Immingham Green Energy Terminal

TR030008

Volume 6

6.9 Outline Landscape and Ecology Management Plan

Planning Act 2008

Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended)

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Immingham Green Energy Terminal

Development Consent Order 2023

6.9 Outline Landscape and Ecology Management Plan

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Executive Summary

This Outline Landscape and Ecology Management Plan ("LEMP") forms part of an application for a development consent order ("DCO") relating to the construction, operation and maintenance for the Immingham Green Energy Terminal (IGET) project. The associated development includes the construction and operation of a green hydrogen facility for the production of green hydrogen from imported ammonia on site.

The Outline LEMP sets out a strategy for the establishment and future management of proposed landscape and ecological works associated with the main landside elements of the Project. It sets out the short and longer-term measures and practices that will be implemented to establish, monitor and manage the areas of new planting.

The document reviews the existing baseline habitats on the site, reviews the planning policy context in relation to habitat creation and reviews the opportunities for enhancing the landscape and ecological value of the operational layout.

The document includes an Indicative Landscape and Biodiversity Plan which defines areas of amenity grassland, species rich grassland, native species-rich hedgerow, native trees and shrubs and ornamental trees. The Outline LEMP describes how these areas would be established and maintained during the first five years following implementation. It also describes the approach to monitoring of the establishment of these features and the longer term management approach.

The detailed measures and a plan for securing their establishment and maintenance will be prepared in accordance with the principles in this Outline LEMP and this is secured under a Requirement of the **draft DCO [TR030008/APP/2.1**].

1 Introduction

1.1 Overview

1.1.1 This Outline Landscape and Ecology Management Plan ("LEMP") forms part of an application for a development consent order ("DCO") relating to the construction, operation and maintenance of a multi-user liquid bulk terminal, which would be located on the eastern side of the Port of Immingham ("the Port"), as well as associated development (collectively termed "the Project"). The associated development includes the construction and operation of a green hydrogen facility for the production of green hydrogen from imported ammonia on site. The Project is described within **Chapter 2: The Project [TR030008/APP/6.2]**.

1.1.2 The Outline LEMP sets out a strategy for the establishment and future management of proposed landscape and ecological works associated with the Project. It sets out the short and longer-term measures and practices that will be implemented to establish, monitor and manage the areas of new planting.

1.1.3 The Outline LEMP will assist in integrating the land side works for the Project within the surrounding landscape, and delivering ecological enhancements in accordance with relevant local and national policies relating to landscape and biodiversity identified which are set out in detail in **Chapter 8: Nature Conservation (Terrestrial Ecology) [TR030008/APP/6.2] and Chapter 13: Landscape and Visual Impact [TR030008/APP/6.2]** and which are summarised in **Section 1.6** of this document.

1.1.4 The Site is separated into landside and marine elements. The landside elements include the East Site, the West Site, and the access road and connection corridors. The marine elements are the jetty and topside infrastructure. See **Figure 2.4** for the illustrative project layout **[TR030008/APP/6.4]**.

1.1.5 This Outline LEMP relates to those landside elements associated with the East Site and West Site within Work No. 3, Work No. 5, and Work No. 7. Schedule 2 of the **draft DCO [TR030008/APP/2.1**] includes a requirement preventing commencement of any part of those works until details of the associated landscape and ecology measures, the timing of their provision and a plan for their establishment and maintenance has been submitted and approved by North East Lincolnshire Council ("NELC"). Those details must accord with the principles contained in this Outline LEMP and once approved, must be complied with.

1.1.6 Measures contained within this Outline LEMP do not include the compensatory provision for the loss of mature woodland in the Long Strip woodland (within Work No. 1 and Work No. 2), which is subject to a separate **Woodland Compensation Strategy** (**[TR030008/APP/6.8]**), which is also secured by DCO requirement.

1.2 Landscape Plans

1.2.1 As part of this Outline LEMP, an Indicative Landscape and Biodiversity Plan illustrates areas for proposed landscape and ecological measures within the East Site and West Site (Work No. 3, Work No. 5 and Work No. 7) as follows:

Figure 1: Indicative Landscape and Biodiversity Plan (see rear of this document)

1.3 Purpose of the Outline Landscape and Ecology Management Plan

1.3.1 This Outline LEMP presents the indicative strategy for the addition of landscape and ecological measures to the hydrogen production facility (specifically Work No. 3, Work No. 5 and Work No. 7).

1.3.2 The Project has been designed, as far as is practicable, to avoid or reduce effects on landscape and biodiversity features through siting of the Project components. For further information see in particular, **Chapter 8: Nature Conservation (Terrestrial Ecology) [TR030008/APP/6.2],** and **Chapter 13: Landscape and Visual Impact [TR030008/APP/6.2]**.

1.3.3 This document outlines the landscape and ecological measures that would be implemented during, construction of the Project, as well as the habitat management, and monitoring measures to be implemented once the Project is operational.

