

# OUTLINE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN

## HyNet Carbon Dioxide Pipeline DCO

Planning Act 2008

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

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# ANNEXES

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## ANNEX A - Landscape and Ecological Mitigation Plan

# 1. INTRODUCTION

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## 1.1. PROJECT OVERVIEW

- 1.1.1. The Applicant intends to build and operate a new underground carbon dioxide (CO<sub>2</sub>) pipeline from Cheshire, England to Flintshire, Wales (the Newbuild Carbon Dioxide Pipeline) with necessary Above Ground Installations (AGIs) and Block Valve Stations (BVSs). It is classed as a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) under the Planning Act 2008 to be made to the Secretary of State for Business, Energy and Industrial Strategy (BEIS) via the Planning Inspectorate (The Inspectorate).
- 1.1.2. The DCO Proposed Development will form part of HyNet North-West ('the Project'), which is a hydrogen supply and Carbon Capture and Storage ('CCS') project. The goals of the Project are to reduce carbon dioxide emissions from industry, homes and transport and support economic growth in the North West of England and North Wales. The wider Project is based on the production of low carbon hydrogen from natural gas. It includes the development of a new hydrogen production plant, pipelines, and the creation of CCS infrastructure. CCS prevents CO<sub>2</sub> entering the atmosphere by capturing it, compressing it and transporting it for safe, permanent storage.
- 1.1.3. The DCO Proposed Development is a critical component of HyNet North West by facilitating the transportation of carbon and enabling the rest of the Project to be low carbon. The hydrogen and CCS elements of the Project do not form part of the DCO Proposed Development and will be delivered under separate consenting regimes.
- 1.1.4. The DCO Application will seek consent for the construction, operation and maintenance of the following components which form part of the DCO Proposed Development, namely:
- **Ince Above Ground Installation (AGI) to Stanlow AGI Pipeline** – a section of new underground onshore pipeline (20" in diameter) to transport CO<sub>2</sub>;
  - **Stanlow AGI to Flint AGI Pipeline** – a section of new underground onshore pipeline (36" in diameter) to transport CO<sub>2</sub>;
  - **Flint AGI to Flint Connection Pipeline** - section of new underground onshore pipeline (24" in diameter) to transport CO<sub>2</sub>;
  - **Flint Connection to Point of Ayr Pipeline** – section of existing Connaught Quay to Point of Ayr (PoA) underground onshore pipeline (24" in diameter) which currently transports natural gas but would be repurposed to transport CO<sub>2</sub> as part of the DCO Proposed Development. No physical works would be required to facilitate the repurposing, with the exception of minor works

at each end of the pipeline, and the construction of three new Block Valve Stations (BVSs) along the existing onshore pipeline;

- **Four AGIs** - Ince AGI, Stanlow AGI, Northop Hall AGI, and Flint AGI.
- **Six Block Valve Stations (BVSs)** - located along:
  - The new Stanlow AGI to Flint AGI Pipeline (three in total);
  - the existing Flint Connection to PoA Terminal Pipeline (three in total);
- Other above ground infrastructure, including Cathodic Protection (CP) transformer rectifier cabinets and pipeline marker posts;
- Utility Connection's infrastructure, including power utilities and Fibre Optic Cable (FOC); and
- Temporary ancillary works integral to the construction of the Carbon Dioxide Pipeline, including Construction Compounds and temporary access tracks.

1.1.5. Further details of each key element of the DCO Proposed Development are set out in **Chapter 3 – Description of the DCO Proposed Development (Volume II)** of the **Environmental Statement (Document reference: D.6.2)**.

1.1.6. Works to install the DCO Proposed Development are expected to start in April 2024.

1.1.7. The development authorised by the DCO must be undertaken in accordance with this Outline Landscape and Ecology Management Plan (Outline LEMP) pursuant to the Requirements of the **Draft Development Consent Order (DCO) (Document reference: D.3.1)**.

## **1.2. OUTLINE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN**

1.2.1. An Environmental Impact Assessment (EIA) has been undertaken for the DCO Proposed Development and the ES has been prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the DCO EIA Regulations). In accordance with the requirements of the DCO EIA Regulations, the ES contains the assessment of the potential significant effects on the environment that may be caused during construction, operation and maintenance of the DCO Proposed Development and describes the proposed mitigation measures.

1.2.2. As part of this process, which included extensive stakeholder engagement, a number of commitments and good practice measures to be actioned during design and construction were made. These were applied as part of the environmental assessment process. In addition, mitigation measures were proposed and committed to, to offset any significant effects identified as part of the assessment, after applying the mitigation hierarchy (avoid, minimise, restore, offset). All of these measures have been collated into the **Register of**

**Environmental Actions and Commitments (REAC) (Document reference: D.6.5.1) and all measures associated with construction are part of the Outline Construction Environmental Management Plan (OCEMP) (Document reference: D.6.5.4)**

1.2.3. This OLEMP has been produced in order to ensure the survival and establishment of Landscape and Ecological commitments set out within the **Landscape Layouts (Document reference: EN070007-D.2.14-LAY-Sheets 0-10)** and the commitments stated within the **REAC (Document reference: D.6.5.1)**. This OLEMP intends to guide those responsible for the protection and management of the landscape and ecology elements in the Design of the DCO Proposed Development. The document sets out the preparation, management and monitoring practices for the period prior to construction; during construction and throughout the initial establishment maintenance period. This document will form the basis for a detailed LEMP to be produced at the Detailed Design stage by the construction contractor and maintained through the operational period. The key objectives of this OLEMP are to:

- ensure the continued health and vigour of any retained existing vegetation within the Newbuild Infrastructure Boundary;
- ensure the successful establishment and continued healthy growth through to maturity of all proposed vegetation;
- achieve a clean, tidy condition and appearance of all external areas; and
- ensure the continued existence of natural habitat for existing species and sustain the ecological environment wherever possible.

### **1.3. LANDSCAPE LAYOUTS**

1.3.1. As part of the DCO Application, Landscape Layouts have been produced for each AGI and BVS, which sets out the proposed mitigation design. These can be referenced as follows:

- **EN070007-D.2.14-LAY-Sheet 0 Flint AGI Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 1 Northop Hall AGI Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 2 Ince AGI Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 3 Aston Hill BVS Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 4 Mollington BVS Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 5 Rock Bank BVS Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 6 Babell BVS Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 7 Pentre Halkyn BVS Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 8 Cornist Lane BVS Landscape Layout;**
- **EN070007-D.2.14-LAY-Sheet 9 Stanlow AGI Landscape Layout.**

- 1.3.2. To refine the AGI and BVS Landscape Layouts, detailed Landscape Layouts will be produced by the appointed construction contractor during Detailed Design. In addition, a new set of drawings will be produced along the Newbuild Carbon Dioxide Pipeline route. These detailed Landscape Layouts will include:
- Existing vegetation and/or features to be removed;
  - Proposed vegetation and/or features to replace those removed;
  - Existing vegetation and/or features to be retained and protected.

- 1.3.3. In addition to the full suite of Landscape Layouts the following will also be produced by the construction contractor in agreement with the Local Planning Authority (LPA):

- Typical Soft Landscape Details for all vegetation types;
- Detailed specification for all vegetation types;
- Detailed Planting Schedules that build upon the indicative species list provided within **Indicative species List (Document Reference: EN070007-D-2.14-LAY-Sheet 10)**;
- Existing Land type survey plans to enable the appropriate 'Make Good / return to prior use';
- Detailed Hedgerow survey plans will build upon the existing **Hedgerow Plans Regulation 5(2)(I)(i) Application Plans (Document Reference EN070007-D.2.13)**;
- Detailed arboricultural survey plans will build upon the **Preliminary Constraints and Impacts Plan (Figure 9.11.1 within Appendix 9.11 Arboricultural Impact Assessment Report, Volume III)**.

