduous woodland	Priority habitat (NERC Act S41)	Section 1, 3 and 5
Coastal Sand Dunes	Priority habitat (NERC Act S41), irreplaceable habitat (NPPF)	Section 5
Wood Pasture and Parkland	Priority habitat (NERC Act S41)	Section 3

5.2 Field Survey

- 5.2.1 In summary, the survey area is dominated by agricultural land comprising mainly intensively managed arable fields, interspersed with smaller permanent grassland paddocks. These habitats are species poor and of relatively low ecological value. Species-rich and notable habitats were limited to small pockets of land not in use for agriculture.
- The semi-natural habitats recorded within the Survey Area are described below, by section, and shown on the Phase 1 Habitat Map (**Figure 3**). Target Notes (TNs) were collected for specific features of note and are provided in Annex B along with supporting photographs. The TN locations are shown on **Figure 3**.
- 5.2.3 Watercourses are being crossed throughout the route of the Proposed Development. All watercourses that are being crossed using open cut methods have been subject to further specialist surveys and assessment. The survey results are provided in *ES Volume IV Appendix 6.6 Aquatic Ecology Survey Report (Application Document 6.4.6.6)*, therefore only limited comment on watercourses is provided within this Appendix.

5.3 Section 1

Arable

5.3.1 This was the dominant habitat in this section. Most of the arable farmland is being used to produce cereal crops. The field margins are of low botanical diversity however, there is potential for scarce arable flora to occur.

Broadleaved Plantation Woodland

5.3.2 Stands of plantation broadleaved woodland occur to the north of the former Immingham Golf Course. In general, these are recently planted woodlands (within the last 30 years) and as such are of a single age class and do not support woodland ground flora. The canopy of these woodlands consists of alder (*Alnus glutinosa*), pedunculate oak (*Quercus robur*), wild cherry (*Prunus avium*), silver birch (*Betula pendula*), ash (*Fraxinus* excelsior), sycamore (*Acer pseudoplatanus*) and poplar (*Populus* sp.). The canopy of these woodlands is dense and therefore the ground flora is sparse, but where light levels allow, the ground flora is made up entirely of grasses.

Hedgerows

5.3.3 Hedgerows are present throughout Section 1 and all examples represent priority habitat. In general these hedgerows are managed and have improved grassland edges or are associated with ditches. Typical species within the hedgerows include hawthorn (*Crataegus monogyna*), ash, elder (*Sambucus nigra*), blackthorn (*Prunus spinosa*) and dog rose (*Rosa canina* agg.).

Improved and Poor Semi-Improved Grassland

- 5.3.4 Poor semi-improved grassland is located on the former Immingham Golf Club. Typical plant species comprise perennial rye grass (*Lolium perenne*), nettle (*Urtica dioica*), docks (*Rumex* spp.), cocks foot (*Dactylis glomerata*) and thistles (*Cirsium* spp.). The sward is of a uniform height with areas of the grassland becoming more rank around the old bunkers of the golf course.
- 5.3.5 Other comparable species poor stands of managed or unmanaged grassland occur within Section 1.

Semi-Improved Grassland

- 5.3.6 Areas of higher quality semi-improved grassland occur in association with Mayflower Wood as rides and glades, as well as larger stands of meadow. Species found within this area include pepper saxifrage (*Silaum silaus*). This grassland is not sufficiently botanically diverse to represent a priority grassland habitat type.
- 5.3.7 The area of grassland rides and glades within Mayflower Wood also have a relatively high nature conservation interest in the context of the wider habitat resource within Section 1.

Open Mosaic Habitat on Previously Developed Land

- 5.3.8 Within the land for the proposed Immingham Facility there is an area of Open Mosaic Habitat (OMH) on Previously Developed Land (Annex B; TN1), a priority habitat. The habitat has developed over a gravel substrate and supports a sparse flora including common spotted orchid (*Dactylorhiza fuchsii*), southern marsh orchid (*Dactylorhiza praetermissa*), yellowwort (*Blackstonia perfoliata*), mouse-ear hawkweed (*Pilosella officinarum*) and fern grass (*Catapodium rigidum*), with self-set birch (*Betula* spp.) and willow (*Salix* spp.) scrub (Ref 27).
- 5.3.9 The area of OMH on Previously Developed Land is the most notable habitat in Section 1. This is a priority habitat and can support a range of specialist flora and faunal species. A full suite of habitat surveys has been undertaken previously. These data are available in the previous Humber Zero Report (Ref 27). As the surveys have been undertaken within the previous two years no further surveys are required.

Standing Water

5.3.10 Standing water occurs as ponds. There are a total of four ponds located within the DCO Site Boundary. These are all settlement lagoons and as such are not considered a priority habitat.

Running Water

5.3.11 This habitat only occurs as ditches. They occur widely but, as the primary function of the ditches is land drainage within an agricultural landscape, they are generally of poor water quality.

Ephemeral/short perennial

5.3.12 An area of ephemeral vegetation consisting of mosses and dandelions (Taraxacum agg.) associated with bare ground.

Dense/continuous Scrub

5.3.13 Area of dense scrub comprised of bramble (*Rubus fruticosus* agg.), hawthorn, dog rose, willow and blackthorn.

5.4 Section 2

Arable

5.4.1 This was the dominant habitat in this section and is as described for Section 1.

Semi-Improved Grassland

5.4.2 This habitat occurs in one distinct area in Section 2. Mix of coarse grasses, with herbs including cuckooflower (*Cardamine pratensis*), buttercups, common vetch (*Vicia sativa*), and taraxacum agg. This is interspersed with marshy grassland.

Marshy Grassland

5.4.3 This habitat occurs in one distinct area in Section 2. Mix of foxtail, Yorkshire fog (*Holcus lanatus*), common reed (*Phragmites australis*), cock's-foot and tufted hairgrass (*Deschampsia cespitosa*).

Broadleaved Plantation Woodland

5.4.4 This habitat occurs in one distinct area in Section 2. Canopy of oak, silver birch, hornbeam (*Carpinus betulus*), willow and field maple with an understorey of elder, hawthorn and rowan.

Poor Semi-Improved Grassland

5.4.5 This occurs locally in a matrix with arable fields. Typical species include perennial ryegrass, Yorkshire fog and red fescue with docks and thistles.

Hedgerows

5.4.6 Hedgerows are present throughout Section 2 and all examples represent priority habitat. In general, these hedgerows are managed and have improved grassland edges or are associated with ditches. Typical species within the hedgerows include hawthorn, ash, crab apple (*Malvus sylvestris*), sycamore, dog rose and blackthorn.

Running Water

5.4.7 This habitat only occurs as ditches in section 2. They occur widely but, as the primary function of the ditches is land drainage within an agricultural landscape, they are generally of poor water quality. Not all of the ditches reliably hold water.

Other Habitats

5.4.8 Scattered scrub and free-standing broadleaved mature and semi-mature trees occur in association with some of the above habitats.

5.5 Section 3

Arable

5.5.1 This was the dominant habitat in this section and is as described for Section 1.

Improved and Poor Semi-Improved Grassland

5.5.2 There are areas of poor semi-improved grassland in the vicinity of Barnoldby-le-Beck and Ashby-cum-Fenby. These semi-improved grasslands have mostly been left unmanaged and consequently are dominated by rank coarse grasses and pernicious weed species. Species in these habitats include perennial ryegrass, red fescue, false oat grass (*Arrhenatherum elatius*), cock's-foot, creeping thistle (*Cirsium arvense*), docks, common sorrel (*Rumex acetosa*) and white clover.

Semi-Natural Broadleaved Woodland

- 5.5.3 Section 3 has two stands of semi-natural broadleaved woodland which range in floristic diversity. These woodlands are a priority habitat type.
- 5.5.4 The woodland to the south of Barnoldby-le-Beck (Annex B; TN2) consists of a small band of woodland with a canopy consisting of pedunculate oak, ash, horse chestnut (*Aesculus hippocastanum*), elm (*Ulmus sp.*), beech (*Fagus sylvatica*) and cherry (*Prunus sp.*) with a sparse understorey consisting of hawthorn, holly (*Ilex aquifolium*), willow (*Salix sp.*) and elder (*Sambucus nigra*). There is a dense ground flora including Yorkshire fog, docks, common nettle and brambles.
- 5.5.5 The woodland located to the south of Ashby-cum-Fenby (Annex B; TN3) has a canopy of hornbeam, ash and sessile oak (*Quercus petraea*) with an understorey dominated by hawthorn with ash, dog rose, blackthorn, ivy, elder and bramble.

Broadleaved Plantation Woodland

5.5.6 There is a small stand of plantation broadleaved woodland located to the west of Ashby-cum-Fenby. This newly planted woodland consists of young trees of pedunculate oak, alder, ash and hazel with a ground flora consisting of Yorkshire fog, common bent (*Agrostis capillaris*), herb Robert (*Geranium robertianum*), docks and thistles.

Broadleaved Parkland

5.5.7 Broadleaved parkland is present within Barnoldby le Beck (Appendix B; TN4). The parkland is comprised of a grassland that has been improved which is dominated by coarse grasses including Yorkshire fog and perennial ryegrass with creeping buttercup and common sorrel. The parkland trees consist of pedunculate oak, sycamore and a cherry (*Prunus* sp.). The parkland is identified on MAGIC as the Woodpasture and Parkland priority habitat.

Hedgerows

5.5.8 Hedgerows are present throughout Section 3 and all represent the priority habitat. In general, these hedgerows are managed and have improved grassland edges or are associated with ditches. Typical species within the hedgerows include hawthorn, field maple, elder, ash, pedunculate oak, sycamore, dog rose and blackthorn.

Improved grassland

5.5.9 Improved grassland paddocks dominated by species such as perennial rye grass, dandelion, white clover and docks are also prevalent within the landscape.

Standing Water

5.5.10 This comprises a single pond that dries up in summer. Bulrush (*Typha latifolia*) dominates the pond. The banks of the pond supports species such as bittersweet (*Solanum dulcamara*), greater willowherb (*Epilobium hirsutum*), clovers, perennial rye grass, cleavers (*Galium aparine*) and cock's-foot. Given the dominance of bulrush this pond is not likely to represent a priority habitat.

Running Water

- 5.5.11 Waithe Beck is the main watercourse in Section 3 and is designated as a LWS where the Proposed Development crosses. Waithe Beck is 1.5m wide and 20cm deep with a moderate water flow and gravel substrate. The banks are gentle to steep and are vegetated with bramble, yellow flag iris (*Iris pseudacorus*), cleavers and bulrush.
- 5.5.12 River Freshney Headwaters LWS is also within Section 3. The Proposed Development crosses the River Freshney approximately 100m downstream from the source. At the point the Proposed Development crosses, the River Freshney is approximately 30cm deep and 50cm wide. The banks are steep earth banks vegetated with coarse grasses, common nettle and cow parsley (*Anthriscus sylvestris*). There is limited aquatic macrophyte cover in the channel.
- 5.5.13 Minor field drainage ditches are prevalent within the arable landscape but are typically of poor quality or do not reliably hold water.

Other Habitats

5.5.14 Scattered scrub and free-standing broadleaved mature and semi-mature trees occur in association with some of the above habitats.

Requirements for Further Survey and Assessment

- 5.5.15 The area of broadleaved parkland will require further survey. Trees within parkland can often be considered veteran or ancient, and where present they represent an irreplaceable habitat. On a precautionary basis until further survey work is completed, and consistent with national advice, this habitat is assessed as being of up to national ecology and biodiversity value.
- 5.5.16 River Freshney Headwaters LWS is to be crossed by the Proposed Development and is a chalk stream, an irreplaceable and priority habitat. Further habitat data can be found in *ES Volume IV Appendix 6.6: Aquatic Ecology Survey Report (Application Document 6.4.6.6).*No further surveys are required aside from those mentioned in Section 4 of this Appendix, but a Precautionary Working Method Statement (PWMS) will be needed during the construction phase to ensure no impacts occur to the watercourse.

5.6 Section 4

Arable

5.6.1 This was the dominant habitat in this section and is as described for Section 1.

Poor Semi-Improved Grassland

5.6.2 A stand of poor semi-improved neutral grassland is present to the west of Covenham St Bartholomew. The area is unmanaged and has been overtaken by coarse grass and tall herb species. Species found in these areas include yellow oat grass (*Trisetum flavescens*), soft rush (*Juncus effusus*), creeping buttercup, sorrel, creeping thistle, cocksfoot and

hogweed (*Heracleum sphondylium*). The area of grassland is getting encroached by scattered scrub consisting of willow, blackthorn, bramble and dog rose.

Semi-Improved Grassland

5.6.3 A potential area of semi-improved grassland is present in an area which has not been accessed. This has been determined through aerial imagery and visual identification on site.

Running Water

5.6.4 The Louth Canal and Yarburgh Beck are the main watercourses in this section. There are also a number of drainage ditches across Section 4.

Hedgerows

5.6.5 Hedgerows are present throughout Section 4 and all represent priority habitat. In general, these hedgerows are managed and have improved grassland edges or are associated with ditches. Typical species within the hedgerows include hawthorn, field maple, ash, pedunculate oak, dog rose and blackthorn.

Semi-Natural Broadleaved Woodland

5.6.6 Section 4 has one stand of semi-natural broadleaved woodland located on the banks of Yarburgh Beck. Canopy species include pedunculate oak and willow sp. with sparse understorey and ground flora.

Other Habitats

5.6.7 Scattered scrub and free-standing broadleaved mature and semi-mature trees occur in association with some of the above habitats.

5.7 Section 5

Arable

5.7.1 This occurs as described for Section 1.

Semi-Improved Grassland

5.7.2 A potential area of higher quality grassland is found south of Theddlethorpe St Annes, which is an example of the priority habitat coastal and floodplain grazing marsh. However, access was not granted to this area, therefore this area was viewed from adjacent land, but it was not possible to undertake a detailed survey of the grassland.

Dune Grassland

5.7.3 An area of dune grassland is found south of Theddlethorpe St Annes. However, due to the presence of dense scrub it was not possible to access the grassland area during the surveys. This is encompassed by the priority habitat coastal sand dunes and is an irreplaceable habitat.

Dune Scrub

5.7.4 Large area of dune scrub found south of Theddlethorpe St Annes. The dunes scrub is dominated by sea buckthorn (*Hippophae rhamnoides*). The dune scrub transitions into dune grassland. This is encompassed by the priority habitat coastal sand dunes and is an irreplaceable habitat.

Open Dune

- 5.7.5 An area of open dune is found south of Theddlethorpe St Annes, this area could not be accessed during the surveys. This is encompassed by the priority habitat coastal sand dunes and is an irreplaceable habitat.
- 5.7.6 The sand dune habitats encompassed by the priority habitat coastal sand dunes are also notable. This is an irreplaceable habitat (NPPF, 2021) and is of international ecology and biodiversity importance for biodiversity (S41), it is also part of Saltfleetby-Theddlethorpe Dunes SSSI, Humber Estuary Ramsar, Humber Estuary SPA and Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC. The dune habitats will remain unaffected by the development as the dune valve is not in the dune habitats. The dune habitats are to the east of the dune valve, which is the eastern most extent of intrusive construction work. There will be no disturbance or loss of dune habitat during construction or operation and there will be no changes in habitat management. It is anticipated there will be no changes in hydrology and further information on this can be found in ES Volume II Chapter 11 Water Environment (Application Document 6.2.11) and as such further surveys are not required.

Running Water

- 5.7.7 Two rivers (Great Eau and Long Eau) are crossed by the Proposed Development.
- 5.7.8 The Great Eau is 4m wide at the point of crossing and has good water quality with a sluggish flow. Emergent and submerged vegetation is present within the watercourse. The earth banks are vegetated and approximately 1.5m in height.
- 5.7.9 The Long Eau is 6m wide at the point of crossing. The water quality is good and the river is slow flowing, with vegetated banks.
- 5.7.10 Other watercourses are present across Section 5 with a number of larger slow flowing ditches being crossed by the Proposed Development. Minor field drainage ditches are also present but are typically of poor quality or do not reliably hold water.

Hedgerows

5.7.11 Hedgerows are present throughout Section 5 and all represent the priority habitat. In general these hedgerows are managed and have improved grassland edges or are associated with ditches. Typical species within the hedgerows include hawthorn, field maple, ash, pedunculate oak, dog rose and blackthorn.

Bare Ground

5.7.12 Area of bare ground with approximately 20% of the area vegetated is present in Theddlethorpe. Vegetation includes sow thistle (*Sonchus sp.*), ragwort (*Senecio jacobaea*), creeping thistle, spear thistle (*Cirsium vulgare*), buddleia, bristly oxtongue (*Helminthotheca echioides*), bird's-eye pearlwort (*Sagina procumbens*) and Yorkshire fog.

Mixed Plantation Woodland

5.7.13 Semi-mature mixed plantation woodland with two age classes and an unmanaged scrub layer throughout is present in Theddlethorpe. Canopy consists of willow sp., sycamore, pine sp., and wild cherry.

Other Habitats

5.7.14 Scattered scrub and free-standing broadleaved mature and semi-mature trees occur in association with some of the above habitats.

6 Protected and Notable Species

6.1 Overview

- 6.1.1 The sections below identify the protected and notable species relevant to the Proposed Development with reference to the results of the desk study and the field survey. Any requirements for further survey are also identified.
- 6.1.2 The species accounts are arranged in alphabetical order.

6.2 Aquatic Invertebrates

Desk Study

6.2.1 The desk study returned no records of aquatic invertebrates.

Field Survey

6.2.2 Suitable habitat for aquatic macroinvertebrates is present across all sections in the form of ditches, ponds and rivers.

Requirements for Further Survey and Assessment

6.2.3 Further surveys have been commissioned and results are provided in ES Volume IV Appendix 6.6: Aquatic Ecology Survey Report (Application Document 6.4.6.6).

