

Viking CCS Pipeline

6.8 Outline Landscape and Ecological Management Plan – Revision B (Tracked)

Document Reference: EN070008/APP/6.8

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: July 2024

PINS Reference	Document Reference	Document Revision	Date
EN070008	EN070008/APP/6.8	Revision 1	October 2023
EN070008	EN070008/APP/6.8	Revision A	May 2024
<u>EN070008</u>	<u>EN070008/APP/6.8</u>	<u>Revision B</u>	<u>July 2024</u>

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Table of Contents

1	Introduction.....	3
1.1	Project Overview	3
1.2	Purpose and Structure of this Document.....	4
1.3	Objectives.....	5
1.4	Roles and Responsibilities.....	5
1.5	Relevant Legislation	7
1.6	Existing Landscape and Biodiversity Features	<u>1342</u>
2	Landscape and Ecology Strategy	<u>1514</u>
2.1	Landscape Strategy.....	<u>1514</u>
2.2	Overview Landscape Design Principles	<u>1615</u>
2.3	Ecology Strategy	<u>1615</u>
3	Management Prescriptions.....	<u>2019</u>
3.1	Introduction.....	<u>2019</u>
3.2	Native Hedgerows (Type 1 and 2)	<u>2120</u>
3.3	Tree and Shrub Planting.....	<u>2324</u>
3.4	Grassland.....	<u>2524</u>
3.5	Existing Vegetation	<u>2726</u>
4	Pre – and Post Construction Monitoring	<u>2827</u>
4.1	Habitats	<u>2827</u>
4.2	Species.....	<u>2827</u>
4.3	Landscape.....	<u>2827</u>
5	References	<u>3028</u>
	Appendix A Landscape Plans.....	<u>3230</u>

Figures

Appendix A - Figure 1: Washingdales Block Valve Station	<u>3334</u>
Appendix A - Figure 2: Thoroughfare Block Valve Stations	<u>3432</u>
Appendix A - Figure 3: Louth Road Block Valve Station	<u>3533</u>
Appendix A - Figure 4: Theddlethorpe Facility	<u>3634</u>

Tables

Table 1: Notable habitats within the DCO Site Boundary	<u>1413</u>
Table 2: Indicative mix for hedgerows	<u>2120</u>
Table 3: Proposed native trees.....	<u>2322</u>
Table 4: Proposed native tree and shrub mix	<u>2322</u>
Table 5: Indicative mix for low maintenance grassland.....	<u>2524</u>
Table 6: Indicative mix for species rich grassland	<u>2524</u>

1 Introduction

1.1 Project Overview

- 1.1.1 This Outline Landscape and Ecological Mitigation Plan (Outline LEMP) has been prepared on behalf of on behalf of Chrysaor Production (U.K.) Limited (the ‘Applicant’), a Harbour Energy group company, which intends to transport compressed and conditioned Carbon Dioxide (CO₂) from the delivery point at Immingham to storage in depleted gas reservoirs in the Southern North Sea.
- 1.1.2 This document forms part of a Development Consent Order (DCO) application and provides a framework for delivering the landscape and ecological strategy and the successful establishment and future management of proposed landscape works associated with the Viking Carbon Capture and Storage (CCS) Pipeline (hereafter referred to as ‘the Proposed Development’). It sets out the short and long-term measures and practices that will be implemented by the Applicant to establish, monitor and manage landscape and ecology mitigation measures embedded in the design.
- 1.1.3 The Proposed Development will comprise the construction, operation, maintenance, and decommissioning of the Immingham Facility, an onshore pipeline from Immingham to Theddlethorpe with three Block Valve Stations, the Theddlethorpe Facility, and an offshore pipeline tie-in and outlet up to Mean Low Water Springs (MLWS). The key components of the Viking CCS pipeline comprise the following and are described in more detail in *ES Volume II Chapter 3: Description of the Proposed Development (Application Document 6.2.3)*:
- Immingham Facility, described in more detail in Section 3.6;
 - Approximately 55.5 km buried 24 inch (") onshore steel pipeline (including cathodic protection), described in more detail in Section 3.7;
 - Three Block Valve Stations, described in more detail in Section 3.8;
 - Theddlethorpe Facility – both the preferred and alternative locations are described in more detail in Section 3.9;
 - Existing LOGGS Pipeline to the extent of the DCO limits at MLWS and shutdown and isolation valves described in more detail in Section 3.10; and
 - Dune Isolation Valve, described in more detail in Section 3.11.
- 1.1.4 The location of each of these facilities is shown on Figure 3-3 *ES Volume II Chapter 3: Description of the Proposed Development (Application Document 6.2.3)*. Additionally, a summary list of the key components split by each Local Planning Authority is included in Table 3-1 of Chapter 3.
- 1.1.5 As set out in the *Draft DCO (Application Document 2.1)*, a requirement will necessitate the submission and approval of a detailed Landscape and Ecology Management Plan (LEMP) to deliver the provisions as set-out in this Outline LEMP.
- 1.1.6 This Outline LEMP is a live document, the context of which will continue to be updated, refined and (where necessary) added to, based on ongoing discussions between the Applicant and statutory bodies and relevant Local Planning Authorities. It will be updated by the Applicant into a final detailed Landscape and Ecology Management Plan (LEMP) prior to the commencement of works in accordance with the Requirements contained in Schedule 2 of the *Draft DCO (Application Document 2.1)*.

Landscape Plans

- 1.1.7 As part of the DCO Application, Landscape Plans (Appendix A) have been produced for each of the Block Valve Stations and for the Theddlethorpe Facility, which sets out the proposed mitigation. These are as follows:
- Figure 1: Landscape Plan Washingdales Block Valve Station;
 - Figure 2: Landscape Plan Thoroughfare Block Valve Station;
 - Figure 3: Landscape Plan Louth Road Station Block Valve Station; and
 - Figure 4: Theddlethorpe Facility Option 2.
- 1.1.8 Specific landscape plans for Theddlethorpe Facility Option 1 have not been prepared as these facilities are located on the former TGT site which currently has planting and screening on its existing perimeter. Similarly, the Immingham Facility will be located on a currently industrial site and so this will benefit from wider landscaping plans which lie outside the plans for the Proposed Development.

1.2 Purpose and Structure of this Document

- 1.2.1 The purpose of this document is to set out the proposed strategy to mitigate the effects of the Proposed Development on landscape and biodiversity features and to enhance the biodiversity, landscape and green infrastructure (GI) value of the Proposed Development to secure compliance with relevant national and local planning policies.
- 1.2.2 The Proposed Development has been designed, as far as is practicable, to avoid or reduce effects on landscape and biodiversity features through development design and impact avoidance. Opportunities to secure net gains for landscape and biodiversity as part of the implementation of the Proposed Development have also been considered. This assessment process and the impact avoidance measures to be implemented are described in *ES Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)* and *ES Volume II Chapter 7: Landscape and Visual (Application Document 6.2.7)*.
- 1.2.3 This document outlines the landscape and biodiversity avoidance measures that would be implemented prior to, and during, construction of the Proposed Development, as well as the habitat restoration, enhancement, management, and monitoring measures to be implemented once the Proposed Development is operational. Implementation of these measures is proposed to be secured by the requirement for a detailed LEMP to be produced in accordance with this Outline LEMP.
- 1.2.4 In order to avoid potential conflicts in approach to impact avoidance and enhancement, this document identifies the measures required for both landscape and biodiversity together, to demonstrate a cohesive strategy.
- 1.2.5 The Outline LEMP is structured as follows:
- **Section 1.1** sets out the context, responsibilities and arrangements for delivery of the plan;
 - **Section 1.2** describes the landscape and ecology strategy for the Proposed Development which incorporates proposals for landscape and biodiversity impact mitigation.
 - **Section 1.3** details the measures required for the effective management and maintenance of the landscape and biodiversity mitigation proposals; and
 - **Section 1.4** describes post-construction monitoring to determine that the functions documented within this Outline LEMP are being achieved and whether remedial action may be required.

