Frodsham Solar

Outline Landscape and Ecology Management Plan

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1.0 INTRODUCTION

1.1 Purpose of the oLEMP

1.1.1 This document is the **outline Landscape and Ecology Management Plan** ('**oLEMP**') [**EN010153/DR/7.13**] for the Frodsham Solar Farm ('the Proposed Development'). The **oLEMP** is part of the information that accompanies the DCO Application for the Proposed Development. It sets out a framework for the successful implementation, establishment and longer-term management and maintenance of the proposed landscape and ecological works that form a key part of the Proposed Development.

1.1.2 Should the Proposed Development be consented, then the DCO will require that a final Landscape and Ecology Management Plan ('final LEMP') is produced and agreed with the local planning authority (Cheshire West and Cheshire Council ('CWaCC'). Details regarding the agreement of proposals within the Non Breeding Bird Mitigation Area ('NBBMA') are set out in **Appendix B**. The Proposed Development must be undertaken in accordance with the approved plan. This is secured via a Requirement in Schedule 2 of the **draft DCO [EN010153/DR/3.1]**.

1.1.3 The design of the Proposed Development has followed an iterative approach, which includes the identification of key landscape and ecological features to be retained and enhanced where feasible, along with opportunities to create new features. Measures to mitigate against adverse environmental effects, and to enhance the baseline environment, also form part of the design. For further details of the design process, refer to the **Design Approach Document** ('**DAD**') [**EN010153/DR/5.8**]. For further details of environmental effects, including mitigation and enhancement measures, refer to the **Environmental Statement** ('**ES**') [**EN010153/DR/6.1**].

1.1.4 Retained and proposed landscape and ecological features within the Order Limits will be managed and maintained through the life of the Proposed

Development (including during construction and decommissioning) unless otherwise stated in **Section 6.0**.

1.1.5 The **oLEMP** also provides an overview as to how habitats specified within the **Biodiversity Net Gain Report** ('**BNG Report**') [**EN010153/DR/7.12**] will achieve their targeted habitat type and conditions within the anticipated timeframe. The **oLEMP** outlines appropriate monitoring criteria and commits to identifying remedial/contingency measures to be implemented in the event that these targets are not achieved. Habitat condition assessment sheets for the relevant habitats are provided as **Appendix C**.

1.2 Other Relevant Documents

1.2.1 The DCO Application is accompanied by a series of documents, plans and strategies that that explain how Frodsham Solar Limited ('the Applicant') will ensure that the Proposed Development is built, operated, and decommissioned in a way that accords with the overall Design Vision and Project Design Principles as set out in the **DAD [EN010153/DR/5.8]**, and reflects the committed mitigation measures and enhancement identified in the **ES**. These are:

i) **Design Parameters Statement** [**EN010153/DR/7.1**] ('**DPS**') which sets out the design parameters within which different components of the Proposed Development must be implemented / maintained.
ii) **Works Plans** [**EN010153/DR/2.3**] which set out the location of the different components of the Proposed Development as set out in Schedule 1 of the draft DCO.
iii) **Outline Construction Environmental Management Plan** ('**oCEMP**') **[EN010153/DR/7.5]** which explains how the Applicant would manage and report the potential environmental effects of the Proposed Development during the construction period.
iv) **Outline Operational Environmental Management Plan** ('**oOEMP**') **[EN010153/DR/7.6]** which explains how the Applicant would manage and

report the potential environmental effects of the Proposed Development once it becomes operational.

v) **Outline Decommissioning Environmental Management Plan** ('**oDEMP**') [**EN010153/DR/7.7**] which explains how the Applicant would manage and report the potential environmental effects of the Proposed Development during the decommissioning period.

~~vi)~~i) **Outline Public Rights of Way Management Plan** [**EN010153/DR/7.9**] which describes how the public rights of way ('PRoW') running through the Order Limits will be managed by the Applicant.

~~vii)~~ii) **BNG Report** [**EN010153/DR/7.12**] which describes how the Proposed Development would achieve a minimum increase of 10% in habitat and hedgerow units and no net loss in watercourse units, when excluding the NBBMA. When taking into account the NBBMA the Proposed Development achieves a minimum increase of 10% in habitat, hedgerow and watercourse.

1.2.2 Should the Proposed Development be consented, then the DCO will require that final versions of these documents are produced and agreed with CWaCC, and other key stakeholders as necessary. The final documents will be in substantial agreement with the outline documents. The Proposed Development must be undertaken in accordance with the approved plans. This is secured via a Requirement in Schedule 2 of the **draft DCO [EN010153/DR/3.1]**.

1.2.3 The **ES** includes other plans and documents that illustrate and/or explain aspects of the Proposed Development. Of particular relevance to the **oLEMP** are:

i) **ES Vol 3 Figure 2-1: Indicative Construction Site Layout [EN010153/DR/6.3]** which sets out the indicative layout of works within the Order Limits during construction.

ii) **ES Vol 3 Figure 2-2: Indicative Operational Site Layout [EN010153/DR/6.3]** which sets out the indicative layout of development

within the Order Limits once operational (being one way in which the Design Parameters and limits of deviation on the Works Plans could be built out).

iii) **ES Vol 3 Figure 2-3: (a-e) Illustrative Environmental Masterplan (IEM) [EN010153/DR/6.3]** which sets out the location of proposed environmental mitigation enhancement measures. The **IEM** is included as **Appendix A** to the **oLEMP**.

iv) **ES Vol 2 Appendix 9-1: Flood Risk Assessment and Drainage Strategy [EN010153/DR/6.2]** which describes the proposed measures to be implemented in respect of surface water drainage and how these will be managed.

1.3 Consultation

1.3.1 Consultation with stakeholder groups and members of the public has been carried out, both formally and informally, as part of the design development process. Of relevance to the **oLEMP** was consultation held with:

i) Natural England ('NE').
ii) CWaCC.
iii) Cheshire Wildlife Trust ('CWT').
iv) Environment Agency.
v) National Grid.
vi) United Utilities.
vii) SP Energy Networks.
viii) Frodsham Town Council ('CWT').

1.4 Structure of the oLEMP

1.4.1 The **oLEMP** is structured as follows:

i) **Section 1.0: Introduction** provides introduction and context to the document.

ii) **Section 2.0: The Order Limits** describes the landscape and ecological context of the Order Limits and their surroundings.

iii) **Section 3.0: Proposed Development** describes the proposed works.

iv) **Section 4.0: Design Approach and Design Principles** sets out the design vision and project design principles that the Proposed Development will fulfil.

v) **Section 5.0: Roles and Responsibilities** sets out the roles and responsibilities of those involved in implementing the final LEMP.

vi) **Section 6.0: Management and Maintenance** sets out details of the works required to implement and maintain the landscape and ecology proposals, including planting and seeding specifications.

vii) **Section 7.0: Monitoring and Review** sets out details of how the measures included in the final LEMP would be monitored and reviewed during the life of the Proposed Development.

viii) **Appendix A: Illustrative Environmental Masterplan** illustrates the spatial extent of the proposals.

ix) **Appendix B: Outline Non-Breeding Bird Mitigation Strategy** sets out an overview of implementation, management and monitoring requirements within the Non-Breeding Bird Mitigation Area

x) **Appendix C: Condition Assessment Sheets** sets out the condition assessment requirements for each of the proposed habitat types, reflecting the templates published by the Department for Environment, Food & Rural Affairs ('DEFRA').

2.0 THE ORDER LIMITS

2.1 Introduction

2.1.1 The Order Limits cover approximately 337.5 hectares of land within Frodsham Marshes, as illustrated on **ES Vol 3 Figure 1-1: Site Location [EN010153/DR/6.3]**. The Order Limits comprise a series of distinct sub-areas which are illustrated on **ES Vol 3 Figure 1-2: Proposed Development Areas [EN010153/DR/6.3]**, as follows:

i) Solar Array Development Area ('SADA').
ii) Main Site Access.
iii) Non-Breeding Bird Mitigation Area ('NBBMA').
iv) Skylark Mitigation Area.
v) SPEN Grid Connection.
vi) SPEN Substation Access.

2.1.2 The SADA is the principal component of the Proposed Development. It is located at the eastern end of Frodsham Marshes, between the Mersey Estuary and the M56. The northern boundary of the SADA is formed by the River Weaver, and the north-western boundary by the Manchester Ship Canal, with the Mersey Estuary lying beyond. The western boundary of the SADA is formed by three of the former Manchester Ship Canal Dredging Deposit Cells (Cell 2, Cell 3 and Cell 6). The southern boundary of the SADA is formed by agricultural fields and the M56 motorway.

2.1.3 The SADA comprises three relatively distinct areas:

i) The Eastern Cluster of Frodsham Wind Farm: This area forms the western half of the SADA. Six operational wind turbines with a maximum height of 125m to blade tip, are located in this area. The land forms part of the former Manchester Ship Canal Dredging Deposit Ground, and includes Cells 1 and 5. The cells have been restored to agricultural land and are

now grazed by sheep / cattle. The land in this area lies between approximately 9.5m and 12.5m above ordnance datum (AOD).

ii) Former agricultural land used by Frodsham Wildfowlers: The central area of the SADA is former agricultural land which has been left fallow and managed to encourage use by wildfowl. This area is currently used for recreational shooting by Frodsham Wildfowlers. This area of the Site is crossed by a series of ditches which have been used to drain and manage water levels on Frodsham Marsh. The land in this area lies at approximately 6m AOD.

iii) Agricultural land: The south-eastern portion of the SADA is agricultural land. It is understood that the land has been used for growing crops and silage. Some areas of the fields appear to have been left fallow and have been colonised with scrub and wet grassland. Hedgerows demarcate boundaries between field units. The land in this area lies at approximately 5m AOD.

2.1.4 The Main Site Access runs from the west, leaving the public highway via Pool Lane roundabout and turning onto Grinsome Road (a private road). Vehicles would travel east for approximately 1.5km, turning north at Grinsome Road Roundabout, onto Road 1 of Protos. Vehicles would then turn east along Marsh Lane which leads to Frodsham Wind Farm. The Frodsham Wind Farm access tracks provide access to the SADA.

2.1.5 The NBBMA is located on Cell 2 and Cell 3 of the Manchester Ship Canal Dredging Deposit Cells and adjacent areas of ponds and grassland. It is immediately west of the SADA.

2.1.6 The Skylark Mitigation Area is located within an arable field to the south of the SADA.

2.1.7 The SPEN Grid Connection would run from the SADA to the existing Frodsham National Grid Substation. The connection would cross over the River Weaver.

2.1.8 The SPEN Substation Access follows an existing dedicated private access road running north from the A56 to the substation complex.

2.2 Land Use

2.2.1 The SADA comprises agricultural and former agricultural land. The Main Site Access and the SPEN Substation Access both comprise existing private access roads. The NBBMA comprises existing farmland and wetland. The SPEN Grid Connection would cross over the River Weaver.

2.2.2 A series of Public Rights of Way (PRoW) cross the Order limits; these are illustrated on **ES Vol 3 Figure 1-5: Public Rights of Way [EN010153/DR/6.3]**. The PRoWs include footpaths and restricted byways, which allow access by walkers, riders and cyclists. National Cycle Route 5 runs along a section of the Main Access Route and along part of the southern edge of the SADA.

2.2.3 The SADA is crossed by a series of utilities including above and below ground high voltage electricity transmission lines, high pressure gas lines, water distribution mains, telecommunication lines and private pipelines associated with nearby petrochemical plants.

2.2.4 The closest settlement is Frodsham on the south side of the M56, approximately 140m from the SADA. To the south-west of Frodsham lies Helsby, approximately 2km from the SADA. Both Frodsham and Helsby lie at the foot of the northern extent of the Cheshire Sandstone Ridge, which rises to a height of approximately 150m to the south of Frodsham and Helsby. To the north and north-east of the SADA, on the north bank of the River Weaver/Weaver Navigation, is Runcorn.

2.2.5 There are large areas of industrial development along this section of the River Mersey corridor. The northern bank of the River Weaver/Weaver Navigation is occupied by the INEOS Inovyn Runcorn Site which produces a range of chemicals for industrial use. The INEOS Inovyn Runcorn Site also includes

an 800MW gas-fired power station. The Runcorn Energy from Waste Plant operated by Viridor is further to the north.