1.3.4 This Outline LEMP is structured as follows:

a. **Section 1** sets out the context, responsibilities and arrangements for delivery of the plan.

b. **Section 2** describes the landscape and ecology strategy for the Project which incorporates proposals for landscape and ecological measures. The strategy is illustrated in **Figure 1: Indicative Landscape and Biodiversity Plan**.

c. **Section 3** details the measures required for the effective management and maintenance of the landscape and ecological proposals.

d. **Section 4** describes post-construction monitoring to determine that the objectives of the LEMP are being achieved and whether remedial action may be required.

1.4 Responsibilities

1.4.1 The Applicant will be responsible for establishing, managing and monitoring the implementation and establishment of the landscape and ecological measures outlined within this document within the five-year establishment aftercare period.

1.5 Legislation and Policy

1.5.1 The legislation and policies relevant to the construction of the Project and biodiversity specific measures are listed below. For more detail refer to **Chapter 4: Legislative and Consenting Framework [TR030008/APP/6.2]**. The planning policies which are considered to be directly relevant to this Outline LEMP include:

a. National Policy Statement for Ports 2012 ("NPSfP")

b. North East Lincolnshire Local Plan 2018

1.5.2 In respect of biodiversity within developments, paragraph 5.1.16 of the NPSfP states that "*Development proposals provide many opportunities for building in beneficial biodiversity or geological features as part of good design. When considering proposals, the decision-maker should maximise such opportunities in and around developments, using requirements or planning agreements where appropriate*".

1.5.3 In respect of habitats, Paragraph 5.1.19 of the NPSfP states that "*... opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals*" ...Within a defined site, adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of proposed project.'

1.5.4 In respect of landscape and visual impacts, paragraph 5.11.16 of the NPSfP states that "*Within a defined site, adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of proposed project*."

1.5.5 The NELC Local Plan Policy 41 (Biodiversity and Geodiversity) states that "*The Council will have regard to biodiversity and geodiversity when considering development proposals, seeking specifically to…minimise the loss of biodiversity features, or where loss is unavoidable and justified ensure appropriate mitigation and compensation measures are provided"* and "*…create opportunities to retain, protect, restore and enhance features of biodiversity value, including priority habitats and species*."

1.5.6 The NELC Local Plan Policy 42 (Landscape) states that "*Landscape character should be given due consideration in the nature, location, design and implementation of development proposals*" and developers should *"….complete a site specific landscape appraisal, proportionate to the anticipated scale and impact of a proposal, and submit a landscaping scheme for all development where this is appropriate, which complements the character and appearance of the site, responds to landscape character, climate change and flood alleviation where appropriate, and improves local biodiversity and levels of amenity; seek opportunities, when incorporating landscape buffers to offset development impacts, to enhance landscape quality including opportunities to incorporate suitable landscape planting; retain and protect trees and hedgerows which offer value for amenity, biodiversity and landscape; and take opportunities where*

appropriate, to retain, protect and restore elements that contribute to historic landscape character."

1.5.7 This document and the measures herein respond to these policy requirements within the overall constraints of the Project, as explained below.

1.6 Existing Landscape and Biodiversity Features

1.6.1 The Site is situated to the east of the Port of Immingham and largely outside of the operational area of the Port. The area surrounding the Port is industrial in nature, being dominated by chemical manufacturing, oil processing and power generation facilities. Beyond the industrial facilities, the wider area is largely agricultural.

Existing Landscape Features

1.6.2 The connection corridor which links the proposed terminal to the East Site includes a section of woodland known as 'Long Strip' between Laporte Road and the Humber Estuary that is subject to a Tree Preservation Order ("TPO"). A bridleway, Bridleway 36, runs through the eastern edge of the Long Strip, connecting users from Laporte Road to the coastal path that follows the Humber Estuary east to Grimsby.

1.6.3 The East Site comprises two parcels of land, which are bisected by Laporte Road. The first parcel of land consists of an area of hardstanding to the north of Laporte Road which is currently in use by the Applicant as a storage area. The second parcel of land is a triangular shaped area of brownfield land that is currently covered by gravel and various stockpiles.

1.6.4 The West Site currently comprises three former agricultural fields, which are bounded by linear hedgerows and drainage ditches. A short tarmac access road has been constructed from Kings Road into the West Site, associated with an extant planning consent. A series of overhead power cables run across the middle and southern boundaries of the West Site, with a buried mains water and a buried high-pressure gas pipeline present along the southern boundary.

Existing Biodiversity Features

East Site

1.6.5 The northern parcel of East Site comprises hardstanding used for storage surrounded by a shelter belt of mature Monterrey cypress (*Cupressus macrocarpa*).

1.6.6 The southern parcel was formerly arable land until taken out of agricultural rotation in c. 2007. Since then the habitat has become invaded by bramble (*Rubus fruticosus* agg.) and establishing silver birch (*Betula pendula*), goat willow (*Salix capraea*) and butterfly-bush (*Buddleja davidii*) scrub, which is dense in parts. The scrub surrounds a central square portion of the site, which has been cleared and appears to have been used periodically for storage since c. 2009.