1.3 Objectives

1.3.1 The overarching objectives of the Outline LEMP are to:

- Integrate the Proposed Development into its landscape setting and avoid or reduce adverse ecological, and landscape and visual effects;
- Promote the conservation, protection and improvement of the physical and natural environment within the Proposed Development and its setting. The landscape framework should be seen as an integral part of the surrounding landscape;
- Diversify ecological value of existing habitats, for example through restoration and enhancement of hedgerows, restoration and creation of diverse habitats with high distinctiveness; and
- Guide the design and management of landscape and biodiversity components that respond to and enhance the character of the landscape, local distinctiveness and sense of place.

1.4 Roles and Responsibilities

1.4.1 The exact roles and responsibilities will be confirmed prior to construction; however, the following section provides an indication of the roles which are envisaged. Clearly establishing roles and responsibilities is vital to ensure the successful construction of the Proposed Development, including the implementation of the LEMP.

The Applicant

1.4.2 The Applicant will distribute the LEMP to all relevant personnel involved in the construction and long-term operation of the Proposed Development. These personnel will include the site manager and site operatives / contractors and visitors as appropriate. The Applicant will establish the appropriate roles and responsibilities for site staff as set out in the *Draft Construction Environmental Management Plan (CEMP) (ES Volume IV Appendix 3.1 (Application Document 6.4.3.1))*.

Environmental Clerk of Works

1.4.3 An Environmental or Ecological Clerk of Works will be appointed for the duration of the construction phase. The purpose of this appointment is to ensure that the environmental interests of areas that may be affected by the works are safeguarded. The Environmental Clerk of Works will have the appropriate authority to review Risk Assessments and Method Statements, oversee works and recommend action as appropriate, including temporarily stopping works where non-compliant working is observed, for example to safeguard protected species and their habitats, or where any other breaches of environmental legislation are likely to occur.

1.4.4 The Environmental Clerk of Works will ensure the implementation of, and compliance with, the provisions of the Construction and Environmental Management Plan (CEMP) and the mitigation contained within the Environmental Statement (ES) as well as licensing or other conditions imposed on the construction.

1.4.5 The Environmental Clerk of Works may be from a company who provide a general Clerk of Works who can liaise with a team of internal specialists (Technical Specialist Advisors) on specific environmental subjects, for example, ecology, soils, noise, air quality, or pollution where required throughout construction, or a suitably qualified individual.

1.4.6 In summary, the Environmental Clerk of Works is responsible for:

- Inspections of the Contractor's work site to ensure compliance with environmental standards and requirements;
- Weekly routine audits of the Contractor's compliance with the CEMP – site activities and record keeping;
- Monitoring or inspection of site activities in response to incidents, breaches of the CEMP or complaints received from a third party;
- Inspections of works to ensure that environmental mitigation measures incorporated into the design have been implemented;
- Implementation of corrective mitigation measures where proposed mitigation results in effects over and above those within any ES chapter, licence or planning conditions; and
- Delivering toolbox talks on environmental matters and sensitivities to the appropriate staff prior to works being undertaken.

Ecological Clerk of Works (ECoW)

- 1.4.7 An ECoW will be appointed by the Applicant to provide advice to the appointed contractor regarding ecological issues. The ECoW will check that ecological protection, mitigation and enhancement measures as detailed in this document are implemented. The ECoW will be a suitably qualified ecologist who is a competent and experienced field surveyor with protected and notable species identification skills, understanding of relevant legislation and appropriate guidelines to be able to provide guidance on mitigation and management of habitats and protected species. The ECoW will deliver a Toolbox Talk to the Site Manager / Principal Contractor prior to works commencing to outline the ecological protection, mitigation and enhancement measures specified in this document.

Landscape Clerk of Works (LCoW)

- 1.4.8 A LCoW will be appointed by the Applicant to provide advice and guidance to the appointed contractor regarding landscape issues. The LCoW will oversee the successful implementation and establishment of landscape measures detailed in this document. The LCoW will ensure compliance with design specifications and quality standards and that approved plans and specifications are adhered to through the construction and maintenance period. The LCoW will be a suitably qualified landscape professional with Chartered membership of the Landscape Institute.

Site Manager / Principal Contractor

- 1.4.9 The Contractor appointed by the Applicant to construct the Proposed Development will be responsible for establishing, managing and monitoring the implementation and establishment of landscape and ecological mitigation within the five-year establishment aftercare period. The Applicant will inspect and report on the success of establishment during this period. For more detail, please refer to Section 4.
- 1.4.10 The Site Manager will be responsible for ensuring that all relevant management and monitoring activities take place and keep a record of actions as evidence. The Site Manager should be responsible for contacting the ECoW in the event of uncertainties regarding ecological issues.
- 1.4.11 General responsibilities of the Site Manager will include:
- Supervising and monitoring the implementation and maintenance of protective or mitigation measures as set out in this document;

- Delivering and ensuring all site operatives and other site workers / visitors receive either a site introduction or tool box talk (with the support of the ECoW where necessary) so they are aware of any ecological constraints on Site;
- Consult with the ECoW for advice e.g., prior to, and during, site works for each development phase;
- Liaising with the client and all relevant stakeholders about ecological issues; and,
- Monitoring protection zones / buffers.

1.4.12 The site managers responsibilities may be undertaken on their behalf by an appropriate person under their instruction.

1.5 Relevant Legislation

1.5.1 The UK is no longer a member of the European Union (EU). EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation. EU legislation which applied directly or indirectly to the UK before 11.00 p.m. on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'.

1.5.2 The Secretary of State for the Environment, Food and Rural Affairs have made changes to parts of the Conservation of Habitats and Species Regulations 2017 (referred to as the 2017 Regulations) so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in England. All other processes or terms in the 2017 Regulations remain substantively unchanged and existing guidance is still relevant.

1.5.3 Key legislation relevant to the Proposed Development is summarised below.

Great Crested Newt

1.5.4 Great Crested Newt (*Triturus cristatus*) (GCN) are protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 ([Ref 1](#)[Ref 4](#)). This makes it an offence to deliberately capture, injure or kill a GCN; deliberately disturb a GCN; or damage or destroy a breeding site or resting place used by GCN.

1.5.5 Deliberate capture or killing is taken to include “accepting the possibility” of such capture or killing. Deliberate disturbance of GCN includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) to hibernate; or b) to affect significantly the local distribution or abundance of GCN.

1.5.6 Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from Natural England can be obtained to facilitate the works that would otherwise be illegal.

1.5.7 GCN are also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (WCA). This makes it an offence to intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb GCN in such a place.

1.5.8 Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 remain an offence under the Wildlife and Countryside Act 1981 ([Ref 2](#)[Ref 2](#)) although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

1.5.9 Although it does not afford any legal protection, GCN are listed as a Species of Principal Importance for biodiversity conservation in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 ([Ref 3](#)[Ref 3](#)).

1.5.10 Work within the DCO Site Boundary will take place under a District Level Licence (DLL) from Natural England. The DLL authorises acts that would otherwise be offences under The

Conservation of Habitats and Species Regulations 2017 (as amended) ([Ref 1](#)~~Ref 1~~) and Wildlife and Countryside Act 1981 (as amended) ([Ref 2](#)~~Ref 2~~). Any departure from the conditions of the licence may be an offence under that legislation. Please refer to Section 2.3.2 for further information on the DLL and measures to prevent harm to GCN.

Reptiles

- 1.5.11 Common species of reptile (common lizard *Zootoca vivipara*, slow worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus*) are protected against intentional killing and injury under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) ([Ref 2](#)~~Ref 2~~). There is no requirement for a licence where development works affect common species of reptiles. Instead, Natural England advise that where reptiles are present, they should be protected from any harm that might arise during the development works through appropriate mitigation.

Salmon and Freshwater Fisheries

- 1.5.12 The Salmon and Freshwater Fisheries Act 1975 ([Ref 4](#)~~Ref 4~~) covers the 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).
- 1.5.13 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.
- 1.5.14 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.

Eels

- 1.5.15 The Eels (England and Wales) Regulations 2009 ([Ref 5](#)~~Ref 5~~) 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.
- 1.5.16 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.
- 1.5.17 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".

Bats

- 1.5.18 All species of bat, their breeding sites and resting places are protected under the Habitats Regulations ([Ref 1](#)~~Ref 1~~) and Wildlife and Countryside Act 1981 (as amended) ([Ref 2](#)~~Ref 2~~). Regulation 43 of the Habitats Regulations makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats (which includes any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate or to affect significantly the local distribution or abundance of the species to which they belong);
- damage or destroy a breeding site or resting place of a bat; or
- possess, control, transport, sell or exchange, or offer for sale or exchange, any live or dead bat or part of a bat or anything derived from a bat or any part of a bat.