2.2.6 To the west of the SADA is the Western Cluster of Frodsham Wind Farm comprising 13 no. wind turbines with the same maximum height as the Eastern Cluster). Further development in the marshes is located to the west of the Wind Farm and this includes Stanlow Oil Refinery, the Former CF Fertilisers Plant (decommissioned during 2022), Encirc Glass, and a series of different renewable energy and energy management facilities at Protos (some existing, some under construction, with further development proposed).

2.2.7 As set out above, the Manchester Ship Canal forms the northern boundary of the Order Limits and is separated from the Mersey Estuary by Frodsham Score, a 100m-200 m wide strip of low-lying marshland. The Mersey itself is a wide body of water, and the northern shore is approximately 2.65km from the SADA.

2.3 Landscape Context

2.3.1 *A Landscape Strategy for Cheshire West and Chester Borough*[1] ('CWaCC Landscape Strategy') describes and classifies the landscape of the CWaCC area. Urban areas are excluded. The Order Limits are located almost entirely within LCA 4a: Frodsham, Helsby and Lordship Marshes. The western end of the Access Road extends into LCA 9a: Dunham to Tarvin Plain. LCA4a is where change in the landscape resulting from the Proposed Development would occur and hence is the most relevant LCA for the design process.

2.3.2 Key perceptual/visual sensitivities, qualities and values for LCA4a are:

i) The flat landform and long views contribute to the perception of a large scale, exposed landscape.
ii) Presence of man-made embankments foreshorten views to the north across the Mersey Estuary.
iii) Important views to and from the Frodsham Sandstone Ridge and Helsby Hill.
iv) The consistent field pattern through planned enclosure gives the perception of a reclaimed, tamed landscape.
v) Vegetation-fringed ditches and rough ground and lagoons provide texture in the landscape.
vi) Parts of the marsh are remote, but the presence of traffic on the M56 motorway brings noise and movement to the area; the presence of birds and proximity to John Lennon Airport also contribute to noise and movement.
vii) Sense of naturalness of the marsh is diluted by man-made features and development.

[1] Bayou Bluenvironment and The Planning & Environment Studio (2016). *A Landscape Strategy for Cheshire West and Chester Borough*. Cheshire West and Chester Council. *Available at* https://www.cheshirewestandchester.gov.uk/residents/planning-and-building-control/total-environment/local-landscape-character-assessment-landscape-strategy-2016 *[Last Accessed 15 July 2024]*

viii) No prominent skyline, but embankments, pylons and industrial development are visually prominent.

ix) The open character means there is little opportunity for screening any large scale elements or for mitigating visual impact without the mitigation measures in themselves being highly visible - making it a visually sensitive landscape. There are relatively few sensitive visual receptors in the area, limited to a few residential properties and users of the PRoW network, but in adjacent areas overlooking the marsh there are views from Frodsham and Helsby as well as visitors to the viewpoints at the top of Helsby Hill and the War Memorial above Frodsham.

2.3.3 The landscape condition of LCA 4a is identified as follows:

"Although much of the area is actively farmed, the degraded hedgerows and broken fencing shows this to be a landscape in need of improved management. Some land to north of Lordship Lane remains in use for canal dredgings and has undergone change as a result of the preliminary works for the permitted windfarm. Wet grassland species have been lost and ditches are eutrophic as a result of the intensive agricultural use of the land".

2.3.4 The overall management strategy for LCA4a is:

"…to enhance and restore the conditions of habitats and features of the marshes whilst safeguarding its open character"

2.3.5 More detailed guidelines for landscape management and for built development within LCA4a are:

i) Encourage recreational development as a means of managing some of the more derelict and degraded areas of the landscape. Encourage use of the area by walkers, cyclists, rowers and horse riders (including provision of picnic facilities and viewing opportunities) whilst safeguarding the nature conservation interest of the area, particularly its importance for birds.

ii) Maintain the distinctive field pattern that reveals the planned 19th century enclosure of the marsh.
iii) Seek to restore thorn hedgerows that are falling into decline.
iv) Maintain and ecologically enhance the ditch system and riparian habitats and land supporting breeding, over wintering and passage birds. Seek opportunities to re-create habitats such as species rich grassland and reed beds.
v) Increase the biodiversity of intensively managed grassland and arable land – create and link buffer strips along linear features such as hedgerows and ditches to create a continuous network of wildlife corridors.
vi) Improve water quality by encouraging less-intensive agricultural practices to reduce fertiliser run-off and nutrient levels in the ditches.
vii) Encourage restoration of derelict industrial land including re-creation of salt-marsh and reintroduction of grazing to maintain the open character of the marsh.
viii) Consider opportunities to create views across the Mersey Estuary.
ix) Conserve the 'remote' character of the marshes away from the main transport corridor of the M56.
x) Retain the open character of the marsh by restricting planting to low growing scrubby species typically found in the local landscape, taking into account the importance of the area for ground nesting birds and wintering/passage birds. Woodland planting /screening using tall or ornamental species is not appropriate in the open marsh.
xi) Conserve the remaining open, undeveloped areas of the marsh.
xii) Consider using native scrubby vegetation to screen views of traffic on the north side of the M56 motorway (taller species may be appropriate on the southern side of the motorway adjacent to the Helsby to Frodsham Undulating Enclosed Farmland).
xiii) Consider views to and from the Frodsham Sandstone Ridge and Helsby Hill when planning any change.

2.4 Ecological Context

2.4.1 Two internationally designated sites are located within 2km of the SADA, namely:

i) Mersey Estuary Special Protection Area ('SPA').
ii) Mersey Estuary Ramsar.

2.4.2 Four nationally designated sites are located within 2km of the SADA, namely:

i) Mersey Estuary SSSI.
ii) Flood Brook Clough SSSI.
iii) Dunsdale Hollow SSSI.
iv) Runcorn Hill LNR.

2.4.3 A small part of the Mersey Estuary SSSI overlaps the north-western edge of the SADA.

2.4.4 The Mersey Estuary is thus protected at both international and national level for its nature conservation interest.

2.4.5 Eighteen non-statutory Local Wildlife Sites (LWS) designated at local level are located within 2km of the SADA. The Frodsham, Helsby and Ince Marshes Local Wildlife Site ('LWS') extends across the majority of the SADA, the whole of the Skylark Mitigation Area, and sections of the Main Access Route.

2.4.6 The SADA largely comprises areas of neutral grassland, arable land and modified grassland, separated by ditches, watercourses, hedgerows and tree lines. Also present are areas of reedbeds, scrub, ponds, woodland and existing tracks/roads.

2.4.7 Ecological surveys (desk studies and field surveys) have established that the SADA supports a minimum of six species of bat (foraging and commuting), water vole, badger, common toad and a range of invertebrate species. The SADA also has the potential to support roosting bats, eels and other fish, brown hare, otter and European hedgehog.

2.4.8 Ornithological field surveys have confirmed that the SADA supports a range of bird species, including qualifying species for the Mersey Estuary SPA/Ramsar. A number of other bird species that are not qualifying features of the SPA/Ramsar have also been identified as either breeding within or near to the SADA, or wintering within the SADA.

2.4.9 The NBBMA predominantly comprises neutral grassland; areas of neutral grassland located towards the south and west of this area also contain scattered scrub and tall forbs. Also present are a number of ponds, ditches, reedbeds, scattered broadleaved trees and unsealed tracks.

3.0 THE PROPOSED DEVELOPMENT

3.1 Introduction

3.1.1 The Proposed Development comprises solar PV panels capable of generating more than 50MW of electricity, with a BESS facility and on-site Frodsham Solar Substation. The Proposed Development includes two potential locations for the BESS and Frodsham Substation, the decision made on which option to bring forward will be made at the detailed design stage.

3.1.2 The solar PV panels would be mounted in groups on a metal frame which would be fixed in position with panels facing south. The solar PV panels, BESS and Frodsham Solar Substation would be connected to one another by a series of below ground cables. Supporting infrastructure would include transformers, inverters, switchgear, security fencing, CCTV, internal access roads, fire suppression system. The BESS and Frodsham Solar Substation would also require security lighting and fire suppression systems.

3.1.3 The Main Site Access would follow existing private roads and tracks, and would join the public highway network at Pool Lane Roundabout

3.1.4 Electricity would be exported to the local distribution network via a series of above ground and below ground cabling running to the Frodsham SPEN Substation. This would include an above ground crossing over the River Weaver. Above ground cabling would be supported on wooden poles.

3.1.5 A separate underground private wire connection is provided for, which would follow the route of the Main Site Access. This would enable electricity generated by the Proposed Development to be exported directly to local businesses.

3.1.6 Works to retain, enhance, and create new green infrastructure would be carried out, including measures to maintain this for the life of the Proposed Development. These are set out in the following sections of this **oLEMP**.

4.0 DESIGN APPROACH AND DESIGN PRINCIPLES

4.1 Design Approach Document

4.1.1 The **DAD [EN010153/DR/5.8]** which also forms part of the DCO Application submission documents describes the following:

i) The approach that the Applicant has taken to design from the outset of the project.
ii) The Design Vision and Design Principles that have influenced decision making.
iii) The design evolution that has resulted in the development that is being applied for.
iv) How design measures will be secured through the provisions of the DCO.
v) The framework for delivering on design post-consent.

4.1.2 This **oLEMP** provides further detail regarding bullets iv) and v) in respect of the green infrastructure proposals within the Proposed Development.

4.2 Design Vision

4.2.1 The Design Vision for the Proposed Development is set out in the **DAD [EN010153/DR/5.8]**, as follows:

"We want to deliver a substantial amount of renewable energy to the National Grid and to local businesses, making a clear contribution towards national renewable energy targets.

We want to conserve and enhance the local environment, provide a benefit to local communities, and to be a responsible neighbour to local people, during the construction, operational and decommissioning stages of the project.

We will follow a clear design process from start to finish, reflecting project-specific design principles, demonstrating collaborative interdisciplinary working, engagement with stakeholders and local communities, and delivering good design outcomes that we will commit to delivering".

4.3 Project Design Principles

4.3.1 To achieve the Design Vision, a series of Project Design Principles have been identified and broken down into more detailed measures in the **DAD [EN010153/DR/5.8]**. The Project Design Principles are secured via the **draft DCO [EN010153/DR/3.1]**. Not all have direct relevance to the **oLEMP**. Those that do are set out below:

i) Project Design Principle 2: Landscape and Views. Develop the proposals in a manner sensitive to their landscape setting and reflecting the value placed on the landscape by local communities, reducing visual impacts from nearby properties, recreational routes and key viewpoints.

i) Retain and enhance the open character of Frodsham Marshes, where feasible.

j) Retain and enhance existing vegetation cover that defines character and provides visual screening.

k) Undertake new planting of trees, scrub and hedgerows which is consistent with character and to provide further screening.

l) Contain development within established field boundaries to retain landscape pattern.

m) Provide development-free buffers alongside existing landscape features.

n) Provide long-term management and maintenance of the landscape of the Order Limits.

o) Retain open vistas looking across Frodsham Marshes and the wider estuary, where feasible.

p) Give consideration to impacts upon the long-range views from Frodsham War Memorial and Helsby Hill.

q) Consider, and seek to mitigate where possible, adverse impacts upon views from properties, with particular reference to those located at closer distances such as at the northern edge of Frodsham.

r) Consider potential impacts arising from glint and glare and mitigate if adverse effects are identified.

ii) Project Design Principle 3: Biodiversity and Green Infrastructure. Protect and enhance green infrastructure within the Order Limits and in doing so create the conditions for enhanced biodiversity locally.

a) Achieve a minimum of 10% increase in habitat and hedgerow units, and no net loss in watercourse units.
b) Manage, maintain and increase vegetation cover within the Order Limits for the lifespan of the Proposed Development.
c) Provide mitigation associated with potential impacts on the Mersey Estuary SSSI, SPA and Ramsar site.
d) Retain and enhance existing site features, and introduce development-free buffers around hedgerows, ditches and other features of biodiversity value. Buffers will be a minimum of 5m around hedgerows and a minimum of 10m around watercourses.
e) Reduce impacts on valuable habitat features through good design, e.g. minimising culvert crossings, avoidance of impacts on high value habitat, best practice construction methods.
f) Enhance ecological connectivity, both within the Order Limits and with features outside its boundary. Create and/or enhance wildlife corridors.
g) Provide interpretative material to explain the ecology of the Order Limits to visitors.

iii) Project Design Principle 4: Public Access and Recreation. Retain, enhance and encourage public access through the life of the proposals, including during construction and decommissioning where feasible.

a) Create new permissive pathways to link up existing routes, filling gaps in the existing network and creating loops where possible, to enhance appeal to users and to improve connectivity.
b) Provide wayfinding signage and information about the variety of routes available within the Order Limits and in respect of onward

connections. Information to consist of both physical signage on site and published material to provide guidance to potential visitors.

c) Design and install interpretative material along access routes, providing information regarding the social and natural history of the Order Limits and its present use for generating energy.

d) Provide and signpost potential formal public car parking area(s) within the Order Limits, where provided.

iv) Project Design Principle 6: Cultural Heritage. Develop the proposals so that they are sensitive to the presence of heritage assets, their settings, and the wider historic environment.

c) Maintain views from the Order Limits (and their surroundings) to heritage assets located on the higher ground.

d) Retain the legibility of the flat topography within the Order Limits and views to the river in views from the higher ground.

e) Provide interpretative material explaining the relationship between the Order Limits and the surrounding historic landscape.

