NORTH LINCOLNSHIRE GREEN ENERGY PARK

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North Lincolnshire Green Energy Park

Volume 5

5.7 Outline Landscape and Biodiversity Management and Monitoring Plan (LBMMP)

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Acronyms and Abbreviations

NAME	DESCRIPTION
AGI	*Above Ground Installations*
BNG	*Biodiversity Net Gain*
CBMF	*Concrete Block Manufacturing Facility*
CEMP	*Construction Environmental Management Plan*
CO_2	*Carbon Dioxide*
CoCP	*Code of Construction Practice*
CCUS	*Carbon Capture, Utilisation and Storage*
DCO	*Development Consent Order*
DHPWN	*District Heat and Private Wire Network*
DNA	*Deoxyribonucleic Acid*
ERF	*Energy Recovery Facility*
EV	*Electric Vehicle*
H_2	*Hydrogen*
HPI	*Habitat of Principle Importance*
INNS	*Invasive Non-Native Species (INNS)*
LBMMP	*Landscape and Biodiversity Management and Monitoring Plan*
LNR	*Local Nature Reserve*
LWS	*Local Wildlife Site*
NLC	*North Lincolnshire Council*
NLGEP	*North Lincolnshire Green Energy Park*
NSIP	*Nationally Significant Infrastructure Project*
PRF	*Plastic Recycling Facility*
RHTF	*Residue Handling and Treatment Facility*
SAC	*Special Area of Conservation*
SPA	*Special Protection Area*
SSSI	*Site of Special Scientific Interest*
SuDS	*Sustainable Drainage System*
UK	*United Kingdom*

1. INTRODUCTION

1.1 Project Overview

1.1.1.1 The North Lincolnshire Green Energy Park (NLGEP) ('the Project'), located at Flixborough, North Lincolnshire, is a Nationally Significant Infrastructure Project (NSIP) with an Energy Recovery Facility (ERF) capable of converting up to 760,000 tonnes of non-recyclable waste into 95 MW of electricity at its heart and a carbon capture, utilisation and storage (CCUS) facility which will treat a proportion of the excess gasses released from the ERF to remove and store carbon dioxide (CO_2) prior to emission into the atmosphere.

1.1.1.2 The NSIP incorporates a switchyard, to ensure that the power created can be exported to the National Grid or to local businesses, and a water treatment facility, to take water from the mains supply or recycled process water to remove impurities and make it suitable for use in the boilers, the CCUS facility, concrete block manufacture, hydrogen production and the maintenance of the water levels in the wetland area.

1.1.1.3 The Project will include the following Associated Development to support the operation of the NSIP:

- a bottom ash and flue gas residue handling and treatment facility (RHTF)
- a concrete block manufacturing facility (CBMF)
- a plastic recycling facility (PRF)
- a hydrogen production and storage facility
- an electric vehicle (EV) and hydrogen (H_2) refuelling station
- battery storage
- a hydrogen and natural gas above ground installations (AGI)
- a new access road and parking
- a gatehouse and visitor centre with elevated walkway
- railway reinstatement works including, sidings at Dragonby, reinstatement and safety improvements to the 6 km private railway spur, and the construction of a new railhead with sidings south of Flixborough Wharf
- a northern and southern district heating and private wire network (DHPWN)
- habitat creation, landscaping and ecological mitigation, including green infrastructure and 65-acre wetland area
- new public rights of way and cycle ways including footbridges
- Sustainable Drainage Systems (SuDS) and flood defence; and
- utility constructions and diversions.

1.1.1.4 The Project will also include development in connection with the above works such as security gates, fencing, boundary treatment, lighting, hard and

soft landscaping, surface and foul water treatment and drainage systems and CCTV.

1.1.1.5 The Project also includes temporary facilities required during the course of construction, including site establishment and preparation works, temporary construction laydown areas, contractor facilities, materials and plant storage, generators, concrete batching facilities, vehicle and cycle parking facilities, offices, staff welfare facilities, security fencing and gates, external lighting, roadways and haul routes, wheel wash facilities, and signage.

1.1.1.6 The overarching aim of the Project is to support the United Kingdom's (UK) transition to a low carbon economy as outlined in the Sixth Carbon Budget (December 2020), the national Ten Point Plan for a Green Industrial Revolution (November 2020) and the North Lincolnshire prospectus for a Green Future. It will do this by enabling circular resource strategies and low-carbon infrastructure to be deployed as an integral part of the design (for example by reprocessing ash, wastewater and carbon dioxide to manufacture concrete blocks and capturing and utilising waste-heat to supply local homes and businesses with heat via a district heating network).

1.1.1.7 The development platforms will be raised above the flood plain together with the new access road. The visitor centre will overlook an extensive area of new wetland alongside the river corridor, which will provide a wetland ecosystem that is linked into the drainage and flood alleviation for the project, and also providing access for the public.

1.1.1.8 The Project requires works including but not limited to:

- hard surfaces;
- roads;
- screen planting (native semi-natural broadleaved woodland);
- hedgerows;
- amenity tree planting;
- wildflower and grass areas and road verges;
- native herbaceous vegetation;
- wetland;
- ditch system and drainage swales; and
- surface water attenuation ponds and basins.

1.1.1.9 The Project also includes elements of retained habitat, proposed habitat enhancements and creation, and soft landscaping. The management and maintenance of these features during operation of the Project is the subject

of this outline Landscape and Biodiversity Management and Monitoring Plan (LBMMP).

1.2 Scope and Purpose of the LBMMP

1.2.1.1 This outline LBMMP covers terrestrial features and habitats; the Application Land does not include areas covered by intertidal or river habitats and for any that are adjacent they are considered unaffected. As such, it is predicted that they will continue to be shaped by current hydrogeomorphological processes and not disrupted by the Project.

1.2.1.2 The four key areas of the site comprise:

- The Energy Park Land - an area within the Order Limits containing the core elements of the Project (EFW, CO_2 capture, ash treatment and concrete block manufacturing, plastic recycling facility, visitor centre, hydrogen production and re-fuelling station), located north of Ferry Road West (B1216);
- The Railway Reinstatement Land - reinstatement of the existing 6 km Dragonby to Flixborough branch line and construction and operation of a new railhead to the south of Flixborough Wharf, with the primary purpose of facilitating the delivery and export of materials to and from the Project;
- The Northern District Heat and Private Wire Network (DHPWN) Land – running from the southern end of the NLGEP site, east along the A1077 (Phoenix Parkway) before looping around Normanby Road and Bessermer Way to the east; and
- The Southern DHPWN land - running from the southern end of the NLGEP site where the B1216 (Ferry Road West) joins, extending south through the agricultural land on the west side of the A1077.

1.2.1.3 Both DHPWNs will support the same buried utilities infrastructure; comprising insulated supply and return pipework for heat and cabling to supply electrical power.

1.2.1.4 The temporal scope of the outline LBMMP includes monitoring and maintenance extending to 30 years, which is the commitment required for the purposes of maintaining biodiversity net-gain.

1.2.1.5 The purpose of the outline LBMMP is to set out the principles for the management of existing retained habitats and established vegetation, as well as those that will be enhanced and newly created within the Order Limits during construction and operation of the Project. This outline LBMMP will therefore be developed into a detailed document and submitted to North Lincolnshire Council (NLC) for approval. Management principles contained within the outline LBMMP aim to ensure that retained, enhanced and created habitats perform their intended ecological and landscape functions. These functions are in part ameliorative (e.g., to screen views from sensitive receptors), and in part mitigation/ compensation (e.g., to provide alternative

habitat for species displaced by the development). Further information is provided in the following documents.