## 1.4. ADDITIONAL AREAS OF MITIGATION

- 1.4.1. During the process of the EIA, it was established that in some locations, like-for-like replacement along the Newbuild Carbon Dioxide Pipeline route would not be possible owing to the requirement for easements of the Newbuild Carbon Dioxide Pipeline and/or offset requirements for existing services equipment such as overhead powerlines and underground cables etc. In order to safeguard the worst case space requirements for replacement planting within the Newbuild Infrastructure Boundary, areas for mass planting were identified at a number of locations, shown in **Table 1**. As per standard practice and with the absence of specific guidance on replacement ratios at this stage, these are based on an area replacement of 3:1 for areas of woodland, irreplaceable habitats (bespoke approach) and individual trees identified to be lost.





**Table 1 – Proposed Mitigation Areas**

<b>Work Number</b>	<b>Area</b>
<i>Work No. 57A:</i> Creation of environmental mitigation, east of Cryers Lane, at the location shown on Sheets 2, 3 and 4 of the Works Plans, including woodland planting.	4.2 acres
<i>Work No. 57B:</i> Creation of environmental mitigation south-west of Stanlow AGI, at the location shown on Sheets 3 and 4 of the Works Plans, including woodland planting.	0.9 acres
<i>Work No. 57C:</i> Creation of environmental mitigation north of the M56 at the location shown on Sheets 4 and 5 of the Works Plans, including woodland planting.	1.1 acres
<i>Work No. 57D:</i> Creation of environmental mitigation south of the M56 at the location shown on Sheets 4 and 5 of the Works Plans, including woodland planting.	3.4 acres
<i>Work No. 57E:</i> Creation of environmental mitigation east of River Gowy / south of M56 at the location shown on Sheets 5 and 6 of the Works Plans, including woodland planting.	3.3 acres
<i>Work No. 57F:</i> Creation of environmental mitigation west of River Gowy / south of M56 at the location shown on Sheets 5 and 6 of the Works Plans, including – woodland planting to create new woodland block west of River Gowy; and riparian planting along western bank of River Gowy and connected ditch.	2.9 acres
<i>Work No. 57G:</i> Creation of environmental mitigation north of the Shropshire Union Canal / west of Liverpool Road at the location shown on Sheet 9 of the Works Plans, including woodland planting.	2.8 acres
<i>Work No. 57H:</i> Creation of environmental mitigation east of the A494 at the location shown on Sheet 17 of the Works Plans, including – woodland planting; and scrub planting over the easement and where the pipeline is laid.	1.9 acres
<i>Work No. 57I:</i> Creation of environmental mitigation west of Church Lane at the location shown on Sheet 17 and 18 of the Works Plans, including – woodland planting; and scrub planting over the easement and where the pipeline is laid.	11.4 acres
<i>Work No 57J:</i> Creation of environmental mitigation on land east of Alltami Brook at the location shown on Sheet 19 of the Works Plans, including – creation of new woodland block; and scrub planting over the easement and where the pipeline is laid.	10.2 acres
<i>Work No 57K:</i> Creation of environmental mitigation at Alltami Brook at the location shown on Sheet 19 of the Works Plans, including –	8.5 acres

Work Number	Area
woodland planting either side of the pipeline; scrub planting over the easement and where the pipeline is laid; and riparian planting along the edge of the brook.	
<i>Work No 57L</i> : Creation of environmental mitigation east of Brookside at the location shown on Sheets 19 and 20 of the Works Plans, including – Woodland and scrub planting; and riparian planting buffer along the southern edge of the order limits adjacent to ditch, should trees along the boundary be removed. Else, continuation of woodland planting only.	0.8 acres
<i>Work No 57M</i> : Creation of environmental mitigation east of Northop Hall AGI at the location shown on Sheet 20 of the Works Plans, including – woodland planting; scrub planting over the easement and where the pipeline is laid.	5.5 acres

- 1.4.2. The locations above are set out in **Appendix 1 Landscape and Ecological Mitigation Plan (Document reference: D.6.5.10.1.)**
- 1.4.3. To refine the Landscape and Ecological Mitigation Plan, a detailed Landscape and Ecological Mitigation Plan will be produced by the appointed construction contractor during Detail Design, following hierarchy shown in **Table 2** below in relation to replacement planting.

**Table 2 – Vegetation replacement hierarchy**

<p><b>1.</b></p> <p><b>Where existing vegetation can't be retained in its original location, a replacement of like-for-like (for the case of trees this should be of at least a ratio of 3:1) is to be implemented in the same location the vegetation was lost. This includes exploring options to plant within proximity to existing services equipment such as by using root barriers and other alternatives where practicable.</b></p>

<p><b>2.</b></p> <p><b>Where replacement vegetation cannot be implemented in the same location owing to constraints, it should be re-located as close as reasonably practicable, such as within the same field parcel or an adjacent field parcel.</b></p>

<p><b>3.</b></p> <p><b>Where no suitably nearby location can be found owing to constraints, then replacement vegetation can be located within the identified parcels of land set out on Appendix 1 Landscape and Ecological Mitigation Plan (Document Ref: D.6.5.10.1.)</b></p>

- 1.4.4. The Landscape and Ecological Mitigation Plan doesn't address any additional requirements outside of the Newbuild Infrastructure Boundary to meet the Biodiversity Net Gain (BNG) target. This is being pursued through engagement with landowners and stakeholders using the off-site compensation scenarios. Full details are within the **BNG Assessment (Document reference: D.6.5.12.)**

**1.5. APPROACH**

- 1.5.1. This document should be used as a working document that provides outline details that cover the initial habitat creation works, and their management and monitoring for a period of 5 years for all vegetation with the addition of a further 5 years for woodland planting, commencing at Practical Completion (i.e. inclusive of first year Defects Liability Period (DLP)). The Construction Contractor would be responsible for the management and maintenance of the landscape and ecological elements up to Final Completion (i.e. within the first

year DLP). The Applicant would then be responsible for appointing a Maintenance Contractor to undertake the management and maintenance of the landscape and ecological elements for the remainder of the maintenance period (i.e. post Final Completion).

- 1.5.2. It is expected that the Construction Contractor will be responsible for the detailed LEMP but that they will likely appoint suitably qualified Project Landscape Architect, Project Ecologist, Arboriculturist, Ecological Clerk of Works, Landscape Contractor and Landscape Maintenance contractor as appropriate. For the purposes of this OLEMP reference will largely be made to 'Construction Contractor' in terms of responsibilities.
- 1.5.3. This OLEMP provides a guide, with the detailed LEMP in the next stage being subject to change and improvement as the ecological features / habitats become more apparent and as they mature through the maintenance period. Although the aims of the detailed LEMP will remain the same, the management prescriptions may need to be adapted in response to variables that arise over time (e.g. climate change, pests, invasive species etc). These will be set out in an annual monitoring report. This will be used by the Project Ecologist and Project Landscape Architect as part of the Construction Contractor team, supported by the Ecological Clerk of Works (ECoW) to determine whether the aims of the LEMP are being/have been met, and to identify any actions or changes to the LEMP that may be required. If the reviews highlight the need for management changes, then remedial measures would be introduced into the LEMP following agreement with LPAs.
- 1.5.4. This OLEMP is structured as follows:
- **Section 1** – Introduction: provides an outline of the OLEMP purpose and background of the DCO Proposed Development's landscape and ecological design;
  - **Section 2** – Pre-Construction Management Actions: details landscape / ecological management actions for Pre-construction Stage;
  - **Section 3** – Construction Management Actions: details landscape / ecological management actions for the Construction Stage;
  - **Section 4** – Post-Construction Management Actions: details landscape / ecological management and monitoring actions for Post-construction Stage;
  - **Section 5** – Weed Control; and
  - **Section 6** – Maintenance and Management Schedules: provides detail of the mechanisms for management responsibility, together with the programme of works to be implemented during the Establishment Stage, at hand-over following DLP and on-going management and maintenance.