1.5.19 Under Section 9 of the WCA (s.9(4)(b), 9(4)(c) and 9(5) only), it is an offence (in relation to bats) to:

- intentionally or recklessly disturb a bat while it is occupying a structure or place of shelter or protection;
- intentionally or recklessly obstruct access to any structure or place used by a bat for shelter or protection; or
- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead bat or any part of, or anything derived from a bat (or be responsible for adverts suggesting the intention to do this).

1.5.20 Where development will result in damage to suitable habitat where bats are present, or risks harming or significantly disturbing bats, a European Protected Species Mitigation Licence is likely to be required to allow the works to proceed.

Water Vole

1.5.21 The water vole is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) ([Ref 2](#)~~Ref 2~~). This makes it an offence to:

- Intentionally capture, kill or injure water voles;
- Intentionally or recklessly damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care);
- Intentionally or recklessly disturb them in a place of shelter or protection (on purpose or by not taking enough care); and
- Possess, sell, control or transport live or dead water voles or parts of them (excluding water voles bred in captivity).

1.5.22 The Act provides a defence against the offences outlined above. However, the defence is only sustained if it can be argued that the potential offence was 'the incidental result of a lawful operation' and 'could not reasonably have been avoided' as set out in the Wildlife and Countryside Act 1981 (as amended) ([Ref 1](#)~~Ref 1~~). In order to demonstrate these two elements of the defence, as far as is reasonable, appropriate action would need to be taken to safeguard water vole and their shelters to ensure there is as little risk as possible of interfering with them. Short-term low-level disturbance which 'allows water vole to flee and then later return' is not considered likely to trigger an offence under the Wildlife and Countryside Act 1981 (as amended) ([Ref 1](#)~~Ref 1~~). Where development cannot avoid potential offences then a licence may be required.

Otter

1.5.23 Otter and their resting places receive protection under both British and European legislation. Under European legislation the otter is protected under EC Directive (92/43/EEC), being listed under Annexes Iia and Iva. This is implemented in Britain under the Conservation of

Habitats and Species Regulations, 2017 (as amended) ([Ref 1](#)~~Ref 1~~). Under this legislation it is an offence to “deliberately capture, injure or kill an otter; deliberate disturbance of otters; or damage or destroy a breeding site or resting place used by an otter.”

1.5.24 The otter is listed under Annexe II of the Bern Convention and is also protected under Schedule 5 and 6 of the WCA. Under the WCA it is a criminal offence to:

- intentionally or recklessly damage, destroy, or obstruct access to a place used by an otter for shelter or protection; and
- Possess, sell, control or transport live or dead otters, or parts of otters.

1.5.25 The disturbance offence within the Habitat Regulations is not concerned with levels of disturbance which would be unlikely to adversely affect otter. Under this legislation there would only be a conflict with the above legislation where disturbance is of sufficient extent or magnitude to:

- Impair the ability of otter to survive, to breed or reproduce, or to rear or nurture their young; or
- Significantly affect the local distribution or abundance of the species.

1.5.26 Where development cannot avoid potential offences, then a European Protected Species Mitigation Licence will be required.

Badger

1.5.27 Badgers are protected under the Protection of Badgers Act 1992 (the Act) ([Ref 6](#)~~Ref 6~~). Relevant offences under the Act may result from any action that intentionally or recklessly:

- Damages a badger sett or any part of it;
- Destroys a badger sett;
- Obstructs access to, or any entrance of, a badger sett; and
- Disturbs a badger when it is occupying a badger sett.

1.5.28 The Act 1992 ([Ref 6](#)~~Ref 6~~) provides a defence against the offences outlined above. However, the defence is only sustained if it can be argued that the unintentional damaging was ‘the incidental result of a lawful operation’ and ‘could not reasonably have been avoided’ as set out in the Act. In order to demonstrate these two elements of the defence, as far as is reasonable, appropriate action would need to be taken to safeguard badgers and their setts to ensure there is as little risk as possible of interfering with them.

1.5.29 Where development cannot avoid potential offences then it is possible to apply to Natural England for a development licence to derogate the Act. For reasons of animal welfare and to avoid destruction of setts containing breeding females with dependant cubs, development licences are only issued for sett closure between 1 July and 30 November inclusive.

1.5.30 The term ‘badger sett’ is normally understood to mean the system of tunnels and chambers, in which badgers live, and their entrances and immediate surrounds. The Act specifically defines a sett as ‘any structure or place which displays signs indicating current use by a badger’ ([Ref 6](#)~~Ref 6~~).

1.5.31 Natural England has also provided clarification on interpretation of what would constitute a disturbance offence ([Ref 8](#)~~Ref 8~~). This clarifies that in the view of Natural England, the 1992 Act ([Ref 6](#)~~Ref 6~~), and therefore the licensing system, is not concerned with ‘trivial’ levels of apparent disturbance at setts which would be unlikely to adversely affect any badgers present. There is no specified distance over which a disturbance offence would or would not apply. However, historically it has generally been accepted, except in exceptional circumstances involving activities likely to be disturbing a greater distance, that a 30m stand-

off is usually sufficient to mitigate for a potential disturbance offence ([Ref 9](#)~~Ref 9~~). Works within 30m may therefore require a licence, depending on the magnitude and duration of the relevant impact.

Nesting birds

- 1.5.32 All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended), with some species afforded greater protection under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). In addition to the protection from killing or taking that all birds receive; Schedule 1 birds and their young must not be disturbed at the nest.
- 1.5.33 There are no licensing purposes that explicitly cover development activities affecting wild birds.

Other Animals

- 1.5.34 All wild mammals are protected from unnecessary suffering under the Wild Mammals (Protection) Act 1996 ([Ref 10](#)~~Ref 10~~).

Hedgerows

- 1.5.35 The Hedgerow Regulations 1997 ([Ref 11](#)~~Ref 11~~) 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 Proposed Development by way of field survey, to determine whether any qualify as important under the ecological criteria.

Invasive Species

- 1.5.36 Part 14 of the Wildlife and Countryside Act 1981 (as amended) ([Ref 1](#)~~Ref 1~~) makes it unlawful to plant or otherwise grow in the wild any plant which is listed under Part II of Schedule 9. Part 14 of the Wildlife and Countryside Act 1981 (as amended) ([Ref 1](#)~~Ref 1~~) states that 'if any person plants or otherwise causes to grow in the wild, plants which are included in Part II of Schedule 9, he shall be guilty of an offence'. The Wildlife and Countryside Act 1981 (as amended) ([Ref 1](#)~~Ref 1~~) also states that persons must take reasonable all steps and must exercise due diligence to avoid committing an offence. It is not an offence to have plants listed under Schedule 9 on the land, it is an offence to cause the spread of these plants to new areas.
- 1.5.37 The Environmental Protection Act 1990 ([Ref 12](#)~~Ref 12~~) classifies soil and other waste containing viable propagules of INNS as controlled waste. This waste must be disposed of in accordance with the duty of care outlined in Section 34 of the 1990 Act.

Biodiversity Net Gain

- 1.5.38 It is government policy in NPS EN-1 that development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design and that such opportunities in and around developments should be maximised where appropriate and, in the National Planning Policy Framework (NPPF) 2023 ([Ref 13](#)~~Ref 13~~), that planning decisions should maximise impacts on and provide net gain for biodiversity.