1.6.7 The East Site does not support any rare or notable protected species; however, the dense areas of scrub within the southern parcel support a range of nesting bird species.

West Site

1.6.8 This land parcel comprises three distinct fields separated by ditches/hedgerows and was formally cultivated until its abandonment from agricultural production approximately ten years ago. This area has reverted to rank grassland with tall ruderals comprising false oat-grass (*Arrhenatherum elatius*), tall fescue (*Schedonorus arundinaceus*), tufted hair-grass (*Deschampsia cespitosa*), meadow foxtail (*Alopecurus pratensis*), great willowherb (*Epilobium hirsutum*), common fleabane (*Pulicaria dysenterica*), bristly oxtongue (*Helminthotheca echioides*), broad-leaved dock (*Rumex obtusifolius*), curled dock (*Rumex crispus*), wild teasel (*Dipsacus fullonum*) and spear thistle (*Cirsium vulgare*).

1.6.9 Goat willow scrub and smaller patches of bramble have colonised the western and eastern parts of West Site.

1.6.10 Species-poor hedgerows occur alongside the southern boundary and central ditches that form the field boundaries. Hawthorn (*Crateagus monogyna*) is the dominant species, with blackthorn (*Prunus spinosa*) occasional and dog rose (*Rosa canina* agg.).

1.6.11 There are several man-made ditches within this land parcel; these ditches appear to have been created as part of the West Site enabling works around five years ago. These have now become overgrown with dense stands of common reed (*Phragmites australis*). There are also two ditches present which form boundaries between the three fields (running north to south), which are also overgrown with dense stands of common reed.

1.6.12 The West Site does not support any rare or notable protected species; however, the grassland and scrub habitats support a range of nesting bird species. The ditches were surveyed for otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) and no evidence of these species was recorded.

2 Landscape and Ecology Strategy

2.1 Landscape Strategy

2.1.1 Good design has been a key consideration from the outset. The Environmental Impact Assessment has informed the iterative design process, however, due to the operational safety and security requirements there are constraints on the opportunities for landscape and biodiversity features that can be considered within the hydrogen plant area which comprises operational process plant and hazardous substances.

2.1.2 As shown on **Figure 1: Indicative Landscape and Biodiversity Plan**, the following measures are proposed to help soften and integrate the Project into the landscape and provide biodiversity benefits so far as practicable.

Overview of Landscape Design Principles

2.1.3 This section describes the landscape and ecological opportunities which underpin the Outline LEMP and explains how they have been applied to the design of the Project. A Red Amber Green ("RAG") rating has been assigned to each zone as illustrated on **Figure 1: Indicative Landscape and Biodiversity Plan** to indicate the feasibility of landscape and ecological opportunities. Landscape and ecological opportunities within each zone are outlined within **Table 1** for Work No. 7 (the West Site) and **Table 2** for Work No. 3 and Work No 5 (the East Site).

2.1.4 Zones identified on Figure 1 as 'Green' and 'Amber' have been taken forward for consideration as landscape and biodiversity areas with indicative landscape treatments for each zone described below. Zones rated as 'Red – not feasible', have been discounted as possible landscape and biodiversity enhancement areas due to the limitations and functional requirements of the Project. The purple area on **Figure 1** indicates the area in which landscape and ecology planting will not be undertaken due the presence of operational buildings and infrastructure. The final location of the measures applicable to the zones identified on **Figure 1** will reflect the detailed design of the hydrogen production facility.

Table 1: Outline LEMP Options Table for the West Site (Work No. 7)

Zone W- West Site E - East Site	RAG rating Green – feasible with safety specific limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG review
W1	Higher personnel traffic area next to security and visitor building. Avoid creating trip and fall hazards and making sure pathways through this are delineated.	Amenity area – ornamental planting where appropriate adjacent to admin and welfare buildings with clearly defined walkways for safe access and allowing for easy access of underground service and maintenance.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W2	Avoid significant vegetation within 2m of the boundary for security reasons. Do not obscure the building view of the fence area.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W3	Avoid significant vegetation within 2m of the boundary for security reasons. Do not obscure the building view of the fence area.	Species-rich grassland within Grasscrete (or similar approved) with clearly defined access where required. Native trees/ shrubs to boundary	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)

Zone W- West Site E - East Site	RAG rating Green – feasible with safety specific limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG review
W4	Queens road boundary close to cooling water area/cooling towers. Area around towers should be clear for access and laydown with some areas of hardstanding. Avoid significant vegetation within 2m of the boundary for security reasons. Access around safe haven building also to be kept clear.	Species-rich grassland with clearly defined and clear access to safe haven.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W5	Avoid significant vegetation within 2m of the boundary for security reasons. Do not obscure the building view of the fence area.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project. Species-rich grassland with clearly defined and clear access to safe haven.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)