## 1.6. LANDSCAPE ELEMENTS

1.6.1. As set out above a series of Landscape Layouts have been produced for the proposed designs to date at AGI and BVS locations. The key aims of these designs has been to retain as much vegetation as possible, provide planting that aims to filter views for receptors, and connect with existing planting and surrounding green infrastructure. The proposed design aims to deliver the works within an appropriate landscape setting, in consideration of the existing and future baselines and ecological mitigation.

1.6.2. This OLEMP covers elements that comprise the soft landscape of the DCO Proposed Development, as follows:

- Existing trees to be retained;
- Existing hedgerow to be retained;
- Native Tree Screen Planting (Woodland belt character);
- Native Shrub Planting (low level planting);
- Hedgerow Trees (individual trees);
- Individual Trees (individual trees to replace those lost);
- Native Triple Staggered Hedgerow (proposed hedgerow where not replacing existing like-for-like);
- Native Double Staggered Hedgerow (where replacing existing like-for-like);
- Species Rich Grassland; and
- Made Good / return to prior use.

1.6.3. The indicative species for the above elements are noted on **Landscape Layout EN070007-D.2.14-LAY-Sheet 10**.

## 1.7. ECOLOGICAL ELEMENTS

1.7.1. Details of ecological surveys carried out are described in Environmental Statement **Chapter 9 - Biodiversity (Document reference: D.6.2.9)** and its associated technical appendices (**Appendix 9.1-9.10, Volume III**). Ecological surveys comprised:

- Phase 1 Habitat Surveys;
- National Vegetation Classification Surveys;
- Great crested newt *Triturus cristatus* Surveys;
- Bat Activity Surveys;
- Bats & Hedgerow Assessment Surveys;
- Badger *Meles meles* Surveys;
- Riparian Mammal Surveys;
- Barn owl *Tyto alba* Surveys;

- Breeding and Wintering Bird Surveys; and
- Aquatic Ecology Surveys on Ponds and Watercourses.

1.7.2. A summary of legislation is provided below in Table 3.

**Table 3. Summary of Relevant Legislation**

<b>Receptor</b>	<b>Legislation</b>
<b>Great Crested Newt</b>	Great crested newt are legally protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended).
<b>Bats</b>	All bat species are legally protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended).
<b>Badger</b>	Badgers and their setts are legally protected under the Protection of Badgers Act 1992 (as amended) and the Wildlife and Countryside Act 1981 (as amended).
<b>Otter</b>	Otter are legally protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended).
<b>Water vole</b>	Water vole are legally protected under the Wildlife and Countryside Act 1981 (as amended).
<b>Barn Owl</b>	Barn owl are legally protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) which affords them protected against disturbance whilst nesting.
<b>Birds</b>	All breeding birds, their eggs, nests and young are protected under the Wildlife and Countryside Act 1981 (as amended). Some species are afforded special protection whilst nesting under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
<b>Aquatic Receptors</b>	Waterbodies including watercourses are afforded protection as Habitats of Principal Importance under the Natural Environment and Rural Communities (NERC) Act 2006.  Atlantic salmon <i>Salmo salar</i> freshwater fish are afforded protection under the Salmon and Freshwater Fisheries Act 1975. Atlantic salmon, river lamprey, sea lamprey, and bullhead are afforded protection under the Habitats and Species Regulations 2017 (as amended). European eel <i>Anguilla Anguilla</i> are afforded protection under the Eels (England and Wales) Regulations 2009 and the NERC Act 2006. Brown/sea trout, <i>Salmo trutta</i> , Atlantic salmon, river lamprey <i>Lampetra fluviatilis</i> , sea lamprey <i>Petromyzon marinus</i> , and smelt <i>Osmerus eperlanus</i> , are all afforded protection under the NERC Act 2006.

1.7.3. This OLEMP covers ecological elements as detailed within the **Register of Environmental Actions and Commitments (REAC) (Document reference: D.6.5.1)** such as:

- Log pile – created from suitable log sections following tree removal;
- Hibernacula – created from a mixture of materials including earth, logs and stones; and
- Bat and Bird boxes – to be installed in suitable locations.

## 2. PRE-CONSTRUCTION MANAGEMENT ACTIONS

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### 2.1. GENERAL MANAGEMENT ACTIONS

- 2.1.1. An Outline Construction Environmental Management Plan (OCEMP) has been produced as part of the DCO Application (**Document reference: D.6.5.4**) and should be referred to upon commencement of works on Site. The appointed Construction Contractor should appoint an appropriately experienced ECoW, to cover/oversee the ecology and landscape matters, prior to the commencement of construction. The Construction Contractor may also be required to develop working method statements (MS) for all key construction operations.

### 2.2. HABITAT MANAGEMENT ACTIONS

#### TREE AND HEDGEROW PROTECTION

- 2.2.1. No existing trees, shrubs or other plants shall be removed or cut without specific instructions from the ECoW and/or Project Manager and their appointed arboriculturist.
- 2.2.2. Trees are to be protected prior to, during and after construction in accordance with the findings set out within the **Arboricultural Impact Assessment Report (Document Reference: D6.3.9.11,)**
- 2.2.3. All works are to be carried out in accordance with the *British Standard Recommendations for Tree Work, BS 3998:1989* and *British Standard (BS 5837:2012): Trees in Relation to Design, Demolition and Construction*, and should be undertaken by certificated personnel from the Arboricultural Association's list of Registered Contractors. Proof of experience and insurance provision will be required. All work will be undertaken at the appropriate time and with the consent of the ECoW and/or Project Manager who shall approve a programme of work with the relevant LPA.
- 2.2.4. It is the Construction Contractor's responsibility to ensure all fencing around retained trees and hedgerows are installed to BS5837, prior to construction commencing on Site and are maintained throughout the Construction period.

#### OTHER HABITATS/NOTABLE SPECIES

- 2.2.5. Protected species mitigation and management actions for the Pre-construction Stage of the DCO Proposed Development are detailed within the **Register of Environmental Actions and Commitments (REAC) (Document reference: D.6.5. 1)**.



### 3. CONSTRUCTION MANAGEMENT ACTIONS

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#### 3.1. RETAINED HABITAT ACTIONS

- 3.1.1. As stated in **Section 2.2**, tree protection fencing shall be installed in accordance with the **Arboricultural Impact Assessment Report (Document Reference: D6.3.9.11 Appendix 9.11, (Volume III))** and maintained throughout the Construction Stage. It is the Construction Contractor's responsibility to ensure all fencing around retained trees and hedgerows are installed and maintained prior to and throughout the Construction Stage.
- 3.1.2. All operations shall be carefully carried out to avoid damage to the trees being treated or neighbouring trees. No trees to be retained shall be used for anchorage or winching purposes.
- 3.1.3. Within areas of temporary land take, where vegetation clearance is required (i.e. for site compounds / temporary storage of materials and topsoil), full reinstatement of habitat will take place, to ensure there will be no change to baseline conditions. Topsoil shall be removed and stored in accordance with BS 3882:2015 '*Specification for topsoil*' (BSI, 2015) and reinstated in the same place upon completion, once any compaction has been relieved.
- 3.1.4. All mitigation planting will take place at the earliest opportunity following construction i.e. within the first suitable planting season possible. All hedgerows will be re-instated within 1 year of impact as set out by commitment **D-BD-032 of the REAC (Document reference: D.6.5.1)**.