6.3 Badger

Desk Study

6.3.1 37 records of badger (*Meles meles*) were returned by the desk study within 250m of the Proposed Development, the closest of which is located within the Survey Area.

Field Survey

- 6.3.2 Suitable habitat for badger setts is present within the Survey Area in areas of woodland and hedgerows. Where setts occur, badgers will forage in surrounding farmland habitats.
- 6.3.3 Eight active, partially active and disused badger setts were recorded in the Survey Area, of which three are within the DCO Site Boundary. Details of sett and field sign locations are not included in this Appendix for reasons of confidentiality and are reported in ES Volume IV Appendix 6.4: Badger Survey Report (Confidential) (Application Document 6.4.6.4).

Requirements for Further Survey and Assessment

- 6.3.4 There is a possibility that further setts could be present within areas of woodland/dense scrub that were not accessible for survey. There is a large amount of suitable foraging habitat within the Survey Area and badger is a common and widespread species and could be present in areas that were not surveyed.
- 6.3.5 Further badger surveys have been commissioned to determine the usage of setts and to meet the requirements set in the Standing Advice for badger (Ref 44). Results are reported in a separate confidential badger report (ES Volume IV Appendix 6.4 (Application Document 6.4.6.4)).

6.4 Bats

Desk Study

- 6.4.1 The desk study returned seven records of confirmed bat roosts. The closest of which was a pipistrelle bat roost located in Ashby-cum-Fenby located 200m south of the DCO Site Boundary.
- 6.4.2 The desk study also returned 12 records of foraging and commuting bats including noctule (*Nyctalus noctule*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Myotis (*Myotis* spp.) bats.
- 6.4.3 The MAGIC website identified one granted bat European Protected Species Mitigation (EPSM) licence within the Desk Study Area relating to brown long-eared bat (*Plecotus auritus*) and common pipistrelle, located in North Thoresby from 2016. These records are located 679m west of the DCO Site Boundary.

Field Survey

Buildings

6.4.4 No buildings suitable for use by roosting bats will be affected by the Proposed Development.

Trees

6.4.5 A total of 36 trees with bat roost potential were found within the Survey Area and could be affected by the Proposed Development. The relevant trees are detailed in Annex A and encompass 10 trees assessed to be of low suitability, 18 trees of moderate suitability, nine trees of high suitability to support a bat roost, and two confirmed roosts (T10 and T35; Annex A).

Foraging and commuting

6.4.6 The majority of the bat foraging and commuting habitat is made up of hedgerows and woodland edges with watercourse corridors which are also suitable for commuting and foraging bats. This is mainly interspersed with arable and improved grassland which provides low quality habitat for bats.

Requirements for Further Survey and Assessment

- 6.4.7 Although some buildings and trees may be in relatively close proximity to the Proposed Development, there is a limited potential for disturbance during construction. This is because of the scale and nature of the works, which would be limited to temporary excavations taking place over a short period of time. Such activities would reasonably not generate vibration or noise of sufficient magnitude to result in meaningful disturbance.
- 6.4.8 Bat emergence / re-entry surveys have been completed to confirm presence / likely absence of roosting bats within any trees with high or moderate suitability within the DCO Site Boundary. It is likely that the Proposed Development will be able to avoid trees where roosting bats are confirmed.
- 6.4.9 Any section of hedgerow lost during the construction phase will be replaced, however there may be short term effects on commuting/foraging bats due to the temporary loss of these habitats.
- 6.4.10 Given this crossing point surveys have been undertaken across the Proposed Development for major hedgerows and watercourses that may be affected by the Proposed Development

- with the results reported in ES Volume IV Appendix 6.2: Bat Survey Report (Application Document 6.4.6.2).
- 6.4.11 The potential for the Proposed Development to impact bats is assessed in ES Volume II Chapter 6 Ecology and Biodiversity (Application Document 6.2.6). If impacts could occur that would result in legal offences and that could not be mitigated, a EPSM Licence will be applied for.

6.5 Birds (Breeding)

Desk Study

- 6.5.1 The southern part of the Survey Area is in close proximity to the Greater Wash SPA and Saltfleetby Theddlethorpe Dunes SSSI. Both the North and South areas of the Proposed Development are also located in close proximity to the Humber Estuary SSSI and SPA. The importance of these sites for breeding birds is defined in Section 4.
- 6.5.2 Records were requested from the BTO for breeding birds with records of Schedule 1 species and species of BoCC¹ concern. Lincolnshire Environmental Records Centre returned a large number of records of breeding bird species within the Desk Study Area.
- 6.5.3 There were 26 records of Red List species within the Desk Study Area during the breeding season, including grey partridge (*Perdix perdix*), swift (*Apus apus*), cuckoo (*Cuculus canorus*) and lapwing (*Vanellus vanellus*).
- 6.5.4 Thirty-six records of species listed on Schedule 1 of the WCA have also been recorded in the Desk Study Area during the breeding season, including: quail (*Coturnix coturnix*), avocet, little ringed plover, little tern, barn owl (*Tyto alba*), kingfisher (*Alcedo atthis*), hobby (*Falco subbuteo*), peregrine falcon (*Falco peregrinus*) and Cetti's warbler (*Cettia cetti*).
- 6.5.5 For full details of the desk study for breeding birds, refer to ES Volume IV Appendix 6.7: Ornithology Survey Report (Application Document 6.4.6.7).

Field Survey

6.5.6 Most habitats within the DCO Site Boundary have some suitability for nesting birds. This includes arable farmland, which may support ground nesting species, including notable species such as skylark (*Alauda arvensis*) and yellow wagtail (*Motacilla flava*). There are areas of dense and scattered scrub throughout the Survey Area as well as areas of mature woodland and hedgerows that provide good quality nesting habitat for breeding birds.

Requirements for Further Survey and Assessment

- 6.5.7 Given that the majority of the Proposed Development will result in short duration temporary impacts on bird habitats (mainly arable farmland) an extensive programme of breeding bird surveys is not considered proportionate or necessary for purposes of ecological impact assessment. Instead, bird survey work should focus on those local areas of habitat of relevance to assessment of impacts on qualifying bird species of designated sites, or that are otherwise likely to support important populations or assemblages of bird species.
- 6.5.8 The breeding bird survey approach had already been defined when work started on the desk study and Phase 1 Habitat Survey. The approach and results are provided in *ES*

¹ Birds of Conservation Concern (BoCC) is a list summarised by the RSPB which identifies birds as being Red, Amber or Green list species. With species on the Red List being of the most urgent conservation concern. These lists confer no legal status. However, they are useful when assessing the significance of predicted impacts and determining the level of mitigation that may be required when birds are affected by development or any other activity.

Volume IV Appendix 6.7: Ornithology Survey Report (Application Document 6.4.6.7) of this ES.

6.6 Birds (Wintering)

Desk Study

- 6.6.1 The southern end of the Proposed Development is in close proximity to the Greater Wash SPA, which is designated for its assemblages of wintering assemblage of common scoter. Both the North and South areas of the Proposed Development are also located in close proximity to the Humber Estuary SPA, the Humber Estuary SSSI, and the Humber Estuary Ramsar. The importance of these sites for wintering birds is defined in Section 4.
- 6.6.2 For full details of the desk study for wintering birds, refer to ES Volume IV Appendix 6.7: Ornithology Survey Report (Application Document 6.4.6.7).

Field Survey

6.6.3 The majority of habitats within the DCO Site Boundary comprised arable and pasture fields, interspersed with hedgerows and a small number of woodlands, ponds and larger waterbodies and watercourses such as the Great Eau and Long Eau. These areas provide some habitats for resident and migratory bird species in the winter months. The areas of land within Section 5 and Section 1 are of particular importance due to some areas of the landscape being functionally linked with Humber Estuary SAC/SPA and the Greater Wash SPA.

Requirements for Further Survey and Assessment

- 6.6.4 Wintering bird surveys were scoped in at an early stage on the basis of the proximity of the Proposed Development to the Humber Estuary SPA/SAC and the Greater Wash SPA, and the potential for disturbance/displacement of wintering birds within the designated sites and the potential disturbance/displacement of wintering birds outside the site should they be using functionally linked land. The approach and results are provided in ES Volume IV Appendix 6.7: Ornithology Survey Report (Application Document 6.4.6.7).
- 6.6.5 The wintering bird survey results will be used to inform the Habitats Regulation Assessment (HRA) provided in ES Volume IV Appendix 6.12 (Application Document 6.4.6.12), as well as the EcIA, ES Volume II Chapter 6 Ecology and Biodiversity (Application Document 6.2.6).

6.7 Fish

Desk Study

- 6.7.1 The desk study returned five records of fish within the DCO Site Boundary. All of these records were of European eel (*Anguilla anguilla*) with the most recent record coming from 2017.
- 6.7.2 Further to this the desk study returned another 20 records of fish within 250m of the DCO Site Boundary including 12 records of European eel and eight records of brown trout (*Salmo trutta*).

Field Survey

6.7.3 Suitable habitat for fish is found across all sections in the form of ditches, ponds and rivers.

Requirements for Further Survey and Assessment

6.7.4 There is a possibility that fish could be a constraint to the Proposed Development where open cut watercourse crossings, or other works affecting freshwater habitats, are needed. Further surveys have been undertaken and results can be found in the ES Volume IV Appendix 6.6: Aquatic Ecology Survey Report (Application Document 6.4.6.6).

6.8 Flora

Desk Study

6.8.1 The desk study returned records of two protected and notable flora. These are a record of prickly saltwort (*Salsola kali*) (NERC Act S41; GB Vulnerable) located within the sand dune habitat of Section 5, and rye brome (*Bromus secalinus*) (GB Near Threatened), and scarce arable plant species, located within Section 2 and Section 4.

Field Survey

6.8.2 The field survey did not identify any protected or notable flora.

Requirements for Further Survey and Assessment

6.8.3 There is a possibility that arable field margins support populations of protected and notable flora. However, the majority of the field margins across the route are narrow and species poor. These are likely disturbed by agricultural practices and fertiliser spraying. As such no further surveys are required.

6.9 Great Crested Newt

Desk Study

- 6.9.1 The desk study returned six records of great crested newt within the Desk Study Area. The closest of these is a record from 2014 associated with South Cockerington, located approximately 80m from the Survey Area.
- 6.9.2 A review of the MAGIC website identified two EPSM Licences for great crested newt within the Desk Study Area, located in Ashby-Cum-Fenby. These are both located 620m south of the DCO Site Boundary.
- 6.9.3 A total of 67 waterbodies were identified as potentially relevant to the Proposed Development (which could support great crested newt) based on the land required for the Proposed Development, plus a buffer of 250m (representing typical movement distances of great crested newt from their breeding ponds).

Field Survey

6.9.4 As the development has the potential to result in the loss of suitable terrestrial habitat for great crested newt, a district level licence for the Proposed Development will be sought. Natural England have undertaken an Impact Assessment for the Proposed Development documented in an Impact Assessment and Conservation Payment Certificate (IACPC) (refer to ES Volume IV Appendix 6-9 (Application Document 6.4.6.9).

Requirements for Further Survey and Assessment

6.9.5 The potential for the Proposed Development to impact great crested newt is assessed in the EclA (ES Volume II Chapter 6 Ecology and Biodiversity (Application Document 6.2.6)). The Proposed Development will utilise the District Level Licensing Scheme (refer to ES

- Volume IV Appendix 6.9: GCN DLL Certificate (Application Document 6.4.6.9)) and therefore further surveys are not required.
- 6.9.6 Given this commitment, no further surveys are required to address ponds that were not visited at the time of the Phase 1 habitat survey, or to undertake specific surveys for great crested newt.

6.10 Otter

Desk study

- 6.10.1 The desk study returned 145 records of otter in the Desk Study Area, the closest of which was within the DCO Site Boundary located on Waithe Beck, from 2015.
- 6.10.2 The desk study also returned records of otter on Long Eau river within the vicinity of the Proposed Development.
- 6.10.3 In the National Otter Survey (Ref 45) commissioned by the Environment Agency most recently in 2009-2010, surveys were conducted within several river catchments in the Desk Study Area including Louth Coastal and Grimsby and Ancholme. The report states that with respect to the Louth Coastal Area "There has been a small expansion in otter distribution and otters are now using most of the catchment" and with respect to the Grimsby area "otters are now using most of the watercourses in the Ancholme system and some of the small coastal streams".

Field Survey

- 6.10.4 A total of 147 watercourses have been classified as requiring assessment for the presence of otter based on a review of aerial imagery and mapping. Otter was observed on Long Eau during the Phase 1 Habitat surveys, and suitable habitat with connectivity to other areas of habitat was noted in several watercourses including Long Eau, Great Eau and Waithe Beck. An otter spraint was recorded during Phase 1 Surveys on Long Eau, located 250m west of the Proposed Development, and an otter spraint was located on New Gayton Engine Drain 300m north of the Proposed Development. It is likely that the home ranges of these otter, or of other otter will include the Proposed Developments footprints, and further otter surveys will be required within these areas to determine the extent of otter activity.
- 6.10.5 A number of watercourses within the Survey Area are arable drainage ditches which are generally unsuitable for otter foraging and commuting, with low water levels, poorly vegetated banks and poor connectivity to other suitable habitat in the landscape. However, there are some higher quality rivers and streams crossed by the Proposed Development which may have potential to support transitory otters, particularly given that the species is relatively widespread within the county/region.

Requirements for Further Survey and Assessment

6.10.6 Otter could be affected where suitable watercourses are crossed by haul roads and access tracks or would be subject to open-cut construction methods. Further surveys have been commissioned to determine the presence/ absence of otter on all relevant watercourses, and to determine if any holts or laying up areas are present. Refer to ES Volume IV Appendix 6.3: Otter and Water Vole Report (Application Document 6.4.6.3) of this ES.

6.11 Reptiles

Desk study

6.11.1 There is one recent reptile record from the Desk Study Area. This is a 2018 record of common lizard (*Zootoca vivipara*) (S41), at Theddlethorpe St Helens, approximately 400m from the Survey Area.

Field Survey

- 6.11.2 The majority of the Survey Area comprises arable farmland and permanent grazed pasture that does not provide refuge, hibernation and terrestrial foraging habitat needed to sustain site faithful populations of reptile species.
- 6.11.3 The Phase 1 Habitat survey identified localised areas of habitat suitable to support common lizard, grass snake (*Natrix natrix*) and/or slow worm (*Anguis fragilis*). Given the lowland nature of the Survey Area, and the general lack of good quality reptile habitat, it is reasonable to conclude that adder is likely absent. The Survey Area is located beyond the national range of smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*).
- 6.11.4 The relevant areas of habitat suitable for reptiles are summarised below.
- 6.11.5 Within Section 1 there is an area of OMH near Immingham which has suitability for reptiles. A survey on this land in 2022 found no reptiles, therefore it is concluded that reptiles are likely absent (Ref 27).
- 6.11.6 In Section 5 Saltfleetby Theddlethorpe Dunes SSSI also provides good habitat for reptiles. This habitat will be avoided through the use of the existing LOGG pipeline, and as such no impacts on reptiles are anticipated.

Requirements for Further Survey and Assessment

6.11.7 Given the footprint of the Proposed Development and limited availability of suitable habitat within the Survey Area, there would be a negligible risk of fragmentation or isolation of any reptile populations present. Although reptiles may still use some of the habitats present within the DCO Site Boundary, these habitats are only suitable to sustain incidental, transitory usage and consequently they do not merit further survey. These habitats will be reinstated after the relevant works are completed.

6.12 Terrestrial Invertebrates

Desk Study

6.12.1 The desk study returned 24 records of 13 species of terrestrial invertebrates. These included small heath (*Coenonympha pamphilus*) (Red Data List (RDL) Near Threatened (NT)) and wall (*Lasiommata megara*) (RDL NT). A full list of notable terrestrial invertebrates can be found in Annex C which includes the three butterfly species stated above and 11 moth species. The 11 moth species are listed on S41 of the NERC Act for research only and as such are not considered further.

Field Survey

6.12.2 The majority of the Survey Area comprised arable farmland and permanent pasture, and these habitats are unlikely to support any rare or notable species.

- 6.12.3 The OMH near Immingham has potential to support notable invertebrate species. A butterfly survey on this land in 2022 determined that wall butterfly was absent within the land. There is a colony of small heath butterfly which is a S41 species (Ref 27).
- 6.12.4 The area of sand dunes at the south-eastern end of the Proposed Development also has potential to support notable invertebrate species. This habitat will not be subject to any works, so no impacts on terrestrial invertebrates are anticipated.

Requirements for Further Survey and Assessment

- 6.12.5 The VPI Site provides few opportunities for a rich invertebrate assemblage or scarce species. However, it does support small heath butterfly. This land has been recently surveyed and the data has been shared with this project (Ref 27). No further data is needed to inform EcIA.
- 6.12.6 There is some localised habitat loss at the Block Valve Station sites, however these areas are within arable habitats and unlikely to support protected or notable invertebrate assemblages. Permanent works are proposed at the former Theddlethorpe Gas Terminal however these habitats are comprised of bare ground and hardstanding and had limited suitability to support protected or notable invertebrate assemblages.
- 6.12.7 Wall butterfly occurs on a range of habitats whilst favouring short, open grassland. The majority of the route is arable and short, open grassland is limited. There is a lack of habitat for wall butterfly, and where the habitat is present the impacts will only be temporary.
- 6.12.8 Small heath butterfly occurs on heathland and costal dune, and less commonly in woodland rides. These habitats are limited to Section 1 where woodland rides occur within Mayflower Wood and within the dune habitats located within Section 5. Both of these habitats are being avoided and as such no impacts are expected on the habitats and their ability to support small heath butterfly.
- 6.12.9 It is therefore not considered necessary to undertake any specialist terrestrial invertebrate surveys.