Zone W- West Site E - East Site	RAG rating Green – feasible with safety specific limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG review
W6 and W12	Operational area to be kept clear of combustible material, slip trip and fall hazards for safety reasons. Area used for maintenance access, equipment and material laydown.	No opportunity for landscape or biodiversity areas.	Area excluded from the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W7	Area to be clear for access and laydown with some areas of hard standing. Avoid significant vegetation within 2m of the boundary for security reasons. Opportunity for attenuation pond.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project. Species-rich grassland and opportunity for attenuation pond and raft. Areas of native tree and shrub planting.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)

Zone W- West Site E - East Site	RAG rating Green – feasible with safety specific limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG review
W8	Area to be clear for access and laydown with some areas of hard standing. Avoid significant vegetation within 2m of the boundary for security reasons.	Species-rich grassland with clearly defined access where required.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W9	Area to be clear for access and laydown with some areas of hard standing. Avoid significant vegetation within 2m of the boundary for security reasons.	Species-rich grassland within areas of Grasscrete (or similar approved) with clearly defined access where required.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W10	Avoid significant vegetation within 2 m of the boundary for security reasons. Do not obscure the building view of the fence area.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project. Species-rich grassland and areas of native tree and shrub planting.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)

Zone W- West Site E - East Site	RAG rating Green – feasible with safety specific limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG review
W11	Area to be clear for access and laydown with some areas of hard standing. Avoid significant vegetation within 2m of the boundary for security reasons.	Species-rich grassland within areas of Grasscrete (or similar approved and where required) with clearly defined access where required.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W13	Higher personnel traffic area next to security and visitor building. Avoid creating trip and fall hazards and making sure pathways through this are delineated.	Amenity area – ornamental planting where appropriate adjacent to admin and welfare buildings with clearly defined walkways for safe access and allowing for easy access of underground service and maintenance.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
W14	Avoid significant vegetation within 2m of the boundary for security reasons. Do not obscure the building view of the fence area.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)

Table 2: Outline LEMP Options Table for the East Site (Work No 3 and 7)

Zone W- West Site E -East Site	Green – feasible no limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG Review
E1	Avoid significant vegetation within 2m of the boundary for security reasons. Do not obscure the building view of the fence area.	Amenity area – ornamental planting where appropriate adjacent to admin and welfare buildings with clearly defined walkways for safe access and allowing for easy access of underground service and maintenance.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
E2 and E3	Area next to process area to be clear for access and laydown with some areas of hard standing. Avoid significant vegetation within 2m of the boundary for security reasons.	Species-rich grassland within areas of Grasscrete (or similar approved and where required) with clearly defined access where required.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
E4, E5, E6, E7	Operational area to be kept clear of combustible material, slip trip and fall hazards for safety reasons. Area used for maintenance access, equipment and material laydown. Access to pipeline required in E5.	No opportunity for landscape or biodiversity areas.	Area excluded from the Indicative Landscape and Biodiversity Plan (**Figure 1**)

Zone W- West Site E -East Site	Green – feasible no limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG Review
E8, E9, and E11	Area next to process area to be clear for access and laydown with some areas of hard standing. Avoid significant vegetation within 2m of the boundary for security reasons.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
E10	Area alongside Laporte Road boundary. Avoid significant vegetation within 2m of the boundary for security reasons.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)
E12	Parking and welfare building - avoid significant vegetation within 2m of the boundary for security reasons. Opportunity for retention pond/ flood attenuation to extend into indictive development area.	Frontage – amenity grass verge to roadside and low native hedge maintained at height of less than 1m. 2m wide species rich grassland to each side of the security fence within clearance zone. Small trees where appropriate within the constraints of the Project. Species-rich grassland and opportunity for attenuation pond and raft.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)

Zone W- West Site E -East Site	Green – feasible no limitations Amber – feasible with limitations Red – not feasible	Landscape/Ecological Opportunity	Outcome of RAG Review
E13	Area next to process area to be clear for access and laydown with some areas of hard standing. Avoid significant vegetation within 2m of the boundary for security reasons.	Species-rich grassland within areas of Grasscrete (or similar approved and where required) with clearly defined access where required.	Area included within the Indicative Landscape and Biodiversity Plan (**Figure 1**)

2.2 Ecology Strategy

Overview of General Ecology Habitat Creation Principles

2.2.1 The following habitat creation principles have been adopted in the development of this LEMP document, which take into account the various safety limitations to the creation and management of habitats within the operational Project boundary:

a. Creation of species-rich wildflower grassland – a diverse native wildflower grassland species mix will be planted to encourage the development of a species-rich sward to attract feeding insects.

b. Creation of native species-rich hedgerow – new native species-rich hedgerows will be planted around peripheral areas of the Project to create habitat corridors and to provide (once established) habitat for nesting and roosting birds, and ecological niches for terrestrial invertebrates and amphibians, as well as berry-bearing shrubs to provide a food source for overwintering birds.

c. New tree and shrub planting – native tree and shrub habitat to be established to create habitat for nesting and roosting birds, and ecological niches for terrestrial invertebrates and amphibians.