- ES Chapter 10: Ecology and Nature Conservation (**Document Reference 6.2.10**).
- ES Chapter 11: Landscape and Visual Impact Assessment (**Document Reference 6.2.11)**.
- Proposed habitat creation and enhancement is set out in Appendix A to this document and the Indicative Landscape and Biodiversity Plans (**Document Reference 4.10**).

1.2.1.6 Compliance with the outline LBMMP (and its detailed successor) will be a requirement of the Development Consent Order (DCO). As such, the EFW plant operator and NLGEP management must comply with all measures within it.

2. RETAINED ECOLOGICAL AND LANDSCAPE FEATURES

2.1 General Considerations

2.1.1.1 Impacts on landscape features such as removal or partial removal have been minimised through careful planning and consideration in the design process, and the acknowledgement that minimising disturbance and removal of characteristic features is preferable as it helps deliver landscape mitigation and recovery, is often more effective than replacement and re-establishment, conserves landscape character and biodiversity and maintains integrity in the landscape, for example the function of the ditch drainage system. The Code of Construction Practice (CoCP) (**Document Reference 6.3.7**) which is to form the basis of a future Construction Environmental Management Plan (CEMP), sets out how the mitigation of potential effects on these features will be implemented.

2.1.1.2 Retained landscape elements include a range of features that are reflective of the local landscape and its topography, ranging from the 'Lincolnshire Edge' escarpment to the east which is largely wooded or common land (Open Access Land), the 'Trent Levels' comprising the agricultural floodplain and the river corridor with its flood defences, as well as elements of the peri-urban landscapes found around the areas of settlements of Scunthorpe, Flixborough and Neap House, and the industrial land uses associated with the Flixborough Industrial Estate and river wharf which includes some brown-field land and the railway corridor to the river port.

2.1.1.3 Retained ecological features include an array of habitats that will not be directly impacted (or only partially so) by the Project. These are distributed across the Application Land and are associated with the existing arable farmland landscape, the disused railway line, and the DHPWN land. They include various semi-natural habitat types; several protected species; and a range of international, national and local designated wildlife sites located within close proximity to the Order Limits. The CoCP outlines how measures to avoid or mitigate potential effects on these receptors will be implemented.

2.2 Landscape Features to be Retained

2.2.1.1 Retained landscape features include some elements of the existing areas of arable fields and associated field margins, boundary hedgerows and drainage ditches, areas of road verge and roadside hedgerows associated with highway infrastructure, pockets and areas of grassland and scrubland, and individual trees, tree groups and woodland and woody scrub, alongside areas of unused land and hardstanding. Other retained elements include landscape features related to the management of surface water and groundwater levels in the lower floodplain and features characteristic of the scarp landscape. Further details on key landscape features are provided below, described in their contexts.

- Highway ditches in various conditions of maintenance, roadside hedgerows mostly with gaps or unmanaged and verges mostly only

maintained along the highway edge along the A1077 (Phoenix Way), and Ferry Road West.

- Field hedgerows and field margins/ ditches in mostly well maintained and managed condition across the land to the east and west of the proposed access road.
- Drainage ditches and flood control bunds parallel to the River Trent and in areas of existing agricultural land.
- Trees in the areas alongside the River Trent flood defence bund and areas around the edge of Flixborough Industrial Estate and along Stather Road.
- Woodland along the margins of the Open Access Land and the 'Lincolnshire Edge' escarpment, woody scrub in peripheral areas to the Flixborough Industrial Estate, and woodland along the railway corridor.

2.3 Ecological Features and Habitats to be Retained

2.3.1.1 Ecological features to be retained include various habitat types. This includes areas of arable land and associated field margins, neutral grassland, ditches, scrub, woodland, bracken and tall ruderal vegetation. Habitats of Principal Importance within the site comprise Hedgerows, Lowland Calcareous Grassland, and Lowland Dry Acid Grassland, whilst Lowland Mixed Deciduous Woodland is associated with adjacent and nearby designated sites outside of the Order Limits. In addition, protected species that are present within and adjacent to the site include great crested newts (*Triturus cristatus*), water vole (*Arvicola amphibius*), otter (*Lutra lutra*), badger (*Meles meles*), reptiles, bats and a range of breeding, migratory and wintering birds. Further details on key ecological features are provided below, with protected species described in the context of their supporting habitats:

- Designated sites of international importance for wildlife are associated with the adjacent section of the River Trent, which forms part of the Humber Estuary Ramsar Site and Special Area of Conservation (SAC). The Ramsar Site and SAC are designated based on the presence of estuarine and coastal habitats and species including grey seals (*Halichoerus grypus*), river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*). The Ramsar Site is also designated for several waterbird populations that occur at levels of international importance and the overall assemblage of wetland birds that also occurs in internationally important numbers. The Humber Estuary Special Protection Area (SPA) is located 5.8 km north of the site at the closest point; the SPA is similarly designated for several migratory and wintering waterbird populations, as well as important breeding populations of bittern (*Botaurus stellaris*) marsh harrier (*Circus aeruginosus*), avocet (*Recurvirostra avosetta*) and little tern (*Sterna albifrons*).
- Regional wildlife sites, including the Phoenix Parkway, Phoenix and Atkinson's Warren Local Nature Reserves (LNRs), extend north and south of the DHPWN Land and east of the Energy Park Land. These support extensive areas of woodland, scrub, and semi-improved and

improved grassland. The Humber Estuary Site of Special Scientific Interest (SSSI) overlaps with the Humber Estuary Ramsar Site, SPA and SAC and is designated for similar features. Local designated sites are numerous, with key examples falling partially within the Order Limits including Phoenix Parkway Local Wildlife Site (LWS), Atkinson's Warren LWS, Slag Banks LWS, Conesby Quarry LWS and Yorkshire East Gullet LWS.

- Habitats of Principal Importance (HPI) will be partially retained post-construction. These include hedgerows, present along the boundaries of the Energy Park Land, the DHPWN Land and the Railway Reinstatement Land, typically characterised by a species-poor mixtures dominated by hawthorn (*Crateagus monogyna*). Small areas of Lowland Dry Acid Grassland will be retained within the block of semi-natural habitats to the east of the Energy Park Land. Lowland Calcareous Grassland HPI occurs along the disused railway and is unmanaged and located over freely draining, base rich, pebble/stone substrate. Calcareous grassland areas feature a variable sward height and support occasional notable species, including northern marsh orchid (*Dactylorhiza purpurella*), southern marsh orchid (*Dactylorhiza praetermissa*) and bee orchid (*Ophrys apifera*).
- Open arable land and associated field margins are the dominant habitats within the site, with large areas to be retained to the southeast of the Energy Park Land. Arable land, occasional areas of semi-improved grassland and associated ditches and hedgerows are used by ground nesting breeding birds, including skylark *(Alauda arvensis),* reed bunting *(Emberiza schoeniclus),* yellowhammer (*Emberiza citrinella*), linnet (*Linaria cannabina*), grey partridge (*Perdix perdix*), yellow wagtail (*Motacilla flava*) and meadow pipit (*Anthus pratensis*). Overwintering and migratory birds identified within the site include SPA qualifying species mallard (*Anas platyrhynchos*) and teal (*Anas crecca*). Arable and field margins are also used by small mammals, bats and invertebrates. In addition, cropland provides valuable foraging habitat for badger, which have established a main sett and several outliers within the Energy Park Land.
- Watercourses and wetland habitats include an extensive network of wide, deep ditches dividing arable fields within the Energy Park Land and Southern DHPWN, the majority of which are to be retained. Other wetland habitats include small ponds and areas of reedbed within the 'Habitat Creation' area, located to the east of the Energy Park Land (Work area number 12A; **Document Reference 4.4).** This area is referred to as the 'eastern mosaic area' throughout this document. Wetland habitats to the east of the Energy Park Land and surrounding the Railway Reinstatement Land support small and medium populations of great crest newt, whilst those across the site are likely to be used by common amphibians; breeding, overwintering and migratory birds; otter; water vole; invertebrates; and as commuting corridors by bats, badger and other small mammals.