4.4 Utility Easements and Other Buffers

4.4.1 A number of utilities cross the Order Limits which are shown on ES Vol 3 Figure 1-6: Utilities [EN010153/DR/6.3]. Easements are in place to enable the utility providers to access and maintain these, and the design of the Proposed Development secures this through the limits of deviation set out on the **Works Plans** [**EN010153/DR/2.3**] and the protective provisions of the **draft DCO** [**EN010153/DR/3.1**]. The easements are as follows:

i) Shell Grangemouth to Stanlow Pipeline: 3.05m either side of the pipe from the pipe edge.

ii) Shell/Essar Stanlow to Carrington Pipeline: 30.48m diameter for above ground pipe sections and 10m diameter for below ground section.

iii) Essar Stanlow to Runcorn: 30.5m either side of the pipe from the pipe edge.

iv) Buried gas supply: 6.0m easement centred on pipe with additional 3m access strip either side of easement.
v) Private water main: 6.0m centred on pipe.
vi) Windfarm HV Cables: 10.0m centred on the cable. 132kV Private Wire Connection will lie within this easement.
vii) Wind turbines. No dig within 10m diameter. No extraction or excavation within 75m diameter. No extraction or excavation deeper than 5m within 75m to 100m diameter.
viii) 400kV National Grid Overhead Line: 30m diameter from the tower base.
ix) 132kV SPEN Overhead Line: 30m diameter from the tower base.

4.4.2 Any planting undertaken within the easement of these utilities must be agreed with the undertaker and species selection and planting distances will comply with the asset protection and vegetation management standards of the relevant utility undertakers.

Other Buffers

4.4.3 In addition, buffers to protect key environmental features will be adopted where practicable, as follows:

i) A 10m buffer between fencing surrounding solar PV modules and non-tidal watercourses.
ii) An 8m buffer surrounding retained ponds and reedbeds.
iii) A 16m buffer between fencing surrounding solar PV modules and tidal watercourse defence structures.
iv) A 6m buffer between fencing surrounding solar PV modules and hedgerows / areas of substantial vegetation.
v) A 10m buffer between fencing surrounding solar PV modules and public rights of way.
vi) A 10m buffer from the toe of existing earth bunds surrounding the Manchester Ship Canal Dredging Deposit Cells, to safeguard the stability of these structures.

These buffers have been applied to the development areas shown on the Works Plans [**EN010153/DR/2.3**].

4.4.4 Any tree or scrub planting, or any engineering works to improve or create public access or other green infrastructure that would involve intrusive ground works, proposed within 8m of a main river fluvial flood defence or 16m of a main river tidal flood defence, would need to be agreed in writing with the Environment Agency. Evidence of such agreement shall be provided with the final LEMP submitted to the relevant planning authority for approval.

4.5 Biodiversity Net Gain Objectives

4.5.1 While the Proposed Development is not subject to statutory BNG requirements, the Proposed Development has committed to achieving an increase of at least 20 % in habitat units and 75 % in hedgerow units across the Site, together within no net loss of watercourse units, when excluding the NBBMA. With the NBBMA also taken into account the Proposed Development has committed to achieving at least 10% increase in watercourse units as well. These increases are to be calculated using DEFRA's Statutory Biodiversity Metric Calculator[2]. As noted in the **BNG Report [EN010153/DR/7.12]** the trading ~~principles~~ rules in relation to the loss of reedbed and scrub habitats will not be met based on the habitats shown on the Illustrative Environmental Masterplan. However, the Applicant is committed to achieving the relevant statutory biodiversity metric trading rules in respect of reedbed and scrub if this is what is agreed to be desired in discussion with CWACC at the time of approving the detailed LEMP. The potential approach to achieve this is set out below.

4.5.2 The implementation of the landscape and ecological works and their subsequent management will ensure the Proposed Development meets the

[2] Department for Environment, Food & Rural Affairs (2023, last updated 21 Feb 2025). *Statutory Biodiversity Metric tools and guides*. [online] https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides [accessed 11 Apr 2025]

above objectives (i.e., achieving the stated habitat type and condition), as summarised in Table 1~~Table 1~~ overleaf. Table 1~~Table 1~~ will serve as a guide to the future management and monitoring of created habitats, outlines timescales in which the objectives should be achieved, and offers a direct comparison between the habitats shown on the **IEM** (**Appendix A** of this document) and the habitat types utilised for the Biodiversity Metric for the Proposed Development. Additional details of the BNG Assessment are provided in the **BNG Report [EN010153/DR/7.12]**.

4.5.3 The habitat types and conditions set out in Table 1~~Table 1~~ are in accordance with the Biodiversity Metric for the Proposed Development, which utilised DEFRA's Statutory Biodiversity Metric Calculator[3]. Target condition, and the associated targeted criteria, are measured in accordance with the relevant condition assessment sheets for the particular habitat, as issued alongside the Statutory Biodiversity Metric (July 2024 version)[4] and provided in **Appendix C**. Time to target condition is pre-set within the Biodiversity Metric, and is the timeframe in which it is expected the habitat type and condition would be achieved.

4.5.4 The Applicant's primary means of achieving compliance with BNG trading rules would be through on-site habitat creation and design refinement, including the creation of reedbed and scrub habitat within the Site. This would result in a slightly different habitat outcome from that shown on the **IEM** (**Appendix A** of this document) but the final design would still continue to achieve the overall biodiversity uplift set out above in paragraph 4.5.1.

4.5.5 If, at the detailed design stage, the final statutory biodiversity metric calculation demonstrates that the required trading rule compliance cannot be achieved

[3] Department for Environment, Food & Rural Affairs (2023, last updated 21 Feb 2025). *Statutory Biodiversity Metric tools and guides*. [online] https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides [accessed 11 Apr 2025]
[4] Department for Environment, Food & Rural Affairs (2023, last updated 21 Feb 2025). *Statutory Biodiversity Metric tools and guides*. [online] https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides [accessed 11 Apr 2025]

through on-site provision alone, the Applicant would address any residual shortfall through the creation or purchase of appropriate off-site biodiversity units.

Table 1: Summary of Biodiversity Net Gain Objectives

Landscape Habitat Type	BNG Habitat Type	Condition Sheet	Target Condition	Targeted Criteria	Time to Target Condition (Years)
Proposed native woodland	Other woodland; broadleaved	Woodland	Poor	N/A – poor condition targeted	5
Proposed native woodland	Lowland mixed deciduous woodland	Woodland	Poor	N/A – poor condition targeted	10
Neutral grassland (NBBMA)	Other neutral grassland	Grassland (Medium, high and very high distinctiveness)	Moderate	A, B, C, D	5
Marshy grassland (NBBMA)					
Retained neutral grassland/grazing within solar array security fence line[5] (and elsewhere within the SADA)					
Skylark Mitigation Area			Good	A, B, C, D, E, F	10
Retained neutral grassland/grazing within solar array security fence line[6] (and elsewhere within the SADA)	Modified grassland	Grassland (Low distinctiveness)	Good	A, B, C, E, F, G	7
			Moderate	C, E, F, G	4
Reedbed	Reedbeds	Wetland	Moderate	B, C, D, E, F, I	7
Proposed native scrub (new and enhanced)	Mixed scrub	Scrub	Moderate	A, B, C, D	10
Proposed water storage area (NBBMA)	Ponds (non-priority habitat)	Pond	Moderate	A, B C, F, G, H, I or A, C, F, G, H, I	3
Proposed scrape					
Proposed ponds					

[5] 'Retained neutral grassland/grazing within solar array security fence line (and elsewhere within the SADA); Other neutral grassland' comprises areas which have been identified as other neutral grassland during baseline surveys, and will be retained as such during the construction and operation of the Proposed Development.
[6] 'Retained neutral grassland/grazing within solar array security fence line (and elsewhere within the SADA): Modified grassland' comprises areas where grassland would be created within the SADA during habitat creation.

Landscape Habitat Type	BNG Habitat Type	Condition Sheet	Target Condition	Targeted Criteria	Time to Target Condition (Years)
Proposed native hedgerow	Native hedgerow (species rich)	Hedgerow	Moderate	A1, A2, B1, B2, C2, D1, D2	5
Proposed native hedgerow (maintained at a low height)	Native hedgerow (species rich)	Hedgerow	Poor	B1, B2, C2, D1, D2	5
Proposed native trees and shrubs	Native hedgerow with trees (species rich)	Hedgerow	Poor	A1, A2, C2, D1, D2, E2	10
Proposed ditch	Ditches	Ditch	Poor	N/A – poor condition targeted	1
Existing drainage ditch (NBBMA) (enhanced)	Ditches	Ditch	Moderate	A, B, C, D, E, F, G	n/a

4.6 The Landscape and Ecological Proposals

4.6.1 To achieve the Project Design Principles, and having regard to the Biodiversity Net Gain objectives, the landscape and ecological proposals would include the following habitat creation/enhancement and access enhancement measures. All measurements stated are approximate:

i) Approximately 36.1 ha of public access/biodiversity enhancement zones, as shown on the **IEM** (**Appendix A**), comprising enhancement of existing vegetation (trees and scrub, grassland and wetland) and provision of new vegetation.
ii) Creation/enhancement of approximately 114.6 ha of other neutral grassland.
iii) Creation of approximately 75.7 ha of modified grassland.
iv) Specific habitat creation and enhancement measures within Items i-iii above including:
    a) Approximately 2.2 ha of new native woodland.
    b) Approximately 0.87 ha of new native mixed scrub, and enhanced management of approximately 1.43 ha of existing scrub.
    c) Enhancement of approximately 6.4km of existing hedgerows and hedgerow with trees.
    d) Approximately 2.5km of new native hedgerow, and approximately 5km of new belts of native trees and shrubs.
    e) Approximately 1 ha of new ponds, approximately 335m of new ditches, and approximately 2.1 ha of new reedbed. Enhanced management of approximately 0.9 ha of existing ponds, approximately 10.9km of existing ditches and approximately 12.1 ha of existing reedbed.
v) NBBMA including:
    a) Approximately 70.81 ha of retained, new and enhanced habitats (wetland and other neutral grassland) to benefit wetland birds.
vi) Skylark Mitigation Area, comprising 5.58 ha of other neutral grassland creation, which will support invertebrate prey, offering a foraging resource

and which can also be used by nesting skylark through the breeding season, as well as providing wider ecological benefits. Throughout the establishment works for this area, National Highways will be able to gain access to the M56 and its associated structures and assets.

vii) New habitat creation structures, including:

a) 60 no. new bat boxes including a minimum 5 no hibernation boxes and a minimum 5 no. maternity boxes.
b) A minimum 2 no. barn owl boxes.
c) A minimum 2 no. kestrel boxes.
d) A minimum 30 no. bird nesting boxes.
e) 10 no. reptile/amphibian refugia.
f) 20 no. hedgehog boxes.
g) 10. no. insect hotels.

viii)Enhanced access provision including:

a) Enhancements to the existing PRoW network.
b) Approximately 5.34km of new permissive paths.
c) New signage.
d) New interpretation material.
e) New benches
f) New litter bins and dog bins
g) New visitor car park (subject to the process set out in **Section 6.0** below).
h) New bicycle parking.