~~1.5.39 Although delivery of BNG is not a legal requirement for NSIPs, the Applicant recognises the importance of BNG and is committed to delivering BNG that is proportionate to a project of this type. As delivery of BNG is not currently mandatory for NSIPs, it is not possible for the Applicant to take rights over land compulsorily for the purpose of delivering BNG, and opportunities to deliver BNG on site, as part of a buried pipeline project, are understandably limited. In addition, the Environment Act 2021 (once the relevant provisions are in operation)~~

~~includes a mandate for at least 10% Biodiversity Net Gain (BNG) for projects, including for Nationally Significant Infrastructure Projects (NSIPs).~~

~~1.5.40 However, the Applicant considers that where there will be a permanent loss of habitat at the above ground facilities, including their associated permanent access points and access tracks, it is proportionate to commit to delivering BNG. As such the Applicant has made a voluntary commitment to deliver a 10% net gain in biodiversity relating to the permanent habitat losses at the Immingham Facility, Theddlethorpe Facility, and Block Valve Stations. The Applicant will provide at least 10% BNG as part of the Proposed Development.~~

~~1.5.41~~1.5.39 Further information on BNG including an analysis of the BNG potential of the Proposed Development is provided in the Draft Biodiversity Net Gain Assessment (*Application Document 6.7.1*) and in the Biodiversity Net Gain Strategy (*Application Document 6.7.2*).

1.6 Existing Landscape and Biodiversity Features

Existing Landscape Features

- 1.6.1 The DCO Site Boundary around the Immingham Facility comprises industrial land with areas of hardstanding and [scattered scrub]. Areas of broadleaf plantation woodland and scrub lie within the DCO Site Boundary to the south of the Immingham Facility. The landscape features within the DCO Site Boundary between the Immingham Facility and the Theddlethorpe Facility consist of mainly agricultural fields under arable production, interspersed with individual trees, hedgerows, tree belts (linear), and small woodland blocks with small, isolated areas of neutral and amenity grassland. An area of parkland and woodland blocks are located at Barnoldby le Beck. The DCO Site boundary crosses numerous roads (including the A46, A16 and A18), farm tracks, watercourses (including drains, rivers and a canal) and two sections of railway line (between Stallingborough and Habrough and adjacent to the Immingham Facility).
- 1.6.2 There is an existing network of Public Rights of Way (PRoW) within the DCO Site Boundary and across the surrounding area. Details of the PRoWs located within the DCO Site Boundary are detailed in, and shown, on the Access and Rights of Way Plans (*Application Document 4.20*) and outlined in Table 1 of the Outline PRoW Management Plan (*Application Document 6.11*).

Existing Biodiversity Features

Statutory Designated Sites

- 1.6.3 There are four European designated sites within the DCO Site Boundary:
- The Humber Estuary SPA;
 - The Humber Estuary Ramsar;
 - Saltfleetby-Theddlethorpe Dunes and Gibraltar Point SAC; and,
 - Greater Wash SPA with marine components
- 1.6.4 There is one further European designated site within 10 km of the DCO Site Boundary - the Humber Estuary SAC, located 1.27 km north-east of the DCO Site Boundary at its closest point.
- 1.6.5 There are 15 nationally designated sites (i.e., Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR)) within 10 km of the DCO Site Boundary. There is one nationally designated site within the DCO Site Boundary, which is Saltfleetby - Theddlethorpe Dunes SSSI.
- 1.6.6 Statutory designated sites that are overlapped by, or within 10 km of the DCO Site Boundary are described within Table 6-7 of *ES Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)*. Figure 6-1 within *ES Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)* shows the locations of the Statutory Designated Sites in relation to the DCO Site Boundary.

Non-statutory Designated Sites

- 1.6.7 There are 33 non-statutory sites designated for their nature conservation value within 2 km of the DCO Site Boundary; these designations include Local Wildlife Sites (LWS), Sites of Nature Conservation Interest (SNCI) Local Wildlife Trust (LWT) sites or Roadside Nature Reserve (RNR) sites. These are summarised in Table 6-8 of Chapter 6 *ES Volume II (Application Document 6.2.6)*. The locations of non-statutory designated sites in relation to

the DCO Site Boundary are provided in Figure 6-2 within *ES Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)*.

Habitats

1.6.8 The following habitats of ecological importance are present within the DCO Site Boundary. The Locations of habitats are show in Figure 6.1 in *ES Volume II Chapter 6: Ecology and Biodiversity (Application Document 6.2.6)*.

Table 1: Notable habitats within the DCO Site Boundary

Habitat Type	Importance
Open mosaic habitat on previously developed land	Local importance
Semi-natural broadleaved woodland	Local importance
Broad-leaved plantation woodland	Local importance
Woodpasture and parkland	County importance
Scattered trees	Local importance
Veteran trees	National importance
Semi-improved grassland	Local importance
Open water (ponds)	Local importance
Running water	Local and county importance
Dune grassland, dune scrub and open dunes	International importance

Species

1.6.9 The desk study and field surveys confirmed presence or identified habitats suitable for the following species or species groups:

- Invertebrates – habitats at the proposed Immingham Facility support small heath butterfly (*Coenonympha pamphilus*);
- Amphibians – habitats within the DCO Site Boundary may support amphibians including GCN and common toad (*Bufo bufo*);
- Reptiles – habitats within the DCO Site Boundary may support common reptile species such as common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*) and grass snake (*Natrix Helvetica*);
- Fish – watercourses within the DCO Site Boundary may support fish;
- Birds – habitats within and adjacent to the DCO Site Boundary may support breeding and non-breeding birds (Including Schedule 1 species);
- Bats – habitats within the DCO Site Boundary support roosting, foraging and commuting bats;
- Water vole – watercourses within the DCO Site boundary support water vole (*Arvicola amphibius*);
- Otter – watercourses within the DCO site boundary are used by foraging and commuting otter (*Lutra lutra*);
- Badger – there are badger (*Meles meles*) setts present within the DCO Site Boundary;

- Brown hare – arable habitats within the DCO Site Boundary have suitability for brown hare (*Lepus europaeus*);
- Hedgehog – hedgerows, woodland and grassland habitats are suitable for hedgehog (*Erinaceus europaeus*);
- Aquatic macroinvertebrates and macrophytes – present within watercourses; and
- Invasive non-native species – present along watercourses.

2 Landscape and Ecology Strategy

2.1 Landscape Strategy

- 2.1.1 Good design has been a key consideration from the outset. The EIA has informed the iterative design process, guided by design principles developed specifically to address the opportunities and constraints presented by the Proposed Development. These principles have been developed in response to policy requirements, published landscape character assessment guidance and fieldwork analysis.
- 2.1.2 With reference to the Landscape Plans (Appendix A), the following design mitigation has been embedded in the Proposed Development to reduce effects on the environment, including landscape character, visual amenity, and biodiversity. In developing the landscape design strategy, particular consideration was given to:
- The recommendations contained within relevant landscape guidelines, including Natural England Statements of Environmental Opportunity (SEO) outlined in the profiles for NCA 41: Humber Estuary ([Ref 12](#)~~Ref 12~~), NCA 42: Lincolnshire Coast and Marshes ([Ref 15](#)~~Ref 15~~), and NCA 43: Lincolnshire Wolds ([Ref 16](#)~~Ref 16~~); and
 - Guidance contained within the Landscape Institute's Infrastructure Technical Guidance Note 04/20 ([Ref 17](#)~~Ref 17~~).
- 2.1.3 The overall objective of the landscape design is to integrate the Proposed Development into its landscape setting and avoid or reduce adverse landscape and visual effects. The design achieves this objective whilst maximising opportunities to deliver net gains in biodiversity. Accordingly, the landscape design aims to achieve the following:
- To integrate the Proposed Development into the existing landscape pattern as far as possible by utilising and following existing features, including vegetation;
 - To adopt a mitigation hierarchy to avoid loss of habitats where possible and to minimise the loss of vegetation where loss is unavoidable within the constraints of the Proposed Development;
 - To replace habitat lost due to the construction of the Proposed Development and introduce new habitats within the Block Valve Stations and Theddlethorpe Facility through areas of new planting; and
 - To filter and screen prominent components of the Proposed Development in views from visual receptors.
- 2.1.4 Details of the landscape measures embedded into the Proposed Development design, including a summary of their environmental functions and objectives, is presented in *ES Volume II Chapter 3: Description of the Proposed Development (Application Document 6.2.3)* and *ES Volume II Chapter 7: Landscape and Visual (Application Document 6.2.7)*.

2.2 Overview Landscape Design Principles

2.2.1 This section describes the landscape design principles which underpin the landscape design strategy and explains how they have been applied to the design of the Proposed Development.

2.2.2 The landscape proposals have been developed in line with the Good Practice Guide (041) (~~Ref 18~~[Ref 18](#)) which provides guidance when planting in the vicinity of high pressure pipelines.