- Woodland and scrub habitats within the site are restricted to small areas of woodland adjacent to the DHPWN and Railway Reinstatement Land and frequent to occasional pockets of scrub across the wider site. Small areas of both woodland and scrub will be retained post-construction. No woodland within the Order Limits meets the criteria for HPI, whilst areas of scrub are typically species-poor and of poor to moderate condition. The eastern mosaic area of common land supports more mature willow *(Salix* spp.) scrub. Woodland and scrub offer suitable cover for reptiles, great crested newts and a badger sett along the railway. They are also widely used by birds, bats, small mammals and invertebrates.
- Other habitats present in smaller quantities include bracken, ephemeral and tall ruderal vegetation and semi-improved grassland. These habitats occur alongside scrub and wetland areas within the eastern mosaic part of the Application Land. This area will be retained and is a valuable relic 'heathland' area that is currently unmanaged and in poor condition. This area is used by a wide range of species, including amphibians, reptiles, birds, badger, bats, small mammals and invertebrates.

3. NEWLY CREATED/ENHANCED HABITATS AND LANDSCAPE FEATURES

3.1 General Considerations

3.1.1.1 The Project aims to deliver a range of new and enhanced habitats and landscape features, including:

- semi-natural broadleaved woodland;
- wet woodland;
- native amenity tree planting;
- native species-rich Hedgerow HPI
- native scrub;
- ponds, swales and associated wetland vegetation; and
- varied grassland habitats, including amenity, species-rich neutral grassland, Lowland Meadow HPI, Calcareous Grassland HPI and Lowland Dry Acid Grassland HPI.

3.1.1.2 Areas of habitat creation and enhancement are outlined in ES Chapter 10 (**Document Reference 6.2.10**) and the Indicative Landscape and Biodiversity Plan (**Document Reference 4.10**). The Design Principles and Codes (**Document Reference 5.12**) provide a framework for implementing the proposed habitat creation and enhancement measures.

3.2 Newly Created/Enhanced Landscape Features and Habitat Measures

3.2.1.1 The proposed created and enhanced landscape features and habitat measures are outlined below, and their locations are presented in Appendix A of this document.

3.2.2 Hedgerows

3.2.2.1 New hedgerows are proposed in the southern section of the Application Land. These will aim to provide habitat connectivity to ditches and the reinstated hedgerow along Ferry Road West. All sections of new hedgerow will comprise a species-rich mix of native broadleaved shrubs and trees. On-going management measures will aim to maximise their value for wildlife and subdivision of the landscape and its land uses. Proposed hedgerows are identified on the Indicative Landscape and Biodiversity Plan (**Document Reference 4.10**) under the Tree Planting key 'Native Woodland and Hedgerows.

3.2.3 Semi-Natural Broadleaved Woodland

3.2.3.1 The planting of semi-natural broadleaved woodland is proposed in the north of the Application Land and Flixborough Industrial Estate, and extending east to the north and south of the reinstated railway. The woodland will be

designed to be in keeping with the landscape character of the 'Lincolnshire Edge', and will provide connectivity to Burton Wood LWS, located 380 km north of the Order Limits. Native wet woodland will also be established within the proposed wetland areas to the east of the new railhead. Proposed woodland areas are identified under the category 'Native Woodland and Hedgerows' on the Indicative Landscape and Biodiversity Plan under the key heading 'Tree Planting'.

3.2.4 Amenity Tree Planting

3.2.4.1 Numerous blocks of native, species-rich amenity tree planting are proposed throughout the Energy Park Land, in close proximity to built-up areas, and to create a landscape framework that is appropriately scaled for the Project. This will provide landscape and visual mitigation for the Project and integrate the new development into the existing setting. It will also provide transition from naturalistic planting and naturalistic landscape features in peripheral areas of development. In addition to providing landscape value, the woodland blocks will be managed to contribute positively to biodiversity richness, and complement areas of nearby and adjoining semi-natural habitats. Urban tree planting is identified as 'Formal Tree Planting'. on the Indicative Landscape and Biodiversity Plan (**Document Reference 4.10**) under the key heading 'Tree Planting'.

3.2.5 Scrub

3.2.5.1 Stands of mixed native-species scrub will be created in areas of the Application Land, including dense scrub below pylons and scattered scrub along woodland edges and within fields to the west and east of the access road, close to Neap House. New areas of scrub planting are identified on the Indicative Landscape and Biodiversity Plan (**Document Reference 4.10**) under the Tree Planting key 'Low Scrub Planting Under Pylons', and the areas of scrub in the proposed wetlands and area close to Neap House under the 'Understorey/ Ground Cover' key heading, 'Wetland Habitat (including wet woodland)'.

3.2.6 Grassland

3.2.6.1 Grassland creation and management will aim to create new areas of Lowland Meadow Habitat of Principle Importance (HPI), species-rich neutral grassland and Lowland Calcareous Grassland HPI within the Energy Park Land and Railway Reinstatement Land. Appropriate grassland management will also encourage the reestablishment of Lowland Dry Acid Grassland HPI within the eastern mosaic area, which is currently dominated by bracken. Proposed areas of grassland are presented within the Indicative Landscape and Biodiversity Plan (**Document Reference 4.10**) under the key heading 'Understorey/ Ground Cover' as 'Grassland', 'Grassland/ Wildflower', and

'Wildflower & Wildflower Underplanting', and will also be part of 'Wetland Habitat (including wet woodland)' areas.

3.2.7 Ponds and Wetland

3.2.7.1 A large area wetland is to be created to the west of the new access road within the Application Land. This will include ponds with shallow variable margins, swales, wet lowland grassland, areas of reedbed and scattered wet woodland and scrub. The extent of the areas of wetland is identified on the Indicative Landscape and Biodiversity Plan (**Document Reference 4.10**) under the 'Understorey/ Ground Cover' key heading as 'Wetland Habitat (including wet woodland)'.

3.2.8 Amenity Planting to Retaining Structures

3.2.8.1 Climbing and/ or trailing hardy plant/shrub species are to be planted along the length of some of the retaining structures that support the perimeter of the development platform. The planting is to create a partial or fully vegetated covering to the structure to provide a softened appearance and is to be native or semi-native species to avoid ornamental cultivars. Planting (climbing species) can be at the lower level at the base of the retaining wall, or planting (trailing species can be at the upper level at the top of the retaining wall. Sufficient growing space, soil, and drainage conditions must be allowed for healthy and effective growth and plant performance.