#### 3.2. LANDSCAPE ELEMENT CREATION ACTIONS

- 3.2.1. The soft landscape design for the DCO Proposed Development will be developed to create semi-natural habitats (habitats of value for wildlife). This will provide increased refuge and foraging habitat for several legally protected and or notable species, including the following:
- The proposed areas of shrub and woodland planted with native species will provide refuge and foraging habitat for several species including bats, birds, badger *Meles meles*, and small mammals;
  - The proposed areas of hedgerow planted with native species will provide refuge, foraging and commuting habitat for several species including but not limited to great crested newt *Triturus cristatus* and other amphibians, bats, badger, birds, invertebrates and other small mammals including hedgehog *Erinaceus europaeus*; and
  - The proposed areas of grassland will provide increased foraging opportunities for bats, birds, invertebrates and small mammals.
- 3.2.2. The mitigation planting aims to maintain habitat connectivity, with the habitats created mitigating the loss of those removed and restoring links to the wider landscape.

- 3.2.3. **Landscape Layouts EN070007-D.2.14-LAY-Sheet 0-9** define the extent and location of the proposed landscape features and planting specification for the DCO Proposed Development and AGI and BVS. The proposed on-site soft landscape elements will include the following:
- Existing trees to be retained;
  - Existing hedgerow to be retained;
  - Native Tree Screen Planting (Woodland belt character);
  - Native Shrub Planting (low level planting);
  - Hedgerow Trees (individual trees);
  - Individual Trees (individual trees to replace those lost);
  - Native Triple Staggered Hedgerow (proposed hedgerow where not replacing existing like-for-like);
  - Native Double Staggered Hedgerow (where replacing existing like-for-like);
  - Species Rich Grassland; and
  - Made Good / return to prior use.
- 3.2.4. **Appendix 1 Landscape and Ecological Mitigation Plan (Document reference D.6.5.10.1.** shows the identified locations for further mitigation planting along the Newbuild Carbon Dioxide Pipeline route. At Detailed Design plans similar to those around BVSs and AGIs will be produced by the Construction Contractor and will show features as listed above where appropriate.
- 3.2.5. The post-construction management of each element noted above will be detailed in **Section 4.**
- 3.2.6. The following sections describe the elements that comprise the soft landscape of the DCO Proposed Development. The species composition for the following landscape elements and mitigation planting are provided on **Landscape Layouts EN070007-D.2.14-LAY-Sheet 0-9.**
- CREATION OF WOODLAND, NATIVE SHRUB AND HEDGEROW HABITATS**
- 3.2.7. Any bare rooted plants shall be supplied to Site with their roots having been treated with an approved mycorrhizal inoculant anti-desiccant root dip at the time of lifting in the nursery. Evidence shall be supplied by the Construction Contractor that the plants have been treated in this way (Note: current proposals allow for rootball and container stock only, bare root note included if stock availability requires substitutions. Any substitutions which differ from the specified planting schedule will first be approved by the Clerk of Works).
- 3.2.8. Any containerised stock shall be checked to ensure even and healthy growth.
- 3.2.9. All native species planting stock shall be grown in the UK from seed sourced in the UK.

- 3.2.10. The Construction Contractor shall secure the source of nursery stock as soon as notice to proceed to construction is issued. Any requirement for species substitution will be agreed with ECoW.
- 3.2.11. Plant handling, packaging, protection, transportation and on-site storage are to be undertaken in accordance with '*The National Plant Specification - 'Handling and Establishment' Landscape Plants*' published by The Committee for Plant Supply and Establishment, 1995.
- 3.2.12. The planting season for bare root, root-balled and cell grown plants shall be 1 November to 31 March inclusive, unless otherwise advised by the ECoW and/or Project Manager. Planting shall take place during favourable weather and soil conditions.
- 3.2.13. Note: all planting on embankments is proposed on a maximum 1:3 gradient. The proposals are based on computer generated gradients. The Construction Contractor must establish a safe method of planting and maintenance (i.e. consider soil condition, terrain, size/weight of planting, machine/operations and weather).
- 3.2.14. Planting depth shall be to the original nursery mark on the plant. Backfill shall be in accordance with Typical Soft Landscape Construction Details produced by the Construction Contractor prior to commencement of construction.

#### **CREATION OF GRASS AND WILDFLOWER HABITATS**

- 3.2.15. Existing soils are to be prepared by raking and removing debris and stones to create a suitable seed bed. Cultivation and seeding are to be avoided in wet conditions that may give rise to soil compaction, smearing or other damage.
- 3.2.16. Where there is a significant time gap between soil preparation and sowing of the grass seed mix, the soil shall be left fallow. If necessary, any weed growth should be removed by hand or by using an appropriate non-residual herbicide, as set out in **Section 5**, prior to cultivation.
- 3.2.17. The seed mixes are to be sown by machine or broadcast by hand at a rate identified on the above drawing, applied in two equal passes in different directions. Seed beds shall then be lightly raked.

#### **MADE GOOD / RETURN TO PRIOR USE**

- 3.2.18. Following construction works, the Construction Contractor shall prepare the areas of land that are to be Made Good / Returned to Prior Use as appropriate with reference.

#### **OTHER HABITATS/NOTABLE SPECIES**

- 3.2.19. Protected species mitigation and management actions for the Construction Stage of the DCO Proposed Development are detailed within the **REAC (Document reference: D.6.5.1)**.

## 4. POST CONSTRUCTION MANAGEMENT ACTIONS

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### 4.1. GENERAL MAINTENANCE AND MANAGEMENT ACTIONS

- 4.1.1. This section sets out the general maintenance prescriptions and assumed responsibilities for the soft landscape areas, for the first 5 years (10 years for woodland planting) following Practical Completion of the landscape works. It is assumed landscape works will be completed as a whole, and not in sections, to allow the start of the five-year aftercare period. These prescriptions will be reviewed on a rolling basis at the end of Year 1 and 3, and an addendum to be added to the detailed LEMP will be produced for agreement with the LPA, to reflect any agreed actions.
- 4.1.2. This section also covers the management actions for each landscape element, specifically designed to enable the objectives to be achieved and allow the successful establishment of a sustainable, healthy landscape, which will implement landscape, visual and ecological mitigation measures.
- 4.1.3. **Schedule A**, in **Section 6** of this OLEMP, comprises a Maintenance Schedule of Works detailing the management actions to be carried out by the appointed Landscape Contractor (within the DLP/Yr 1) and appointed Maintenance Contractor (for the following aftercare period). This should be read in conjunction with the prescriptions detailed below. The schedule sets out the activities required to achieve the long term aims of the soft landscape design of the DCO Proposed Development.
- 4.1.4. Following the completion of the Construction Stage, once all planting is in place, a suite of drawings should be produced by the Construction Contractor referred to as 'as built drawings' or similar to ensure what has been constructed matches the proposed drawings, as well as forming a reference for on-going maintenance and associated record keeping.

### 4.2. GENERAL LANDSCAPE MANAGEMENT PRESCRIPTIONS

- 4.2.1. The following are considered to be the over-arching requirements for the 5-year maintenance period, that apply to the hard and soft landscape estate as a whole:
- The Construction Contractor shall attend quarterly Site inspections with the ECoW as indicated in **Schedule A**, in **Section 6**. Inspection dates and site access arrangements to be confirmed with all participating parties at least 1-week prior to site inspection. All personnel carrying out the inspections and management tasks must be suitably trained and competent;
  - Management prescriptions shall be adapted as required following findings of quarterly Site inspections and noted in a Quarterly Site Inspection Report to monitor condition and establishment;

- Establishment of planting will be implemented by the Construction Contractor appointed by the Applicant, including ensuring any failed specimens are replaced. Future maintenance will be undertaken appointed Construction Contractor.
- Fertilisers, herbicides and/or lime are not required, unless otherwise stated. Of particular note, neonicotinoids shall not be used, and glyphosate may only be used in exceptional circumstance and with prior approval from the LPA.
- Subject to agreement with the ECoW and/or Project Manager - grass clippings and other vegetative arisings may be composted on Site in suitable agreed locations to minimise visual impact, or alternatively shall be removed from Site to a previously approved licensed recycling or waste disposal centre.
- Litter shall be removed on a bi-monthly basis, or as necessary across the whole Site where heavy infestation has occurred. A co-ordinated approach to tackling litter problems should be sought with other management agencies and landowners in order to achieve a litter free zone.