2.2.2 Tree planting will also take into account the emerging NELC Tree Strategy, which is expected to be adopted in late 2023 (Ref 1-3). The Tree Strategy provides *"…a strategic framework for the management of the local tree population to achieve agreed aims and objectives…..[and] helps the council deliver its obligations under the Natural Environment and Rural Communities Act 2006….deliver aims contained in the Government's 25 year Environment Plan 2018…and to comply with the National Planning Policy Framework*".

Climate Change Resilience

2.2.3 Forestry England has prepared guidance in its 'diverse forests for future climate' note, in response to climate change predictions that summer temperatures could rise by up to 10°C in parts of England by the end of this century, acknowledging that diverse forests are more resilient to climate change (Ref 1-4). For this reason, up to 25% of the tree specimens of provenance from more southern counties in England will be sourced to allow for climate change adaptation. Tree specimens will be sourced from nurseries 2 to 5 degrees latitude south of the planting site (as recommended by Forestry England) as genetic differences may enable them to better cope with a warming climate than specimens of local provenance.

Disease Resilience

2.2.4 The Applicant will commit to sourcing trees from suppliers who are either certified under the Plant Healthy Certification Scheme or who have passed a 'Ready to Plant' assessment provided by Fera Science Ltd. This will ensure that the specimens have met the necessary biosecurity requirements to minimise the risk of introducing pests and diseases.

2.2.5 Ash, although common throughout the landscape in the county and a key component of Long Strip woodland, will be excluded from the planting mix due to the risk of vulnerability to ash dieback disease.

3 Management Prescriptions

3.1 Introduction

3.1.1 This section describes how new landscape and biodiversity areas illustrated on **Figure 1: Indicative Landscape and Biodiversity Plan** will be established, maintained during the first five years following implementation and managed in the long term until decommissioning of the associated landside works. The detailed measures and a plan for securing their establishment and maintenance will be prepared in accordance with the principles in this Outline LEMP.

3.1.2 The components within the landscape and biodiversity zones are:

- Amenity grassland
- Species rich grassland
- Native species-rich hedgerow
- Native trees and shrubs
- Ornamental trees

3.2 Amenity grassland

3.2.1 Amenity grassland will be established in strategic locations to maintain sight lines in line with security measures.

Function

3.2.2 Areas of mown amenity grassland will provide a defined character to the landscape and maintain sight lines in line with security measures.

Implementation

3.2.3 The proposed locations for creating amenity grassland are within zones W1, W2, W5, W7, W10, W13, W14, E1, E8, E9, E10, E11 and E12 as illustrated on **Figure 1: Indicative Landscape and Biodiversity Plan.**

3.2.4 A specification for amenity grassland will be developed based on the indicative species and percentages presented in **Table 3**. This may be subject to change based on the prevailing soil types.

Table 3: Indicative mix for amenity grassland

Botanical Name	Common Name	% Mix
Grasses		
Agrostis capillaris	Common Bent	5
Festuca rubra	Red Fescue	50
Lolium perenne	Perennial Ryegrass	25
Poa pratensis	Smooth-stalked Meadow-grass	20

Note: mix is Emorsgate Seeds EG22 – Strong Lawn Grass Mixture, comprising 100% grasses. Sowing rate: 25g/m2.

Long-term management

3.2.5 The long-term management of amenity grassland will be undertaken to maintain a relatively stable grassland community.

3.2.6 Measures for amenity grassland will focus on a regime of:

a. Mowing a minimum of six times per growing season (Years 1 – 5) between March and October, cut to 30mm with arisings raked into piles and left in situ for seven days before collection and removal to an off-site green waste composting facility.

b. Visual inspections during the growing season.

c. Control of undesirable species (e.g. arable weeds) and injurious weeds to prevent colonisation and domination of the grassland using a selective herbicide.

d. Margins adjacent to areas of trees/ shrubs 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.

3.3 Species-rich grassland

3.3.1 Species-rich grassland will be established in strategic locations to maintain sight lines in line with security measures.

Function

3.3.2 By establishing a diverse sward of grasses and herbs biodiversity will increase, enhancing value for wildlife.

Implementation

3.3.3 The proposed locations for creating species-rich grassland are within zones W2, W3, W4, W5, W7, W8, W9, W10, W11, W14, E2, E3, E8, E9, E10, E11 and E13 as illustrated on **Figure 1: Indicative Landscape and Biodiversity Plan**.

3.3.4 A specification for species-rich grassland will be developed final LEMP based on the indicative species, percentages presented in **Table 4**. This may be subject to change based on the prevailing soil types.