3.3 Specific Measures for Protected Species

3.3.1.1 In addition to the management and enhancement of existing habitats, specific measures for protected species will be implemented across the site. Measures comprise the provision of natural and artificial features serving as mitigation and compensation for the loss of habitat and/or potential disturbance during construction and operation. Species-specific enhancement measures have also been incorporated in the Project design and are presented below.

3.3.2 Bats

3.3.2.1 A range of bat boxes will be installed within the eastern mosaic area and adjacent woodland bordering the railway, with the aim of providing bat roosting features in areas where existing trees and buildings are largely unsuitable for roosting bats. Bat boxes installed along the railway will include a minimum of two Schwegler 2F general purpose boxes, providing mitigation and alternative roosting habitat to compensate for the potential removal of trees with suitable bat roost features. Elsewhere, groups of 2-3 boxes will include durable woodcrete bat boxes, suitable for a combination of species,

including pipistrelle (*Pipistrelle* sp.), *Myotis* and brown long-eared (*Plecotus auritus*).

3.3.3 Birds

3.3.3.1 Habitat improvement and creation will account for breeding, migratory and wintering birds, with specific measures incorporated to enhance habitats for notable and qualifying species and to encourage the natural colonisation of protected and priority bird species. These include:

- Providing a winter food source for overwintering and farmland species, using common reed (*Phragmites australis*), thistles (*Cirsium* sp.), fat hen (*Chenopodium album*), teasel (*Dipsacus* spp.) and reed canary grass (*Phalaris arundinacea*), to create 'weedy grassland'.
- Creation of artificial sand martin (*Riparia riparia*) colony nesting banks/walls in the wetland or areas close to open water.
- Provision of a range of bird boxes in established woodland edge and scrub areas including along the reinstated railway and the eastern mosaic. Boxes will include tree sparrow (*Passer montanus*) nest boxes, open fronted boxes and boxes with varied hole sizes, accommodating a range of tree and shrub nesting species.
- Lowland Meadow areas will aim to provide habitat for ground nesting birds including skylark and grey partridge, particularly within open areas such as within the Lysaght's drain corridor.
- Wet scrub and swamp/marginal vegetation creation will include dense common reed, bramble and willow, favoured by Cetti's warbler (*Cettia cetti*).
- Created shrub and woodland understorey will aim to establish areas of dense scrub supporting a mix of native broadleaved species and berry bearing species, providing suitable habitat for blackcap (*Sylvia atricapilla*), dunnock (*Prunella modularis*), song thrush (*Turdus philomelos*), bullfinch (*Pyrrhula pyrrhula*) and tree sparrow.

3.3.4 Badger

3.3.4.1 The Project will incorporate a badger tunnel located beneath the access road, immediately south of the Lysaght's drain, ensuring badger commuting from the west can still reach primary foraging habitats (arable land) safely. The tunnel will incorporate adequate drainage, be 600 mm in diameter and located where existing habitat connectivity can be enhanced though the planting of scrub and appropriate grassland management, including the provision of cover around tunnel entrances. If necessary, suitable fencing will be erected to encourage badgers to use the tunnels.

3.3.5 Reptiles and Amphibians

3.3.5.1 Species-specific habitat improvements targeting common lizard within the Railway Reinstatement Land will include the creation of 'basking banks', open, south facing banks within areas of Lowland Calcareous

Grassland/scrub mosaic. Suitable breeding habitat will also be created by retaining piles of cut vegetation and woodchips (warm, humid decomposing organic material suitable for egg laying) within suitable undisturbed areas. Log and brash piles covered in clay/soil will also offer hibernation opportunities for reptiles and amphibians.

3.3.6 Water vole

3.3.6.1 The enhancement of Lysaght's drain will aim to increase the diversity and abundance of marginal ground vegetation adjacent to still water along this watercourse, benefiting water vole. Monitoring and control of the invasive American mink (*Neovision neovision*) is also proposed, as this species negatively affects water vole populations. The banks and adjacent areas of short sections of ditches supporting water vole to the north of Flixborough Industrial Estate will not be planted with woodland, and vegetation shading the ditches will be cut back if required following annual monitoring visits.

3.3.7 Small mammals, including hedgehog

3.3.7.1 Holes will be left in boundary fencing to create 'hedgehog highways' and allow the movement of hedgehogs throughout the site. In addition, artificial or natural hedgehog boxes will be located in quiet undisturbed areas with ground covering vegetation, such as along the woodland edge or proposed area of mixed native shrub.

4. HABITAT AND LANDSCAPE MANAGEMENT AND MAINTENANCE MEASURES

4.1 General Measures

4.1.1.1 Existing trees and vegetation within the Application Land must be fully considered in the construction stages and the implementation of new trees and planting (refer to the Tree Survey and any recommendations in accordance with British Standard 5837:2012: Trees in relation to design, demolition, and construction – Recommendations). This will identify trees and other significant vegetation that contribute visual amenity to be retained due to their good condition, and potential longevity. The survey will also identify trees in decline that it may be advisable to remove, for example for safety reasons. During development retained trees must be protected in accordance with BS5837:2012

4.1.1.2 Where possible use soils from the Application Land. These soils should be stored, protected, managed, and handled in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra 2009) (see also the requirement for a Soil Management Plan in the CoCP (**Document Reference 6.3.7**)). Measures will include:

- Selection and use of earth moving and handling plant to minimise trafficking, disturbance, and compaction.
- Avoiding contamination of topsoil with subsoil, stone, hardcore, rubbish or material from demolition work.
- Handling topsoil in the driest conditions possible.
- Avoiding the handling of topsoil during or after heavy rainfall or when it is wetter than the plastic limit as defined by BS 3882, Annex N2.

4.1.1.3 All trees, hedgerow plants/ shrubs shall conform to the specification for nursery stock as set out in the National Plant Specification where it applies to trees, shrubs and plant handling and establishment and British Standard 3936 Parts 1 (1992) and 4 (1984). Advanced Nursery stock trees shall conform to BS 5236.

4.1.1.4 Native species shall be of local provenance wherever possible and preferably from seed collected from semi-natural parent trees and plants within the appropriate region of provenance zone as set out in the Forestry Commission Practice Note “using local stock for planting native trees and shrubs”. It must be demonstrated if this is not possible prior to sourcing native species outside the local area.

4.1.1.5 Handling, planting and establishment of trees and hedgerows shall be in accordance with BS 8545:2014

4.1.1.6 Procurement, selection, handling and planting of trees and plants is to be conducted by a professional with appropriate horticultural experience and in

accordance with BS 4428:1989 'Code of Practice for general landscape operations' and 8454:2012.

4.1.1.7 Habitat and landscape management and maintenance is focussed on three key areas of retained habitat: hedgerows, ditches and the eastern mosaic area. Management of created habitats includes the range of grassland, scrub, woodland and wetland habitats proposed within the Energy Park Land and Railway Reinstatement Land. No specific management of other retained habitats, including arable and field margins is proposed. **All maintenance is to be carried out in accordance with current best practice to ensure legal compliance in respect of protected species.**

4.1.2 Works on Retained Hedgerows

Overview

4.1.2.2 Retained hedgerows are an essential part of the farmed landscape found in the floodplain and are a feature of the landscape character. They are also a structuring landscape element along the road infrastructure and close to the edges of settlements.