4.2.2. In particular reference to watering:

- Watering shall be undertaken during dry periods (being any period without substantial rainfall for 14 days or more).
- Watering should generally be undertaken in the morning before the active growing window, particularly during periods of hot weather.
- The Construction Contractor shall be entirely responsible for varying the frequency of visits according to climatic conditions and for contacting the ECoW to agree the timing of any additional watering visits if required.
- Where restrictions are placed on the use of water, the Construction Contractor shall be responsible for the costs of obtaining recycled water.
- The Construction Contractor shall be responsible for any plant failures or excessive die back from drought stress during the management contract period.

### **4.3. LANDSCAPE LAYOUT ELEMENTS**

#### **EXISTING VEGETATION TO BE RETAINED**

- 4.3.1. Existing trees and vegetation retained within the Newbuild Infrastructure Boundary and those immediately adjacent to the Site should be checked during the quarterly Site inspections, for signs of deterioration or distress and the appropriate actions undertaken, where a potential safety hazard is identified.
- 4.3.2. All diseased wood, prunings and rubbish should be removed from Site to the nearest recycling centre and the Site left in a clean and tidy condition.

- 4.3.3. Heavy branches should be removed in sections and undercut to avoid tearing the bark, then lowered by slings. No branch stumps should be left, and no cuts should be sealed with fungicidal sealant. No cuts should be capable of holding water.
- 4.3.4. Tree works shall be carried out in accordance with BS 3998:1989 '*Recommendations for Tree Work*' (BSI Standards Publication, 2010 British Standards).
- 4.3.5. Riparian vegetation should be retained where practicable.

#### **INDIVIDUAL TREE AND HEDGEROW TREE PLANTING**

- 4.3.6. Individual tree and Hedgerow tree planting is proposed across the Newbuild Infrastructure Boundary and within BVS and AGI locations to provide localised filtering to residential receptors and recreational users from PRow, alongside mitigating potential tree loss across the DCO Proposed Development.

#### **Management prescriptions**

- 4.3.7. Management actions include:
- Newly planted trees will require regular watering within the first few weeks of planting, in accordance with the Landscape Institute Watering Advice Note.
  - The area around the trees will be kept clear of vegetation for up to five years after planting using mulch. Apply fertilizer to the bases of the trees in April for the first two years and weed around the trees on a monthly basis during the main growth period of April to October (inclusive).
  - Pruning, where necessary, should be undertaken during January and early February with the aim of achieving a dense structure suitable for nesting birds. Pruning should be avoided between February and September (inclusive), to ensure that nesting birds are not affected by the management works.
  - Trees and stakes will be inspected annually during the growing season. Check for damaged, dead or diseased trees, remove trees where damage has occurred that would jeopardise long term survival of the tree and replace in the next planting season following identification. This annual inspection will also be used to re-firm trees where leaning/ uneven soil and check staking and tree ties, replacing where necessary.
  - All weeds from around the base of the trees to be removed to a radius of 500mm. Weeds are to be hand-pulled where feasible, otherwise spot-treated with non-residual herbicide.
  - Inspect the depth of course grade bark mulch and top up annually in March to maintain a required minimum depth of 75mm.
  - Remove stakes and tree ties in Year 3, if tree has reached required establishment. If not, review in Years 4 and 5.

- Cut back and remove any epicormic growth.

#### **NATIVE TREE SCREEN PLANTING (WOODLAND BELT CHARACTER)**

4.3.8. Screen planting (woodland belt character) has been proposed across the Newbuild Infrastructure Boundary and within BVS and AGI locations to provide localised screening to residential receptors and recreational users from PRow and mitigate vegetation loss throughout the DCO Proposed Development.

Management prescriptions

4.3.9. Management actions include:

- Newly planted specimens shall be checked during quarterly Site inspections for signs of damage, disease or pests present. In regard to possible deer/rabbit browsing, shrub guards have been specified to limit the risk of browsing damage. The ECoW and/or Project Manager will inspect the establishment of the planting with the Construction Contractor to review if effective control is being achieved.
- All tree ties, guards and stakes shall be adjusted as required during the quarterly Site inspections. Once the trees planting has reached establishment and no longer requires support (likely Year 3), guards, ties and stakes may be removed and disposed of at the nearest recycling centre or kept in storage for reuse in the future.
- The bark mulch where applied, should be maintained at an even spread and be of a consistent thickness of 75mm, to ensure that it is effective as a weed suppressant and moisture conserver. Following any maintenance operations and on an annual basis (in March), the coarse grade bark mulch shall be supplemented (to a depth of 75mm) to allow for any material which may have been lost.
- Minor pruning of dead or damaged wood shall be carried out as necessary. Wounds exceeding 25mm diameter must not be treated with a sealant. On substantial trees, the LPA Tree Officer must be consulted for any necessary approvals.
- Any diseases or pests present should be reported to the LPA in the first instance and a programme of removal and replacement should be provided by the Construction Contractor.
- Any dead or dying saplings shall be replaced with good quality specimens of the same species, as appropriate to maintain the overall habitat structure.
- Where appropriate, dead wood will be retained on Site and piled up underneath the main canopy to create invertebrate habitat and shelter for small mammals.
- Newly planted specimens are to be watered fortnightly between April and the end of September (up to a maximum of 15 visits), at a rate of 25 litres per tree. This should be increased during periods of drought at the discretion of the Construction Contractor.

- 4.3.10. Weed control shall be undertaken in accordance with **Section 5** of this document.
- 4.3.11. Timings of maintenance activities shall be carried out as per **Schedule A** in **Section 6** of this document.

#### **NATIVE SHRUB PLANTING (LOW LEVEL PLANTING)**

- 4.3.12. Planting mixes have been proposed to provide appropriate mitigation for vegetation loss throughout the DCO Proposed Development, to aid visual screening and to ensure new planting is not out of keeping with existing species within the landscape and will therefore retain a consistent connection of planting for wildlife.

#### **Management prescriptions**

- 4.3.13. Management actions include:
- Newly planted shrubs shall be checked during quarterly Site inspections for signs of damage, disease or pests present. In regard to possible deer/rabbit browsing, shrub guards have been specified to limit the risk of browsing damage. The E/CoW and/or Project Manager will inspect the establishment of the planting with the Construction Contractor to review if effective control is being achieved.
  - The bark mulch where applied, should be maintained at an even spread and be of a consistent thickness of 75mm, to ensure that it is effective as a weed suppressant and moisture conserver. Following any maintenance operations and on an annual basis (in March), the coarse grade bark mulch shall be supplemented (to a depth of 75mm) to allow for any material which may have been lost.
  - All pruning cuts shall be made in accordance with BS 7370 Part 4 and shall be undertaken using secateurs and handsaws. Mechanical hedge cutters may only be used on compact small-leaved species which have dense foliage.
  - Pruning shall be undertaken to promote flowering and fruiting in accordance with the species and age of the plant.
  - All broken and badly damaged branches shall be pruned from the plants.
  - Any diseases or pests present should be reported to the LPA in the first instance and a programme of removal and replacement should be provided by the Construction Contractor.
  - Where appropriate, dead wood will be retained on Site and piled up underneath the main canopy to create invertebrate habitat and shelter for small mammals.
  - Newly planted shrubs are to be watered fortnightly between April and the end of September (up to a maximum of 15 visits), at a rate of 25 litres per



shrub. This should be increased during periods of drought at the discretion of the Construction Contractor.

4.3.14. Weed control shall be undertaken in accordance with **Section 5** of this document.

4.3.15. Timings of maintenance activities shall be carried out as per **Schedule A** in **Section 6** of this document.

### **HEDGEROW PLANTING**

4.3.16. An indicative species mix for hedgerow planting has been provided within **Landscape Layouts Sheet 10 (doc ref: EN700007-D.2.14-LAY-Sheet 10 Indicative Species)** and is to comprise of native species. Where, like for like mitigation is required hedgerow species are to be determined via hedgerow surveys or as per the species mix provided should this provide a greater benefit for biodiversity.