Reinstatement of existing landscape features

2.2.3 Sections of hedgerows or trees removed during the construction stage will be reinstated in line with the guidance outlined in the Good Practice Guide, to at least a similar style and quality to those that were removed.

New planting to block valve stations and Theddlethorpe Facility

2.2.4 The Block Valve Stations would include a 10m wide planting strip which will provide screening and integrate the proposed infrastructure into the landscape using the planting distances as outlined in the Good Practice Guide. The proposed landscape elements for new planting is described in the landscape mitigation section below.

Landscape mitigation

2.2.5 The outline landscape planting plans for the Block Valve Stations and the Theddlethorpe Facility are shown on in Appendix A and contain the following key elements.

- Tree/ shrub planting: native planting using species typical of the local area and existing landscape will be planted along the boundaries of the permanent above ground structure sites to provide visual mitigation around the periphery of the site and habitat connectivity; and
- Replacement planting: native shallow-rooting hedgerow species typical of the local area and existing landscape will be planted within the pipeline easement. To prevent future root damage to the pipeline, no trees will be planted within the pipeline easement.

2.2.6 The Landscape Plans define the extent and location of the proposed landscape features for the Block Valve Stations and Theddlethorpe Facility. The proposed landscape elements will include the following:

- Native Hedgerow Type 1 (over pipeline);
- Native Hedgerow Type 2;
- Native tree planting;
- Native shrubs and trees;
- Low maintenance grassland; and
- Species rich grassland.

2.3 Ecology Strategy

Pre-construction Site Walkover

2.3.1 A pre-commencement walkover survey will be undertaken by the ECoW prior to works commencing. The date of this survey will depend upon the start date for construction and

the schedule of works. The purpose of the walkover will be to review the site conditions prior to works commencing, to identify any changes on site or ecological constraints.

Great Crested Newts

2.3.2 Work within the DCO Site Boundary will take place under a DLL from Natural England (*refer to ES Volume IV Appendix 6.9 (Application Document 6.4.6.9)*). The licence will permit acts, subject to licence conditions, including killing, injury, disturbance, capture and transport of GCN, as well as damage and destruction of their breeding sites and resting places. Impacts of development progressing under the Licence will be fully compensated for by off-site habitat provision that is being paid for by the Applicant. However, reasonable measures can be undertaken to minimise suffering to any GCN which may be present within or immediately adjacent to the development footprint.

2.3.3 The ECoW will provide a toolbox talk prior to the works commencing to outline:

- The terms and conditions of the DLL;
- Identification of GCN;
- How to minimise the risk of harming GCN; and,
- What to do if GCN or other amphibians are found during the works.

2.3.4 Any areas of potentially suitable habitat will be noted during the pre-commencement walkover and communicated to the Site Manager.

Reptiles

2.3.5 Any areas of potentially suitable habitat will be noted during the pre-commencement walkover and communicated to the Site Manager.

2.3.6 Where suitable habitat is identified, the area will be hand searched prior to clearance, or the vegetation managed to discourage reptiles from the working area. This should only be completed during suitable weather conditions and will involve the phased mowing or strimming of vegetation. Vegetation will first be cut to a height of 250 mm using a strimmer and then after at least 2 hours cut to 100 mm or less. If reptiles are encountered at any time, then works in that area will cease until the reptiles have moved from the working area and the ECoW advises that works can proceed.

Nesting Birds

2.3.7 Where possible, vegetation clearance works will be completed outside of the nesting bird season (which is from March to September). If this is not possible, each area of habitat to be cleared will be checked for nesting birds prior to clearance (a maximum of 48 hours before works commencing) by the ECoW. If an active nest is found, then the nest and its immediate surroundings will need to be left undisturbed until nesting is complete and the birds have fledged. A suitable species dependent buffer will need to be implemented (as advised by the ECoW).

2.3.8 Ground nesting species may be dissuaded from nesting in construction/site access routes by removing the surface vegetation from the desired area before the breeding season commences. Where this is not possible bird deterrent measures will be deployed to deter birds from nesting, followed by the completion of a pre works survey to check for presence of nests.

2.3.9 If Schedule 1 species are found breeding within the working area, works will stop immediately and Natural England advised.

Roosting Bats

- 2.3.10 Trees with moderate and high suitability for roosting bats have been subject to emergence / re-entry surveys. There are two roosts confirmed within the DCO Site Boundary in T10 and T35 (refer to *ES Volume IV Appendix 6.2 (Application Document 6.4.6.2)*).
- 2.3.11 The ECoW will highlight any confirmed roosts or trees with suitability for roosting bats during the pre-construction walkover survey. If possible, the tree with a confirmed bat roost will be retained, and a suitable buffer implemented to avoid disturbance (as advised by the EcoW). If it is not possible to retain the tree, a European Protected Species Mitigation Licence (EPSML) from Natural England will be required.
- 2.3.12 With reference to CIEEM guidelines ([Ref 19](#)~~Ref 19~~), where survey data is older than 18 months, and trees have high or moderate suitability for roosting bats, update surveys to confirm presence / absence will be completed. Update surveys will only be necessary where impacts on trees cannot be avoided.

Otter

- 2.3.13 Watercourses within the DCO Site Boundary have been surveyed for otter (*ES Volume IV Appendix 6.3 (Application Document 6.4.6.3)*). The ECoW will check for any new otter resting places (holts / couches) during the pre-commencement walkover survey. If an otter resting place is found, an appropriate buffer will be implemented. If it is not possible to avoid disturbance of otter, a EPSML from Natural England will be required. Where survey data is older than 18 months, update surveys will be necessary.

Water Vole

- 2.3.14 Watercourses within the DCO Site Boundary have been surveyed for water vole (*ES Volume IV Appendix 6-3 (Application Document 6.4.6.3)*). Where water vole will be disturbed, works will be completed under a mitigation licence. Appropriate working methods and mitigation measures will be detailed in the mitigation licence application.

Badger

- 2.3.15 Habitats within the DCO Site Boundary plus a 50 m buffer have been surveyed for badger (*ES Volume IV Appendix 6-4 (Application Document 6.4.6.4)*). Seven active badger setts were identified within the survey area and five badger setts will require closure under licence.
- 2.3.16 Indicative location for artificial setts and full details of the mitigation strategy are provided within the confidential badger report (*ES Volume IV Appendix 6-4 (Application Document 6.4.6.4)*). Artificial setts will be created at least 6 months prior to the time that any main setts will be closed. To encourage badgers to use the new sett, soil from the spoil heap of the main setts will be taken and placed within and around the entrances of the artificial setts, a regime of laying baits would also be used actioned to encourage the badger clan to find and start using the new sett.
- 2.3.17 The new setts will be monitored for signs of use using a combination of cameras to record activity and sand traps to capture footprints and any other field signs. Main setts will only be closed once evidence of the use of the artificial setts has been recorded.

Hedgehog

- 2.3.18 The site contains habitats suitable for hedgehog. Any areas of dense vegetation, refugia or potential hedgehog nests will be checked and removed under supervision of the ECoW. Any individuals found will be moved to a safe area away from the construction area. Brash piles should not be removed between November and February or where temperatures are below 5°C to avoid disturbing hibernating hedgehogs.

Invasive Species

- 2.3.19 Any invasive species present within the site boundary will be noted during the site walkover. It should be noted that invasive species may not be visible during the winter months, therefore an update walkover may be required depending upon the start date for construction and the schedule of works. Areas of invasive species will be fenced off and a specialist invasive species contractor appointed to treat and / or remove from site.

Impact Avoidance

- 2.3.20 The Proposed Development has been designed to avoid the temporary or permanent loss of notable habitats (see [Table 1](#)~~Table 4~~ above), as far as is practicable.
- 2.3.21 The impact avoidance measures outlined below will be implemented as appropriate to the relevant phase of the Proposed Development, the purpose being to reduce the impact of works on landscape and biodiversity features and to ensure legislative compliance.
- 2.3.22 Standard environmental best practice and mitigation will be implemented to ensure construction and operation of the Proposed Development complies with legislation relating to protected species. It will also ensure the Proposed Development does not compromise the local conservation status of ecological receptors present within or in the vicinity of the DCO Site Boundary.