4.6.2 The amount of new habitat types provided would exceed any loss of the equivalent habitat type due to the construction of the Proposed Development. The management and maintenance measures set out in this **oLEMP** would ensure that ecological function of the new/enhanced habitats exceeds that of any lost due to construction.

4.6.3 Additionally, the Applicant proposes to reach out to local interest groups and nearby educational institutions, with the intention that the habitat creation and enhancement works will be available for research and educational purposes,

thereby providing added value from the Proposed Development to the local community.

5.0 ROLES AND RESPONSIBILITIES

5.1 Introduction

5.1.1 Specific roles and responsibilities during construction are set out indicatively in the **oCEMP [EN010153/DR/7.5]**. Key construction roles and responsibilities relevant to the final LEMP are anticipated to include:

i) **Principal Contractor** – This is a formal role established in the CDM Regulations (2015)[7]. The Principal Contractor will be appointed by the Applicant and have responsibility for co-ordinating the Construction Phase of the project.

ii) **Site Manager** – The Principal Contractor will identify a Site Manager who will have overall responsibility for implementation of the CEMP and all other DCO and legislative requirements.

iii) **Environmental Manager** – The Principal Contractor will identify an Environmental Manager who will have responsibility for management of environmental matters related to the Construction Phase of the Proposed Development, including ensuring compliance with legislation, ensuring that mitigation, management and monitoring measures in the detailed LEMP (including in relation to the Skylark Mitigation Area) are implemented, and that best practice is applied during works. The Environmental Manager will be a point of contact with environmental bodies and other third parties as required to perform their duties.

iv) **Environmental Clerk of Works** – The Applicant will appoint an Environmental Clerk of Works (ECoW) who will be a suitably qualified environmental professional responsible for on-site management and monitoring of environmental impacts including for soil management, pollution control, noise and dust monitoring, and surface water.

[7] HMSO (2015). *The Construction (Design and Management) Regulations 2015.* Available at: https://www.legislation.gov.uk/uksi/2015/51 [Last Accessed: 26 February 2025]

v) **Ecological Clerk of Works** – The Applicant will appoint an Ecological Clerk of Works (EcoCoW) who will be a suitably qualified ecologist responsible for on-site managing and monitoring of the works in relation to habitats, protected species, and other wildlife.

vi) **Community Liaison Officer** – The Applicant will appoint a Community Liaison Officer who will ensure that a Community Liaison Group (CLG) is established and will be the point of contact for the CLG, ensuring that regular updates are issued during the construction of the Proposed Development.

5.1.2 Specific roles and responsibilities once the Proposed Development is operational are set out indicatively in the **oOEMP** and are not repeated in detail here. Key roles and responsibilities relevant to the final LEMP are anticipated to include:

i) **Site Manager** – The Applicant will appoint a Site Manager who will have overall responsibility for implementation of the final LEMP and all other DCO and legislative requirements.

ii) **Environmental Manager** – The Applicant will appoint an Environmental Manager who will have responsibility for management of environmental matters related to the operational phase of the Proposed Development, including ensuring compliance with legislation, ensuring that the mitigation, management and monitoring measures in the detailed LEMP) are implemented, and that best practice is applied during works. The Environmental Manager will be a point of contact with environmental bodies and other third parties as required to perform their duties.

iii) **Quality Manager** – The Applicant will appoint a Quality Manager who will have responsibility for quality assurance and compliance, document management and record keeping, inspections for quality control, management of risks, and process improvement related to quality control and assurance. For the final LEMP they will have responsibility for quality assurance of procedures and for management of documentation, records, and monitoring of the systems relating to the same

iv) **Ecological Clerk of Works** – The Applicant will appoint an Ecological Clerk of Works who will be a point of contact for the Applicant to discuss any issues relevant to ecology, if they were to arise during the management of the operational phase i.e. regarding protected species and habitats.

v) **Community Liaison Officer** – The Applicant will appoint a Community Liaison Officer who would be the point of contact, ensuring that regular updates are issued during the operational life of the Proposed Development.

5.1.3 It is the Applicant's intention that the NBBMA is managed by the RPSB, however should this not be possible, then a suitably experienced and reputable nature conservation body will be sought, which will be required to be agreed by Cheshire West and Chester Council and Natural England. ~~The NBBMA will be managed by a suitably experienced and reputable nature conservation organisation reporting into the Site Manager.~~ Details of this would be provided in the final NBBMS (see **Appendix B** for the outline NBBMS).

6.0 MANAGEMENT AND MAINTENANCE

6.1 Introduction

6.1.1 This section identifies the management and maintenance works required in order to successfully achieve the Project Design Principles that relate to landscape, ornithology and ecology.

6.1.2 Land within the Frodsham National Grid Substation (which also includes the SPEN Substation) and along the route of the Main Access Road would be handed back post-construction. Management and maintenance of those area would thus be the responsibility of the current landowners (or any successor) and falls outside the scope of the final LEMP.

6.1.3 It is the Applicant's intention that the NBBMA is managed by the RPSB, however should this not be possible, then a suitably experienced and reputable nature conservation body will be sought, which will be required to be agreed by Cheshire West and Chester Council and Natural England. ~~The NBBMA will be managed by a suitably experienced and reputable nature conservation organisation.~~ Details of the management of the NBBMA are set out in **Appendix B** of this document.

6.2 Advanced Works

6.2.1 Timescales for new planting and new seeding are set out in **Section 6.6** and **Section 6.7** below, and implementation will typically follow the substantial completion of the Proposed Development or agreed phases thereof.

6.2.2 However, advanced planting and other works will be undertaken prior to the start of construction in some locations. These works will comprise the following:

i) Planting of new woodland along the south-eastern perimeter of the SADA at the boundary with the M56 corridor, to provide mitigation against glint and glare effects.
ii) Planting of new hedgerows along the southern boundary of the SADA.

iii) Creation of the NBBMA (refer to **Appendix B**).
iv) Implementation of the proposed bird screening measures (see Section 6.11).

6.2.3 An Arboricultural Method Statement (AMS) will be prepared detailing the requirement for protective fencing, tree pruning, signage, timings, methods of works and any other protection measures prior to any vegetation clearance being undertaken.

6.3 Security

6.3.1 Security measures will be addressed as part of the detailed design phase and will be set out in the final OEMP as appropriate. These would include:

i) Measures to prevent access to PRoWs and permissive paths by unauthorised motor vehicles.
ii) Measures to prevent other unauthorised access.
iii) Measures to reduce anti-social behaviour.
iv) Measures required to ensure that security infrastructure (e.g. fencing, CCTV, etc) can be adequately maintained, and that this is not impeded by landscape and ecological management/maintenance.

6.3.2 Measures to prevent unauthorised access, such as to exclude motorcycles from routes will also need to retain access for the intended user groups, i.e. for example these should not prevent access by less mobile pedestrians, and thus will need to reflect what can reasonably be achieved in order to do this.

6.3.3 If use of any of the proposed permissive paths leads to persistent anti-social behaviour or security issues that cannot be otherwise managed (for instance, if a permissive path is misused in a way that threatens wildlife in the NBBMA or the security of the solar farm), then permissive access may be reviewed and potentially removed in the interest of safety and conservation. Any such decision would involve consultation and agreement with CWaCC.

6.4 Climate Change

6.4.1 Given the 40-year operational lifespan of the Proposed Development, it is possible that changes to the climate may affect the management of the works, necessitating changes to what is proposed.

6.4.2 The species mixes that will be specified in the final LEMP (which are outlined in **Section 6.6** and **Section 6.7**) will be stress tested against UKCP18 projections. Good practice guidance published by the Forestry Commission[8] recommends that in relation to specifying native tree species (including shrubs and hedgerow species) that local provenance stock should be supplemented with stock originating between 2 degrees and 5 degrees further south at a similar altitude and distance from the Atlantic Ocean.

6.4.3 Regular monitoring will be undertaken as set out in **Section 7.0**, which will identify the need for changes to management and maintenance, and the implementation of any remedial measures required to address potential adverse effects arising from climate change. This may include the substitution of species where high rates of climate-related failure have occurred, with more resilient alternative species.

[8] Forestry Commission, 2020. *Managing England's woodlands in a climate emergency.*

6.5 General Management

6.5.1 The tasks set out below will be carried out across the Order Limits for the operational life of the Proposed Development, or as otherwise required.

Fencing

6.5.2 Fencing shall be installed as specified in the **oCEMP [EN010153/DR/7.5]** and/or **oOEMP [EN010153/DR/7.6]** and subject to details approved by CWaCC. Additionally, in areas where grassland management by grazing is proposed, stock-proof fencing shall be installed around all existing hedgerows within these areas (and this would need to enclose the extents of the 6m buffers described in Section 4.4).

6.5.3 Suitably sized (approximately 20 cm x 25 cm) gaps or mammal gates would be installed at suitable intervals and locations along the perimeter fence line to allow small mammals, including badgers, free movement into and out of the SADA. Gates should be positioned close to existing mammal pathways and habitat features providing connectivity within the landscape (e.g., hedgerows). The locations of the gaps/gates would be determined during a pre-commencement survey; this approach would allow for any changes in populations, sett locations and mammal paths which may change prior to the commencement of construction to be taken into account. Badger gates would be focused around sett areas and along known commuting routes and foraging areas in accordance with survey information. The location of mammal gates should be shown on the detailed landscape drawings, and justification for the positioning and number of mammal gates would be provided within the LEMP.

6.5.4 Gaps or mammal gates will not be installed along the perimeter fence of the NBBMA, to prevent predatory terrestrial mammal species entering the NBBMA and potentially predating roosting, foraging and/or nesting birds (or eggs/chicks).

6.5.5 All fencing, including any gates, stiles or other associated structures shall be maintained in good condition throughout the life of the Proposed Development.

6.5.6 An audit of public rights-of-way infrastructure within the Site will be undertaken to identify assets to be removed and/or improved to facilitate access across the Site, in accordance with Design Principle 4: Public Access and Recreation of Appendix A of the Design Approach Document (APP-130).

Litter

6.5.7 Litter and debris shall be removed as required as part of each regular maintenance visit, including from ditches/waterbodies.

Weeding

6.5.8 Problem perennial weeds will be controlled by hand pulling, or if necessary careful targeted application of a non-residual herbicide via spot spraying with a knapsack (low pressure to avoid spray drift) or weed wiping. Herbicide application may be used in April, June and August. Species to be removed shall be identified on-site as part of regular monitoring.

6.5.9 Within or adjacent to ponds, wetland areas, watercourses and ditches, weed growth shall be controlled by either cutting, or by hand pulling. Use of herbicide is not permitted within 10m of watercourses, ditches, ponds, or wetland areas unless mandated as part of an invasive non-native species management requirement.

6.5.10 If invasive non-native species listed under Schedule 9 of The Wildlife & Countryside Act 1981 (as amended) or the EU Invasive Alien Species Regulation (1143/2014) are encountered within or immediately surrounding the Order Limits at any time, the advice of a suitably qualified ecologist will be sought, and the appropriate best practice measures for the species in question shall be taken to prevent the establishment and spread of such plants around the Order Limits.

6.5.11 Where required, a suitably experienced specialist management company will be instructed to eradicate the invasive non-native species from the Site. Any arisings will be disposed of offsite to a suitably licenced waste disposal facility.