Management and Maintenance Objectives

4.1.2.3 Management of retained hedgerows will aim to maintain a dense layer of shrubs and a varied flora at the hedge base, thereby providing a resource for a wide range of species, notably nesting and foraging birds, commuting and foraging bats, invertebrates, small mammals and amphibians.

Management Prescriptions

4.1.2.4 Trimming of retained hedges will be undertaken outside of the breeding bird season every two or three years in January/February, after most of the berries have been taken. Trimming will gradually increase the height and width of the hedge by at least 10cm, and aim to create an 'A-shaped' hedge with wide grass and wildflower margins. In any year, some of the hedgerows will be left untrimmed. The hedge base flora will be left uncultivated and protected against herbicide, pesticide and fertiliser drift.

4.1.3 Works on Retained Ditches

Overview

4.1.3.2 Retained ditches are an essential part of the land drainage system across the floodplain and are a feature of the landscape character.

Management and Maintenance Objectives

4.1.3.3 Enhancement of the Lysaght's drain comprises creating and maintaining a wide band of Lowland Meadow, management to maintain a variable sward

height and improve habitat connectivity between created habitats in the Energy Park Land and the enhanced eastern mosaic.

Management Prescriptions

- Encourage the development of dense macrophyte vegetation in retained ditches and the Lysaght's drain, including a diverse assemblage of native aquatic and marginal species.
- Any future requirements for in-channel maintenance works to ditches in the Energy Park Land (e.g. dredging/ desilting) will be subject to established statutory regulatory procedures to limit impacts on fish, amphibians and other aquatic biodiversity.

4.1.4 Works on Retained Eastern Mosaic Habitats

Overview

4.1.4.2 The mosaic of semi-natural habitats located on common land to the east of the Energy Park Land comprises an area of proposed biodiversity enhancement, located adjacent to Phoenix Parkway and Atkinson's Warren LNRs.

Management and Maintenance Objectives

4.1.4.3 Management and maintenance in this area will aim to improve the condition of all habitats (in line with the Defra Biodiversity Metric 3.0 criteria), whilst retaining the mosaic of structurally diverse habitats, which provide opportunities for a range of local wildlife.

4.1.4.4 Of key importance is the reduction of the extensive cover of bracken to encourage the expansion of Lowland Dry Acid Grassland HPI. Management of scrub and scattered trees in this area will focus on maintaining a varied canopy structure and allowing some shrubs and trees to grow into veterans. In places, it will be beneficial to reduce the dominance or to remove scrub, particularly where it is invading areas of reed swamp or dry acid grassland or overgrowing ponds. Minimum intervention is likely to be most appropriate for areas of established wet scrub dominated by willow. It will also be beneficial to consider carefully reducing the overall dominance and cover of vegetation in areas supporting reed swamp vegetation. The aim of this will be to prevent such habitat from becoming terrestrialised and to increase the area of open water. A specific list of measures and timing will be drawn up based on further survey and assessment of management needs in the area.

4.1.4.5 The works will increase benefit, enjoyment and experience of the common land through public access, and reinforce the difference in landscape between the area and the wooded areas nearby.

Management Prescriptions

- Repeated cutting and mechanical removal will be used to break up and reduce the overall dominance and vigour of bracken in favour of lowland

acid grassland habitat. Management and control measures will be guided by the advice set out in section 7.8 of the Lowland Grassland Management Handbook (Crofts & Jefferson, 1999) and advice on management for invertebrates (Kirby, 2013). Priority will be given to stands of bracken that contain residual grassland vegetation and to preventing any further invasion of bracken onto areas supporting Lowland Dry Acid Grassland HPI.

- Scrub management will focus on the targeted reduction of young encroaching scrub into areas of other habitat and maintaining a varied canopy structure with patches of young and older scrub, glades and sinuous edge habitats, and scattered retained veterans. This will require occasional, small-scale, rotational coppicing/pollarding of taller shrubs and mowing/strimming of bramble. In places it might be beneficial to remove scrub (or at least greatly reduce its dominance), particularly where it is invading areas of reed swamp or dry acid grassland or overgrowing ponds.
- The need for small-scale management of reed swamp vegetation will be carefully assessed, referring to the management of reedbed habitat for invertebrates (see Kirby, 2013). It is likely that some targeted, small-scale cutting and removal of areas of reed and scrub, and perhaps desilting, will be required.
- Management will be undertaken sensitively with respect to the probable presence of great crested newts, including carrying out works to: (i) aquatic and wetland habitats in September to November inclusive and removing vegetation and silt with hand tools; and (ii) terrestrial habitats in May to June inclusive (in accordance with the Great Crested Newt Conservation Handbook; Langton et al., 2001).

4.1.5 Works on Created Hedgerows

Overview

4.1.5.2 New native hedgerows are proposed within the Energy Park Land, surrounding buildings and urban areas, adjacent to newly planted urban trees and intervening wildflower grassland. Sections of reinstated hedgerow are proposed along Ferry Road West, along the southern Application Land boundary and a stretch of the DHPWN Land.

Management and Maintenance Objectives

4.1.5.3 Hedgerow creation and management will aim to create dense, species-rich hedgerows in good condition habitat in line with the Defra Biodiversity Metric 3.0 criteria, improving habitat availability, cover and foraging opportunities for amphibians, badgers, bats, breeding birds and small mammals.

4.1.5.4 The created hedgerows will mend the fragmented hedgerow network and repair the field/ hedgerow landscape restoring landscape character, and help

integrate the new development and its infrastructure as well as repair disturbance from construction.

Management Prescriptions

- New hedges will be planted with native hedgerow shrubs and trees, including hawthorn, blackthorn (*Prunus spinosa*) and hazel (*Corylus avellana*), and variable amounts of additional species such as crab apple (*Malus sylvestris*), dogwood *(Coruns sanguinea*), elder (*Sambucus nigra*), field maple (*Acer campestre*), gorse (*Ulex europaeus*), guelder rose (*Viburnum opulus*), spindle (*Euonym*us europaeus), willow, wych elm (*Ulmus glabra*), pedunculate oak (*Quercus robur*) and rowan (*Sorbus aucuparia*). The addition of climbing species, such as dog rose (*Rosa canina*), and honeysuckle (*Lonicera periclymenum*) will improve species diversity.
- Prior to planting and during the growing season for the first three years, the careful use of glyphosate will be implemented to control weeds competing with hedgerow species.
- Planting is to be double rowed with 0.45 m between the rows and whips planted at 0.3 m spacing. Hedge laying will be implemented once hedgerows are sufficiently mature, to promote dense growth and good structure.
- For a five-year period following planting, the hedgerows will be checked annually at the end of each summer and any dead, dying or diseased specimens will be replaced the following winter.
- Trimming is to be undertaken initially every three years to allow the hedgerow to develop a bushy structure. Once established, trimming will follow that for retained hedges (see above).

4.1.6 Works on Created Semi-Natural Woodland

Overview

4.1.6.2 Woodland management will be applied to the extensive areas of new native woodland north of the Flixborough Industrial Estate and within the Railway Reinstatement Land, as well as where wet woodland is to be established as part of the wetland habitat complex to the west of the Energy Park Land.