6.13 Water Vole

Desk Study

- 6.13.1 The Local BAP (Ref 46) states that water vole "are widespread and the population is the most successful in the UK."
- 6.13.2 The desk study returned 1,166 records of water vole in the Desk Study Area, including 122 records located within the Proposed Development area. The records located within the Proposed Development are on:
 - Little Mardyke;
 - Mablethorpe Middle Cut;
 - Gayton North Fen Drain;
 - New Gayton Engine Drain; and
 - Mill and Harps Drain

6.13.3 Records from the National Water Vole Database and Mapping Project (Ref 48), show that between 2009 and 2018 water vole have been recorded on watercourses located around Immingham.

Field Survey

- 6.13.4 There are many watercourses crossed by the Proposed Development which may have the potential to support water vole, particularly given that the species is relatively widespread in the county/region.
- 6.13.5 A total of 147 watercourses have been classified as requiring assessment for the presence of water vole based on field surveys supplemented with a review of aerial imagery and mapping where land access was not possible.

Requirements for Further Survey and Assessment

6.13.6 Water vole could be affected where suitable watercourses are crossed by haul roads and access tracks or would be subject to open-cut construction methods. Further surveys are required to determine the presence/ absence of water vole on all relevant watercourses. This work has been instructed and the results are reported in ES Volume IV Appendix 6.3; Otter and Water Vole Survey Report (Application Document 6.4.6.3) of this ES.

6.14 Other Protected and Notable Species

- 6.14.1 Records were retuned for brown hare (*Lepus europaeus*) within the Desk Study Area. The temporary land take for the Proposed Development is not likely to adversely affect the conservation status of this species so no survey work is required. There is abundant comparable farmland habitat in the vicinity that would be available to brown hare during construction.
- 6.14.2 The desk study returned one record of European hedgehog (*Erinaceus europaeus*) within the Desk Study Area. There are large swathes of habitat within the Survey Area that are suitable for hedgehog. Although hedgehog is not a protected species it is a S41 species. Effects on hedgehog can be avoided by undertaking a PWMS to ensure no hedgehogs are harmed where habitat removal is necessary, and any potential hibernacula is dismantled outside of the hibernation period (November to February). Due to the short-term impacts of the Proposed Development no habitat fragmentation or significant habitat loss is to be expected.
- 6.14.3 Natterjack toads (*Epidalea calamita*) are listed as a species present in Saltfleetby-Theddlethorpe dunes SSSI and NNR. The dunes and the associated ponds will be avoided as the pipeline will connect to the existing LOGGS pipeline which is below ground at this location. There will be no ground water impacts upon any dune slacks present (*ES Volume II Chapter 11 Water Environment (Application Document 6.2.11)* and as such no further surveys are required.
- 6.14.4 The following species were considered unlikely to be present within the Survey Area, and have been scoped out of the impact assessment:
 - White-clawed crayfish (Austropotamobius pallipes) there were no desk study records of this species within the Desk Study Area. The only known remaining Lincolnshire population occurs on the River Witham (Ref 46Ref 46), which is located more than 30km from the Proposed Development;

- Red squirrel there were no recent desk study records for this species in the Desk Study Area and the Proposed Development is outside the current known range of this species in the UK;
- Pine marten there were no recent desk study records for this species in the Desk Study Area and the Proposed Development is outside the current known range of this species in the UK;
- **Hazel dormouse** there were no recent desk study records for this species in the Desk Study Area. Whilst it is known that there is a re-introduced dormouse population in Lincolnshire (near Wragby) (Ref 47), this is not within the DCO Site Boundary.

6.15 Invasive Non-Native Plant Species (INNPS)

6.15.1 The desk study returned 9 records of four species from within the DCO Site Boundary. **Table 8** below details the desk study records for INNPS.

Table 8: Desk Study Records of INNPS

Species	Locations	Number of Records
Montbretia (Crocosmia x crocosmiliflora)	Grimoldby	1
Virginia creeper (<i>Parthenocissus</i> quinquefolia)	Mablethorpe	1
Nuttall's waterweed (Elodea nuttallii)	Louth Canal, Long Eau, Great Eau	7

6.15.2 The field survey recorded one species of INNPS within the Survey Area. **Table 9** below details the desk study records for INNPS.

Table 9: Field Survey Records of INNPS

Species	Locations	Number of Records
Himalayan balsam (<i>Impatiens</i> glandulifera)	North Beck Drain	1

Requirements for Further Survey and Assessment

- 6.15.3 It is an offence to allow invasive non-native species to spread in the wild, and as such any works or movement of persons/plant where species are growing should be avoided and an exclusion zone put in place.
- 6.15.4 Biosecurity measures will need to be implemented should any person or plant enter the exclusion zone, which should include disinfectant solution being used to clean equipment, boots and vehicles before leaving the work area. A toolbox talk may be delivered by a qualified person to inform staff accessing the work area on how to identify INNS and what to do should the identify or come into contact with any. Control and clearance of these species would be beneficial for the biodiversity locally and count as site enhancement.
- 6.15.5 The clearance and control of vegetation should be done in accordance to a management plan, and any vegetation treated as hazardous and disposed of by licenced waste carriers and in accordance with the relevant legislation, depending on disposal method. Although not recorded during field surveys, giant hogweed was identified within the desk study and

- can be hazardous to health, the sap causing photosensitivity and skin burns on contact, and as such personal protective equipment should be considered if working near the plant.
- 6.15.6 Himalayan balsam is present within the Survey Area. Himalayan balsam is spread through seed dispersal which occurs when contact is made with the seed pod or the plant. Seed pods can disperse seeds up to 7m from the parent plant causing rapid spread of the species within the surrounding habitat. Due to this further survey prior to works is required to map the spread of Himalayan balsam within North Beck Drain and an invasive species management plan will be required to be implemented if relevant to the Proposed Development at detailed design. The management plan will recommend the most appropriate method of treatment depending upon the proximity to works and the extent of the spread of Himalayan balsam.
- 6.15.7 Further surveys may be required to determine these species presence if relevant to the scheme at detailed design.

6.16 Surveys Scoped Out

- 6.16.1 As detailed in Section 6.11 and 6.12, further surveys were not undertaken for:
 - Reptiles any risk to common lizard, grass snake or slow worm potentially present in habitats within the DCO Site Boundary can be adequately addressed through PWMS and ECoW during construction, and the extent of the habitat loss within this area would not significantly reduce the availability of foraging and refuge habitat for reptiles. Previous surveys undertaken at the area of OMH returned no records of reptiles and the sand dunes located at Saltfleetby - Theddlethorpe SSSI will be avoided as the Proposed Development connects to the existing LOGG pipeline which is below ground; and
 - Terrestrial invertebrates Areas of OMH at Immingham have suitability to support
 protected or notable invertebrates. Surveys were completed to inform the Humber Zero
 project (Ref 27) and the results of these surveys have been used to inform the ecological
 impact assessment. Sand dunes located at Saltfleetby Theddlethorpe SSSI will not be
 affected, therefore it is not considered necessary to undertake specific surveys at this
 location.

7 Conclusions and Recommendations

- 7.1.1 This Extended Phase 1 report is based on a desk study and ecological surveys undertaken with the Survey Area to identify ecological constraints and to provide advice in respect of the emerging design of the Proposed Development.
- 7.1.2 The following further surveys summarised in **Table 10**, were completed to inform the Ecological Impact Assessment.

Table 10: Summary of Recommendations

Constraints	Phase 2 Survey Scope	Method	Rationale	Timing	Locations of Survey Results
Habitats	Broadleaved Parkland	Assessment to determine if trees are veteran or ancient	Priority Habitat	June – July 2023	Refer to ES Volume IV Appendix 6.11 Arboricultural Impact Assessment (Application Document 6.4.6.11).
	River Freshney Headwaters LWS	Detailed survey of the LWS to determine the nature of River Freshney	Specialist survey required to determine habitat and botanical interest.	May – July 2023	Refer to ES Volume IV Appendix 6.6 – Aquatic Ecology Survey Report (Application Document 6.4.6.6).
Badger	Four badger setts identified within the DCO Site Boundary	One survey to identify the usage of the setts.	Likely to be permanent loss of the setts and may require sett closures	May 2023	Refer to ES Volume IV Appendix 6.4 - Confidential Badge r Report (Application Document 6.4.6.4)
Bats (foraging)	Hedgerows which could be used for commuting/ foraging.	Crossing point surveys for hedgerows which are crossed by the Proposed Development	Bat foraging/ commuting habitat potentially affected by noise/visual	May to August 2022 / 2023	Refer to ES Volume IV Appendix 6.2 – Bat Survey Report

Constraints	Phase 2 Survey Scope	Method	Rationale	Timing	Locations of Survey Results
			disturbance adjacent to footprint.		(Application Document 6.4.6.2)
Bats (roosting)	Trees with moderate or high suitability which may require removal/pruning	Up to three surveys of emergence/re-entry to assess whether bats are roosting within a feature on a tree	Removal of trees could result in loss of bat roosting habitat	May – September 2023	Refer to ES Volume IV Appendix 6.2 – Bat Survey Report (Application Document 6.4.6.2)
Breeding birds	Refer to ES Volume IV Ornithology Survey Report (Appendix 6.7)	Suite of ornithology surveys	To confirm the assemblage of breeding birds and assess impacts.	March to July 22 / 2023	Refer to ES Volume IV Appendix 6.7 Ornithology Survey Report (Application Document 6.4.6.7).
Non-breeding birds	Refer to ES Volume IV Ornithology Survey Report (Appendix 6.7)	Suite of ornithology surveys	To confirm the assemblage of non-breeding birds and assess impacts.	July to February 2022 / 2023	Refer to ES Volume IV Appendix 6.7 Ornit hology Survey Report (Application Document 6.4.6.7).
Otter	Watercourses crossed by the Proposed Development deemed suitable during habitat suitability assessment as part of the Phase 1 Habitat Survey	Survey of watercourses / ditches crossed by the Proposed Development and habitat that had potential to support otter resting places.	To confirm presence or likely absence of otter resting places within 200 m of the Proposed Development.	May to September 2022 and 2023	Refer to ES Volume IV Appendix 6.3 Otter and Water Vole Survey Report (Application Document 6.4.6.3)

Constraints	Phase 2 Survey Scope	Method	Rationale	Timing	Locations of Survey Results
Water vole	Watercourses crossed by the Proposed Development deemed suitable during habitat suitability assessment as part of the Phase 1	Two surveys of ditches directly crossed by the Proposed Development that had potential to support water vole	To confirm presence / likely absence of water vole on watercourses which will be affected by the Proposed Development.	May to September 2022 and 2023	Refer to ES Volume IV Appendix 6.3 Otter and Water Vole Survey Report (Application Document 6.4.6.3).

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Annex A Trees with Bat Roost Potential (BRP)

Location	Species (Tree Number)	Features	Photographs
Stallingborough	Ash (T1)	Large split in stem located approximately 3.5m up the tree which could go into the main stem BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
Stallingborough	Willow sp. (T2)	Large split at the base of the stem which could provide roosting opportunities for bats BRP - Moderate	
Stallingborough	Ash (T3)	Large split in stem located approximately 3.5m up the tree which could go into the main stem. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
Stallingborough	Ash (T4)	Several broken limbs and callus rolls on east and south aspect from 3-4m up the tree. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
Irby upon Humber	Pedunculate oak (T5)	Ivy-clad main stem on tree old enough for features.	
		BRP - Low	

Location	Species (Tree Number)	Features	Photographs
Barnoldby-le- Beck	Alder (T6)	Knot holes, woodpecker holes, split limb and large hole all present on different aspects of the tree. Combined, the features would allow multiple bats, of multiple species, to roost within the tree. BRP - High	

Location	Species (Tree Number)	Features	Photographs
Barnoldby-le- Beck	Sycamore (T7)	Knot holes, woodpecker holes, and trunk holes present on aspects all around the tree of varying heights. The features allow multiple bats, of multiple species to roost. BRP - High	

Location	Species (Tree Number)	Features	Photographs

Location	Species (Tree Number)	Features	Photographs
Barnoldby-le- Beck	Sycamore (T8)	Multiple knot holes, and holes going into the main stem on numerous aspects of the tree at various heights. The features present would allow numerous bats, of differing species to roost within the tree. BRP - High	

Location	Species (Tree Number)	Features	Photographs

Location	Species (Tree Number)	Features	Photographs
Barnoldby-le- Beck	Sycamore (T9)	Large sycamore with numerous knot holes on all aspects located at various heights up the tree. BRP - Moderate	
Barnoldby-le- beck	Oak (T10)	Large oak with numerous knot holes, and cracks on all aspects located at various heights up the tree. A tear out is also present. BRP - High	No photograph available.

Location	Species (Tree Number)	Features	Photographs
Ashby-cum- Fenby	Sycamore (T11)	Tear out on the eastern aspect approximately 5m up the tree and a small hole leading into the main stem approximately 1m above ground. BRP - Moderate	
Ashby-cum- Fenby	Ash (T12)	Knothole with large cavity into the main stem of the tree located approximately 3m up the tree. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
Ashby-cum- Fenby	Hawthorn (T13)	Knothole with a cavity on the southern aspect of the tree located approximately 3m up the tree. BRP - Moderate	
Ashby-Cum- Fenby	Poplar sp. (T14)	Ivy-clad main stem. BRP - Low	

Location	Species (Tree Number)	Features	Photographs
Ashby-Cum- Fenby	Poplar sp. (T15)	Ivy-clad main stem.	
		BRP - Low	
Ashby-Cum-	Ash (T16)	Ivy-clad main stem.	
Fenby		BRP - Low	

Location	Species (Tree Number)	Features	Photographs
Grainsby Lane	Sycamore (T17)	Single knot hole pointing upwards, likely to get water in during bad weather conditions. BRP - Low	
Grainsby Lane	Dead tree (T18)	Dead tree with ivy cover with Potential Roost Features (PRF) likely. BRP - Low	

Location	Species (Tree Number)	Features	Photographs
Grainsby Lane	Oak (T19)	Ivy covered main stem of a suitable size and age for PRFs to be present. BRP - Low	
North Thoresby	Ash (T20)	Three broken limbs with wounds on the eastern aspect at 4-5m. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
North Thoresby	Ash (T21)	Large tear out that has formed a callus roll, in the centre of the tree leading to a cavity. BRP - Moderate	
North Thoresby	Ash (T22)	Multiple bat roost features with deadwood in the crown creating numerous cavities. BRP - High	

Location	Species (Tree Number)	Features	Photographs
North Thoresby	Ash (T23)	Dead ash with a large central cavity.	
		BRP - Moderate	
North Thoresby	Ash (T24)	Dead ash with a large central cavity. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
North Thoresby	Ash (T25)	Ivy-clad main stem.	
		BRP - Low	
North Thoresby	Ash (T26)	Broken limb with wounds on the western aspect approximately 4m up the tree. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
North Thoresby	Ash (T27)	Several broken branches with cavities and deadwood in the crown. BRP- High	
North Thoresby	Lime sp. (T28)	Several knotholes on the south-western aspect of the tree. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
Pear Tree Lane	Number) Ash (T29)	Tree with a number of PRFs. Ivy cover around tree split on limb of the northern aspect. Hole approximately 7m up on the southern aspect of the tree which goes into the main stem. Inside of the main stem approximately 3m up the tree appears to be rotten, split on the south aspect 4m up. Hole on limb on northern aspect approximately 8m up tree. BRP - High	

Location	Species (Tree Number)	Features	Photographs

Location	Species (Tree Number)	Features	Photographs
Yarburgh	Field maple (T30)	Two stemmed field maple with knot hole with access into the main stem, droppings observed during survey but unable to determine if bat. BRP - Moderate	

Location	Species (Tree Number)	Features	Photographs
Alvingham	Ash (T31)	Ivy-clad main stem.	
		BRP - Low	
Alvingham	Ash (T32)	Ivy-clad main stem.	
		BRP - Low	

Location	Species (Tree Number)	Features	Photographs
Alvingham	Pedunculate oak (T33)	Broken limb with a hole approximately 4m up the tree and ivy clad main stem. BRP - Moderate	
North Cockerington	Hawthorn (T34)	Hawthorn tree with numerous holes on all aspects providing access into the main stem. BRP - High	

Location	Species (Tree Number)	Features	Photographs
North Thoresby	Ash (T35)	Semi-mature ash tree, bats observed coming out of a potential roost feature. Confirmed roost	
Theddlethorpe St Helen	Poplar (T36)	Rot hole in trunk and split in branch.	No photograph available

Location	Species (Tree Number)	Features	Photographs
		BRP – Moderate	

Annex B Target Notes

Habitat	Target Note	Photographs
TN1 –Open Mosaic Habitat on Previously Developed Land	Large area of broken ground that is developing a range of early successional habitats. For the most part, this area comprises an unvegetated gravelled substrate but areas of floral interest include species such as common spotted orchid, southern marsh orchid, yellow-wort, mouse-ear hawkweed, common centaury, hare's-foot, clover and fern grass. Self-set silver birch and willow scrub is present in the south-eastern corner. The topography is flat with little-to-no variation. As a result, areas of standing water or wet ground are likely to be transient.	No photograph available.

Habitat	Target Note	Photographs
TN2 - Broadleaved Woodland	Linear mature woodland with a partially developed understorey and dense ground flora. The woodland has some small areas of bare ground and dead wood. The canopy consists of abundant oak and occasional horse chestnut, sycamore, elm, beech and cherry. The understorey consists of frequent hawthorn, holly and willow species and rare elder. The ground flora consists of abundant hogweed, frequent Yorkshire fog, docks, cleaves nettle and bramble.	