Updated Surveys

- 2.3.23 Where survey data is over 18 months old, update surveys may be required to inform mitigation or licensing.

Protected Species Licences

- 2.3.24 Any necessary protected species licences will be applied for and obtained prior to undertaking any works that might result in offences under the relevant legislation.

Tree Works

- 2.3.25 Where works in close proximity to retained trees cannot be practicably avoided, these works would be undertaken in accordance with current best practice at the time of the works. In January 2023, current best practice is defined in:
- British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations ([Ref 20](#)~~Ref-20~~); and
 - National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.
- 2.3.26 All necessary protective fencing would be installed prior to the commencement of any site clearance or construction works. This would be set out in Arboricultural Reports and Arboricultural Method Statements prepared pre-construction, pursuant to the DCO.

Hedgerow Works

- 2.3.27 The Proposed Development has been routed and designed to reduce the loss of and avoid significant impacts on existing landscape features. Where this is not possible, any impacted area of hedgerow will be replanted where feasible upon completion of the construction phase.

Watercourses and Bankside Vegetation

- 2.3.28 The Proposed Development has been routed and designed to reduce or avoid significant impacts on existing watercourses and bankside vegetation. Where this is not possible, any

impacted area of bankside vegetation will be replanted where feasible upon completion of the construction phase. A pre-construction Hydromorphological Survey of all proposed open-cut watercourse crossings will be undertaken to inform a Channel Reinstatement Scheme. This will ensure that the channel is reinstated as found or better, with riparian bankside reinstatement (either by re-planting or allowing to re-vegetate naturally) to return the watercourse corridor to at least its original condition. These measures would be controlled and implemented through the detailed CEMP.

- 2.3.29 Where impacts on fish cannot be avoided, such as damming and/or de-watering for open-cut techniques, fish removal and relocation works may be necessary. This would require an application to the Environment Agency for authorisation to use fishing equipment other than rod and line.

Precautionary Working Methods

- 2.3.30 Precautionary working methods would be adopted to minimise potential adverse effects on protected/notable species prior to and during construction. Precautionary working method statements would be produced as necessary to specify working requirements and other necessary impact avoidance measures. These measures would be controlled and implemented through the detailed CEMP produced pre-construction, pursuant to the DCO.

Animal Welfare Requirements

- 2.3.31 Construction excavations have the potential to trap wildlife, such as badger and otter, and result in offences under animal welfare legislation. Implementation of measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas and preventing them from falling into and becoming trapped in excavations. No excavations will remain open overnight and if excavations are required to be left open, ramps will be provided to allow animals a means of escape.

3 Management Prescriptions

3.1 Introduction

- 3.1.1 This section describes how existing and new landscape elements illustrated on the Landscape Plans will be protected or implemented during construction, maintained during the first five years following implementation of each planting phase and managed in the long-term until decommissioning of the Proposed Development. The landscape elements are:

- Native Hedgerow Type 1 (over pipeline);
- Native Hedgerow Type 2 with trees;
- Native tree planting;
- Native shrubs and trees;
- Low maintenance grassland; and
- Species rich grassland.

- 3.1.2 Landscape elements, such as hedgerows, trees, and grassland removed along the pipeline route will be reinstated and the area made good to the landscapes former condition. Reinstated vegetation will be implemented in line with the landscape elements outlined below, however, species mixes may vary from the inactive lists due to local variations in

species and habitat elements, and subject to restrictions for planting over and around pipeline easements.

- 3.1.3 National Grid Electricity Transmission (NGET) require that if a landscape scheme is proposed, it is requested that only slow and low growing species of trees and shrubs are planted beneath and adjacent to any existing overhead lines to reduce the risk of growth to a height which compromises statutory safety clearances. Statutory safety clearances will be taken into account for all reinstatement planting.

3.2 Native Hedgerows (Type 1 and 2)

Function

- 3.2.1 New native hedgerows, once established, will assist in integrating the Proposed Development into the existing landscape and provide habitat connectivity. Native hedgerow Type 1 to contain shallow rooting species within easement of the pipeline and native hedgerow Type 2 to contain native tree species.

Implementation

- 3.2.2 The locations for proposed native hedgerows (Types 1 and 2) are illustrated on the Landscape Plans (Appendix A).
- 3.2.3 Hedge trenches shall be dug 450mm wide by 450mm deep, the base of which shall be broken up prior to returning backfill mixture. All stock to be supplied bare root if in season and container grown if planted out of season. New planting to be adequately protected from mammalian pests.
- 3.2.4 A specification for hedgerows will be developed based on the indicative species, sizes and percentages presented in **Table 2**. Larger stock will be used for individual trees within hedgerows, with reference to the species set out in **Table 3**.
- 3.2.5 **Table 2** provides indicative species mixes for hedgerows type 1 and 2.

Table 2: Indicative mix for hedgerows

Hedgerow Mix Type 1			
Species	% Mix	Density	Specification
Prunus spinosa	25%	5/m	BR whips, selected to 900mm, except Ilex 9cm pot (30-40cm). Planted in a double staggered row at 5No. plants per linear metre/
Corylus avellana	30%	5/m	
Crataegus monogyna	20%	5/m	
Rosa canina	2.5%	5/m	
Ilex aquifolium	15%	5/m	
Viburnum opulus	7.5%	5/m	
Hedgerow Mix Type 2			
Prunus spinosa	40%	5/m	
Corylus avellana	15%	5/m	
Crataegus monogyna	30%	5/m	

Hedgerow Mix Type 1			
Species	% Mix	Density	Specification
Euonymus europaeus	15%	2/m	BR whips, selected to 900mm, except Ilex 9cm pot (30-40cm). Planted in a double staggered row at 5No. plants per linear metre/

Establishment and Maintenance

3.2.6 A detailed plan for the establishment and management of new hedgerows will be developed for the five year establishment maintenance period.

3.2.7 The aim of establishment maintenance will be to support the early stages of growth to encourage the canopy to close, reducing future management requirements to address competition from weeds. This is based on the following principles and outline prescriptions:

- Maintain a 0.5 metre weed free strip either side of hedgerow and a 1 metre weed-free circle around trees through chemical and mechanical control;
- Water new plants to minimise failures in periods of drought;
- Remove litter, rubbish, and debris from planted areas throughout the year;
- Re-firm soil around roots to ensure plants are supported and upright in spring each year;
- Inspect and adjust guards in spring and autumn;
- Check and record failed or defective plants in September annually;
- Replace failed or defective plants with matching species of the same size during the next planting season after failure;
- LCoW to undertake a quarterly check of plants to record their growth and condition; and
- Trim hedge in November and December in the fifth maintenance year to promote bushy growth.

Long Term Management

3.2.8 The long-term management of new and existing hedgerows will focus on the following interventions within the Block Valve Stations and Theddlethorpe Facility:

- Hedgerows will be managed on a three-year rotation with only one side of the hedgerow cut in any one year to help develop the hedgerow structure;
- Cutting will be carried out at the end of the winter in February, thereby retaining berries through the winter months for wildlife and avoiding the bird breeding season;
- Overgrowing or overhanging branches will be removed from any pathways, private tracks or adjacent public roads to keep them unobstructed;
- Dead, over-mature or dying hedgerow trees will be subject to removal where they are considered dangerous on health and safety grounds, and in accordance with any protected species constraints; and
- Monitoring will be undertaken to detect any significant changes in hedgerow health and condition. Checks will be made every three years, using fixed-point photography.

3.3 Tree and Shrub Planting

Function

3.3.1 Tree and shrub planting once established, will assist in integrating the Proposed Development into the existing landscape, assist with screening the built structures associated with the Block Valve Stations and Theddlethorpe Facility to reduce adverse effects on the setting of heritage assets and provide habitat connectivity.

Implementation

3.3.2 The locations of proposed trees and shrubs are illustrated on the Landscape Plans (Appendix A).

3.3.3 Trees shall be set in pits 900mm diameter by 900mm depth. The base of the tree pit is to be broken up to a depth of 200mm and backfilled with topsoil consolidated in layers in layers to allow the tree to be placed at the correct depth.

3.3.4 Each tree shall be planted to the nursery line and secured with stakes and ties, including irrigation pipe.

3.3.5 New planting to be adequately protected from mammalian pests.

3.3.6 A specification for tree and shrub belts will be developed based on the indicative species, sizes and percentages presented in Table 3 and Table 4.