Management and Maintenance Objectives

4.1.6.3 Woodland management will be guided by the advice set out by the Forestry Commission (Rodwell & Patterson, 1994; Ferris & Carter, 2000; Forestry Commission England, 2010) and guidance on management for invertebrates (Kirby, 2013). Management will aim to establish woodland of moderate condition in line with the criteria set out in the Defra Biodiversity Metric 3.0. Measures will aim to increase the number and availability of habitat niches for invertebrates and other fauna, by creating a varied age and height

structure, areas of temporary open space, young-growth, open and sinuous edge habitats.

4.1.6.4 The woodland management will help restore and reinforce the characteristic landscape of the 'Lincolnshire Edge', and help integrate the new development and its infrastructure as well as repair disturbance from construction.

Management Prescriptions

- Native tree and shrub species characteristic of Lowland Mixed Deciduous Woodland HPI will be planted, including a rich mix of understorey and canopy species, using transplants of local provenance where possible, and implementing varied planting patterns to encourage structural diversity and wide scrubby margins at the woodland perimeter and along rides and glades.
- Newly planted trees and shrubs will be protected from browsing damage; where necessary transplants will be protected by stock-proof fencing, rabbit-proof fencing and/or protective guards (made of bio-degradable material and/or removed when no longer needed), and failures will be replaced (noting that low levels of mortality are acceptable).
- Prior to planting and during the growing season for the first three years, the careful use of glyphosate will be implemented to control weeds competing with young trees.
- Periodic coppicing/mowing/strimming of woodland edges and glades/rides will ensure areas of young-growth, open and sinuous edge habitats are maintained.
- Cuttings, dead branches and stumps will be left in situ or moved to create log piles, providing a supply of deadwood suitable for a wide range of invertebrates.
- Yearly monitoring will be undertaken so that potential issues can be responded to in an appropriate manner, including excessive deer browsing, grey squirrel debarking, and invasion of non-native species.
- Options to enhance the ground flora will be considered once the woodland has established, referring to recently published guidance (Worrell et al., 2021) and aiming to establish a range of characteristic native woodland plants, such as red campion, bluebell and primrose.
- Planting and natural regeneration of birch (*Betula pendula*), alder (*Alnus glutinosa*) and willow will be encouraged within proposed areas of wet woodland. Minimal intervention is likely to be the best approach in these areas, however coppicing or cutting back may be required to ensure developing woodland does not excessively encroach into open habitats.

4.1.7 Works on Formal Tree Planting

Overview

4.1.7.2 Blocks of proposed formal woodland around the Energy Park Land will comprise a mixture of broadleaved trees, complementing and adjoining areas of nearby scrub and grassland habitat. Urban trees will be managed to provide both ecological value and visual/amenity/landscape functions.

Management and Maintenance Objectives

4.1.7.3 The condition of new areas of urban woodland will be maximised in line with criteria set out in the Defra Biodiversity Metric 3.0 for urban trees, with an overall aim of achieving good condition. Management will aim to maximise the biodiversity value of amenity planting.

4.1.7.4 The tree planting will help integrate the new development and its infrastructure into the wider setting and local landscape environment, mitigate visual impacts, and help transition between wider landscape and the spaces around built form. It will introduce a new landscape pattern of an appropriate scale.

Management Prescriptions

- Over 75% of the trees will be native and planting will establish a predominantly continuous canopy, with any gaps making up less than 10% of the total area.
- During establishment, failures will be replaced, and newly planted trees will be protected from browsing damage by stock-proof fencing, rabbit-proof fencing and/or protective guards (made of bio-degradable material and/or removed when no longer needed).
- Prior to planting and during the growing season for the first three years, the careful use of glyphosate will be implemented to control weeds competing with young scrub.
- Where urban tree planting adjoins other created or existing semi-natural habitats, including ditches, species-rich grassland and scrub, management will encourage a wide transitional zone between habitats, including the formation of wide scrubby margins and graduated edge habitats.
- Microhabitats for birds, mammals and insects will be encouraged, including retaining deadwood, tree cavities and loose bark where safe to do so.
- Where pruning is necessary, trimmings will be used to create habitat piles of dead wood and branches, providing cover and foraging habitats for amphibians, small mammals and invertebrates.

4.1.8 Works on Created Scrub

Overview

4.1.8.2 Proposed scrub planting is focussed within the Energy Park Land and comprises both continuous areas of dense scrub below pylons and irregular stands forming a mosaic with Lowland Meadow HPI and species-rich stands of neutral grassland.

Management and Maintenance Objectives

4.1.8.3 The overall aim of scrub management will be to create varied stands in moderate to good condition (based on criteria in the Defra Biodiversity Metric 3.0). Scrub will be managed to maximise its value for wildlife, targeting farmland birds alongside amphibians, reptiles, small mammals, invertebrates and foraging bats. The aim will be to create a varied canopy structure with areas of young-growth habitat and glades, as well as sinuous edge habitats that grade into grassland, tall herb and other communities.

4.1.8.4 Scrub planting will provide appropriate landscape mitigation for lower-level and close views of the development in some places, and more generally in combination with tree and woodland planting where required as part of visual and landscape mitigation. Where overhead utilities prevent woodland planting and restricted height vegetation is necessary scrub planting will provide sense of enclosure where necessary.

Management Prescriptions

- Scrub planting will utilise a varied mix of native shrub and small-sized tree species, characteristic of lowland mixed deciduous scrub and of local provenance. Suitable species include those listed above for new hedges, notably hawthorn, blackthorn, hazel, crab apple, dog rose, dogwood, elder, field maple, gorse, guelder rose, honeysuckle, spindle and goat willow.
- Planting patterns and spacings will be varied to encourage structural diversity and sinuous scalloped edges. Diversity will be increased by mixing species randomly, in clumps and leaving unplanted areas to regenerate naturally.
- During establishment, failures will be replaced (noting that low levels of mortality are acceptable) and newly planted scrub will be protected from browsing damage by stock-proof fencing, rabbit-proof fencing and/or protective guards (made of bio-degradable material and/or removed when no longer needed).
- Prior to planting and during the growing season for the first three years, the careful use of glyphosate will be implemented to control weeds competing with young scrub.
- Action will be taken to create a varied canopy structure, including periodic coppicing and mowing/strimming of edges and glades. Cutting

areas of scrub in January/February will be undertaken in rotation and aim to retain all ages.

- Cuttings, dead branches and stumps will be left in situ or moved to create log piles, providing a supply of deadwood suitable for a wide range of invertebrates.
- Options to enhance the ground flora will be considered once the scrub has established, referring to recently published guidance (Worrell et al., 2021) and aiming to establish a range of characteristic native woodland plants, such as red campion, bluebell and primrose.

4.1.9 Works on Created Grassland

Overview

4.1.9.2 Several areas and types of grassland are proposed throughout the Energy Park and Railway Reinstatement Land, including:

- Neutral species-rich grassland is to be created adjacent to areas of formal woodland planting around the main ERF buildings and other new facilities, east of the new access road, and north of the A1077 Phoenix Parkway adjacent to the southern perimeter of the Energy Park Land.
- Lowland Meadow HPI will be created within: (i) the two blocks of grassland-scrub mosaic habitat to be created close to the southern perimeter of the Energy Park Land; and (ii) as part of the mosaic of habitats within the new wetland area – some of this will be damp grassland that grades into ponds and reedbeds.
- Areas of Lowland Calcareous Grassland HPI are to be created along the embankments of the reinstated railway line and adjacent to the proposed woodland planting along the northern boundary.
- Lowland Acid Grassland HPI will be expanded as part of the habitat enhancement proposals within the eastern mosaic area of semi-natural habitat, to the east of the Energy Park Land (see management within the retained eastern mosaic area above).
- Where understorey planting comprising herbaceous groundcover or grassland is envisaged in the areas of grid-planted, formal or widely-spaced Urban Tree Planting, it will be established in line with appropriate horticultural practices and/or as set out in this section.