Habitat	Target Note	Photographs
TN3 – Broadleaved woodland	Field boundary woodland which consists of a canopy of hornbeam, sessile oak, and ash, with an understorey of dog rose, blackthorn, hawthorn and elder and a ground flora of brambles.	
TN4 – Broadleaved Parkland	Broadleaved parkland now used for sheep grazing. A number of mature trees, including sycamore, cherry, and oak are present. The ground flora is comprised of grassland species including Yorkshire fog, creeping buttercup, common sorrel. There is no bare ground or scrub.	

Habitat	Target Note	Photographs
TN5 – Broadleaved Woodland	Mayflower wood – Plantation woodland with rides and glades. Species present include hawthorn, ash, crack willow, pedunculate oak, lime and silver birch. Pepper saxifrage potentially present within the rides.	

Habitat	Target Note	Photographs
TN6 - Dune scrub	Large area of dune scrub which transitions to dune grassland. Dominated by sea buckthorn.	

Habitat	Target Note	Photographs
TN7 – Semi-improved grassland	Small distinct area of semi-improved grassland with coarse and fine grasses, cuckooflower, buttercups, common vetch and taraxacum agg.	

Habitat Target N	vote	Photographs
pond. Sp inundation	rea of marshy grassland, which could be an ephemeral pecies present indicate poor drainage and periodic on. Species present include foxtail, Yorkshire fog, common d tufted hairgrass.	

Annex C Notable Invertebrates

Species	Location	Number of records
Wall (Lasiommata megera)	Saltfleetby-Theddlethorpe Dunes NNR	1
Blood-vein (<i>Timandra</i> comae)	Saltfleetby-Theddlethorpe Dunes NNR	1
Latticed heath (Chiasmia clathrate)	Saltfleetby-Theddlethorpe Dunes NNR	1
Buff ermine (<i>Spilosoma lutea</i>)	Saltfleetby-Theddlethorpe Dunes NNR	1
White ermine (<i>Spilosoma lubricipeda</i>)	Saltfleetby-Theddlethorpe Dunes NNR	3
Cinnabar (<i>Tyria</i> jacobaeae)	Saltfleetby-Theddlethorpe Dunes NNR Theddlethorpe	3
Mottled rustic (Caradrina morpheus)	Saltfleetby-Theddlethorpe Dunes NNR Theddlethorpe	3
Dusky brocade (Apamea remissa)	Saltfleetby-Theddlethorpe Dunes NNR Theddlethorpe	2
Large nutmeg (Apamea anceps)	Saltfleetby-Theddlethorpe Dunes NNR	1
Shoulder- striped wainscot (<i>Leucania comma</i>)	Saltfleetby-Theddlethorpe Dunes NNR Theddlethorpe	3
Small heath (Coenonymp ha pamphilus)	Saltfleetby-Theddlethorpe Dunes NNR	1
Small phoenix (<i>Ecliptoper</i> a silaceata)	Theddlethorpe	2
Small squarespot (<i>Diarsia rubi</i>)	Theddlethorpe	2

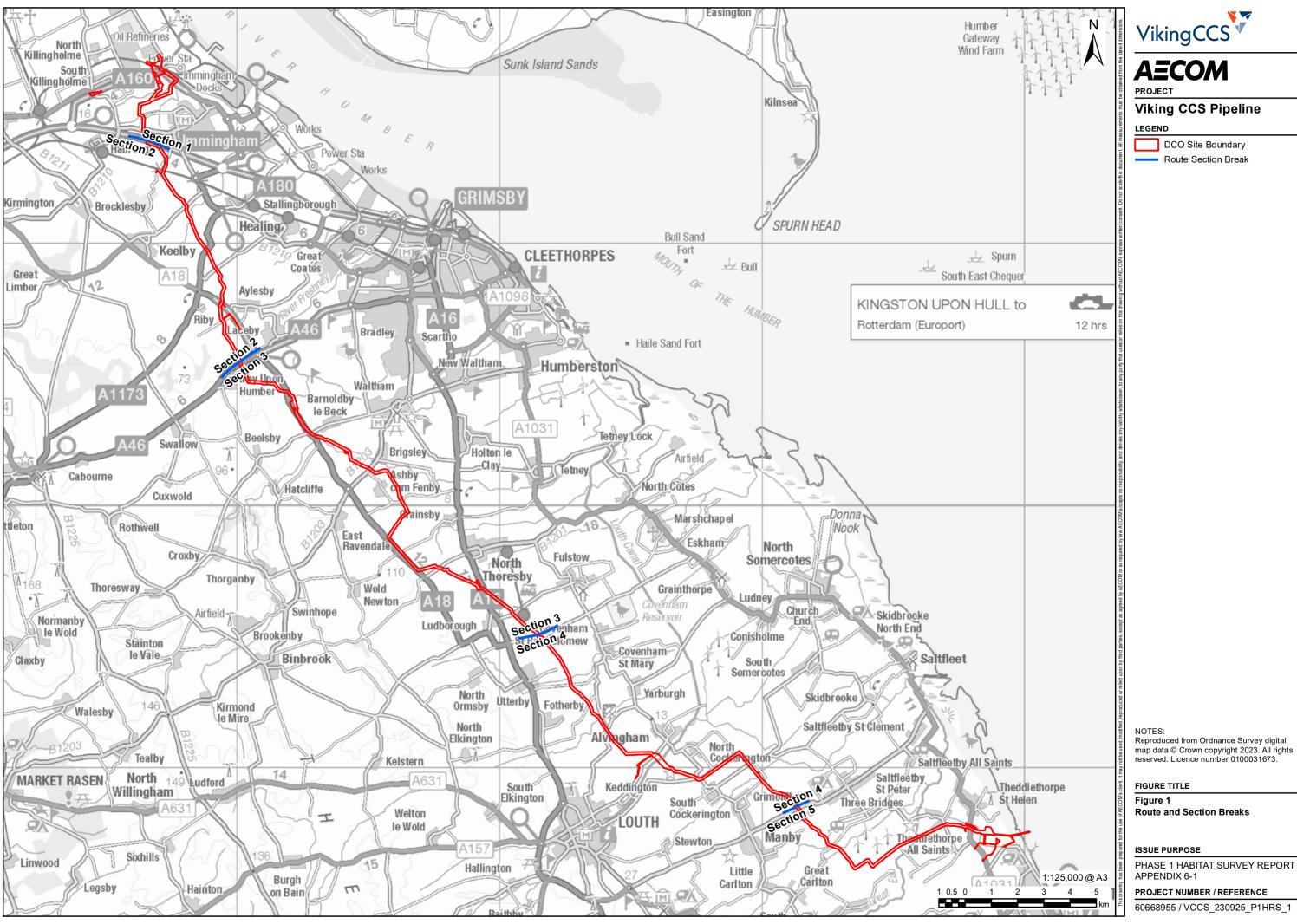
Annex D Figures

Figure 1: Route and Survey Sections

Figure 2: Statutory Designated Sites within 10km

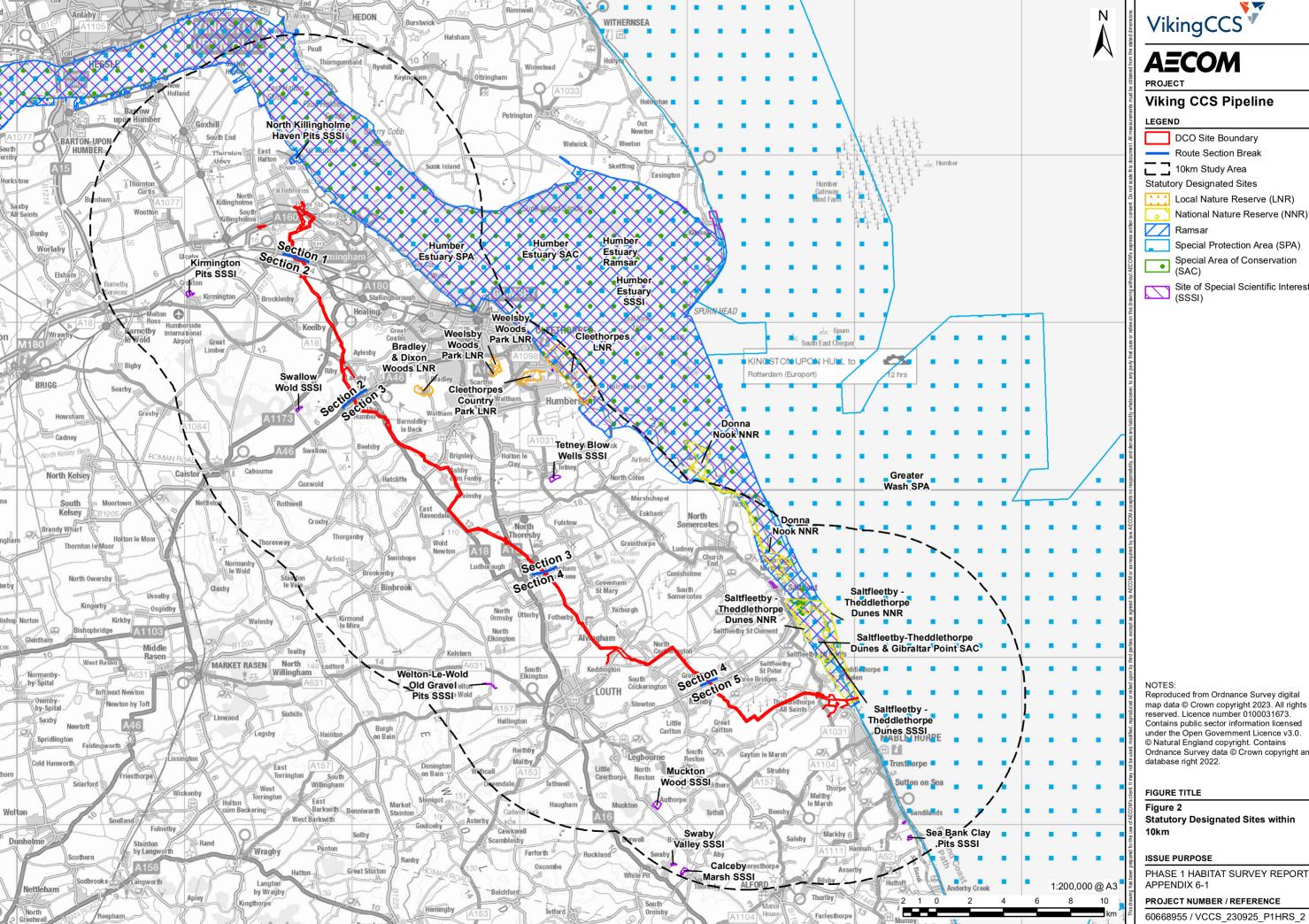
Figure 3: Non-Statutory Designated Sites within 2km

Figure 4: Phase 1 Habitat Map



Date:

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Viking CCS Pipeline

Local Nature Reserve (LNR)

Special Protection Area (SPA)

Special Area of Conservation

Site of Special Scientific Interest (SSSI)

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Statutory Designated Sites within

PHASE 1 HABITAT SURVEY REPORT

PROJECT NUMBER / REFERENCE



PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Route Section Break

2km Study Area

Non-Statutory Designated Sites

Local Wildlife Site

Road Nature Reserve

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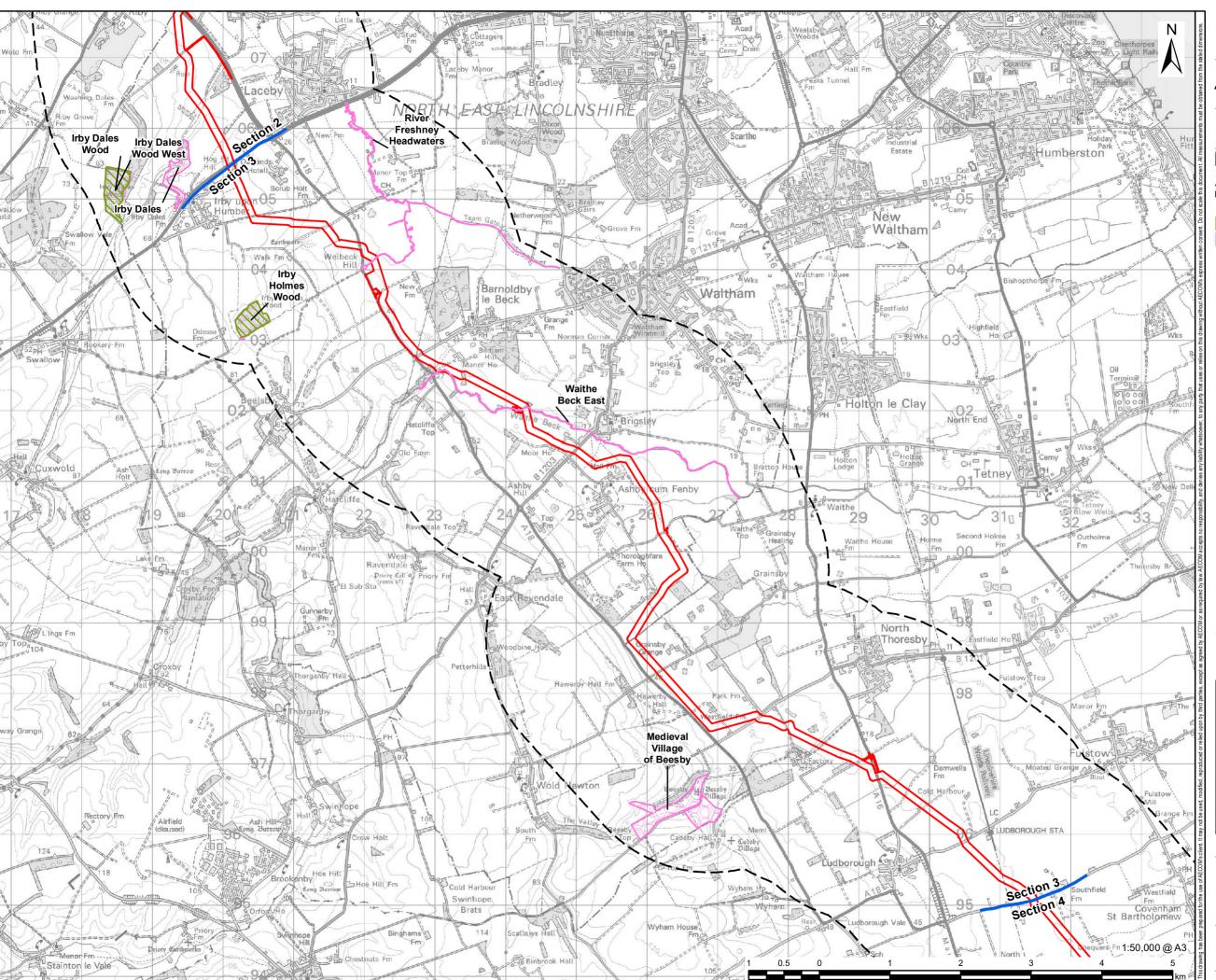
FIGURE TITLE

Figure 3 (1 of 4) **Non-Statutory Designated Sites** within 2km

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary Route Section Break

2km Study Area

Non-Statutory Designated Sites

Ancient Woodland

Local Wildlife Site

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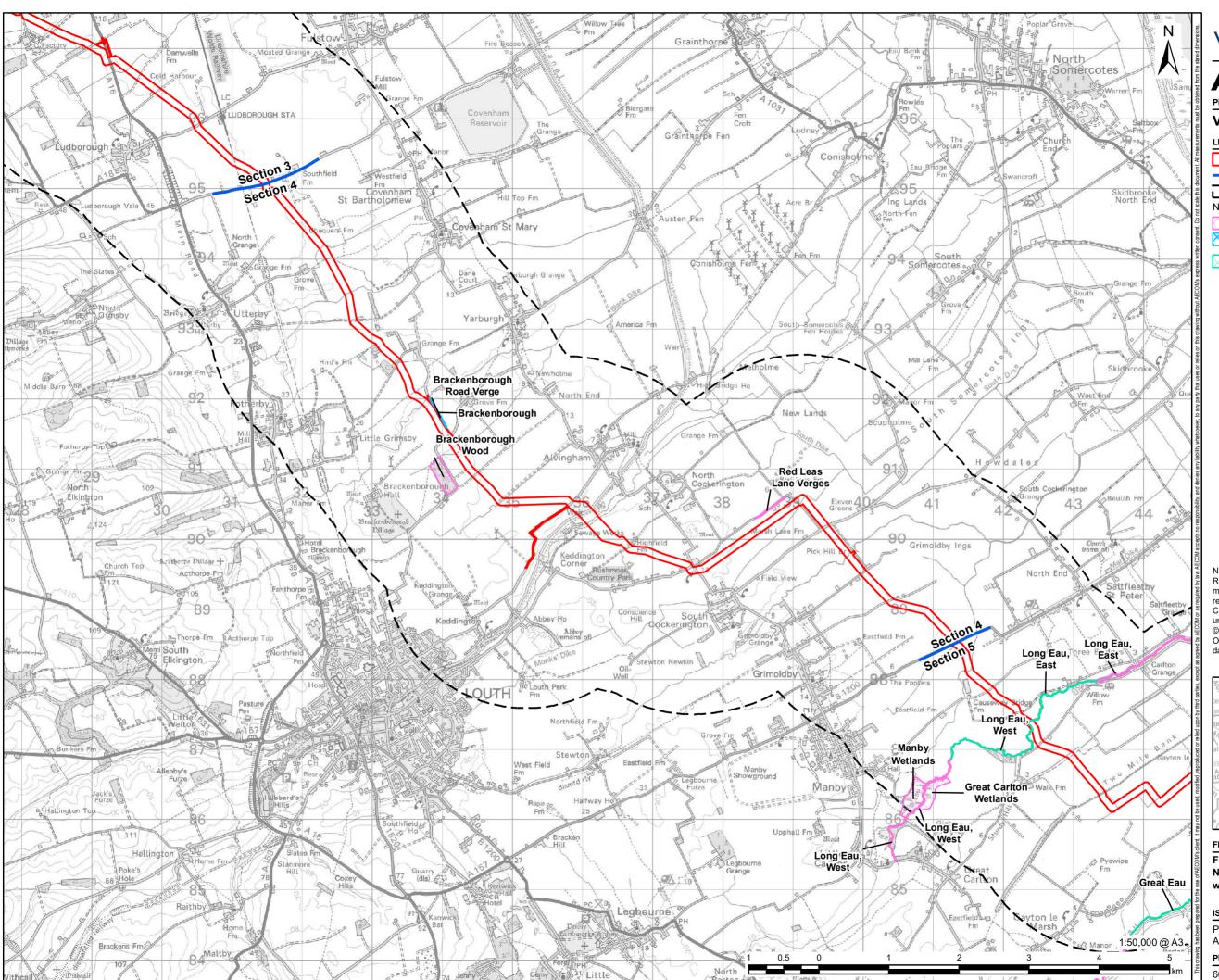
FIGURE TITLE