6.5.12 As set out in the outline NBBMS (**Appendix B** to this document), New Zealand Pygmyweed is known to be present in the ponds to the north of dredging Cell 3. As such, a New Zealand Pygmyweed Control and Management Strategy will be produced prior to the commencement of work in this area as specified in the **oCEMP [EN010153/DR/7.5].**

6.5.13 The **oOEMP [EN010153/DR/7.6]** requires that an Invasive Non-Native Species Management Plan (INNSMP) will be prepared to set out monitoring and control measures for invasive species, including New Zealand Pygmyweed. Should herbicide use be required to control invasive species, the INNSMP must contain measures to ensure that these do not enter watercourses or groundwater.

Badgers

6.5.14 The Proposed Development has been designed to avoid impacting habitats most likely to be used by badgers for both sett building and foraging and commuting (field boundary features). These habitats will be largely retained and protected during the construction process as outlined in the **oCEMP [EN010153/DR/7.5]** with further detail to be provided as necessary in the final CEMP.

6.5.15 Specifically, a pre-construction badger survey would be undertaken immediately prior to the commencement of the site clearance works. If this identifies any changes to baseline conditions in respect of the presence of badger activity and/or setts, then design changes may need to be made, and a disturbance/mitigation licence would need to be obtained from NE. Any outcomes that remain relevant post-construction and that might affect the management/maintenance of the landscape and ecological proposals would be reflected in an updated LEMP.

Access

Access Routes

6.5.16 The locations of PRoWs within the Order Limits are illustrated on **ES Vol 3 Figure 1-5: Public Rights of Way [EN010153/DR/6.3].** Those within and proximate to the SADA and NBBMA are also illustrated on the **IEM** (**Appendix A**). Details of the management of each PRoW are set out in the **Outline Public Rights of Way Management Plan [EN010153/DR/7.9]**.

6.5.17 **Figure 1** illustrates the proposed indicative hierarchy of routes within and proximate to the SADA and NBBMA, distinguishing between the types of access and intended user groups for each route.

6.5.18 The locations of proposed permissive paths are illustrated on the **IEM** (**Appendix A**), and are as follows:

i) A: Approximately 845m length of path linking Brook Furlong and Moorditch Lane.
ii) B: Approximately 1.77km length of path running along the River Weaver, linking the terminus of the public byway at Frodsham Marsh farm with Brook Furlong and with public footpath Frodsham FP 81.
iii) C: Approximately 750m length of path linking restricted byway Frodsham RB 99 with public footpath Frodsham FP81.
iv) D: Approximately 255m length of path linking Moorditch Lane and Brook Furlong.
v) E: Approximately 805m length of path linking Brook Furlong and public footpath Frodsham FP81.
vi) F: Approximately 710m length of path linking public footpath Frodsham FP81 and public footpath Frodsham FP93.
vii) G: Between approximately 150m and 225m of path on boardwalks within the wetland habitat areas to be created at Marsh Farm.

6.5.19 Permissive paths will be designed with regard to good practice design guidance including:

i) *Access for all design guide*[9].
ii) *Outdoor Access Design Guide*[10].
iii) *Paths for Everyone*[11].
iv) *Outdoor Accessibility Guidance*[12].

6.5.20 Permissive paths A, B, D and F will be maintained for pedestrian access only and will comprise a corridor up to 2m wide. Surfacing would comprise either close-mown grass, gravel or boardwalks, to suit the conditions along specific sections of each route.

6.5.21 Permissive paths C and E will be maintained for cycle and equestrian access (in addition to pedestrian access) and will comprise a corridor up to 3m wide. A gravel surface will be provided which will be suitable for all intended users.

6.5.22 Within the wetland habitat areas to be created to the east of Marsh Farm, timber boardwalks carrying permissive path G will run into the wetland from the adjacent public right of way. The boardwalks shall be of sufficient width to allow two people to pass safely.

6.5.23 Full details of the permissive paths, including their routing, will be set out in the final LEMP for any one phase of the Proposed Development and will be agreed with CWaCC, along with the maintenance regime for the PRoW and other permissive paths across the Site. The programme for the implementation of the permissive paths will be included within the final LEMP but permitted paths located within a phase (as defined pursuant to Requirement 3 of Schedule 2 of the draft DCO) shall be made available for use by the public on the date of final commissioning of that phase.

6.5.24 All public rights of way within the Order Limits would be kept free from obstruction, save where required to be crossed for maintenance, which may

[9] Environmental Agency, 2013. *Access for all design guide*.
[10] Paths for All and Scottish Natural Heritage, 2016. *Outdoor Access Design Guide*.
[11] Sustrans, 2018. *Paths for Everyone*.
[12] Paths for All and Sensory Trust, 2023. *Outdoor Accessibility Guidance*.

require temporary obstructions/closures. Any temporary closures or diversions to public rights of way must be agreed with CWaCC. Permissive paths shall be maintained and access by the public permitted for 305 days a year (subject to closures for maintenance or emergencies) until commencement of decommissioning. Any closures of permissive paths for periods exceeding 60 days a year must be agreed in writing with CWACC.

6.5.25 If the use of any of the proposed permissive paths leads to disturbance of the NBBMA, or habitats of the River Weaver adjacent to Cell 1, such that the disturbance results in a notable reduction in the value of that habitat to wintering birds, it will be necessary to introduce mitigation to reduce disturbance to an acceptable level, which could involve the closure of sections of the path that are causing disturbance during core non-breeding bird periods (Nov- Feb inclusive), temporarily or permanently. The Applicant shall undertake ornithological monitoring, as set out in section 7.4 of this plan, to monitor and assess levels of disturbance from the permissive paths. It shall, in coordination with the organisation responsible for the management of the NBBMA, report on the findings of the survey and, if considered necessary, propose adaptive management to mitigate the impacts of disturbance. This monitoring and any mitigation deemed necessary shall be submitted and approved by Council in consultation with Natural England. Further monitoring shall be undertaken to establish the success of any additional mitigation applied and whether any additional adaptive mitigation is required.

Car Park

6.5.26 The potential visitor car park on Moorditch Lane will be provided by the end of the second anniversary of the final commissioning of the Proposed Development (or such later period as may be agreed by CWaCC), unless monitoring undertaken by the Applicant, covering at least a twelve month period, identifies that the proposed access enhancements have not, in that period, resulted in a demonstrable increase in cars informally parking along Moorditch Lane, causing access/egress issues for other users of Moorditch Lane, and only if National Highways has agreed that Brooks Furlong Bridge

can be used by cars to access the car park, pursuant to their Protective Provisions in the DCO.

6.5.27 The Applicant commits to addressing any unforeseen access/egress issues on Moorditch Lane that are caused by the Proposed Development, either by constructing the car park or via alternative measures.

6.5.28 The results of the monitoring referred to in paragraph 6.5.25 and confirmation of the Applicant's approach following that monitoring (including the design of the car park if brought forward) shall be submitted to approval by CWaCC before any car park is constructed.

6.5.29 If delivered, the car park will include security features (e.g. height-restricting barriers and a lockable gate), and the Applicant reserves the right to remove the car park later, if it gives rise to persistent anti-social behaviour. Suitable evidence of such behaviour would first be presented to CWaCC and potential solutions discussed before being implemented. The proposed location of the potential car park is indicated on the **IEM** (**Appendix A**).

6.5.30 For the avoidance of doubt, the Applicant shall be responsible for the costs of designing, constructing and maintaining any car park that is provided.

Bicycle Parking

6.5.31 Bicycle parking facilities would be provided at strategic locations within the Order Limits, including at the point where permissive path A meets Moorditch Lane, and at the proposed car park described above. Indicative locations are shown on the **IEM** (**Appendix A**).

6.5.32 Details of these would be set out in the final LEMP.

Street Furniture

6.5.33 Interpretation panels will be provided within the Order Limits at the locations shown indicatively on the **IEM** (**Appendix A**). These will provide content providing information on subjects including local biodiversity, cultural heritage

assets, renewable energy generation and climate change. Full details of the interpretation panels, including location, content and specification will be set out in the final LEMP.

6.5.34 Signage will comprise waymarking signs mounted on timber posts (or attached to fenceposts) located at each route intersection. The purposes of signage will be to indicate the direction that each route follows, and to provide any other information pertinent to the health and safety of users. In particular, the need for dogs to be kept on leashes along routes close to the NBBMA and to the River Weaver would be shown on signage. Full details of signage, including location and specification will be set out in the final LEMP.

6.5.35 Signage will also be provided to ensure that users of permissive paths and public rights of way are restricted to the intended / authorised users. This will include signage advising that there is no right of access across the Weaver Lane bridge by horse riders.

6.5.36 All signage and interpretation material will be maintained in good condition, so that the information that they show is unobscured and easy to read. Any damage will be made good as soon as feasible.

6.5.37 Benches/seating will be provided at strategic locations along the routes, including at points where opportunities for birdwatching are available. Details of these, including locations will be set out in the final LEMP.

6.5.38 Litter bins/dog bins will be provided along the routes, subject to agreeing a suitable refuse collection strategy with CWaCC. Details and locations will be set out in the final LEMP.

Utilities

6.5.39 The implementation and management of all landscape and ecological proposals shall have regard to the presence of underground and overhead utilities, reflecting the easements set out in **Section 4.4**, and shall not interfere with the operation and maintenance of these.

Pollution Control

6.5.40 Vehicular access to the Proposed Development will be controlled as described above and will be limited to maintenance activities. Pollution prevention measures for vehicles and machinery are set out in the oCEMP, oOEMP and oDEMP. Access tracks will be inspected as part of regular monitoring activities (see **Section 7.0**) to ensure no unacceptable erosion is occurring, and remedial action would be taken where appropriate.

6.6 Existing Trees and Shrubs, and Proposed Planting

Planting Specification

Native Woodland

6.6.1 The following indicative species mix is proposed for areas of new native woodland, with full details to be confirmed in the final LEMP.

i) Oak (*Quercus robur*) 35%.
ii) Silver Birch (*Betula pendula*) 15%.
iii) Field Maple (*Acer campestre*) 20%.
iv) Holly (*Ilex aquifolium*) 10%.
v) Hazel (*Corylus avellana*) 10%.
vi) Hawthorn (*Crataegus monogyna*) 10%.

6.6.2 All plants are to be of certified local provenance (seed zone 302), subject to availability. Stock from seed zones 303, 305, and 404 is also considered suitable and inclusion is encouraged to add resilience against potential adverse climate-change related effects (see **Section 6.4**).

6.6.3 Planting density to be 2m centres. Stock will be predominantly bare root transplants (typically either 40-60cm 1+1 transplants, or 60-80cm 1+2 transplants). Holly will be container grown (typically either 40-60cm 2L pot, or 60-80cm 3L pot). Larger stock may be planted within the woodland plots at

lower densities (typically feathered trees c. 2m high) where early screening is required.

Native Scrub

6.6.4 The following indicative species mix is proposed for areas of new native scrub, with full details to be confirmed in the final LEMP.

i) Hazel (*Corylus avellana*) 30%.
ii) Hawthorn (*Crataegus monogyna*) 45%.
iii) Blackthorn (*Prunus spinosa*) 25%.

6.6.5 All plants are to be of certified local provenance (seed zone 302), subject to availability. Stock from seed zones 303, 305, and 404 is also considered suitable and inclusion is encouraged to add resilience against potential adverse climate-change related effects (see **Section 6.4**).

6.6.6 Planting density to be 2m centres. Stock will be bare root transplants (typically either 40-60cm 1+1 transplants, or 60-80cm 1+2 transplants).

6.6.7 Mixed scrub will be planted to ensure that at least three woody species are planted in any one stand of scrub, and that no single species consists more than 75% of the mix.

Native Tree and Shrub Belts

6.6.8 The following indicative species mix is proposed for new native tree and shrub belts, with full details to be confirmed in the final LEMP.

i) Oak (*Quercus robur*) 20%.
ii) Silver Birch (*Betula pendula*) 20%.
iii) Field Maple (*Acer campestre*) 22.5%.
iv) Hazel (*Corylus avellana*) 10%.
v) Hawthorn (*Crataegus monogyna*) 12.5%.
vi) Dog Rose (*Rosa canina*) 7.5%
vii) Blackthorn (*Prunus spinosa*) 7.5%

6.6.9 All plants are to be of certified local provenance (seed zone 302), subject to availability. Stock from seed zones 303, 305, and 404 is also considered suitable and inclusion is encouraged to add resilience against potential adverse climate-change related effects (see **Section 6.4).**

6.6.10 Planting density to be 2m centres. A minimum of five different species will be planted per 30m length. Areas of less dense planting/gaps are to be identified on-site, in order to retain long-range views.