3.3.7 **Table 3** provides indicative species mixes for individual trees.

Table 3: Proposed native trees

Botanical name	Common name	Girth	Specification
Acer campestre	Field Maple	14-16cm	Extra Heavy Standard
Betula pendula	Silver Birch	12-14cm and 14-16cm	Heavy Standard and Extra Heavy Standard
Prunus avium	Wild Cherry	14-16cm	Extra Heavy Standard
Sorbus aucuparia	Rowan	12-14cm and 14-16cm	Heavy Standard and Extra Heavy Standard
Tilia cordata	Small-leaved Lime	14-16cm	Extra Heavy Standard

3.3.8 **Table 4** provides indicative species mixes for native tree and shrub mix.

Table 4: Proposed native tree and shrub mix

Botanical name	Common name	Density	Specification	% Mix
Acer campestre	Field Maple	2 Ctr	BR whips selected to 900mm	30%
Acer campestre	Field Maple	2 Ctr	BR feather selected to 180-250cm	5%
Corylus avellana	Hazel	2 Ctr	BR whips selected to 900mm	35%

Botanical name	Common name	Density	Specification	% Mix
<i>Crataegus monogyna</i>	Hawthorn	2 Ctr	BR whips selected to 900mm	10%
<i>Malus sylvestris</i>	Crab Apple	2 Ctr	BR whips selected to 900mm	5%
<i>Prunus avium</i>	Wild Cherry	2 Ctr	BR whips selected to 900mm	4%
<i>Prunus avium</i>	Wild Cherry	2 Ctr	BR feather selected to 180-250cm	1%
<i>Ilex aquifolium</i>	Holly	2 Ctr	2lt pot 40-60cm	5%
<i>Prunus spinosa</i>	Blackthorn	2 Ctr	BR whips selected to 900mm	3%
<i>Rosa Canina</i>	Dog Rose	2 Ctr	40-60cm bare root transplant	3%

Establishment Maintenance

- 3.3.9 A detailed plan for the establishment and management of new trees and shrubs will be developed for the five year establishment maintenance period.
- 3.3.10 The aim of establishment maintenance will be to support the early stages of growth to encourage busy growth and the canopy to close, reducing future management requirements to address competition from weeds. The trees and shrubs will be maintained in line the recommendations of a LCoW.
- 3.3.11 Establishment maintenance will be based on the following principles and outline prescriptions:
- Maintain a 1 metre weed-free circle around trees and shrubs through mechanical control;
 - Water new plants to minimise failures in periods of drought;
 - Remove litter, rubbish, and debris from planted areas throughout the year;
 - Re-firm soil around roots to ensure plants are supported and upright in Spring;
 - Inspect and adjust guards, ties and stakes in Spring and Autumn and after strong wind events;
 - Check and record failed or defective plants in September annually;
 - Replace failed or defective plants with matching species of the same size during the next planting season after failure; and
 - Undertake quarterly check of plants to record their growth and condition.

Long Term Management

- 3.3.12 The long-term management of new tree and shrub belts will focus on the following interventions within the Proposed Development:
- 3.3.13 All woodland, woodland buffer and native tree belt planting plots will undergo an annual condition assessment and an appropriate programme of works developed to address changes in condition and site requirements;
- 3.3.14 From year 5 onwards, guards, ties and stakes will be removed from plants;

- 3.3.15 Between years 7 and 10, planted areas will be reviewed and thinned out as necessary to remove any poor or weak specimens, which will facilitate other specimens to flourish and provide space for trees and shrubs to further establish;
- 3.3.16 The understorey of woodland, woodland buffers and native tree belts will be coppiced in stages to minimise disturbance to wildlife, as required, as part of good woodland management;
- 3.3.17 Arisings from thinning or other woodland management functions will be retained on site in the form of dedicated brush and wood piles or wind-rows, for the benefit for fungi, lichen, and invertebrates; and
- 3.3.18 Where necessary, arisings from woodland management will be chipped and spread to a depth no greater than 75mm in woodland areas.

3.4 Grassland

Function

- 3.4.1 A mosaic of grassland types varying in species richness will be established across the Block Valve Stations and Theddlethorpe Facility. Broadly the grassland mosaic will comprise:
 - Low maintenance grassland of moderate species richness to areas requiring maintenance access and verges; and
 - Species rich grassland in areas over pipeline.

Implementation

- 3.4.2 The locations for creating semi-improved grassland are illustrated on the Landscape Plans (Appendix A). The exact location and proportion of margin types within the conservation margins will be tailored to the needs of the site’s biodiversity.
- 3.4.3 A specification for low maintenance grassland will be developed based on the indicative mix presented in **Table 5**. This may be subject to change based on the needs of the site’s biodiversity and prevailing soil types.

Table 5: Indicative mix for low maintenance grassland

Mix	Specification
Basic General Purpose Meadow Mixture EM1 - Emorsgate Seeds (wildseed.co.uk) 4g/m2	EM1 is a complete mix composed of 10% native wild flowers and 90% slow growing grasses (by weight). The flower and grass components are also available to order separately as EM1F for the flower component and EG1 for the grass component. **From September 2023 this mixture’s composition will change and will contain Yellow Rattle**

- 3.4.4 A specification for species rich grassland will be developed based on the indicative species, percentages presented in **Table 6**. This may be subject to change based on the needs of the site’s biodiversity and prevailing soil types.

Table 6: Indicative mix for species rich grassland

Botanical name	Common name	% Mix
Wildflowers (10%)		

Botanical name	Common name	% Mix
<i>Achillea millefolium</i>	Yarrow	0.3%
<i>Centaurea nigra</i>	Common Knapweed	1.5%
<i>Leucanthemum vulgare</i>	Oxeye Daisy	1.5%
<i>Malva moschata</i>	Musk Mallow	1.5%
<i>Plantago lanceolata</i>	Ribwort Plantain	3%
<i>Poterium sanguisorba</i> ssp <i>sanguisorba</i>	Salad Burnet	1%
<i>Ranunculus acris</i>	Meadow Buttercup	0.7%
<i>Daucus carota</i>	Wild Carrot	0.5%
Grasses (90%)		
<i>Agrostis capillaris</i>	Common Bent	9%
<i>Cynosurus cristatus</i>	Crested Dogstail	31.5%
<i>Festuca rubra</i>	Red Fescue	27%
<i>Phleum bertolonii</i>	Smaller Cat's-tail	4.5%
<i>Poa pratensis</i>	Smooth-stalked Meadow-grass	18%

3.4.5 The following steps and working methods will be included in the specification:

- Where possible, seed will be obtained from a local source for the purpose of maintaining continuity with local species-rich grasslands;
- Receiving soils will be prepared to reduce nutrients. This could include spraying with a herbicide to remove existing material and incorporating a substrate to reduce nutrient levels or removing topsoil to expose the sub-soil;
- Once the nutrient level is reduced, all clods will be broken up and alien material (such as plastics and metals) above 50mm in size will be removed. The top 50mm of the soil will then be raked to prepare a fine tilth for the seedbed. The raking will occur immediately before sowing;
- Seeding will be completed in either autumn or spring and only once the receiving soils have been tilled and adequately prepared; and
- Seeding and rolling will be carried out in dry weather and access will be prohibited to seeding areas until seed has germinated and a sward has established (see establishment maintenance section below).

Establishment Maintenance

3.4.6 A detailed plan for the establishment and management of the grassland mosaic will be developed for the five-year establishment maintenance period.

3.4.7 The aim of establishment maintenance will be to encourage development of a diverse sward of grasses and herbs. Establishment maintenance will be based on the following principles and outline prescriptions:

- Immediately after sowing, the ground will be left undisturbed and un-watered to allow the grassland to establish naturally;
- Mowing will be carried out in either August or September in the first year with subsequent cuts in March and September. Arisings will be raked into piles and left in

situ for seven days before collection and removal to an off-site green waste composting facility;

- Visual inspections will be made during the growing season;
- Control of undesirable species (e.g., arable weeds) and injurious weeds will be undertaken to prevent colonisation and domination of the grassland through the use of additional cuts during the growing season or if essential, a selective herbicide;
- Low maintenance grass to be kept short around security fence lines;
- Botanical surveys will be carried out in late spring to confirm that the establishment of the grassland mosaic has been successful in achieving their intended aims and objectives. Spot checks will be undertaken at locations within each grassland area by a suitably qualified ecologist during years 1, 3 and 5, the purpose being to record plant species, their distribution, and the overall condition of the grassland. Other relevant indicators relating to the sward that may require remedial action during the contract period or in the future will also be recorded; and
- If remedial action is required, the LCoW will agree action with suitably qualified ecologist and areas identified will be re-seeded.