Figure 3 (2 of 4) **Non-Statutory Designated Sites** within 2km

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE



Date:



PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Route Section Break

_____ 2km Study Area Non-Statutory Designated Sites

Local Wildlife Site

Road Nature Reserve

Site of Nature Conservation

Interest

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FIGURE TITLE

Figure 3 (3 of 4) **Non-Statutory Designated Sites** within 2km

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE



Viking CCS Pipeline

LEGEND

DCO Site Boundary

Route Section Break

2km Study Area

Non-Statutory Designated Sites

Local Wildlife Site

Local Wildlife Trust

Site of Nature Conservation

Interest

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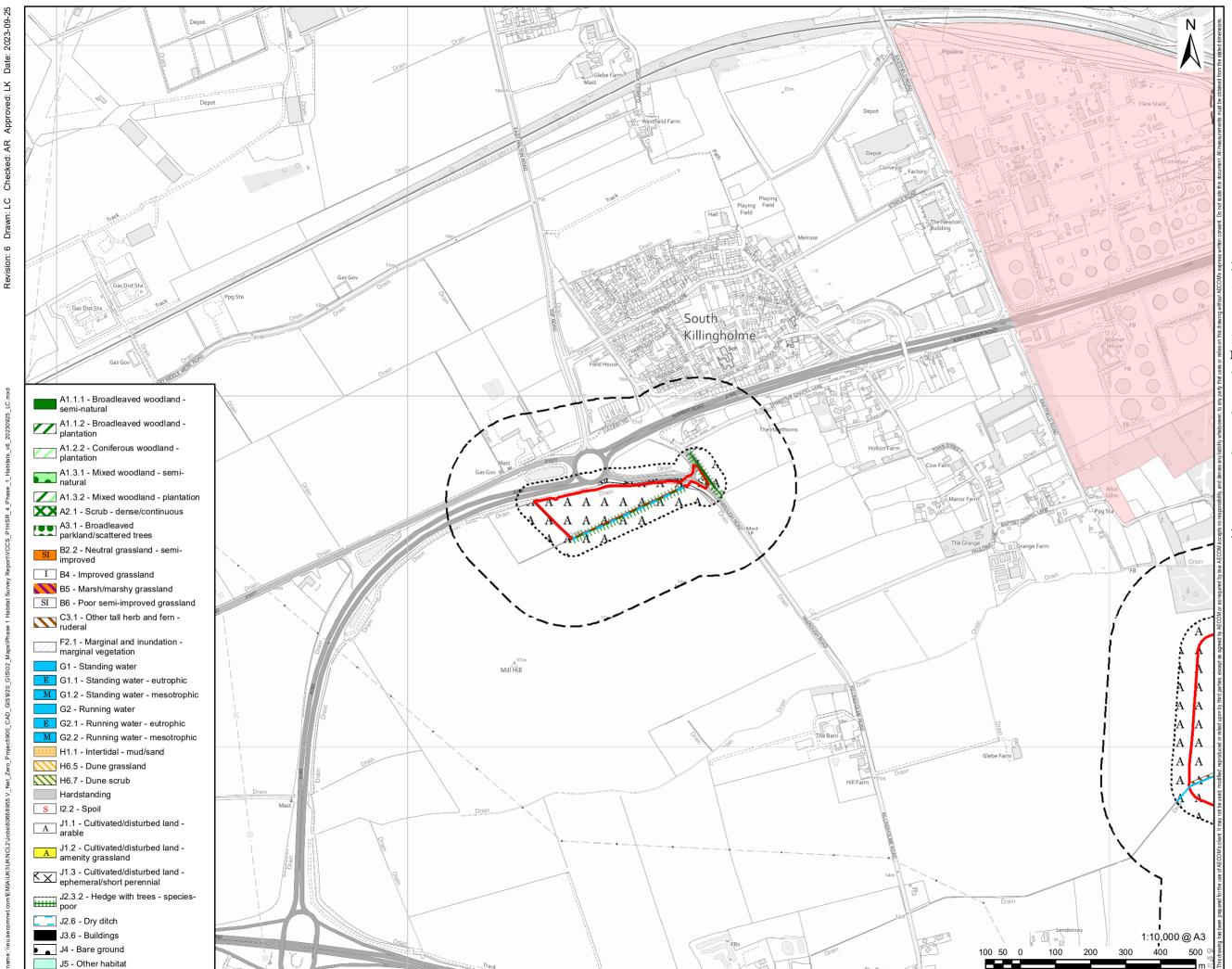
FIGURE TITLE

Figure 3 (4 of 4) **Non-Statutory Designated Sites** within 2km

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and

50m buffer) 250m Study Area

Area Inaccessible

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

 $\times \times \times$ A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native speciesrich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

HHHH J2.3.2 - Hedge with trees - species-poor

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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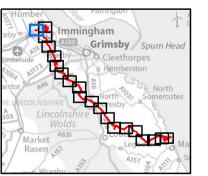


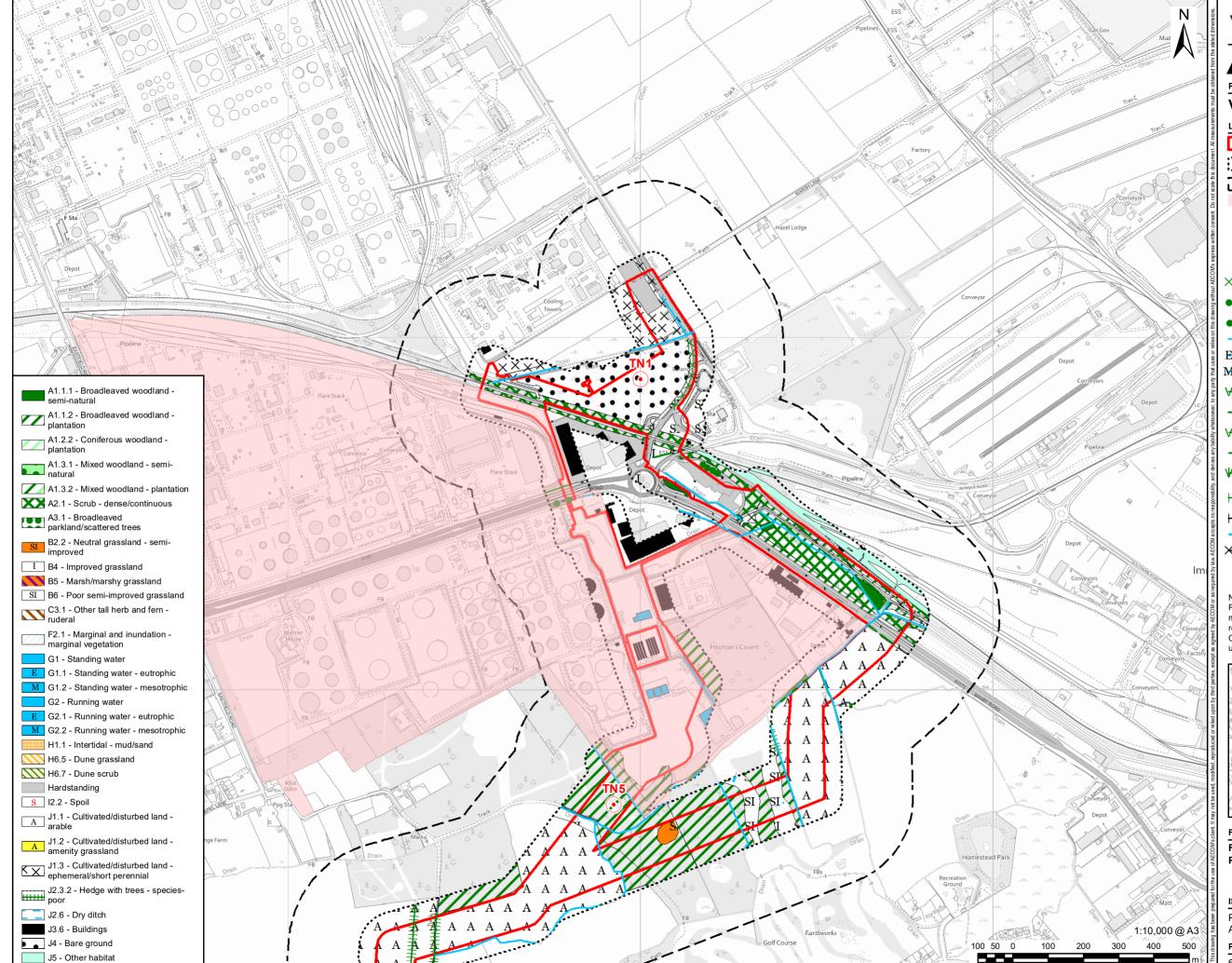
FIGURE TITLE

Figure 4 (1 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

Area Inaccessible

Target Note

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

M G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native speciesrich

J2.1.2 - Intact hedge - species-poor

32.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - speciespoor

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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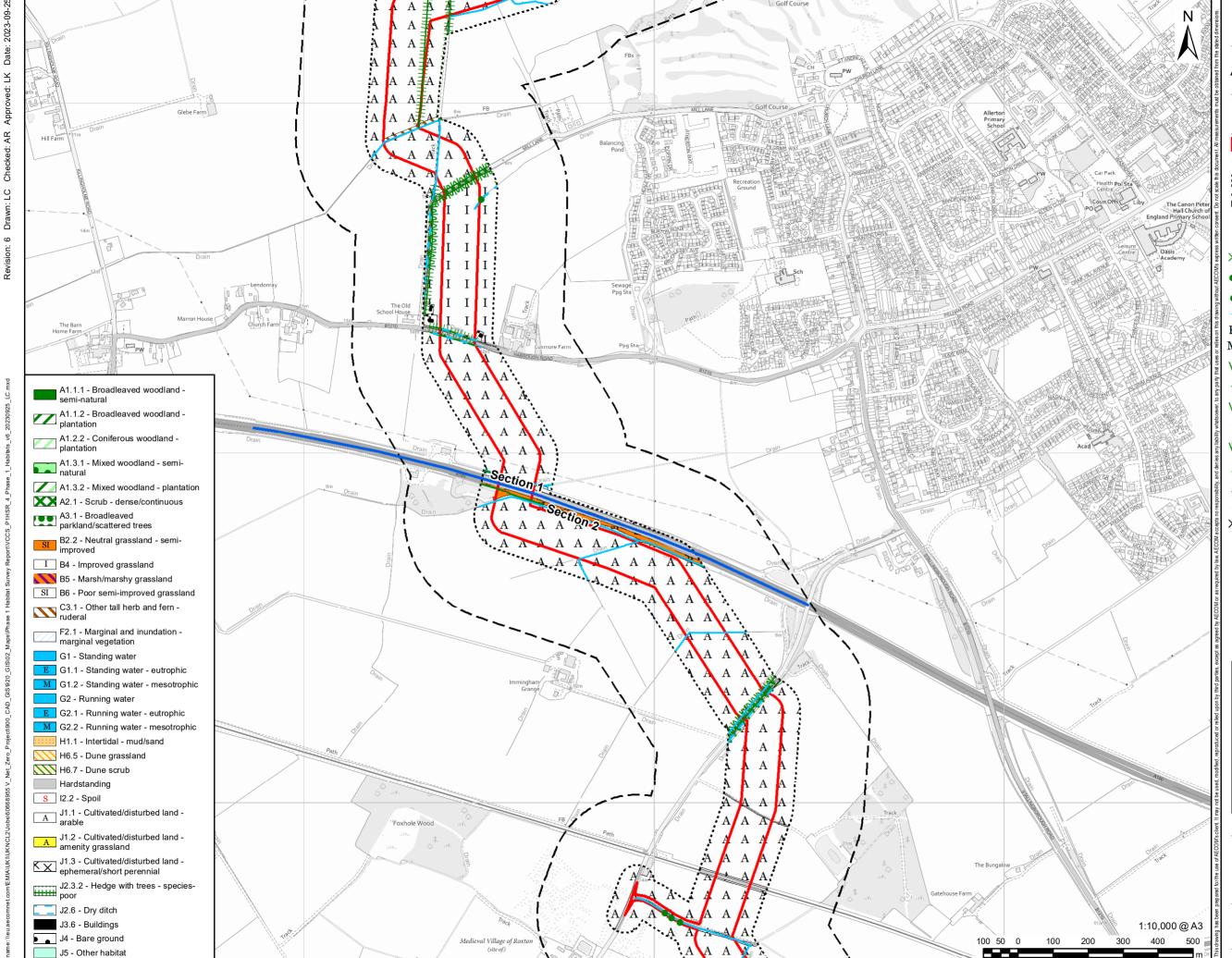
FIGURE TITLE

Figure 4 (2 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

 $\times \times \times$ A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - species-

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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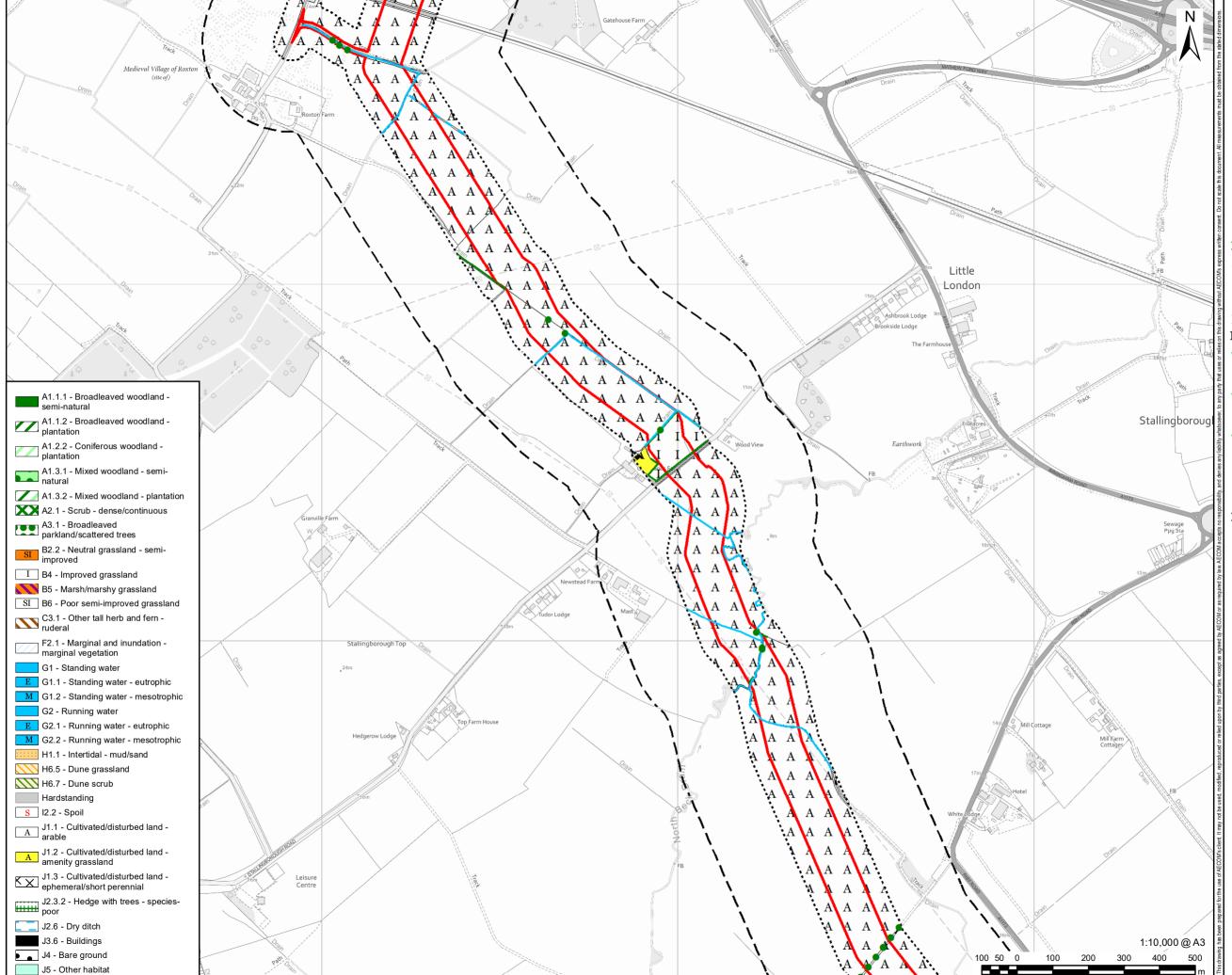
FIGURE TITLE

Figure 4 (3 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and

50m buffer) 250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

— G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native speciesrich

 J2.1.2 - Intact hedge - species-poor J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

HHHH J2.3.2 - Hedge with trees - species-poor

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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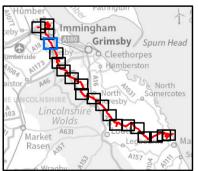