6.6.11 Stock will be predominantly bare root transplants (typically either 40-60cm 1+1 transplants, or 60-80cm 1+2 transplants). Larger stock may be planted at lower densities (typically feathered trees c. 2m high) where early screening is required.

Native Hedgerows

6.6.12 The following indicative species mix is proposed for new native hedgerows , with full details be confirmed in the final LEMP.

i) Field Maple (*Acer campestre*) 15%.
ii) Dog Rose (*Rosa canina*) 15%.
iii) Hawthorn (*Crataegus monogyna*) 35%.
iv) Blackthorn (*Prunus spinosa*) 25%.
v) Holly (*Ilex aquifolium*) 10%.

6.6.13 All plants are to be of certified local provenance (seed zone 302), subject to availability. Stock from seed zones 303, 305, and 404 is also considered suitable and inclusion is encouraged to add resilience against potential adverse climate-change related effects (see **Section 6.4**).

6.6.14 Plant in double staggered rows, 5 plants per linear metre. All five proposed species will be planted within each 30m length of hedgerow.

6.6.15 Stock will be predominantly bare root transplants (typically either 40-60cm 1+1 transplants, or 60-80cm 1+2 transplants). Holly will be container grown (typically either 40-60cm 2L pot, or 60-80cm 3L pot). Larger stock may be planted within the hedgerows at lower densities (typically feathered trees c. 2m high) where early screening is required.

Implementation

6.6.16 Planting will be carried out in the first available season following the substantial completion of the Proposed Development; earlier planting will be carried out, as and where possible, subject to the completion of any ground works (including land associated with temporary laydown) required in the location of specific planting or seeding works.

6.6.17 Bare root and rootballed stock will be planted while dormant (between the months of November and February, inclusive). Containerised stock will be used where necessary, as advised by the supplier.

6.6.18 Transplants and holly will be notch planted. Feathered stock will be pit planted, with pit details to be set out in the final LEMP.

6.6.19 It is expected that ground conditions and climate will allow for earlier planting (i.e. before January), this will allow the plants more time to establish a network of feeder roots before the onset of spring. Earlier planting will be carried out where possible.

6.6.20 Planting of trees and shrubs will not be carried out when the ground is wet/waterlogged or frost bound, or during periods of excessive cold drying winds or drought.

6.6.21 In areas of existing dense bramble scrub, these will be cleared of bramble prior to planting with the proposed native scrub species.

6.6.22 On completion, all plants will be thoroughly watered-in and will be protected from damage by individual spirals/guards, supported by a high-quality stake that suits the height of the tube. Where there is risk of damage from livestock,

stock-proof fencing may also be installed (and this would need to enclose the 6m buffer described in **Section 4.4**).

6.6.23 After planting a 50mm layer of compost fine bark mulch (nominal size 1-10mm) will be spread to 1m wide diameter around the stem of each plant.

Establishment Management

General

6.6.24 The establishment management period for new planting will last for the first five years following practical completion of the landscape works.

6.6.25 All canes, stakes, guards, spirals and ties, and any stock-proof fencing will be regularly checked, replaced as required and removed from Site and disposed of once plants have established. This is to be checked annually.

6.6.26 Bark mulch will be topped up annually or as required, to maintain 50mm deep layer, until the plants have established.

6.6.27 During the establishment management period (the first 5 years), all dead, dying or diseased stock will be replaced with stock of similar size and species by the appointed contractor at their own cost. If the failure of the plant is due to disease and the disease is considered likely to re-occur, then an alternative native species of local provenance may be used as a replacement, to be agreed with CWaCC. The exact timing of the planting of replacement scrub/tree is dependent on the ground conditions; however, planting will take place between the months of November and February, inclusive.

6.6.28 An annual inspection will be undertaken each September to identify stock in need of replacement.

Weeding and Litter

6.6.29 The planting areas (1m radius around each stem) will be kept mulched to the original specification and weed-free during the establishment period, using approved hand-weeding or if necessary, herbicide treatment (applications in

April, June and August). The herbicide handbook (English Nature, 2003) provides guidance on appropriate herbicide use in relation to nature conservation works. Where used, herbicides will be sprayed in appropriate weather conditions (i.e. during periods of low wind and no excessive rainfall) in accordance with the supplier's instructions, to avoid affecting adjacent grassland areas and will not be used within 10m of watercourses, ditches, ponds, or wetland areas.

6.6.30 The bases of all hedgerows are to be kept weed-free. Manual removal of weeds should be undertaken in the first instance, if this is not successful a minimum of 3 no. applications of systematic herbicide per growing season should be actioned, with a combination of visits to manually remove weeds in conjunction with the use of herbicide, during the first 3 years. Where a hedgerow is within 10m of a watercourse, ditch, pond or wetland, weed removal shall be carried out manually.

6.6.31 Any litter accumulated around hedgerow bases is to be cleared at the same time as weed control operations.

6.6.32 All plants will remain upright and canes/guards adjusted as necessary during treatment of weeds.

Watering and Fertiliser

6.6.33 During the establishment period, trees and shrubs will be inspected during periods of warm weather and drought. If it is considered that the ground conditions are too dry, the planted areas will be watered on a regular basis until weather conditions are considered suitable for watering to cease. Plants shall receive an application of slow-release fertiliser for the first 3 years.

6.6.34 All hedgerow lines shall be regularly watered in times of drought to field capacity and shall receive an application of slow-release fertiliser for the first 3 years.

Long-term Management

General

6.6.35 Long-term management prescriptions will apply once establishment is complete. Existing trees, shrubs and hedgerows will be subject to long-term management from practical completion of the landscape works. Any new planting required to enhance existing vegetation shall be specified and implemented as set out above.

6.6.36 All guards and stakes shall be removed from plants once they are no longer required. These shall be disposed of off-site. Biodegradable guards may be left on-site.

6.6.37 As set out above, in areas where grassland management by grazing is proposed, stock-proof fencing will be required around all existing hedgerows within these areas (and this would need to enclose the extents of the 6m buffers described in **Section 4.4**). This will need to be maintained for the operational life of the Proposed Development.

6.6.38 No cutting or trimming of trees, shrubs or hedgerows will be undertaken during the bird breeding season (01 March to 31 August, inclusive) unless under the supervision of an appropriately qualified ecologist to ensure compliance with wildlife legislation.

6.6.39 Prior to the removal or trimming of any established trees, suitable checks for roosting bats will be undertaken in advance of any removal in accordance with guidance applicable at the time. If bats are confirmed to be roosting within any tree suspected to be impacted by the proposed works, the data gathered would be used to inform potential design amendments in order to avoid or reduce impacts, or failing that, support a European Protected Species (EPS) mitigation licence application to NE to destroy/disturb the bat roost.

6.6.40 Management will ensure that trees and shrubs do not present a hazard to human health, to the operation of the Proposed Development, or to utilities. Where hazards are identified, remedial measures will be taken.

6.6.41 Any arisings from management, e.g. cuttings from thinning/coppicing or from hedge trimming, may be left in piles (typically around the edges of woodland areas), in order to provide additional habitat for invertebrates, amphibians and reptiles and small mammals (if present). Arisings left in piles should only be removed from Site for essential reasons such as to retain access to infrastructure

Woodland

6.6.42 Following the initial establishment maintenance period, the woodland planting areas will be managed to enable the development of a diverse structure in the longer-term. Management shall be on a minimum intervention basis.

6.6.43 Selective thinning of weaker specimens, and/or coppicing of selected species will be undertaken with the aim being to diversify the structure of woodland. The need for thinning and coppicing will be determined every five years by the Environmental Manager, commencing in the first year of the final LEMP. The Update Report will record the species coppiced, and the timescales of the coppicing regime proposed.

6.6.44 Key management objectives for woodland are as follows:

i) Provide visual screening of glint and glare impacts.
ii) Meets the UKHab definition of Other Broadleaved Woodland.
iii) Greater than 80% of species are broadleaved.
iv) Natural regeneration occurs.
v) At least four native tree or shrub species are present.
vi) Woodland is developing a complex structure including ground flora, understory, shrub and canopy species.

Scrub

6.6.45 Scrub will not be allowed to develop into large/dense areas of woodland, and remedial action shall be taken to prevent this, as necessary.

6.6.46 Key management objectives for scrub are as follows:

i) Achieves UKHab definition of Mixed Scrub.
ii) At least three native woody species.
iii) Ensure no single species consists greater than 75% of the habitat.
iv) Promote natural regrowth.
v) Ensure complementary edge habitat is present.

Native Trees and Shrubs

6.6.47 Belts of trees and shrubs will be left to grow. Management will ensure that any gaps in these belts that are intended to allow longer views across the Order Limits are retained.

6.6.48 Key management objectives for trees and shrubs (classified as hedgerows with trees within the Metric) are as follows:

i) Provide screening of views of the proposed new structures, but retain strategic gaps/less dense/lower sections where necessary to preserve existing long-range views towards the Mersey Estuary or to Frodsham Hill and Helsby Hill.
ii) Achieves UKHab definition of Native Species Rich Hedgerow
iii) Maintain a minimum of five woody species per 30m length.
iv) Maintain a bushy growth, on average, of at least 1.5m height and width.
v) Avoid damage from human activities.
vi) Maintain trees in a healthy condition.

6.6.49 The landscape design will involve targeted planting of trees and scrub to assist in screening or softening views of the Proposed Development from elevated vantage points, where appropriate to the operational requirements of the

Proposed Development. Such planting will be designed to integrate with the surrounding landscape character and will only be introduced in locations where it would not adversely affect the established landscape context or result in material reductions in the operational efficiency of the Solar PV panels (for example through shading or the need to remove panels to facilitate planting or maintenance access). Species selection, planting density and location will be carefully considered to ensure that visual mitigation is achieved where possible while maintaining the functional performance of the solar array and the integrity of the landscape character. The planting specification will also take into account the ecological objectives of certain areas of the Site, for example the ecological preference of wintering birds for open habitats. Screen planting would be avoided along the boundaries of the NBBMA, the banks of the River Weaver and other locations which are managed for the benefit of wintering birds.

Hedgerows

6.6.50 Existing and established hedgerows will be left to grow with minimal selective thinning and then maintained at a height of approximately 3m. Typically, hedgerows will be maintained to a minimum width 1.5m and where space allows hedgerows will be allowed to grow out sideways to a maximum width of 3m.

6.6.51 Typically, hedgerows will be cut on a 3-year rotational basis, i.e. not all hedgerows cut in the same year. A third of the total of hedgerows will be cut each year, but the length cut will not be one long stretch, but will be distributed across smaller sections of each hedgerow. This will maintain a resource of flowering and fruiting plants and create nesting and foraging habitat for wildlife. Any existing trees located within hedgerows will be left to grow naturally and not cut. These will be clearly marked to ensure that they are not cut back during hedgerow trimming/maintenance works.

6.6.52 Where the **IEM** (**Appendix A** of this document) shows that proposed hedgerows will be ‘maintained at a lower height’ these will be cut to maintain

a maximum height of no more than 1.5m in order to retain views over these from the adjacent public rights of way and permissive paths. These will be cut annually to maintain the intended height.

6.6.53 Hedgerows alongside all access routes (whether for maintenance access or for recreation/amenity) will receive an additional annual cut on the side facing the routeway where necessary, to ensure they will not encroach or impede access.

6.6.54 Hedgerows will be cut between late September and February, and no cutting or trimming is to be undertaken during the bird breeding season (01 March to 31 August inclusive) unless supervised by a suitably qualified ecologist.