Management and Maintenance Objectives

4.1.9.3 Management of created grassland will aim to establish a variety of herb-rich grassland types, depending on the underlying type of soil and hydrology and maximise the species-richness of the sward. New grasslands will provide a range of conditions suitable for ground nesting and wintering farmland birds (notably grey partridge, skylark, yellowhammer and yellow wagtail), brown hare, amphibians, foraging bats, reptiles, and a variety of invertebrates. Grassland creation and management will be guided by the Lowland Grassland Management Handbook (Crofts & Jefferson, 1999), several

Natural England Technical Information Notes (Stevenson et al., 2008; Jefferson, 2009; Smith, 2010a, 2010b), the Save Our Magnificent Meadows partnership guidance, and advice on management for invertebrates (Kirby, 2013). The target is to create areas of grassland in fairly good to good condition based on the criteria set out in the Defra Biodiversity Metric 3.0.

4.1.9.4 Grassland is intended to provide a range of landscape types in response to the existing open arable flood-plain landscape surroundings. Where tree planting is necessary to integrate and mitigate the scale of some elements of the development in the wider landscape, the grassland, wetlands, and understorey of various proposed grassland types will provide an extensive low-level ground cover that will connect visually with the surrounding field-scape.

Management Prescriptions

- Wildflower grassland establishment methods will be evaluated and the most suitable used for each location. Creation, particularly over former arable land may require 'soil nutrient stripping' to remove of the top layer of soil.
- Where appropriate, seeding will utilise either 'green hay' from a local area of species-rich meadow, commercially bought seed mixes, or broadcast locally collected seed (e.g. along the railway line).
- Regular assessment of the sward will be undertaken to inform ongoing management needs, including cutting and grazing regimes, introductions of wildflowers, and the control of invasive non-native species, other undesirable species and scrub.

4.1.10Works on Created Ponds and Wetlands

Overview

4.1.10.2 The creation of reedbed areas is proposed within the wetland habitat complex west of the new NLGEP access road. Ponds and swales will also be created within the wider Energy Park Land, including within landscaped areas, adjacent to the development buildings and to the west of the access road.

Management and Maintenance Objectives

4.1.10.3 Wetland creation will aim to establish a mosaic of permanent, semi-permanent and seasonal ponds and associated reedbed and grassland habitats, to encourage the greatest diversity of plants, invertebrates, amphibians and mammals, and to provide a buffer against pollution or the invasion of non-native species. Additional management measures will aim to enhance the biodiversity value of created wetland habitats and develop

habitats that achieve good condition (based on relevant criteria in the Defra Biodiversity Metric 3.0).

4.1.10.4 The wetland areas are intended to provide characteristic floodplain and river corridor landscapes that are accessible and can be enjoyed through being accessible. The River Trent is separated from the floodplain by the flood defences, but the wetlands will provide experiential landscape that reflects its location.

Management Prescriptions

- Ponds will be constructed with a range of maximum depths and surface areas. They will also be linked by undulating wetland areas and will feature wide drawdown zones, including underwater bars and shoals to benefit aquatic plants.
- Shallow sloping margins (preferably less than 1:20) will be created around ponds to encourage the development of dense reedbed.
- Where reed thatch is judged to become too dense, it will be cropped/cleared on a rotational basis, including the targeted removal of vegetation and root systems to restore open water. Not all marginal vegetation will be cut in any one year. Periodic coppicing and removal of invading willow scrub may also be required, as well as the occasional dredging of accumulated litter and silt.
- The natural colonisation of wetland habitats will be aided by the introduction of locally collected seed or transplanting species including common reed from nearby sources, such as the Far Ings National Nature Reserve.
- Maintenance of good water quality within all created wetland areas will be measured through appropriate monitoring and maintenance.

4.1.11Works on Invasive Non-Native Species

4.1.11.1 Invasive non-native species present within the Order Limits comprise:

- Himalayan balsam (*Impatiens glandulifera*) located within the Railway Reinstatement Land to the north of the Flixborough Industrial Estate;
- Cotoneaster (*Cotoneaster* spp.) present in occasional areas of ornamental planting and woodland edge within the Northern DHPWN Land; and
- Japanese knotweed (*Fallopia japonica*) located to the east of Normanby Road within the Northern DHPWN Land.

4.1.11.2 ES Chapter 10 (**Document Reference 6.2.10**), and the CoCP (including invasive non-native species (INNS) Management Plan) (**Document reference 6.3.7**) set out the baseline position as regards INNS and the measures that will be taken to identify and control INNS through the construction phase (to be developed in detail in the CEMP). In the post-construction phase, vigilance for INNS will form part of the annual walkover surveys set out in Section 5, and where identified, appropriate controls will

be put in place to ensure control and eradication, in line with prevailing best practice standards and legal requirements.#

4.1.12 Works on Amenity Planting to Retaining Structures

Overview

4.1.12.1 Amenity planting to retaining structures around the Energy Park Land will comprise climbing or trailing native/ semi-native plant species at the base and/ or the top of retaining structures that support the development platform. Planting is to be where the structure is to be visually 'greened' and softened as it will form part of the surrounding streetscape. The amenity planting will be managed to provide both ecological value and visual/amenity/landscape functions.

Management and Maintenance Objectives

4.1.12.2 To ensure healthy plant growth so that the climbing/ trailing plant species fulfil their potential and natural habit whilst providing the intended visual amenity, with an overall aim of achieving good condition. Management will aim to maximise the biodiversity and amenity value of the planting.

4.1.12.3 The amenity planting will help integrate the new development and its infrastructure into the wider setting and local landscape environment, mitigate visual impacts, and help transition between the surrounding neighbourhood and its streets and spaces immediately adjacent to the built form.

Management Prescriptions

- The planting will be native or semi-native and planting will eventually establish a predominantly continuous coverage of the vertical surface.
- Planting will be required to enable on-going inspection of the retaining structures. Species will be selected to avoid potential damage to the integrity of the retaining structures.
- Training wires or framework is to be used for non-self-clinging or climbing species or to ensure closer coverage of the surface of the structure.
- During establishment, failures will be replaced.
- Prior to planting and during the growing season for the first three years, the will be kept weed-free.
- During establishment and as an on-going requirement pruning and tying-in will be necessary, as appropriate for the species and their natural habit, together with securing the plants to supporting wires or framework provided to attach the plants to the vertical structure.
- Microhabitats for birds, mammals and insects will be encouraged and where safe to do so adjacent to public footways.
- Where pruning is necessary, trimmings will be removed for composting.

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5. MONITORING AND REVIEW

5.1 General Considerations

5.1.1.1 Management of the areas and features covered by this outline LBMMP will continue for a minimum of 30 years, unless agreed otherwise by North Lincolnshire Council in consultation with Natural England. As the habitats develop and/or the local development context changes, the LBMMP may need to be reviewed. Any review will be informed by the results of regular monitoring of the condition of the habitats, landscape planting, and any relevant species monitoring.