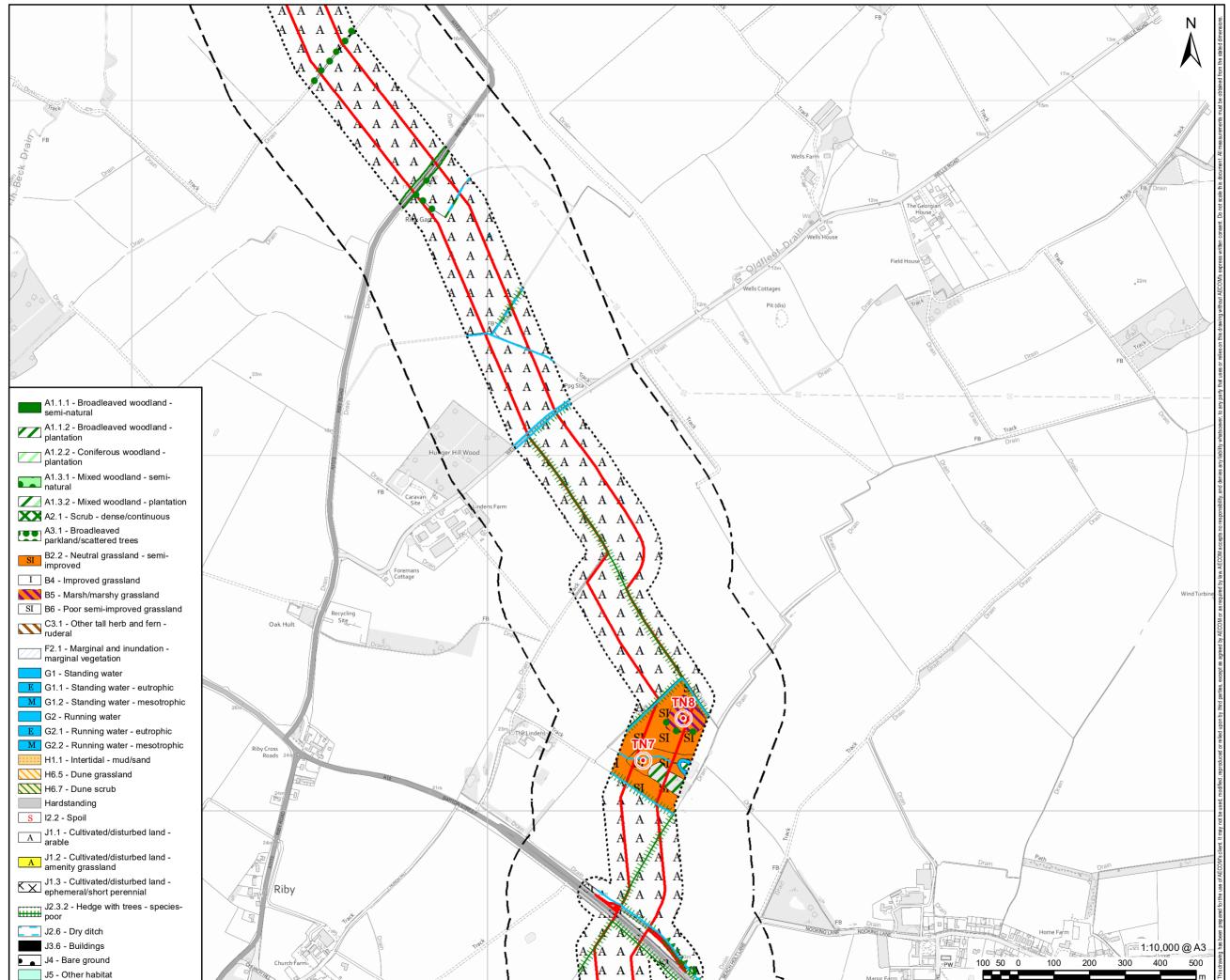
FIGURE TITLE

Figure 4 (4 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

Target Note

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - species-poor

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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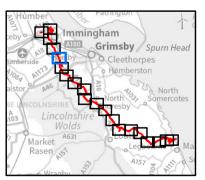


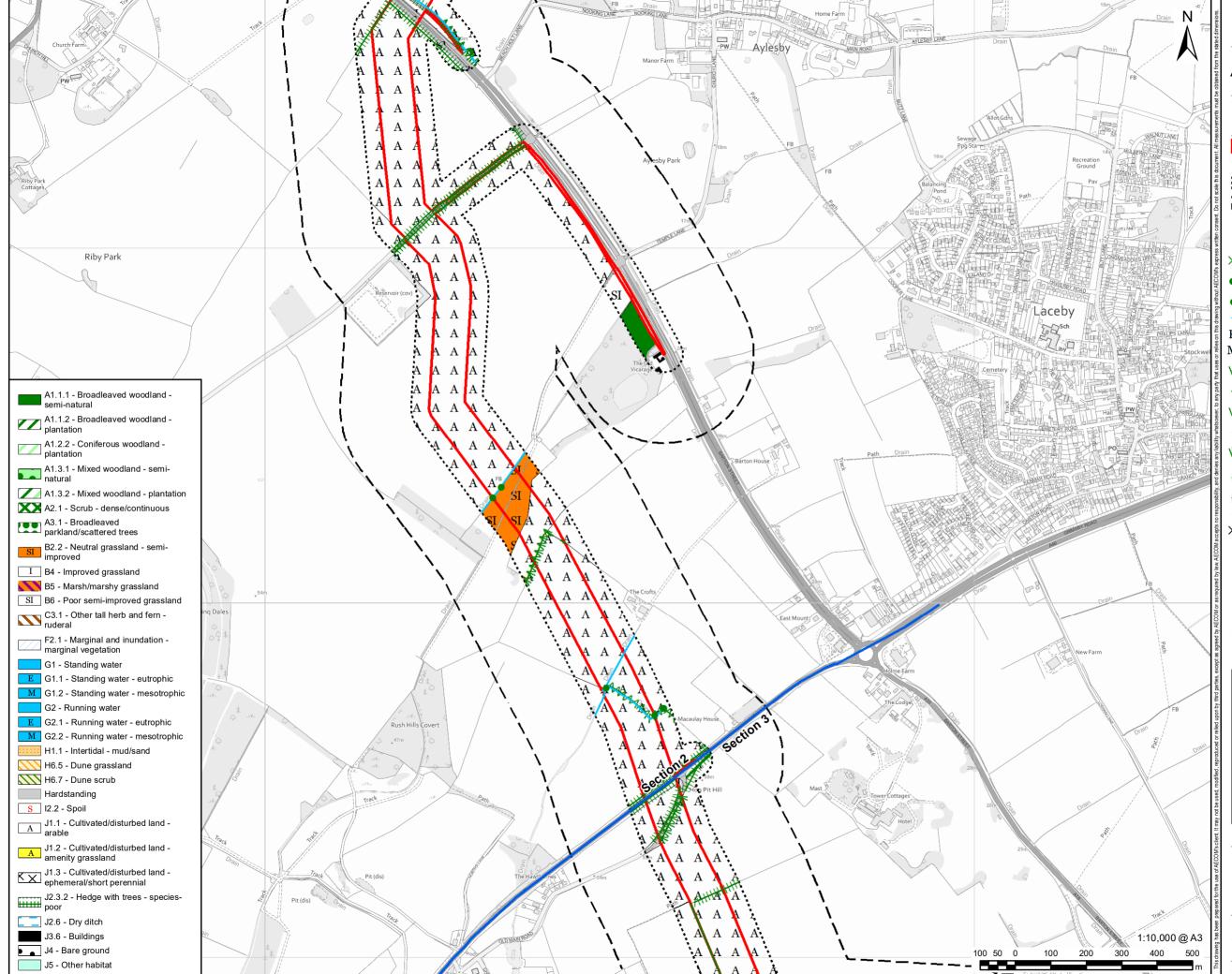
FIGURE TITLE

Figure 4 (5 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE



Approved: LK



PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

 $\times \times \times$ A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

M G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native

species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - species-

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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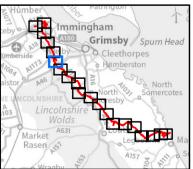


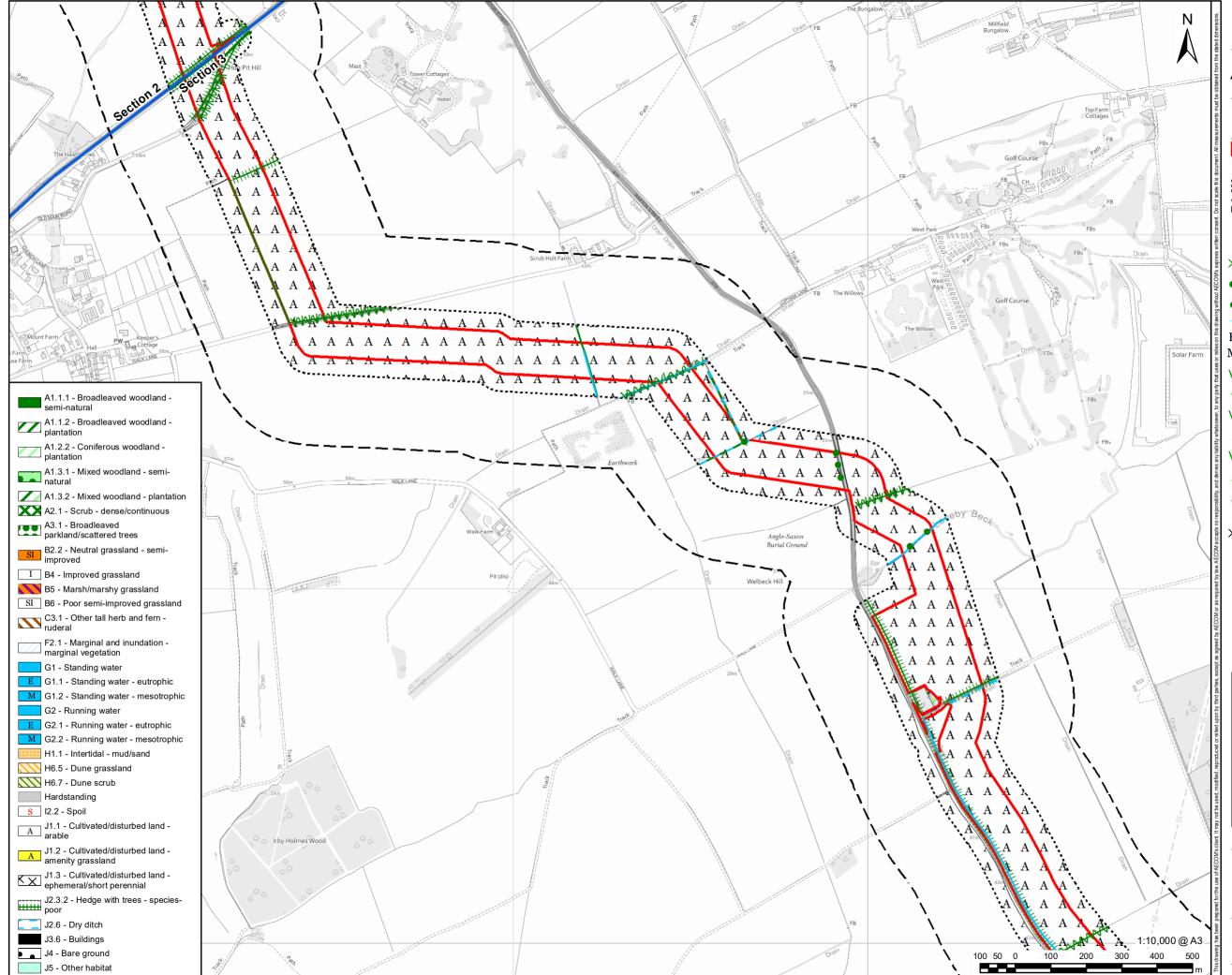
FIGURE TITLE

Figure 4 (6 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE



Date:

Approved: LK



AECOM

PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Route Section Break

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

 $\times \times \times$ A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

M G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native

species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native

HHHH J2.3.2 - Hedge with trees - species-poor

HHHH J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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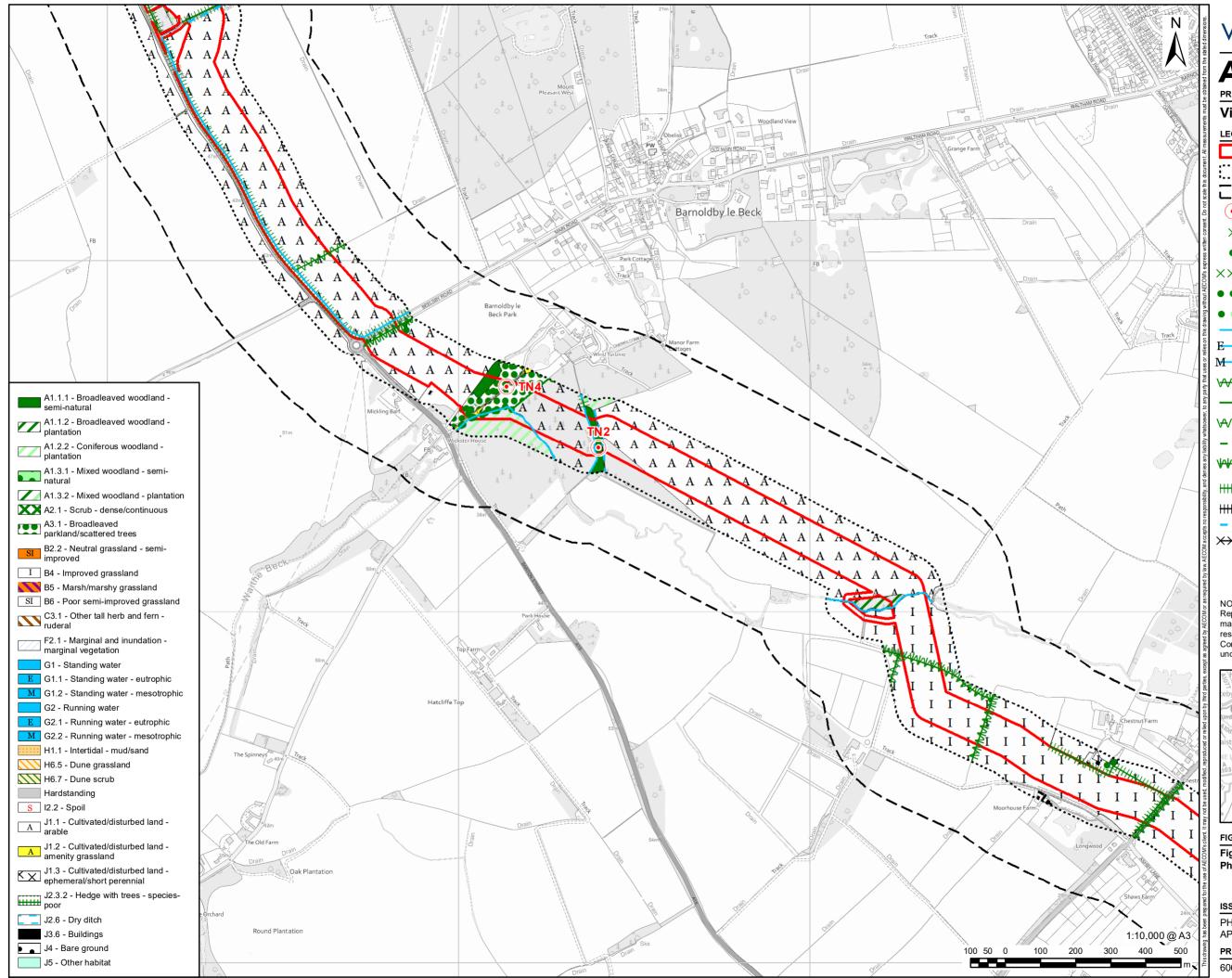
FIGURE TITLE