6.6.55 Key management objectives for hedgerows are as follows:

i) Provide screening of views of the proposed new structures, but retain strategic gaps/lower sections where necessary to preserve existing long-range views towards the Mersey Estuary or to Frodsham Hill and Helsby Hill
ii) Achieves UKHab definition of Native Species Rich Hedgerow.
iii) Maintain a minimum of five woody species per 30m length.
iv) Maintain a bushy growth of at least 1.5m height and width (excluding the lengths to be maintained at a low height).
v) Lengths to be maintained at a low height to have a maximum height of 1.5m, to allow views over them.
vi) Avoid vertical ('leggy') and horizontal gaps along the length of the hedgerow.
vii) Maintain species diverse margins of at least 1m.
viii) Avoid damage from human activities.

6.7 Existing and Proposed Grassland

Seeding Specification

Other Neutral Grassland

6.7.1 The following indicative species mix is proposed for other neutral grassland, with full details to be confirmed in the final LEMP.

6.7.2 Where other neutral grassland is to be created via new seeding, these areas will be sown with Emorsgate EM2 Standard General Purpose Meadow Mixture or similar (indicative species mix set out below) at a rate of 4g/m^2. Seeding will be carried out in accordance with the supplier's instructions.

Grasses

i)	Common Bent (*Agrostis capillaris*)	8.5%.
ii)	Crested Dogstail (*Cynosurus cristatus*)	29.75%
iii)	Red-fescue (*Festuca rubra*)	25.5%
iv)	Smaller Cat's-tail (*Phleum bertolonii*)	4.25%
v)	Smooth-stalked Meadow-Grass (*Poa pratensis*)	17%

Herbs/Wildflowers

i)	Yarrow (*Achillea millefolium*)	0.75%.
ii)	Common Knapweed (*Centurea nigra*)	2.25%.
iii)	Wild Carrot (*Daucus carota*)	1.2%.
iv)	Lady's Bedstraw (*Galium verum*)	0.3%.
v)	Field Scabious (*Knautica arvensis*)	0.6%.
vi)	Oxeye Daisy (*Leucanthemum vulgare*)	1.95%.
vii)	Musk Mallow (*Malva moschata*)	0.75%.
viii)	Ribwort Plantain (*Plantago lanceolata*)	2.25%
ix)	Salad Burnet (*Poterium sanguisorba ssp. sanguisorba*)	1.5%.
x)	Cowslip (*Primula veris*)	0.45%.
xi)	Meadow Buttercup (*Ranunculus acris*)	1.5%.

xii) Yellow Rattle (*Rhinanthus minor*)	0.75%.
xiii)Bladder campion (*Silene vugaris*)	0.75%.

Modified Grassland

6.7.3 The following indicative species mix is proposed for modified grassland, with full details to be confirmed in the final LEMP.

6.7.4 Where modified grassland is to be created via new seeding, these areas will be sown with Emorsgate EG22 Strong Lawn Grass Mixture or similar (indicative species mix set out below) at a rate of 4g/m^2. Seeding will be carried out in accordance with the supplier's instructions.

Grasses

i) Common Bent (*Agrostis capillaris*)	5.0%
ii) Red Fescue (*Festuca rubra*)	39.0%
iii) Perennial Ryegrass (*Lolium perenne*)	25.50%
iv) Smooth-stalked Meadow-grass (*Poa pratensis*)	15.5%

Herbs/Wildflowers

i) Common Knapweed (*Centaurea nigra*)	2.25%
ii) Wild Carrot (*Daucus carota*)	1.75%
iii) Lady's Bedstraw (*Galium verum*)	0.5%
iv) Oxeye Daisy (*Leucantheum vulgare*)	1.25%
v) Musk Mallow (*Malva moschata*)	0.25%
vi) Ribwort Plantain (*Plantago lanceolata*)	2.5%
vii) Salad Burnet (*Poterium sanguisorba ssp sanguisorba*)	2.25%
viii)Self Heal (*Prunalle vulgaris*)	1.75%
ix) Meadow Buttercup (*Ranunculus aris*)	1.75%
x) Red Campion (*Silene dioica*)	0.75%.

Marshy Grassland

6.7.5 The following indicative species mix is proposed for marshy grassland, with full details to be confirmed in the final LEMP.

6.7.6 Where marshy grassland is to be created via new seeding, these areas will be sown with Emorsgate EM8 Meadow Mixture for Wetlands or similar (indicative species mix set out below) at a rate of 4g/m^2. Seeding will be carried out in accordance with the supplier's instructions.

Grasses

i) Common Bent (*Agrostis capillaris*)	4%.
ii) Sweet Vernal-grass (*Anthoxanthum odoratum*)	4%.
iii) Grey sedge (*Carex divulsa subsp. divulsa*)	0.8%.
iv) Crested Dogstail (*Cynosurus cristatus*)	33.6%.
v) Tufted Hair-grass (*Deschampsia cespitosa*)	1.6%.
vi) Red-fescue (*Festuca rubra*)	20%.
vii) Meadow Barley (*Hordeum secalinum*)	3.2%.
viii) Smaller Cat's-tail (*Phleum bertolonii*)	5.6%.
ix) Rough-stalked Meadow-grass (*Poa trivialis*)	5.6%.
x) Tall Fescue (*Schedonorus arundinaceus*)	1.6%.

Herbs/Wildflowers

i) Yarrow (*Achillea millefolium*)	0.7%.
ii) Agrimony (*Agrimonia eupatoria*)	0.6%.
iii) Wild Angelica (*Angelica sylvestris*)	0.1%.
iv) Betony (*Betonica officinalis*)	0.2%.
v) Common Knapweed (*Centurea nigra*)	3.2%.
vi) Meadowsweet (*Filipendula ularia*)	1.4%.
vii) Hedge Bedstraw (*Galium album*)	0.4%.
viii) Lady's Bedstraw (*Galium verum*)	2%.
ix) Meadow Vetchling (*Lathyrus pratensis*)	0.8%.
x) Rough Hawkbit (*Leontodon hispidus*)	0.6%.

xi) Oxeye Daisy (*Leucanthemum vulgare*)	1.2%.
xii) Birdsfoot Trefoil (*Lotus corniculatus*)	0.6%
xiii)Greater Birdsfoot Trefoil (*Lotus pedunculatus*)	0.1%.
xiv) Black Medick (*Medicago lupulina*)	1%.
xv) Ribwort Plantain (*Plantago lanceolata*)	2%.
xvi) Cowslip (*Primula veris*)	0.4%.
xvii) Selfheal (*Prunella vulgaris*)	0.8%.
xviii) Meadow Buttercup (*Ranunculus acris*)	1.2%.
xix) Yellow Rattle (*Rhinanthus minor*)	0.8%.
xx) Common Sorrel (*Rumex acetosa*)	0.6%.
xxi) Great Burnet (*Sanguisorba officinalis*)	0.3%.
xxii) Ragged Robin (*Silene flos-cuculi*)	0.5%.
xxiii) Dandelion (*Taraxacum officinale*)	0.2%.
xxiv) Tufted Vetch (*Vicia cracca*)	0.3%.

Implementation

6.7.7 Grassland seed will be sown in the first September following the substantial completion of the Proposed Development, to allow establishment prior to winter and to provide optimal conditions for Yellow Rattle to establish. Seed will be surface sown, broadcast by machine and rolled where possible. The seed will be divided into two parts for each section and sown in two passes perpendicular to each other where possible.

6.7.8 Seeding will not be carried out when the ground is wet/waterlogged or frost bound, or during periods of excessive cold drying winds or drought.

Establishment Management

6.7.9 The establishment period for new grassland will last for the first year following practical completion of the landscape works.

Other Neutral Grassland and Modified Grassland

6.7.10 Following seeding in autumn, a high spring cut to between 70-100mm will be undertaken around the following April with no further mowing until mid-July. It will then receive a monthly cut, to a height of between 40mm and 60mm, until the end of the growing season to prevent annual weeds from establishing.

6.7.11 Mowing will only take place during periods of dry weather to ensure that waterlogged ground is not damaged by machinery.

6.7.12 The grassland will not be improved by chemical fertiliser or slurry and nutrient levels in the soil should be allowed to reduce over time.

6.7.13 All arisings should remain on Site for 3-5 days following the cut to allow seeds to disperse, and then removed from Site.

Marshy Grassland

6.7.14 In marshy grassland areas, most of the sown meadow species are perennial and are slow to establish. Soon after sowing there is likely to be a flush of annual weeds, arising from the soil seed bank. These weeds can look unsightly, but they will offer shelter to the sown seedlings, provide habitat for invertebrates, and they will die before the year is out. Therefore cutting of the wetland grass will not occur until mid to late summer. Cuttings will be removed.

6.7.15 The grass will then be kept short by mowing through to the end of March of the following year. Any residual perennial weeds such as docks will be manually dug out.

Long-term Management

General

6.7.16 Long-term management prescriptions will apply once establishment is complete. Existing vegetation will be subject to long-term management from practical completion of the landscape works.

Within Solar Array

6.7.17 Grassland within the extent of the Solar Array security fencing (i.e. the areas where the solar PV models are located) will be managed via low-intensity sheep grazing (between September to February) which could be supplemented by mowing via an optional hay cut in August with subsequent aftermath grazing to further reduce fertility.

6.7.18 If grazing is unable to be undertaken during the operation of the solar farm, mechanical cutting will be undertaken instead to replicate the sward height for early March described below.

6.7.19 Moderate trampling will expose ground for colonisation by annuals the next spring; however, heavy trampling can lead to ground poaching and infestations by weed species that will be detrimental to the Site.

6.7.20 The approach outlined in **Table 2** will be followed to allow summer flowering plants to set seed during spring and summer, and to allow low-intensity grazing during winter.

Table 2: Low-Intensity Grazing Annual Regime

Timing	Action
January - February	Light grazing on any new growth.
End of February	Remove grazing; this allows forbs to grow and allows a good habitat for ground nesting birds to develop.
End of August	An optional hay cut may be taken. Cut hay once the wildflowers have seeded from August onwards. The arisings can be collected as a hay crop, mechanically raked and piled up or removed. Arisings must be removed with one or more of these methods to avoid the harmful effects of grass mulch on plant species diversity
September to the end of December	The main grazing period with light grazing down to a short sward height; a mosaic of plant heights helps encourage insects.

6.7.21 The intended outcome of a conservation grazing scheme will be to have a sward of the following height structure at the beginning of March:

i) 75% at a height of approximately 5cm; and

ii) 25% at a height of approximately 25cm.

6.7.22 A stocking density of between 0.5 – 1 livestock units (LSUs) per hectare is recommended between late September and February. This is a typical stocking density for conservation grazing. However, the stocking density and timing of grazing will be at the discretion of the land manager, in order to achieve the desired sward structure given above. More animals could be used for shorter grazing periods.

6.7.23 It is important to regularly monitor the Site to ensure the grassland is not under or over grazed and stock density and duration altered accordingly to deliver the Target Condition specified in Table 1. The stocking density should be reduced in wet periods or in conditions when poaching would lead to a break-up of the sward and colonisation by aggressive weed species.

6.7.24 The following indicators will be used to review and amend stocking densities:

i) An increase in the amount of uneaten grass, the accumulation of litter, an increase in vigorous rank and unpalatable grasses, and a reduction in low growing herbs indicates stocking density is too low (increase density).
ii) A reduction in density of plants, excessive poaching, weed invasion and the development of bare patches indicates stocking density is too high (reduce density).

6.7.25 Grazing is only to be undertaken by sheep. Cattle grazing is not proposed due to the damage this livestock may cause to the solar panel equipment.

6.7.26 Should the sward height become a problem, with plants starting to shade the lower levels of the panels, a strip of no more than 1 m wide can be cut at the base of the panel to shorten the sward height in this area. This cutting can occur at any time, in such cases cuts should reduce sward height to no lower than 200 mm to retain habitat for biodiversity.

Outside Solar Array (excluding NBBMA)

6.7.27 Outside of the Solar Array security fencing and/or stock proof fencing surrounding panel areas, grassland will be managed via mechanical cutting.

6.7.28 Following establishment, one or possibly two cuts will be taken per year comprising an early cut in February (if necessary) to manage regrowth, and a second later in the season between August and September (each cut reducing sward height to approximately 150 mm). No cutting will take place throughout the summer to allow the seeds of the later flowering species to fall prior to the cut. There may be circumstances when an additional summer cut is required to prevent vegetation obscuring panels, in such cases cuts should reduce sward height to no lower than 200 mm to retain habitat for biodiversity.