### **Management prescriptions**

4.3.17. Management actions include:

- The Construction Contractor shall liaise with adjacent landowners regarding the access arrangements and working hours in order to carry out hedge maintenance. All arisings shall be disposed of by the Construction Contractor.
- Regular trimming/cutting is to be undertake during the first three years of establishment to encourage bushy growth and to maintain a neat appearance, with hedge height to be maintained to an appropriate height of approximately 1.5m.
- Following the first three years of establishment hedgerows are to be cut every three years, on a rotation to support a varied hedgerow structure and encourage both fruiting and flowering.
- No trimming, laying, or clipping shall take place during the bird nesting season (March-September).
- All cutters and blades shall be sharpened and set according to the manufacturer's recommendations.
- Where growth to be cut is up to two years old, highway hedgerow planting may be maintained with tractor mounted side arm flails, provided that they cut cleanly without leaving ragged ends. Large leafed evergreen hedges shall be pruned with secateurs to avoid half cut leaves.
- Growth shall be reduced to the point of the previous cut and on completion, both sides of the hedge shall be perpendicular and the top shall be level and at right angles to the sides.
- All clippings lodged in the top or sides of the hedge shall be removed off Site. During the cutting operation all litter and debris within the structure of the hedge shall be removed off Site.

- All hedge laying works shall be carried out in a manner to ensure that the newly laid hedge possesses a neat, uniform appearance of even density. The work shall be carried out ensuring that the cut hedge plants are able to re-grow vigorously.
- All hedge laying work shall only be carried out during the dormant season, but not during periods of extreme frost.
- All side branches from any hedge plants which may impede or obstruct the laying operation or detract from the style and appearance of the completed hedge shall be removed.
- Any branches which are tangled or interwoven with other hedge plants shall be removed to ensure that the hedge plant to be laid is free to be guided into position. Any dead, damaged or diseased wood, along with any other foreign objects and debris, shall also be removed before the plant is laid.
- All plants shall be laid in the same direction unless a gap is likely to occur. All laid hedge plants shall, as far as possible, be interwoven into each other and the supporting hedge stakes to ensure maximum stability. On sloping ground, all hedge plants shall be laid in an uphill direction except when back laying is required to fill a gap.
- Stakes shall be driven centrally down the line of the hedge to offer support to the newly laid hedge plants in accordance with the following staking requirements.
- All cut material and other arisings shall be removed off Site by the end of each working day, unless otherwise required.
- Where any significant gap exists in the hedge after it has been laid, it shall be planted up with new hedge plants. The size of the plants, species and planting density/pattern shall be as specified within the proposed plant schedules.
- The bark mulch where applied, should be maintained at an even spread and be of a consistent thickness of 75mm, to ensure that it is effective as a weed suppressant and moisture conserver. Following any maintenance operations and on an annual basis (in March), the coarse grade bark mulch shall be supplemented (to a depth of 75mm) to allow for any material which may have been lost.
- Failed, unhealthy or dead specimens are to be removed at the earliest convenience and are to be replaced within the next planting season.
- Newly hedgerows are to be watered fortnightly between April and the end of September (up to a maximum of 15 visits), at a rate of 25 litres per linear meter. This should be increased during periods of drought at the discretion of the Construction Contractor.
- Watering of hedges shall be temporarily suspended in areas where ponding occurs or where there is a risk of surface run-off.

- 4.3.18. Weed control shall be undertaken in accordance with **Section 5** of this document.
- 4.3.19. Timings of maintenance activities shall be carried out as per **Schedule A** in **Section 6** of this document.

### **SPECIES RICH GRASSLAND**

- 4.3.20. Species rich grassland is proposed throughout the DCO Proposed Development and is favourable to amenity grassland for biodiversity purposes, including on any earthworks and roadside or access trackside settings. It is to be avoided in areas where newly planted young tree or shrubs are planted to avoid competition. Other low competing grasses can be explored in these areas by the Construction Contractor at Detailed Design stage.

#### **Management prescriptions**

- 4.3.21. Management actions include:
- Monitor success of establishment annually; undertake over-seeding if required during next season, and water and aerate as required.
  - First year management: Cut regularly (i.e. max 3no. times) throughout the growing season in establishment year to 40-60mm. Maintain cutting to 40-60mm when height reaches 150mm. Carry out a final cut (fourth cut), to 60mm after flowering in September.
  - Second year and on-going management: Cut 2no. times each year, a 'hay cut' between late August and October shall be to 70mm after flowering. The grass shall then be maintained with a cut of 50mm to remove excess grass, between the following March and April. Do not cut from spring through to August, to give sown species an opportunity to flower.
  - Weeds to be removed by hand or mechanical means in spring where feasible. Spot treat with non-residual herbicide to eradicate noxious/notifiable weed species if present on Site. Dominant and invasive species will be controlled in the interests of species diversity. Remove all arising from Site after. All arisings will be removed and disposed of responsibly in a licenced green waste facility.
  - Monitor success of establishment annually; undertake over-seeding if required during next season.
  - All instances of damage, compaction or excessive wear/water damage should be reported immediately and a proposal for reinstatement/repair should be submitted.
- 4.3.22. At no point should any fertiliser of any description be used within grassland areas.
- 4.3.23. Timings of maintenance activities shall be carried out as per **Schedule A** in **Section 6** of this document.

## **MADE GOOD / RETURN TO PRIOR USE**

- 4.3.24. Responsibility for the maintenance of the landscaping at AGIs and BVSs and mitigation planting will remain with the Applicant. Responsibility for reinstated or replacement planting, such as replanted hedgerows will revert to the surface landowner following the establishment period.

## **4.4. ECOLOGICAL ELEMENTS**

### **HABITATS**

- 4.4.1. Actions relating to the monitoring and maintenance of habitats during the post Construction Stage of the DCO Proposed Development are detailed within the **REAC (Document reference: D.6.5.1)**.
- 4.4.2. Habitats will be reinstated where possible post construction. Where this is not possible, e.g., where the reinstatement of former habitats will interfere with the buried pipeline, scrub and hedgerow habitats will be planted as an alternative.
- 4.4.3. Aquatic and riparian habitats will be reinstated post construction and will be monitored and subject to maintenance in line with the 5 year post construction period and subject to agreement with the relevant bodies.
- 4.4.4. Channel and banks will be reinstated to mimic baseline conditions as far as practicable to ensure more natural bank forms and in-channel features and morphological diversity. This includes reinstatement of an appropriate vegetation assemblage and structure within the riparian zone along with enhancements to the riparian zone to off-set impacts.
- 4.4.5. Riparian vegetation shall be of varied species and of different types of vegetation (i.e. marginal vegetation, emergent and submerged vegetation), where appropriate. Species that form monospecific stands, such as common reed *Phragmites australis*, should be avoided as over time they will become dominant and replace less resilient species. Species diversity should be maintained with a varied planting regime to improve biodiversity.

### **PROTECTED / NOTABLE SPECIES**

- 4.4.6. Protected species actions for the post Construction Stage of the DCO Proposed Development are detailed within the **REAC (Document reference: D.6.5.1)**. Monitoring and maintenance of habitats and/or features associated with protected species, including great crested newt, bats, badger, otter, water vole, and barn owl, will be carried out in accordance with measures prescribed within any granted mitigation licence received from relevant statutory bodies.
- 4.4.7. Development of a lighting design for use post-construction will be developed based on guidance for lighting with regards to protected species and other nocturnal fauna such as bats, badger and barn owl. Details of the lighting

design will follow the prescriptions outlined within the REAC and captured within a Lighting Strategy to be agreed within LPAs.