Table 4: Indicative mix for species-rich grassland

Botanical Name	Common Name	% Mix
Wildflowers		
Agrimonia eupatoria	Agrimony	0.2
Betonica officinalis	Betony	0.2
Centaurea nigra	Common Knapweed	3

Botanical Name	Common Name	% Mix
Filipendula ulmaria	Meadowsweet	0.8
Leucanthemum vulgare	Oxeye Daisy – (Moon Daisy)	0.8
Malva moschata	Musk Mallow	2.5
Plantago lanceolata	Ribwort Plantain	4.1
Ranunculus acris	Meadow Buttercup	0.7
Silaum silaus	Pepper Saxifrage	0.2
Primula veris	Cowslip	0.2
Lotus corniculatus	Bird's Foot Trefoil	0.1
Achillea millefolium	Yarrow	2
Silene flos-cucli	Ragged Robin	1.2
Galium verum	Lady's Bedstraw	2
Lathyrus pratensis	Meadow Vetchling	0.5
Carex flacca	Glaucous Sedge	1
Taraxacum officinale	Dandelion	0.2
Daucus carota	Wild Carrot	0.3
		20%
Grasses		
Agrostis capillaris	Common Bent	2.4
Anthoxanthum odoratum	Sweet vernal-grass	2
Briza media	Quaking grass	2
Cynosurus cristatus	Crested Dogstail	62.4
Festuca rubra	Red Fescue	10
Trisetum flavescens	Yellow Oat-grass	1.2
		80%

Note: mix is Emorsgate Seeds EM4 – Meadow mixture for clay soils, comprising 20% native wildflowers and 80% slow growing grasses. Sowing rate: 4g/m².

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

a. Where practicable, seed will be obtained from a local source for the purpose of maintaining continuity with local species-rich grasslands.

b. Receiving soils will be prepared to reduce nutrients where possible. 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.

c. 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.

d. Seeding will be completed in either autumn or spring and only once the receiving soils have been tilled and adequately prepared.

e. 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

3.3.6 A detailed plan for the establishment and management of species-rich grassland and conservation margins will be developed for the five year establishment maintenance period.

3.3.7 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:

a. Immediately after sowing, the ground will be left undisturbed and un-watered to allow the grassland to establish naturally.

b. Mowing will be carried out in June or September in the first year with subsequent cuts in April 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.

c. Visual inspections will be made during the growing season.

d. 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.

e. Botanical monitoring surveys will be carried out in late spring to confirm that the establishment of the species-rich grassland has been successful. 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.

f. If remedial action is required, the Applicant will agree action with suitably qualified ecologist and areas identified will be re-seeded.

Long-term management

3.3.8 The long-term management of species-rich grassland will be undertaken to maintain a relatively stable grassland community, and to avoid areas naturally progressing into tall, dense, grass-dominated areas.

3.3.9 Measures for species-rich grassland will focus on a regime of:

a. 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.

b. Visual inspections during the growing season.

c. Control of undesirable species (e.g. arable weeds) and injurious weeds to prevent colonisation and domination of the grassland using a selective herbicide.

d. Meadow margins adjacent to areas of trees/ shrubs 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.

e. The results of annual monitoring surveys will be used to adjust the management regime to maximise biodiversity.

3.4 Hedgerow

Function

3.4.1 New native hedgerows, once established, will assist in integrating the Project into the existing landscape and provide habitat connectivity.

3.4.2 New hedgerows provide valuable habitat forming important wildlife corridors. Hedgerow height is important, hedgerows will be maintained at a height of less than 1m high to maintain sight lines to and from the development for safety and security.

Implementation

3.4.3 The proposed locations for proposed hedgerows are illustrated within the frontage areas within zones W2, W5, W7, W10, W14, E8, E9, E10, E11 and E12 as indicated on the **Figure 1: Indicative Landscape and Biodiversity Plan**.

3.4.4 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.

3.4.5 A specification for hedgerows will be developed based on the indicative species, sizes and percentages presented in **Table 5**.

Table 5: Indicative mix for hedgerows

Botanical Name	Common Name	Height (cm)	Root	Form	Density (per linear meter)	% MIx
Crataegus monogyna	Hawthorn	60 - 80	Bareroot	Whip	5	25
Corylus Avellana	Hazel	60 - 80	Bareroot	Whip	5	30
Prunus spinosa	Blackthorn	60 - 80	Bareroot	Whip	5	25
Rosa canina	Dog rose	60 - 80	Bareroot	Whip	5	5
Sambucus nigra	Elder	60 - 80	Bareroot	Whip	5	5
Viburnum opulus	Guelder rose	60 - 80	Bareroot	Whip	5	10

Establishment maintenance

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

3.4.7 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:

a. Maintain a 0.5m weed free strip either side of hedgerow through chemical and mechanical control.

b. Water new plants to minimise failures in periods of drought.

c. Remove litter, rubbish, and debris from planted areas throughout the year.

d. Re-firm soil around roots to ensure plants are supported and upright in spring each year.

e. Inspect and adjust guards in spring and autumn.

f. Check and record failed or defective plants in September annually.

g. Replace failed or defective plants with matching species of the same size during the next planting season after failure.

h. LCoW to undertake a quarterly check of plants to record their growth and condition.

i. Trim hedge in November and December in the fifth maintenance year to promote bushy growth.