Long Term Management

3.4.8 The long-term management of the grassland mosaic within the Block Valve Stations and Theddlethorpe Facility will be undertaken to maintain a relatively stable grassland community in the long-term, and to avoid areas naturally progressing into tall, dense, grass-dominated areas.

3.4.9 Measures for the grassland mosaic will focus on a regime of:

- Mowing once, annually in September with arisings raked into piles and left in situ for seven days before collection and removal to an off-site green waste composting facility;
- Visual inspections during the growing season;
- Control of undesirable species (e.g., arable weeds) and injurious weeds to prevent colonisation and domination of the grassland using a selective herbicide;
- Meadow margins adjacent to woodland and hedgerows may be left for a year or more between cuts to provide dense ground level cover for fauna, including amphibians, small mammals, and invertebrates; and
- Conditions Assessments following Biodiversity Net Gain methodologies will be undertaken in years 2, 5, 10, 15, 20, 25 and 30. The results of these monitoring surveys will be used to adjust the management regime to maximise biodiversity and achieve the projected Biodiversity Net Gain unit values.

3.5 Existing Vegetation

3.5.1 Existing hedgerows with trees, woodland and mature trees within the DCO Site Boundary will be retained wherever possible except where removal is necessary to enable the construction of the Proposed Development. Areas where trees and shrubs are removed to facilitate construction will be made good and include replacement planting.

Function

3.5.2 The primary function of the existing trees and shrubs will be to maintain established habitats, visual amenity and character of the landscape and provide a structure for the addition of the new planting and other features of the development.

Implementation

- 3.5.3 During construction the existing hedgerows, woodland and trees will be protected. Measures to be employed will include the use of clearly defined stand-offs, managing the structure and integrity of the existing vegetation, and undertaking any pruning outside of the bird breeding season.
- 3.5.4 Loss of mature trees within the AONB will be avoided via trenchless construction methods, if applicable.
- 3.5.5 All works are to be carried out in accordance with the British Standard Recommendations for Tree Work, BS 3998:1989 and British Standard (BS 5837:2012): Trees in Relation to Design, Demolition and Construction, and should be undertaken by a suitably qualified contractor.
- 3.5.6 It is the contractor's responsibility to ensure that all fencing around retained trees and hedgerows are installed to BS5837, prior to construction commencing on Site and are maintained throughout the construction period.
- 3.5.7 Existing trees will be periodically inspected by an arboriculturist during construction. Where construction works are adjacent to existing trees, works will be undertaken under a watching brief to record root loss and to recommend further arboricultural works where required.

Long Term Management

- 3.5.8 Long term management of reinstated vegetation will be provided as described for the landscape elements outlined above.

4 Pre – and Post Construction Monitoring

4.1 Habitats

- 4.1.1 Monitoring is required in order to determine that the functions documented within this Outline LEMP are being achieved and whether any remedial management action may be required. The baseline against which the effects of the actions resulting from the monitoring can be compared against, comprise the pre-construction baseline data. This baseline data collected in 2022 will require updating prior to construction, as by operation (from 2028) this data will be over 3 years old and out of date (Ref 1).
- 4.1.2 A post-construction monitoring programme will be formalised and agreed as part of the application and included within the detailed LEMP. Walkover surveys of the Block Valve Stations and Theddlethorpe Facility will be undertaken between April and June in years 2, 4, 6, 10 and then every 5 years post-construction until year 60. The surveys will involve inspection of the trees, hedgerows, and grassland to ensure that they are being managed accordingly.

4.2 Species

- 4.2.1 Monitoring will be required as part of the badger mitigation licence and the water vole mitigation licence and will be detailed within the licence documents. The LEMP will be updated once monitoring requirements are confirmed.

4.3 Landscape

- 4.3.1 All soil restoration and monitoring measures set out in the Outline Soil Management Plan (document reference 6.4.10.1) will be adhered to ensure soil restoration does not have any long term impact on the landscape.

5 References

- Ref 1** The Conservation of Habitats and Species Regulations 2017 [Online] Available at <https://www.legislation.gov.uk/ukxi/2017/1012/contents/made>. Accessed 21.06.2023.
- Ref 2** Wildlife and Countryside Act 1981 (as amended) [Online] Available at <https://www.legislation.gov.uk/ukpga/1981/69>. Accessed 21.06.2023
- Ref 3** Natural Environment and Rural Communities Act 2006 [Online] Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents>. Accessed 21.06.2023
- Ref 4** Salmon and Freshwater Fisheries Act 1975 [Online] Available at: <https://www.legislation.gov.uk/ukpga/1975/51>. Accessed 21.06.2023.
- Ref 5** The Eels (England and Wales) Regulations 2009 [Online] Available at: <https://www.legislation.gov.uk/ukxi/2009/3344/contents/made>. Accessed 21.06.2023
- Ref 6** Protection of Badgers Act 1992 [Online] Available at: <https://www.legislation.gov.uk/ukpga/1992/51/contents>. Accessed 21.06.2023
- Ref 7** Natural England (2009a). Guidance on 'Current Use' in the Definition of a Badger Sett. Available online: https://webarchive.nationalarchives.gov.uk/ukgwa/20140523111208/http://www.naturalengland.org.uk/Images/WMLG17_tcm6-11815.pdf [accessed May 2023]
- Ref 8** Natural England (2009b) Interpretation of 'Disturbance' in Relation to Badgers Occupying a Sett. Available online: https://webarchive.nationalarchives.gov.uk/ukgwa/20140605121600/http://www.naturalengland.org.uk/Images/WMLG16_tcm6-11814.pdf [accessed May 2023]
- Ref 9** *English Nature (2002)*. Badgers and Development.
- Ref 10** Wild Mammals (Protection) Act 1996 [Online] Available at: <https://www.legislation.gov.uk/ukpga/1996/3/contents>. Accessed 21.06.2023
- Ref 11** The Hedgerows Regulations 1997 [Online] Available at: <https://www.legislation.gov.uk/ukxi/1997/1160/contents/made>. Accessed 21.06.2023.
- Ref 12** Environmental Protection Act 1990. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>. Accessed 05.09.2023.
- Ref 13** National Planning Policy Framework (2023). Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>
- Ref 14** Natural England (2012). National Character Area 41 Humber Estuary. Available at: <https://publications.naturalengland.org.uk/publication/2285747#:~:text=The%20Humber%20Estuary%20National%20Character,the%20adjacent%20low%20lying%20land>
- Ref 15** Natural England (2012). National Character Area 42 Lincolnshire Coast and Marshes. Available at: <https://publications.naturalengland.org.uk/publication/6596660822016000#:~:text=This%20area%20is%20characterised%20by,Lincolnshire%20Wolds%20to%20the%20west.>
- Ref 16** Natural England (2012). NCA 43: Lincolnshire Wolds. Available at: <https://publications.naturalengland.org.uk/publication/9965009>
- Ref 17** Landscape Institute's Infrastructure Technical Guidance Note 04/20. Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2020/05/20-4-Infrastructure.pdf>

Ref 18 United Kingdom Onshore Pipeline Operators' Association (2022). Tree Planting Near High Pressure Pipelines (UKOPA/GP/041 Edition 1). Available at <https://www.ukopa.co.uk/published-documents/good-practice-guides/>

Ref 19 CIEEM (2019) Advice note on the lifespan of ecological reports and surveys [Online] Available at: <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>
Accessed 05.09.2023

Ref 20 British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.

Ref 21 National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees

Appendix A Landscape Plans

Appendix A - Figure 1: Washingdales Block Valve Station

Appendix A - Figure 2: Thoroughfare Block Valve Stations

Appendix A - Figure 3: Louth Road Block Valve Station

Appendix A - Figure 4: Theddlethorpe Facility