- 4.4.8. Any mature trees identified for management actions (e.g., felling or pruning) post construction will be inspected by a licensed bat ecologist prior to the works. Trees that are considered to be of bat roost potential ('high' or 'moderate' roost suitability under BCT Guidelines (Collins 2016)) will be subject to detailed survey as specified by the bat ecologist. If bats are recorded roosting and the roosting site would be affected by the required operation, an application for a European Protected Species Bat Mitigation Licence to undertake the management works will be made to the relevant statutory body.
- 4.4.9. Management of woodland, trees, scrub and hedgerow habitats will take place post construction and should be cognisant of breeding birds and will be undertaken outside of the bird nesting season, recognised as March to August inclusive, to avoid damage or destruction of nests. Where works outside of this time cannot be avoided, affected vegetation would be subject to an inspection by an ecologist. If evidence of any nesting activity was identified, works in that area would be delayed until the ecologist confirmed that nesting had finished.
- 4.4.10. Any maintenance and management activities of reinstated or mitigation planted habitats should be assessed or supported by an appropriately experienced ecologist whom will determine any ecological constraints (e.g. presence of protected and/or notable species) or mitigation requirements to achieve management objectives. Where protected and/or notable species are present suitable mitigation will be employed (e.g. exclusion buffers around badger setts, otter holts, etc.) or applications for protected species licenses sought to facilitate management and maintenance works.

## **4.5. MAINTENANCE BEYOND 5-YEAR (10 YEAR FOR WOODLAND) MAINTENANCE PERIOD**

- 4.5.1. Responsibility for the maintenance of the landscaping at AGIs and BVSs and mitigation planting will remain with the Applicant. Responsibility for reinstated or replacement planting, such as replanted hedgerows will revert to the surface landowner following the establishment period.
- 4.5.2. Woodland planting is intended to develop into a diverse canopy to provide screening to the proposed BVS and AGI structures and to mitigate vegetation loss across the scheme by year 15 and beyond. Management should be undertaken on an ad hoc basis and in accordance with British Standard Recommendations for Tree Work, BS 3998:1989 and any relevant LPA policy.
- 4.5.3. Maintenance and monitoring associated with protected species licencing, as required by the relevant statutory body is currently unknown but will be detailed within the associated protected species licencing documents and agreed with the relevant statutory body, along with details including locations, length and frequency of maintenance and monitoring requirements. The responsibility of

these maintenance and monitoring works will be the responsibility of the protected species licence named licensee.

- 4.5.4. No other regular maintenance is required other than to maintain safe use of the highways and footpaths, and to aid visibility.

## 5. WEED CONTROL

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### 5.1. INTRODUCTION

- 5.1.1. **Section 5** covers the systematic and routine control of weeds within proposed soft landscape planting areas during the implementation works and 5-year (10 year for woodland) maintenance period (inclusive of the 12-month DLP), following certified practical completion of the works.

### 5.2. GENERAL

- 5.2.1. Control of injurious, invasive and noxious weeds within all hard and soft landscape areas shall be carried out as outlined in **Section 6** of this document.
- 5.2.2. The following methods of treatment may be used:
- Contact, translocated or residual herbicide in hard surface areas;
  - Translocated herbicide for woodland and scrub planting areas; and
  - Cutting within grass areas.
- 5.2.3. Herbicide should be applied by qualified personnel in accordance with manufacturers guidelines, and not during periods of rain or strong winds. Herbicide application should be considered a last resort and hand pulling/removal should be promoted as the primary form of weed control. Further guidance on weed control methods is available from several sources, including DEFRA publications, notably '*The Weeds Act – guidance note on the methods that can be used to control harmful weeds* (PB7 190); and Landscape Institute Technical Information Note (December 2019) – '*Other options for Weed Control*'.
- 5.2.4. Due to the safety implications of accessing the embankments (i.e. proximity to road, height and steepness of gradient), wildflower habitats in these locations will be reviewed at quarterly Site inspections for establishment and weed growth. If necessary, the hydroseed contractor, E/CoW and appointed Construction Contractor to agree a method statement.

### 5.3. TOTAL WEED CONTROL

- 5.3.1. Hand removal or strim cutting shall be applied to all proposed hard standings and/or paved areas, at a frequency of 2no. times during the growing season, or as required to maintain a weed free condition.
- 5.3.2. Control of weeds/grass adjacent to all areas of hard standing or Site infrastructure (barriers, signs, street furniture, base of columns, fencing etc.) by strim cutting.
- 5.3.3. Weed growth within individual plant guards and grassed areas shall be removed by hand.

5.3.4. Application of residual herbicide only where persistent weeds are a problem and hand removal has been ineffective.

5.3.5. Application of herbicide shall not be carried out during periods of inclement weather and must be applied by certified personnel at manufacturer's rates. Due to proximity to an open water course, herbicide product and application will need approval from the Environment Agency prior to use.

#### **5.4. ARISINGS FROM WEED CONTROL OPERATIONS**

5.4.1. All arisings are to be removed from Site. Injurious weed arisings shall be removed from Site and destroyed at an approved facility.



## 6. MAINTENANCE AND MANAGEMENT SCHEDULES

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### **Schedule A – Indicative Programme of Landscape Works for 5-year Maintenance Period plus 10 year Native Tree Screen Planting (Woodland belt character) and Woodland Planting.**

- 6.1.1. The following provides an indicative programme of Landscape Works for the x year maintenance period. This should be developed further at Detailed Design Stage.
- 6.1.2. **Note:** following the review of the detailed LEMP at the end of Year 5, maintenance and management prescriptions for future maintenance (i.e. Years 6+ and Years 11+ for woodland) will be agreed as appropriate for the soft landscape's establishment, changes in climatic conditions and Site use.
- 6.1.3. Any physical installation or erection of mitigation that may be required as a result of derogation licencing for protected species will necessitate a period of monitoring and maintenance post installation/erection, which will be the responsibility of the protected species licence licensee, which will likely be the Applicant. The period of monitoring/maintenance will be dictated within any granted licence and will be captured within future iterations of the detailed LEMP once known.

Action	Timing	5 Years Maintenance Period (10 for woodland)					
		1 (DLP)	2	3	4	5	6-10
<b>Landscape Inspection Visit</b>							
Includes inspection check of hard and soft landscape establishment, including existing soft landscape. (See Para 4.2.1).	During Autumn or Spring	4no. visits	3no. visits	2no. visits	2no. visits	2no visits	2 no visits
<b><u>Litter</u></b>							
Removal of all litter, rubbish and foreign debris to all hard & soft landscaped areas, bi-monthly or as required. (See Para 4.2.1).	1no. visit in Autumn	✓ .	✓ .	✓ .	✓ .	✓ .	
<b><u>Weed Control</u></b>							
Remove weeds by hand or mechanical means. Remove all arisings from Site. Injurious & invasive weeds within soft and hard landscaped areas (See Section 5).	1no. visit in Spring	✓ .	✓ .	✓ .	✓ .	✓ .	
<b><u>Individual Tree and Hedgerow Tree Planting</u></b>							
Monitor success of establishment annually; undertake re-planting if required during next season.	Re-planting November – February.	✓ .	✓ .	✓ .	✓ .	✓ .	
Check tree stakes and ties for tightness and overall condition. Adjust ties as required. Straighten any plants to an upright position that have been subject to frost heave or wind rock and re-firm the ground.	2no. inspections – 1no. every 6 months.	✓ .	✓ .	✓ .	✓ .	✓ .	
Review and remove tree stakes, guards and ties in Years 3, 4 or 5 (dependent on growth/establishment); dispose of off-site (recycle) and backfill holes with topsoil. If not ready for removal in Year 3, review in Years 4 and 5 as necessary. All tree stakes, guards and ties shall have been removed by end of Year 5.	1no. visit Winter			✓ .	✓ .	✓ .	