Figure 4 (7 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

Target Note

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - species-poor

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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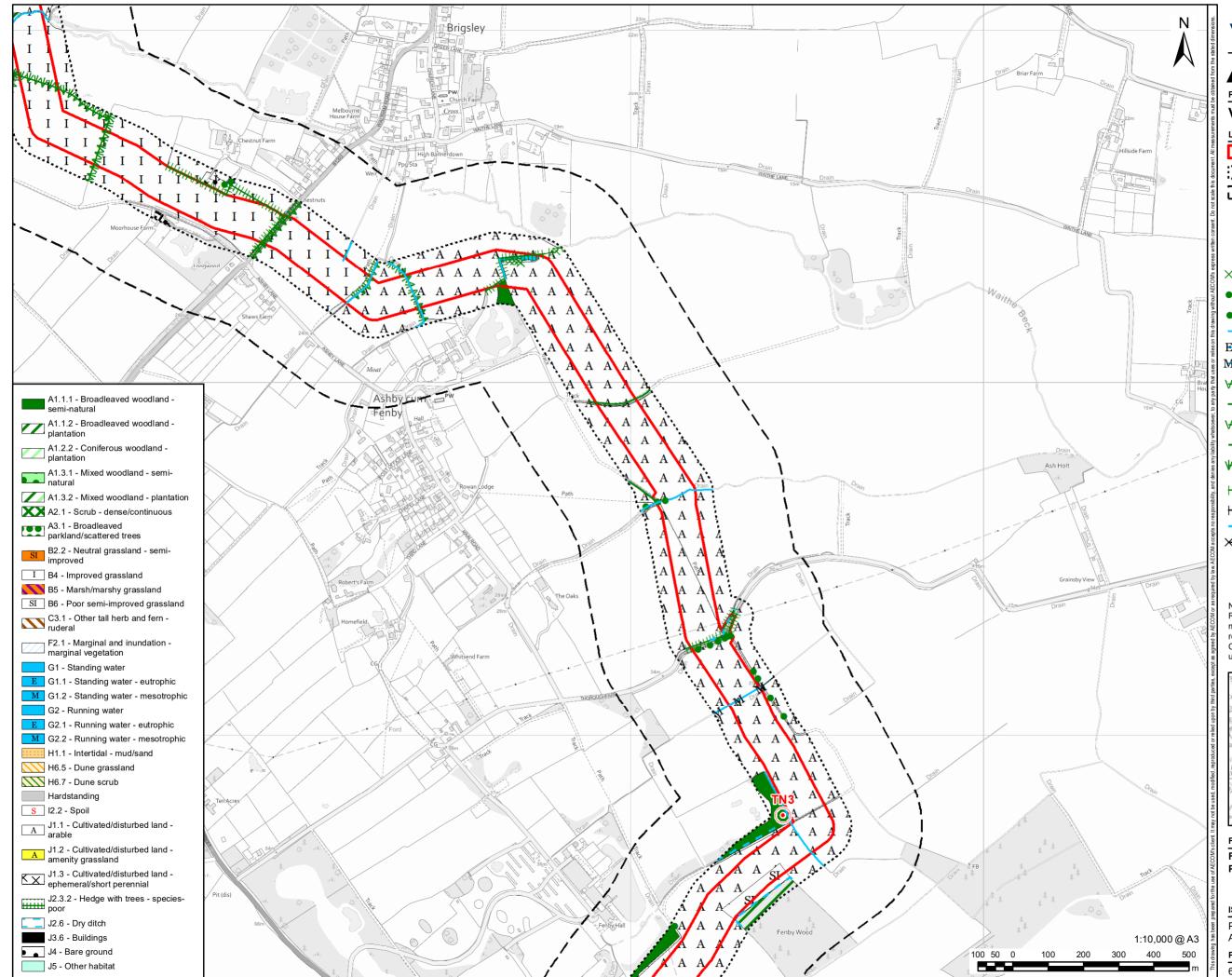
FIGURE TITLE

Figure 4 (8 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

Target Note

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

- G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native speciesrich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - species-poor

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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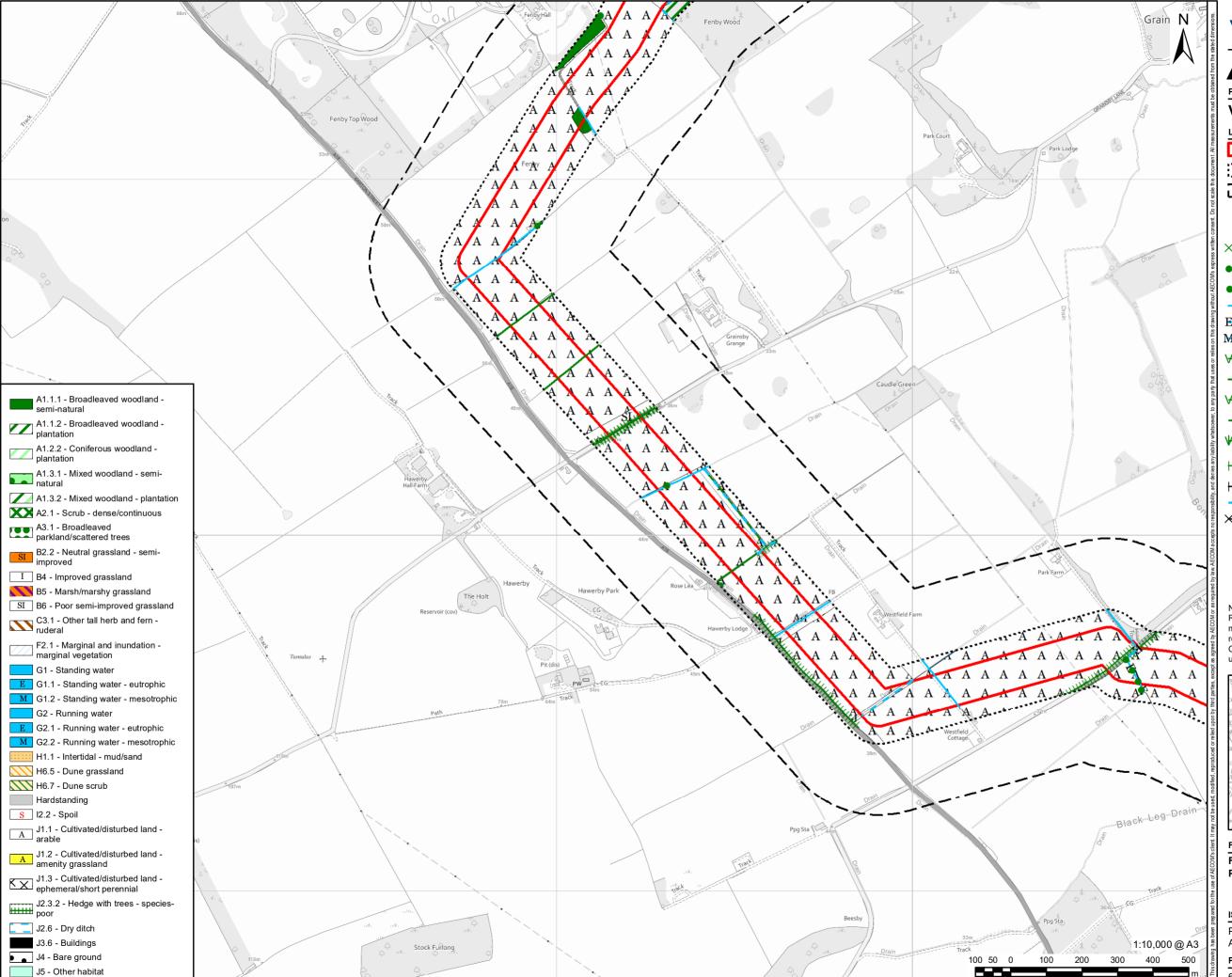
FIGURE TITLE

Figure 4 (9 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native

species-rich

J2.3.2 - Hedge with trees - species-

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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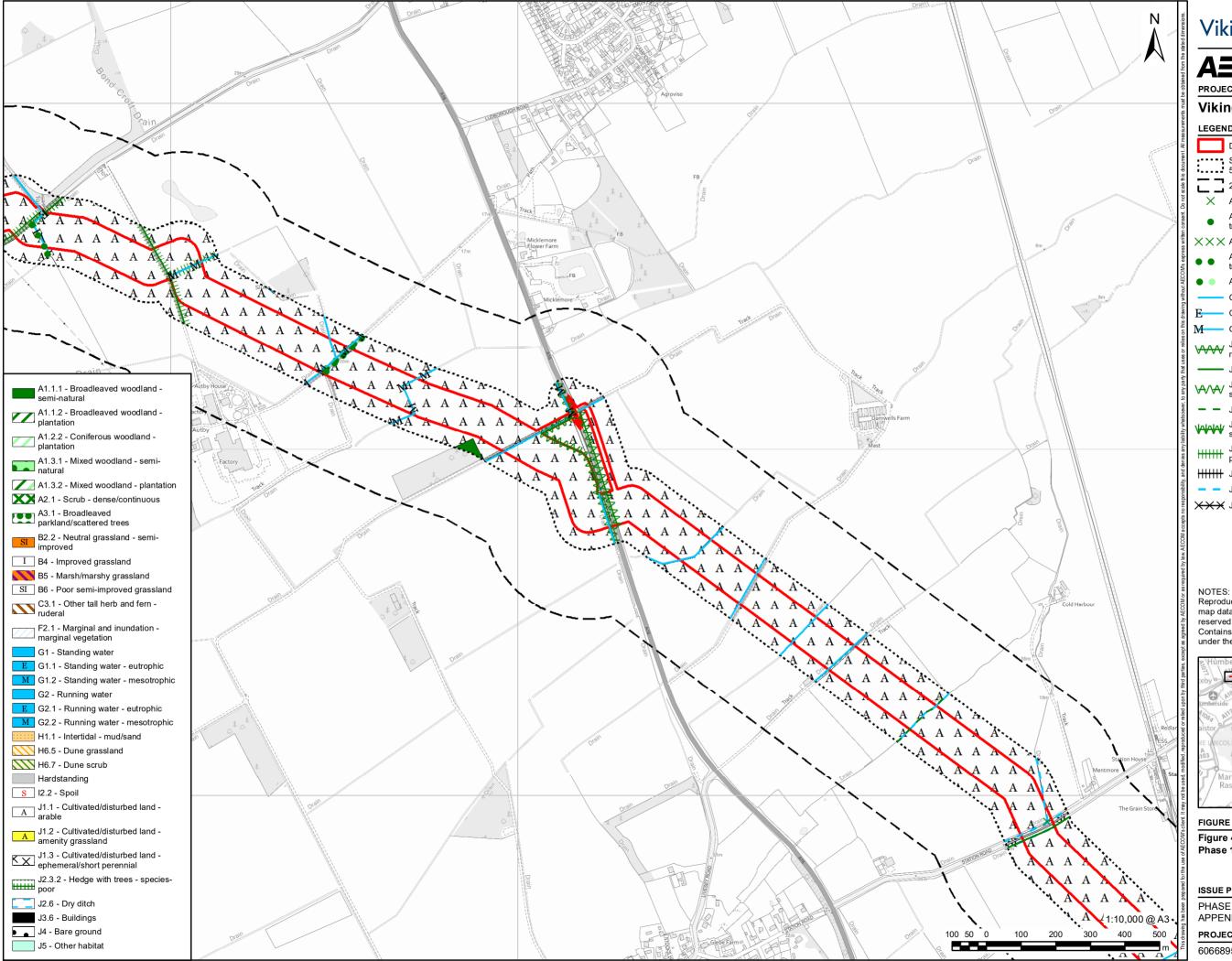
FIGURE TITLE

Figure 4 (10 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native speciesrich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - speciespoor

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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FIGURE TITLE

Figure 4 (11 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Route Section Break

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

 \times \times A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native speciesrich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

J2.3.1 - Hedge with trees - native

HHHH J2.3.2 - Hedge with trees - species-poor

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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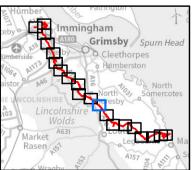


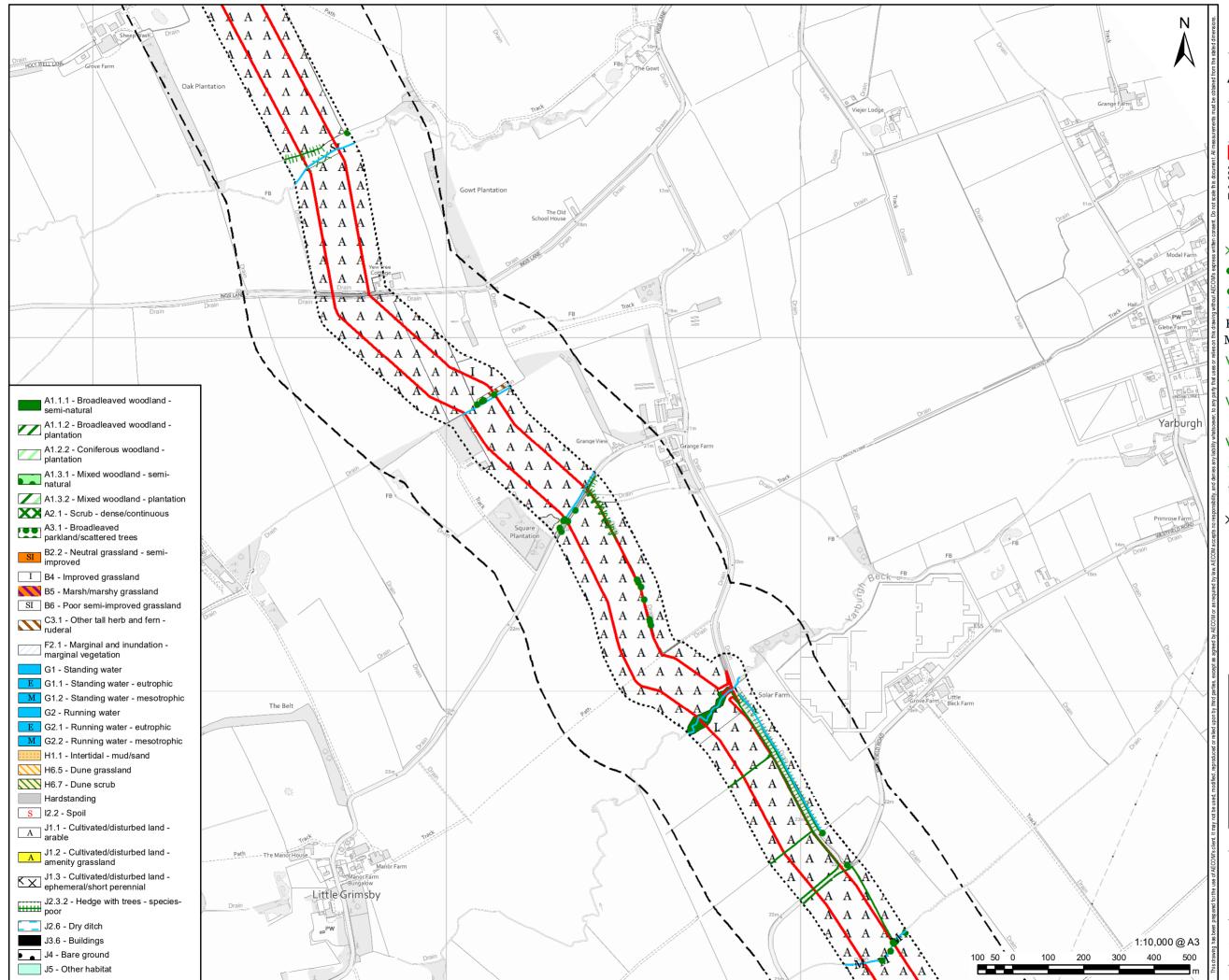
FIGURE TITLE

Figure 4 (12 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native

species-rich J2.3.2 - Hedge with trees - species-

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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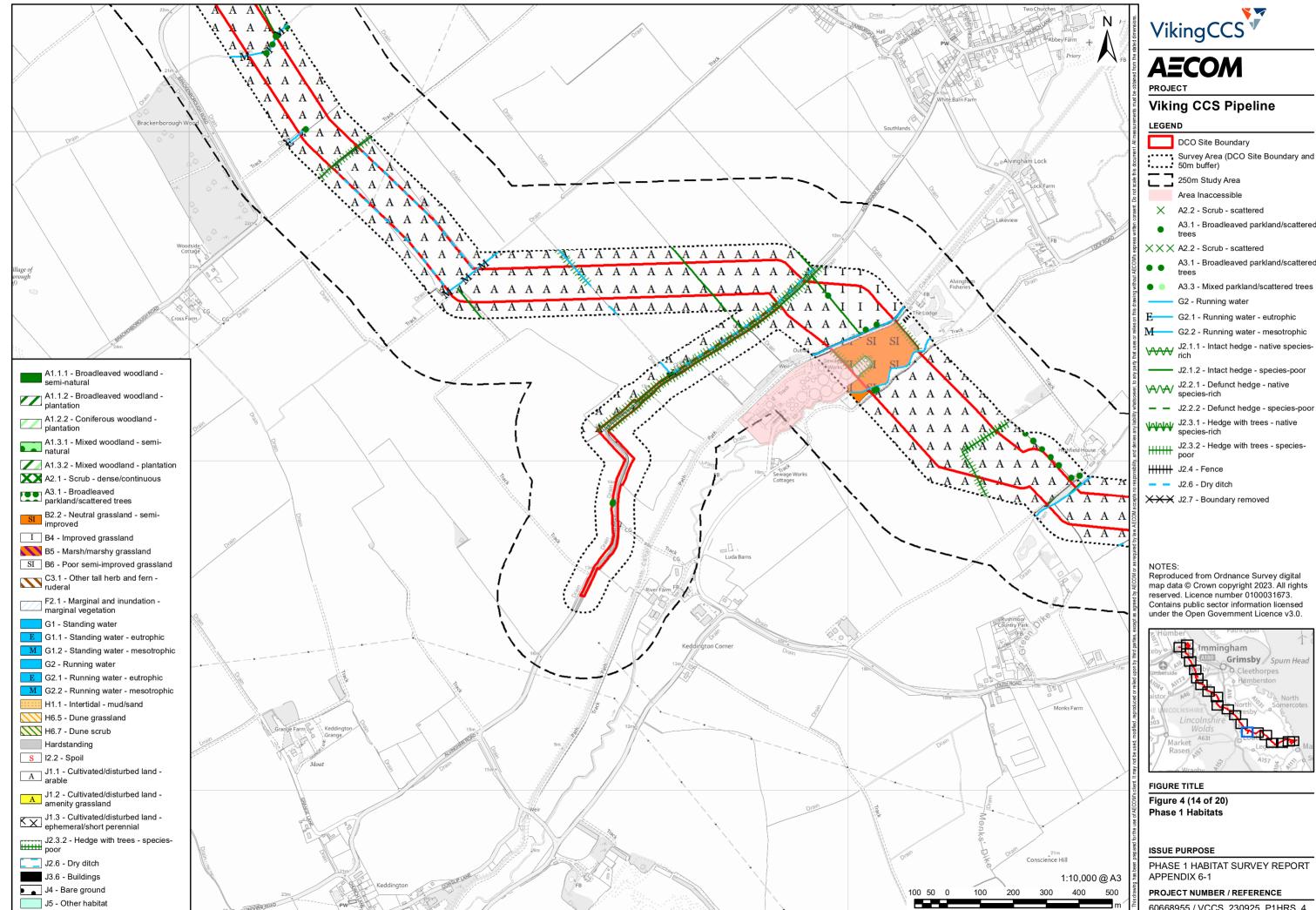
FIGURE TITLE