Long term management

3.4.8 The long-term management of new hedgerows will focus on the following interventions:

a. Hedgerows will be managed and maintained at a height of less than 1m.

b. 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.

c. If managed by traditional techniques such as hedgerow laying, this will be carried out on a rotational basis to retain the structural integrity of hedgerows and maintain connections with other habitats.

d. Overgrowing or overhanging branches will be removed from any pathways to keep them unobstructed.

e. 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.

f. Monitoring will be undertaken to detect any significant changes in hedgerow health and condition. Maintenance and condition checks will be made every three years.

3.5 Tree and shrub planting

3.5.1 Native tree and shrub planting, once established, will assist in integrating the larger elements of the Project into the existing landscape, and also help locally screen low level plant and infrastructure, as well as providing habitat connectivity.

Function

3.5.2 Woodland cover is generally low across the local area. Areas of native trees and shrubs will provide ecological value and wildlife corridors between existing areas of vegetation. They also act as visual screens; however, it is accepted that the opportunity for mitigation of the visual effects of the Project is limited due to the size and scale of the Project.

3.5.3 Trees will be managed to achieve their maximum mature height for the species.

Implementation

3.5.4 The proposed locations of proposed native tree planting are within zones W3, W7, and W10as illustrated on **Figure 1: Indicative Landscape and Biodiversity Plan**.

3.5.5 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. Each tree shall be planted to the nursery line and secured with stakes and ties, including irrigation pipe. New planting to be adequately protected from mammalian pests.

3.5.6 A specification for native trees will be developed based on the indicative species and sizes presented in **Table 6**.

Table 6: Indicative species mix for native trees shrubs (Planted at 2.5m centres)

Botanical name	Common name	Girth (cm)	Form
Quercus robur	English oak	14-16	Extra Heavy Standard
Acer campestre	Field maple	14 - 16	Extra Heavy Standard
Betula pendula	Silver birch	12 - 14	Heavy Standard
Prunus avium	Wild cherry tree	14 - 16	Extra Heavy Standard
Sorbus acuparia	Rowan	12 - 14	Heavy Standard
Tillia cordata	Small-leaved lime	14 - 16	Extra Heavy Standard

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

a. Areas identified for planting will be clearly marked out and agreed with the LCoW in advance.

b. Plants will be inspected by the Applicant at the nursery and on delivery to site prior to planting.

c. Planting will be carried out in winter (November to March) and will be timed to avoid periods of frost, drought, or other inclement weather, as far as practicable.

d. Trees will be planted in mixed groups; the groups will be laid out in such a way as to avoid repetition and clumping of same species groups. Planting layouts will appear to be random and will avoid straight lines and regular geometric patterns.

e. Transplant planting will be protected from strimming activities and damage from animals with individual biodegradable spiral guards, supported by a bamboo cane.

f. Root ball planting will be protected by single staked 180 x 30cm weld mesh guard.

g. The type of guard selected appropriate to species and growth habit.

h. Trees will be staked to protect against wind-rock.

Establishment Maintenance

3.5.8 A detailed plan for the establishment and management of new areas of trees and shrubs will be developed for the five year establishment maintenance period.

3.5.9 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.

3.5.10 Establishment maintenance will be based on the following principles and outline prescriptions:

a. Maintain a 1m weed-free circle around trees and shrubs through mechanical control.

b. Water new plants to minimise failures in periods of drought.

c. Remove litter, rubbish, and debris from planted areas throughout the year.

d. Re-firm soil around roots to ensure plants are supported and upright in Spring.

e. Inspect and adjust guards, ties and stakes in Spring and Autumn and after strong wind events.

f. Check and record failed or defective plants in September annually.

g. Replace failed or defective plants with matching species of the same size during the next planting season after failure.

h. Undertake quarterly check of plants to record their growth and condition.

Long term Management

3.5.11 The long-term management will focus on the following interventions:

a. All tree and shrub planting plots will undergo an annual condition assessment and an appropriate programme of works developed to address changes in condition and site requirements.

b. From year 5 onwards, guards, ties and stakes will be removed from plants.

c. 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.

d. Arisings from thinning or other tree and shrub management functions will be retained on site in the form of dedicated brash and wood piles or wind-rows, for the benefit for fungi, lichen, and invertebrates.

e. Where necessary, arisings from tree and shrub management will be chipped and spread to a depth no greater than 75mm in wooded areas.

3.6 Ornamental trees

3.6.1 Ornamental trees will be planted along the main entrance to the Project to enhance the sense of arrival to the site and direct views along the main route.

Function

3.6.2 Ornamental trees have an aesthetic value in denoting the entrance to the facility as well as a biodiversity value in providing habitat opportunities and screening or framing of views.

Implementation

3.6.3 The proposed locations for individual ornamental trees are within zones W1, W13, E1, E8, E9, E10, E11 and E12 as illustrated on **Figure 1: Indicative Landscape and Biodiversity Plan**.

3.6.4 A specification for individual trees will be developed based on the indicative species and sizes presented in **Table 7**.