Action	Timing	5 Years Maintenance Period (10 for woodland)					
		1 (DLP)	2	3	4	5	6-10
Remove weeds around the trees on a monthly basis during the main growth period of April to October (inclusive).	6no. visits April-October	✓ .	✓ .				
Prune as appropriate to encourage vigour and to remove dead, dying or diseased branches.	1no. visit January		✓ .	✓ .	✓ .	✓ .	
Replace dead, dying or diseased trees in planting season following identification of loss.	2no. visits during growing seasons, as appropriate.	✓ .	✓ .	✓ .	✓ .	✓ .	
Remove weeds around the base of the tree by hand or mechanical means. Remove all arisings from Site. Spot treatment may be used if approved.	1no. visit in Spring.			✓ .	✓ .	✓ .	
Re-mulch to a depth of 75mm.	1no. visit in Autumn	✓ .	✓ .	✓ .	✓ .	✓ .	
Regular watering according to Landscape Institute Technical Bulletin: Watering Restrictions and Watering Specification (May 1996) during the first two growing seasons (Apr-Oct) following planting, thereafter, watering as necessary in following years.	As appropriate.	✓ .	✓ .	✓ .	✓ .	✓ .	
<b><u>Native Tree Screen Planting (Woodland belt character) and Woodland Planting</u></b>							
Monitor success of establishment annually; undertake re-planting if required during next season.	Re-planting November – February	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
Check tree stakes and ties for tightness and overall condition. Adjust ties as required. Straighten any plants to an upright position that have been subject to frost heave or wind rock, and re-firm the ground.	2no. inspections – 1no. every 6 months.	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	
Review and remove tree stakes, guards and ties in Year 3, 4 or 5 (dependent on growth/establishment); dispose of off-site (recycle) and backfill holes with topsoil. If not ready for removal in Year 3, review in	1no. visit Winter			✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	

Action	Timing	5 Years Maintenance Period (10 for woodland)					
		1 (DLP)	2	3	4	5	6-10
Years 4 and 5 as necessary. All tree stakes, guards and ties shall have been removed by end of Year 5.							
Apply fertiliser to base of tree in April for the first two years and weed around the trees on a monthly basis during the main growth period of April to October (inclusive).	1no. April	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>				
Remove weeds around the trees on a monthly basis during the main growth period of April to October (inclusive).	6no. visits April-October	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>				
Prune as appropriate to encourage vigour and to remove dead, dying or diseased branches. Chip small arisings on Site with material over 150mm diameter.	1no. January		✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
Replace dead, dying or diseased trees, plants or shrubs in planting season following identification of loss.	2no. growing seasons, as appropriate.	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
Remove weeds around the base of the tree by hand or mechanical means. Remove all arisings from Site. Spot treatment may be used if approved.	1no. in Spring.			✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
Remulch to a depth of 75mm.	1no. visit in Autumn	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	
Regular watering according to Landscape Institute Technical Bulletin: Watering Restrictions and Watering Specification (May 1996) during the first two growing seasons (Apr-Oct) following planting, thereafter, watering as necessary in following years.	As appropriate.	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
<b><u>Native Shrub Planting</u></b>							
Monitor success of establishment annually; undertake re-planting if required during next season.	Re-planting November – February	✓ .	✓ .	✓ .	✓ .	✓ .	

Action	Timing	5 Years Maintenance Period (10 for woodland)					
		1 (DLP)	2	3	4	5	6-10
Check stakes and ties for tightness and overall condition. Adjust ties as required. Straighten any plants to an upright position that have been subject to frost heave or wind rock and re-firm the ground.	2no. inspections – 1no. every 6 months.	✓ .	✓ .	✓ .	✓ .	✓ .	
Review and remove tree stakes, guards and ties in Years 3, 4 or 5 (dependent on growth/establishment); dispose of off-site (recycle) and backfill holes with topsoil. If not ready for removal in Year 3, review in Years 4 and 5 as necessary. All tree stakes, guards and ties shall have been removed by end of Year 5.	1no. visit Winter			✓ .	✓ .	✓ .	
Prune as appropriate to encourage vigour and to remove dead, dying or diseased branches. Chip small arisings which are over 150mm diameter on Site.	1no. visit January		✓ .	✓ .	✓ .	✓ .	
Replace dead, dying or diseased trees, plants or shrubs in planting season following identification of loss.	2no. visits during growing season, as appropriate.	✓ .	✓ .	✓ .	✓ .	✓ .	
Remulch to a depth of 75mm.	1no. visit in Autumn	✓ .	✓ .	✓ .	✓ .	✓ .	
Regular watering according to Landscape Institute Technical Bulletin: Watering Restrictions and Watering Specification (May 1996) during the first two growing seasons (Apr-Oct) following planting, thereafter, watering as necessary in following years.	As appropriate.	✓ .	✓ .	✓ .	✓ .	✓ .	
Inspect to ensure adjacent species remain clear and do not stifle growth. If required, strim in Year 5 to control competition.	1no. visit October					.	
<b><u>Hedgerow Planting</u></b>							
Monitor successful establishment of planted stock annually during April/May; undertake re-planting if required during next season.	Re-planting November – February	✓ .	✓ .	✓ .	✓ .	✓ .	

Action	Timing	5 Years Maintenance Period (10 for woodland)					
		1 (DLP)	2	3	4	5	6-10
Undertake trimming and cutting works during Jan/Feb (on a 3-year rotation after 3 years)	Annually during Jan/Feb	✓ .	✓ .	✓ .	✓ .	✓ .	
Regular watering according to Landscape Institute Technical Bulletin: Watering Restrictions and Watering Specification (May 1996) during the first two growing seasons (Apr-Oct) following planting, thereafter, watering as necessary in following years.	As appropriate.	✓ .	✓ .	✓ .	✓ .	✓ .	
Replace dead, dying or diseased trees, plants or shrubs in planting season following identification of loss.	2no. visits during growing season, as appropriate.	✓ .	✓ .	✓ .	✓ .	✓ .	
Remulch to a depth of 75mm.	1no. visit in Autumn	✓ .	✓ .	✓ .	✓ .	✓ .	
Inspect for nesting bird presence before all maintenance works.	As required	✓ .	✓ .	✓ .	✓ .	✓ .	
<b><u>Species Rich Grassland</u></b>							
Wildflower: Cutting (max. 3no. cuts) to 40-60mm when height reaches 150mm. Carry out a final (fourth) cut to 60mm after flowering in September. Leave the arisings in situ for 2-7days then remove from Site.	4no. cuts during summer – late autumn.	.					
Wildflower: Cut back once after flowering with a scythe, petrol strimmer or tractor mower to 40-60mm. Leave arisings in situ for 2-7days then remove from Site or leave in localised heaps for hibernacula.	1no. cut during late summer/autumn.		✓ .	✓ .	✓ .	✓ .	
Wildflower: Monitor success of establishment annually; undertake over-seeding if required during next season. Monitor establishment of bulbs to check for disease.	Seed during autumn or spring. Inspect when cutting.	✓ .	✓ .	✓ .	✓ .	✓ .	

## 7. REFERENCES

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- British Standard. (BS 3998:1989). Recommendations for Tree Work.
- British Standard (BS 5837:2012): Trees in Relation to Design, Demolition and Construction.
- Collins J (ed.). (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.
- The Committee for Plant Supply and Establishment. (1995) The National Plant Specification - 'Handling and Establishment' Landscape Plants'.
- Hi-Line Contractors SW Ltd (2021) Arboriculture Impact Assessment, CT\_6231.21.
- Department for Environment, Food and Rural Affairs. (2007). Guidance note on the methods that can be used to control harmful weeds. DEFRA.gov.
- The Landscape Institute. (2019). Other options for Weed Control - Technical Information Note. London: The Landscape Institute.
- The Royal Horticultural Society. (2020). RHS Pruning Groups. Retrieved from RHS.org.uk: [REDACTED]