Figure 4 (13 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

Area Inaccessible

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

 \times \times A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

J2.3.1 - Hedge with trees - native

species-rich

J2.3.2 - Hedge with trees - species-poor

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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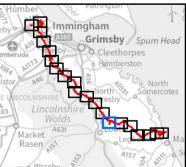


FIGURE TITLE

Figure 4 (14 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE



A3.1 - Broadleaved parkland/scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

- G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.2 - Intact hedge - species-poor

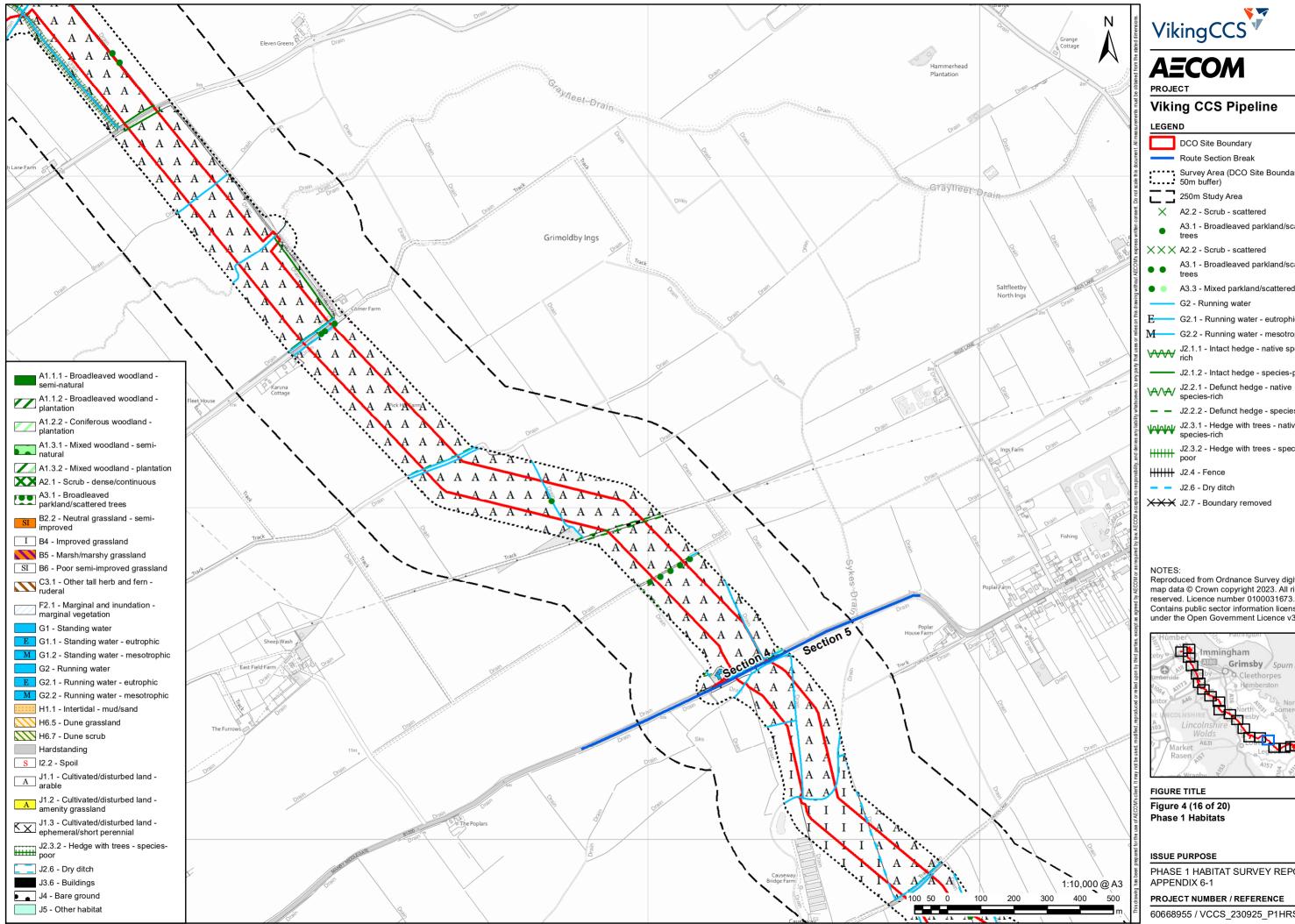
XXX J2.7 - Boundary removed

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PHASE 1 HABITAT SURVEY REPORT

PROJECT NUMBER / REFERENCE



Approved: LK



AECOM

PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Route Section Break

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

 $\times \times \times$ A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native

species-rich HHHH J2.3.2 - Hedge with trees - species-poor

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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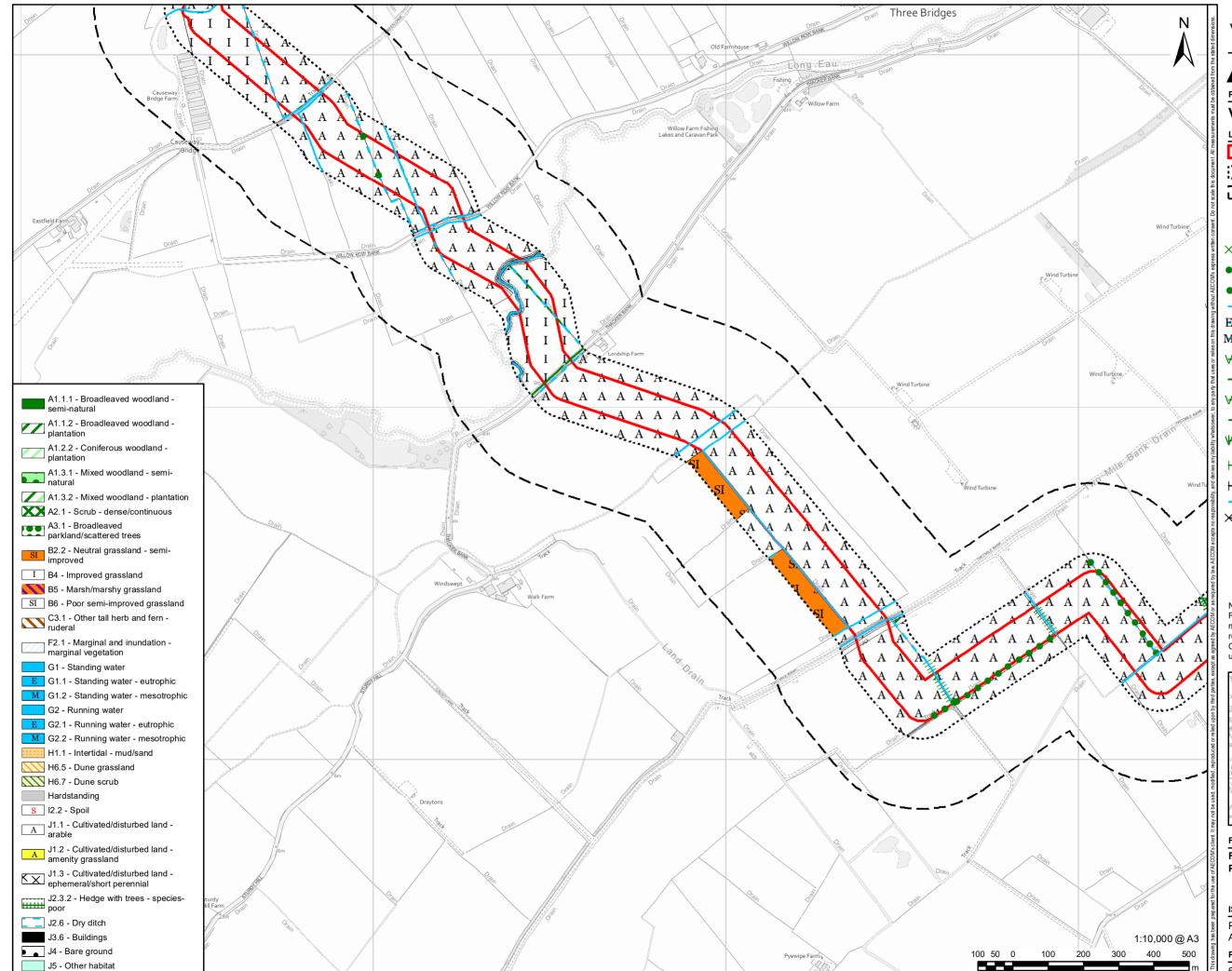
FIGURE TITLE

Figure 4 (16 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

- J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native

species-rich

J2.3.2 - Hedge with trees - species-

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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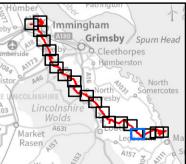


FIGURE TITLE

Figure 4 (17 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

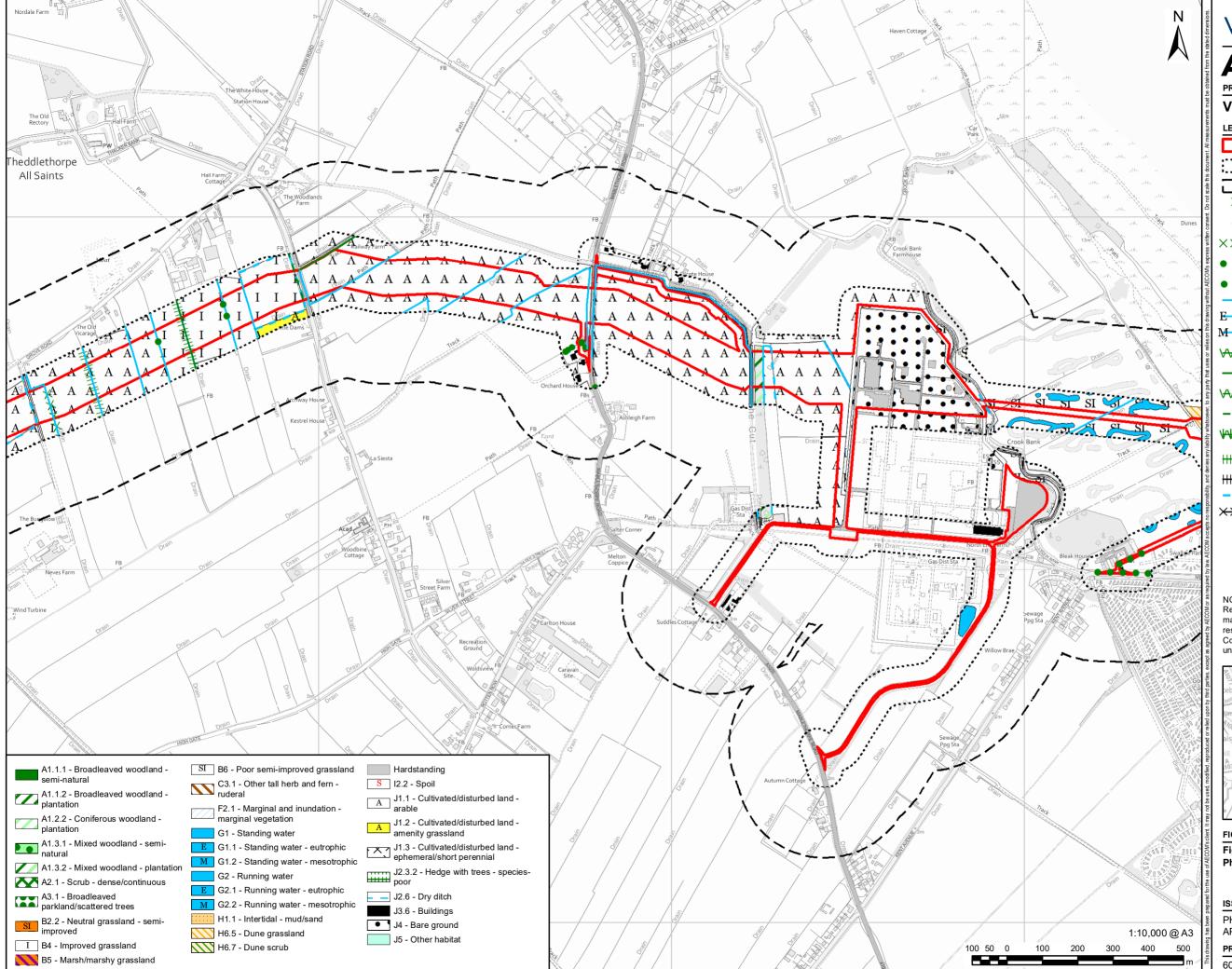
- G2.1 - Running water - eutrophic

XXX J2.7 - Boundary removed

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PHASE 1 HABITAT SURVEY REPORT





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

- G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-

 J2.1.2 - Intact hedge - species-poor J2.2.1 - Defunct hedge - native species-rich

J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - species-

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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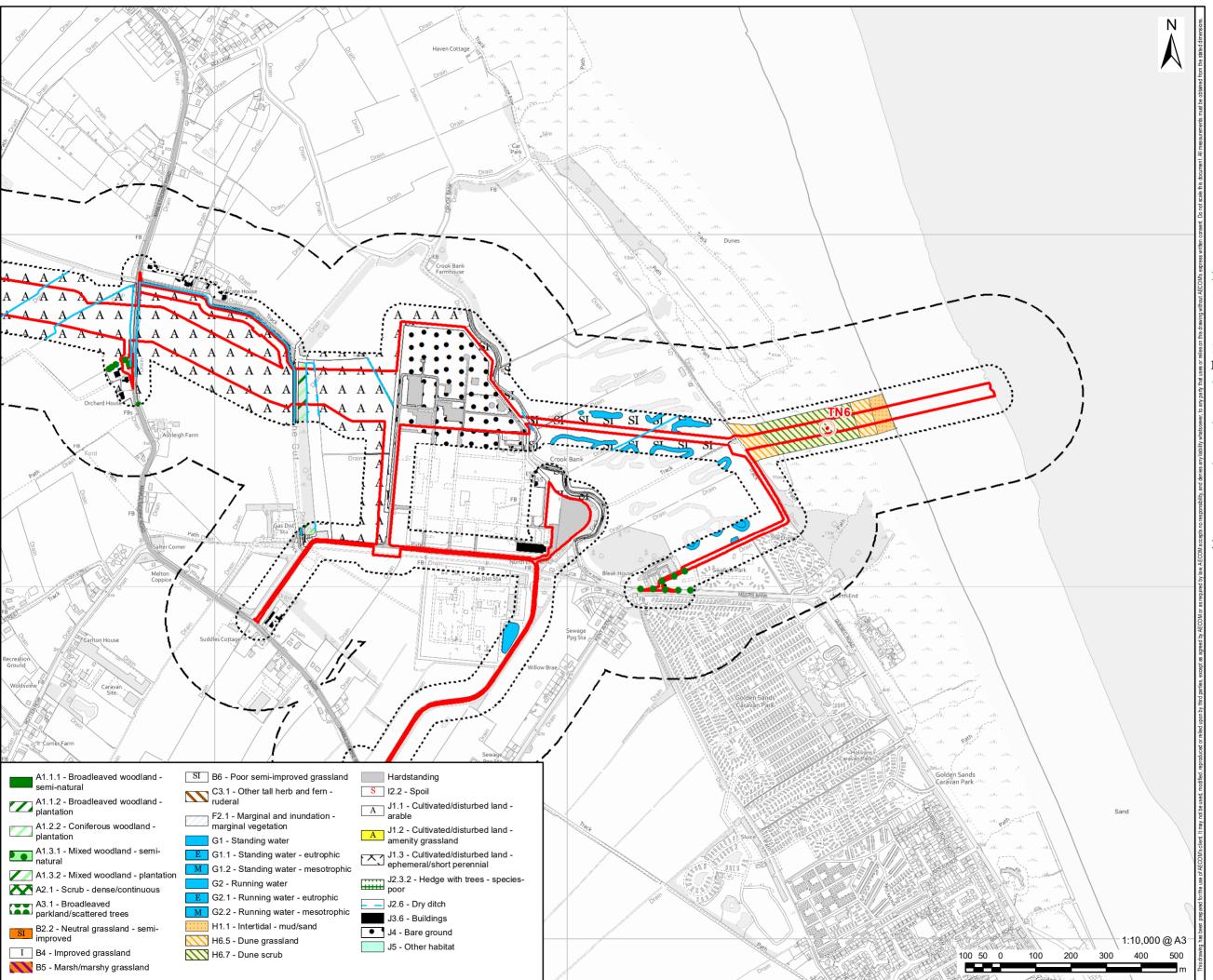
FIGURE TITLE

Figure 4 (19 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE





PROJECT

Viking CCS Pipeline

LEGEND

DCO Site Boundary

Survey Area (DCO Site Boundary and 50m buffer)

250m Study Area

Target Note

X A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

XXX A2.2 - Scrub - scattered

A3.1 - Broadleaved parkland/scattered

A3.3 - Mixed parkland/scattered trees

G2 - Running water

G2.1 - Running water - eutrophic

G2.2 - Running water - mesotrophic

J2.1.1 - Intact hedge - native species-rich

J2.1.2 - Intact hedge - species-poor

J2.2.1 - Defunct hedge - native species-rich

■ J2.2.2 - Defunct hedge - species-poor

J2.3.1 - Hedge with trees - native species-rich

J2.3.2 - Hedge with trees - species-poor

J2.4 - Fence

J2.6 - Dry ditch

XXX J2.7 - Boundary removed

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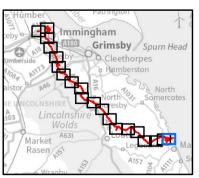


FIGURE TITLE

Figure 4 (20 of 20) Phase 1 Habitats

ISSUE PURPOSE

PHASE 1 HABITAT SURVEY REPORT APPENDIX 6-1

PROJECT NUMBER / REFERENCE