5.2 Annual Maintenance

5.2.1.1 The following annual maintenance measures apply to closely managed amenity grassland and vegetation immediately surrounding the Energy Park buildings; management of all other areas focussing on biodiversity value will follow prescriptions above and precise measures are to be tailored further at later design stages. Monthly maintenance to be carried out in amenity areas will typically include:

- Weeding: Keep planting beds clear of weeds by use of suitable herbicides or hand weeding and maintain an area of clean ground 1.0m diameter around each tree or plant, feathered and standard tree.
- Watering: Water as necessary to promote establishment.
- Stakes, trees, shrubs and ties: All stakes, trees and shrubs are to be maintained in firm positions within the ground and with all ties securely fixed and adjusted to allow for the increase in stem girth.
- Security of the wires or framework for climbing / trailing amenity planting on retaining structures is to be periodically checked. Prune, and tie-in the stems of plants as appropriate for the species and their natural habit, together with securing the plants to supporting wires or framework to ensure the plants are well-attached and supported.
- Mulching: Mulches should be hand weeded as necessary and replenished to their original depth at least once annually.
- Pruning: Remove all dead wood and diseased tissue from all planted material at the end of each growing season, and all stem growths from standard trees immediately before the completion of the maintenance period. Prune tree crowns if necessary to encourage development of good shape.
- Fertilising: Apply organic fertiliser or slow-release general fertiliser to the frequency and in compliance with the manufacturer's recommendations.
- Mowing: Mow grass as frequently as growing conditions require appropriate for the design intent. (e.g., weekly in the height of growing season) to maintain healthy growth. Remove arisings in September or later after flowering has finished and seed heads have formed and shed seed.

5.2.1.2 During and outside the growing season maintenance visits should be carried out periodically and after extreme weather events to check tree and plant supports, firming-in plants, and any other actions to promote establishment, protection, and healthy growth.

5.2.1.3 The above standard landscaping requirements should not apply to ecology areas. In particular for biodiversity areas (including formal tree planting, scrub planting below pylons and species-rich grassland):

- Weeding can be stopped once trees and shrub have established.
- Alternatives should be sought to plastic tree guards and ties - first step is to assess what guards are needed.
- Mulches aren't practical for large-scale planting.
- Formal pruning is unnecessary.
- Addition of fertiliser is unnecessary.
- Frequent mowing should not be undertaken in areas of lowland meadow, species-rich grassland and calcareous grassland.

5.3 Annual Walkover Survey

5.3.1.1 All managed habitats will be subject to an annual walkover inspection by a suitably qualified ecologist and a landscape professional. This inspection will be additional to those discussed under the previous sections (e.g. as required to ensure establishment of tree and shrub planting) and in addition to any monitoring surveys or inspections related to protected species.

- The objective of the annual walkover will be to assess the condition of retained and created habitats against target objectives.
- Following the walkover inspection, an annual monitoring report will be produced detailing any remedial actions or interventions determined necessary in order to meet the relevant species or habitat objectives. Examples may include:
  - Scrub/bracken control or cutting back where threatening to invade or overshade open wetland, grassland or enhanced ditches;
  - Cutting and removal of reed or other dense macrophyte vegetation to prevent the build-up of thatch and drying out of ponds and wetland habitats;
  - Coppicing/mowing/strimming of woodland or scrub edges and glades/rides; and
  - Addressing any INNS noted to have colonised the site.

5.4 Protected Species Surveys

5.4.1.1 The following protected species surveys are required to inform the monitoring and review of species-specific installed measures:

- The badger tunnel beneath the access road will be monitored every 6 months during the first two years, to ensure that the feature is functioning properly and to confirm that badgers are using it (through setting out trail

cameras or clay mats). Any badger fencing established in this area will be monitored to ensure it remains effective; and

- Repeat environmental deoxyribonucleic acid (DNA) surveys will be conducted at great crested newt ponds supporting small and medium populations within the Railway Reinstatement Land and the eastern mosaic.

5.5 Five-Yearly Survey and Substantive Review

5.5.1.1 The performance of the retained and created habitats in relation to their target objectives, including in providing alternative habitat for key species impacted by the development, will be assessed by means of more involved surveys at five-yearly intervals. The first will be undertaken five years after the cessation of construction or habitat creation activities.

5.5.1.2 The following surveys, at minimum, will be included in the five-year reviews:

- Protected species surveys, including acoustic monitoring of foraging and commuting bats during the bat active season; a walkover to identify badger setts and activity levels; an assessment of ditches for presence of and use by otter and water vole; monitoring visits to sample breeding, migratory and wintering birds using the site; and a walkover to assess reptile habitat suitability along the reinstated railway.
- Botanical surveys, focusing on HPI including Lowland Calcareous Grassland, Lowland Meadow and Lowland Dry Acid Grassland.

5.5.1.3 The results of the surveys will be analysed in order to identify any necessary revisions to the management prescriptions. This includes assessing all habitats that contribute to the Biodiversity Net Gain (BNG) target of 10%, to ensure that the intended condition target for each will be reached. Revised prescriptions would then be produced to guide the next five years. This information would be presented as a 'Five Year Monitoring Report' to be shared with relevant stakeholders, including North Lincolnshire Council, Natural England, the Environment Agency and any others deemed relevant. Feedback and suggestions from these stakeholders would be used to guide the next five-year plan.

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APPENDIX A PROPOSED HABITAT CREATION AND ENHANCEMENT

March 2023

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BOW17/961 Flixborough
Drawing title: Proposed Habitat Enhancement and Creation

Drawn by: SB
Checked by: JJ

Date: 13/12/2021

bowland ecology

Creation of native species-rich broadleaved woodland with trees planted in randomised patterns, providing a varied structure with a scrub understorey, glades, rides and well developed edges.

The creation and enhancement of lowland calcareous grassland will be implemented through scrub control, seeding, soil stripping (where required), translocation of notable flowering plants and establishing a suitable grazing or cutting regime.

Biodiversity enhancement area comprising dense bracken, scrub and overgrown wetland habitats. Proposals are to enhance and manage this area, creating Lowland Dry Acid Grassland; enhancing existing ponds and ditches; and improving reedbed and scrub habitats.

The wetland creation area will comprise SUDS ponds, wildlife ponds, swales, wet woodland, reedbeds and lowland floodplain meadows. Species-specific measures include the installation of amphibian/reptile hibernacula and structures offering bird nesting and bat roosting habitat.

Creation and management of landscape elements (tree and hedgerow planting, scrub beneath pylons and grassland areas) throughout the development will promote native species richness and biodiversity value.

Enhancement of Lysaght's drain will establish a wide buffer of species-rich grassland and increase the diversity of marginal vegetation, providing habitat for water vole, otter badger, farmland birds, and foraging bats. The corridor will promote habitat connectivity between the NLGEP and the biodiversity enhancement area.

A badger tunnel will be installed below the proposed access road, allowing badgers to cross safely and access foraging resources to the east.

Areas of scrub and lowland meadow mosaic will be managed to provide suitable habitat for a range of fauna including farmland birds, small mammals and badger.

0 200 400 600 800 m

Legend

- DCO boundary
- Proposed wetland creation
- Proposed green infrastructure and landscaping
- Proposed ecological enhancement area
- Proposed woodland creation
- Proposed lowland calcareous grassland
- Proposed formal tree planting
- Proposed mixed scrub
- Proposed mixed scrub/lowland meadow mosaic
- Proposed wildlife corridor
- Proposed hedgerows
- Enhanced ditches