Table 7: Indicative ornamental tree species

Botanical Name	Specification	Girth
Carpinus betulus 'Frans Fontaine'	Heavy Standard	12-14cm
Acer campestre Elsrijk	Heavy Standard	12-14cm
Betula pendula Fastigiata	Heavy Standard	12-14cm

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

a. Areas identified for tree planting will be clearly marked out and agreed with the LCoW in advance.

b. Plants will be inspected by the LCoW at the nursery and on delivery to site prior to planting.

c. Planting will be carried out in winter (November to March) and will be timed to avoid periods of frost, drought, or other inclement weather, as far as practicable.

d. Plants will be protected from strimming activities and damage from animals by double staked 300x60cm weld mesh guard. The type of guard selected appropriate to species and growth habit.

e. Trees will be staked to protect against wind-rock.

f. Mulch will be applied around the tree to create a 1m weed-free area.

Establishment maintenance

3.6.6 A detailed plan for the establishment and management of new ornamental trees will be developed for the five year establishment maintenance period.

3.6.7 The aim of establishment maintenance will be to support bushy growth and the development of a form characteristic of the species at maturity.

3.6.8 Establishment maintenance will be based on the following principles and outline prescriptions:

a. Maintain a 1m weed-free circle around trees through mechanical control.

b. Water new plants to minimise failures in periods of drought.

c. Remove litter, rubbish, and debris from around the trees throughout the year.

d. Re-firm soil around roots to ensure trees are supported and remain upright in Spring.

e. Inspect and adjust guards, ties and stakes in Spring and Autumn and after strong wind events.

f. Inspect and top-up mulch as required.

g. Undertake any formative pruning if required.

h. Check and record failed or defective trees in September annually.

i. Replace failed or defective trees with matching species of the same size during the next planting season after failure.

j. Undertake quarterly check of trees to record their growth and condition.

Long term management

3.6.9 Individual trees will be managed according to arboricultural best practice in accordance with:

a. British Standard (BS) 8545:2014 Trees: from nursery to independence in the landscape (Ref 1-5).

b. BS 3998:2010 Tree Work – Recommendations (Ref 1-6).

3.6.10 The long-term management of new ornamental trees will focus on the following interventions:

a. All ornamental trees will undergo an annual condition assessment and an appropriate programme of works developed to address changes in condition and site requirements.

b. From year 5 onwards, guards, ties and stakes will be removed from new specimen trees if they have fulfilled their intended purpose, e.g. guards will be removed once the risk of bark damage from grazing animals has reduced.

c. Formative pruning of trees will be undertaken if required under the direction of an arboriculturist.

d. Trees adjacent to public rights of way will be actively maintained and monitored on health and safety grounds, and to maintain access.

4 Pre and Post Construction Monitoring

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. A post-construction monitoring programme will be included within the details submitted under the requirement. Walkover surveys of the planted areas will be undertaken between April and June in years 2, 4, 6 ,10 and then every five years post-construction until decommissioning of the associated landside works. The surveys will involve an inspection of the areas of trees/ shrubs, hedgerows and grassland habitats to ensure that they are being managed accordingly.

4.1.2 Results from the post-construction monitoring will be considered, and if required, the management regimes may be amended accordingly.

5 References

Ref 1-1 Greater Lincolnshire Nature Partnership (2021). Nature strategy: Guidance for tree planting.

Ref 1-2 Greater Lincolnshire Nature Partnership (n.d.). Lowland mixed deciduous woodland. A guide to management.

Ref 1-3 North East Lincolnshire Council and EQUANS (2023) *North East Lincolnshire Tree Strategy* [not yet adopted].

Ref 1-4 Forestry England (n.d.). Diverse forests in a changing climate.

Ref 1-5 British Standard (BS) 8545:2014 Trees: from nursery to independence in the landscape.

Ref 1-6 BS 3998:2010 Tree Work – Recommendations.

Figure 1 Outline Landscape and Ecology Management Plan

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PROJECT

Immingham Green Energy Terminal

CLIENT

Associated British Ports

CONSULTANT

AECOM Limited
5th Floor
2 City Walk
Leeds, LS11 9AR
www.aecom.com

LEGEND

- Site Boundary
- Indicative Zone Feasible for Landscape and Biodiversity Area with 2m Security Zone to Each Side of Fence Line
- Indicative Zone for Landscape and Biodiversity Area with Limitations and Including 2m Security Zone to Each Side of Fence Line
- Indicative Zone Not Feasible for Landscape and Biodiversity Area
- Indicative Operational Area

NOTES

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ISSUE PURPOSE

Landscape and Ecological Management Plan

PROJECT NUMBER

60673509

DEVELOPMENT CONSENT ORDER NO

TR030008

FIGURE TITLE

Indicative Landscape and Biodiversity Plan
Sheet 1 of 2

FIGURE NUMBER

Figure 1

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AECOM Limited
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Indicative Landscape and Biodiversity Plan
Sheet 2 of 2

FIGURE NUMBER

Figure 1