6.7.29 Cutting should adopt a systematic method (i.e., working outwards towards the boundary features); this will allow fauna such as invertebrates, amphibians, birds and small mammals to temporarily and safely vacate the area.

6.7.30 The management will take a flexible approach and the exact dates will be dependent upon weather conditions. A phased (rotational) cutting regime is recommended (i.e., ideally the entire area should not be cut at the same time) in order to allow for more structured grassland.

6.7.31 Cuttings will remain on-Site for three to five days following the cut to allow seeds to disperse and then be removed or heaped in designated areas within the Solar Array Development Area in order to remove nutrients and promote the development of a botanically diverse sward.

Management Objectives for Grassland

6.7.32 Key management objectives for modified grassland are as follows:

i) Achieves UKHab definition of Modified Grassland.
ii) Ensure at least six species per m^2 on average.
iii) Varied sward height is present.
iv) Scrub accounts for less than 20% of the total grassland area.

v) Cover of bare ground is between 1% and 10%.

6.7.33 Key management objectives for other neutral and marshy grassland (other neutral) are as follows:

i) Achieves UKHab definition of Other Neutral Grassland.
ii) Ensure at least nine species per m^2 on average.
iii) Varied sward height is present.
iv) Scrub accounts for less that 5% of the total grassland area.
v) Cover of bare ground is between 1% and 10%.
vi) Species indicative of nutrient enrichment are not present.

6.8 Wetland (outside the NBBMA)

Planting/Seeding Specification

6.8.1 The following indicative species mix is proposed for wetland, with full details to be confirmed in the final LEMP.

6.8.2 The following species mixes are proposed.

Marginal planting

6.8.3 Grass species. To be seeded around the edges of the new or enhanced ditches and waterbodies.

i)	Common Bent (*Agrostis capillaris)*	11%.
ii)	Marsh Foxtail (*Alopecurus geniculatus*)	11%.
iii)	Meadow Foxtail (*Alopecurus pratensis*)	11%.
iv)	Marsh Marigold (*Caltha palustris*)	2%.
v)	Cuckoo Flower (*Cardamine pratensis*)	3%.
vi)	Greater Tussock Sedge (*Carex paniculata*)	12%.
vii)	Pendulous Sedge (*Carex pendula*)	12%.
viii)	Greater Pond Sedge (*Carex riparia*)	12%.
ix)	Crested Dog's-tail (*Cynosurus cristalus*)	3%.
x)	Red Fescue (*Festuca rubra*)	2%.
xi)	Water Avens (*Geum rivale*)	3%.
xii)	Floating Sweet Grass (*Glyceria fluitans*)	11%.
xiii)	Purple Loosestrife (*Lythrum salicaria*)	2%.
xiv)	Water Mint (*Mentha aquatica*)	3%.
xv)	Water-cress (*Nasturtium officinale*)	2%.

6.8.4 Plant plugs at density 7/m^2 in single species groups of 20-30, around the edges of the ditch/waterbody.

i)	Greater Tussock Sedge (*Carex paniculata*)	14%.
ii)	Greater Pond Sedge (*Carex riparia*)	13%.

iii) Floating Sweet Grass (*Glyceria fluitans*) 13%.
iv) Purple Loosestrife (*Lythrum salicaria*) 10%.

In-channel (aquatic) planting

6.8.5 Plant plugs at density 7/m^2 in single species groups of 20-30, within the permanently wet part of the ditch/waterbody.

i) Common Water Plantain (*Alisma plantago-aquatica*) 10%.
ii) Soft Rush (*Juncus effusus*) 10%.
iii) Yellow Flag Iris (*Iris pseudacorus*) 10%.
iv) Branched Bur Reed (*Sparganium erectum*) 10%.
v) Bull Rush (*Typha latifolia*) 10%.

Reedbeds

6.8.6 Common reed (*Phragmites australis*) to be planted in the margins of the new reedbeds at a density of approximately 5 plants per m^2.

Implementation

6.8.7 Details of the physical measures required for the creation or enhancement of existing ponds/open water environments, e.g. the wetland area to the east of Marsh Farm and The Lum, will be set out in the final CEMP, and relevant details will be carried forward into the final LEMP.

6.8.8 Scrapes will be created by excavating shallow depressions, the depths of which will be set out in the final LEMP. Locations shall be broadly as indicated on the **IEM** (**Appendix A**), with the final locations determined on site.

6.8.9 Wetland seed will be sown between late July to early September, to allow establishment prior to winter and likely winter flooding. Alternatively, it may be sown during spring if there is a risk of flooding during the autumn.

6.8.10 Wetland plug planting will take place March/April or September/October when ground and climate conditions are suitable. Ground should be damp to wet

prior to planting and where possible planting will be undertaken during rainy weather. Planting will not be carried out when the ground is frost bound, or during periods of excessive cold drying winds or drought.

Establishment Management

General

6.8.11 The establishment period for wetland vegetation shall last for the first year following practical completion of the landscape works.

6.8.12 Litter and debris will be removed as required, at a minimum on a monthly basis.

6.8.13 Weed growth shall be controlled by either cutting, or by hand pulling. Use of herbicide is not permitted. Species to be removed shall be identified on-site as part of regular monitoring.

6.8.14 No establishment cutting of vegetation is required.

Long-term Management

General

6.8.15 Long-term management prescriptions shall apply once establishment is complete. Existing vegetation shall be subject to long-term management from practical completion of the landscape works.

6.8.16 Management of vegetation shall not impede the drainage function of any wetland feature, including ditches.

6.8.17 The wetland area to the east of Marsh Farm and The Lum will be managed to create habitats which are suitable for SPA birds. The long-term management prescriptions shall be determined in consultation with the conservation organisation responsible for the management of the NBBMA.

Ditches

6.8.18 Once established, bankside vegetation will be cut on a rotational basis, with 25% being cut each year. Areas to be cut shall be cut to 50mm in September with arisings being left for 5-7 days before removal.

6.8.19 Other maintenance actions may be required, such as removal of sediment, which would impact the landscape proposals as grass and plants are likely to be damaged in the process. When this occurs, the affected areas will be re-seeded with the same mix as originally specified, or similar, as available. Additional plug planting will be carried out with the original species and sizes. New planting and seeding will revert to a year of establishment maintenance before being incorporated back into the long-term maintenance operations. Prior to these actions taking place, a review shall be undertaken of the potential for the temporary extraction and subsequent replanting of the affected vegetation. This extraction and replanting shall be carried out if considered to be viable, ecological benefit and if the desired maintenance outcomes are not impacted.

6.8.20 Management shall control the spread of non-native species, which shall typically be removed in the winter following identification. If best practice for the control of particular species requires removal at other times, then this shall be followed.

6.8.21 Vegetation growth shall be encouraged along ditches, as long as this does not prejudice drainage. Where the presence of vegetation is inhibiting drainage, this shall be cleared (all arisings to be removed from the ditch) or other appropriate steps taken to remedy the situation. As a guide no more than approximately 60%-80% of the surface area shall be covered by vegetation at any one-time. Any management decisions to clear vegetation will be undertaken in consultation with the ECoW to confirm that the proposed maintenance actions do not prevent the achievement of the intended ecological outcome for the ditch in question.

6.8.22 Key maintenance objectives for new and enhanced ditches are as follows:

i) Achieves UKHab definition of Ditch.
ii) Maintaining good water quality, with no obvious signs of pollution or eutrophication.
iii) Range of emergent, submerged and floating plants are present.
iv) Fringe of aquatic marginal vegetation is present.
v) Avoid damage from human activities.
vi) Maintain a summer water depth of at least 50 cm.

6.8.23 Retained ditches will also be enhanced and managed for the benefit of water voles as described below.

6.8.24 Enhancement measures for the benefit of water voles will focus on diversifying the bankside vegetation, and also managing the dense bramble scrub to maintain a mix of structure and age and reducing any encroachment/shading of scrub on the channel.

6.8.25 Rotational cutting of the existing dense scrub would maintain a range of successional stages and therefore structure, whilst also encouraging the growth of grass and other bankside vegetation, which would provide more varied cover and food sources for water vole.

6.8.26 The following actions may be undertaken (adapted from *Helping Water Voles on Your Land,* People's Trust for Endangered Species)[13].

i) Cut vegetation on a two-year rotation (or longer), leaving one bank uncut each year. Maintain 15cm of vegetation when cutting and leave gaps of 10-20m as untouched refuge areas. Vegetation to be cut in late Summer (September).
ii) Where ditches have filled in or overgrown, de-silt ditches on a five-year rotation. Carry out work between mid-September and late January. Avoid de-silting more than half a ditch in any winter, and avoid scraping the bank

[13] People's Trust for Endangered Species (undated). *Helping Water Voles on Your Land*. [online] Available at https://ptes.org/wp-content/uploads/2019/07/Helping-water-voles-on-your-land.pdf [Accessed April 2025.]

edges as this can destroy burrows. This will encourage the growth of marginal and in channel vegetation.

iii) Selectively coppice bankside trees and manage hedgerows adjacent to ditches to encourage the growth of marginal and in channel vegetation and reduces leaf fall into the channel. Vegetation removal to be undertaken in winter.

Reedbeds

6.8.27 Reedbeds shall be cut on a five-year rotation (i.e. approximately one-fifth of vegetation shall be cut each year and arisings removed from the reedbed). Cutting shall take place in the autumn, avoiding the main bird breeding season (March to August, inclusive). The aim shall be to provide a diversity of reeds of different heights and ages.

6.8.28 Management shall control the spread of non-native species if necessary, which shall typically be removed in the winter following identification. If best practice for the control of particular species requires removal at other times, then this shall be followed.

6.8.29 Key maintenance objectives for reedbed are as follows:

i) Achieves UKHab definition of Reedbed.
ii) Maintaining good water quality, with no obvious signs of pollution or eutrophication.
iii) There is an absence of scrub and trees.
iv) There is an absence of bare ground.
v) Maintain a diverse structure, with 60-80% reeds and at least 10% open water.

6.8.30 In order to provide additional benefits for water vole within the areas of new reedbed, islands and high banks will be created and managed within the reedbeds. High banks or islands allow refuge during times of flooding.

Waterbodies

6.8.31 Vegetation growth shall be encouraged within the waterbodies, as long as this does not prejudice drainage. Where the presence of vegetation is inhibiting drainage, this shall be cleared (all arisings to be removed) or other appropriate steps taken to remedy the situation. Any management decisions to clear vegetation will be undertaken in consultation with the ECoW to confirm that the proposed maintenance actions do not prevent the achievement of the intended ecological outcome for the ditch in question

6.8.32 Once established, marginal vegetation will be cut on a rotational basis, with 25% being cut each year. Areas to be cut shall be cut to 50mm in September with arisings being left for 5-7 days before removal.

6.8.33 Other maintenance actions may be required, such as removal of sediment, which would impact the landscape proposals as grass and plants are likely to be damaged in the process. When this occurs, the affected areas will be re-seeded with the same mix as originally specified, or similar, as available. Additional plug planting will be carried out with the original species and sizes. New planting and seeding will revert to a year of establishment maintenance before being incorporated back into the long-term maintenance operations. Prior to these actions taking place, a review shall be undertaken of the potential for the temporary extraction and subsequent replanting of the affected vegetation. This extraction and replanting shall be carried out if considered to be viable, ecological benefit and if the desired maintenance outcomes are not impacted.

6.8.34 As set out in Section 6.5, management shall control the spread of non-native species, which shall typically be removed in the winter following identification. If best practice for the control of particular species requires removal at other times, then this shall be followed.

6.8.35 Key Maintenance objectives for waterbodies (ponds) are as follows:

i) Achieves UKHab definition of Pond (non-priority).
ii) Maintaining good water quality, with no obvious signs of pollution or eutrophication.

iii) There is an absence of artificially stocked fish.

iv) Emergent submerged or floating plants cover at least 50% of the pond area which is less than 3m deep.

v) Pond surface is no more than 50 % shaded by trees/scrub.

6.9 Non-Breeding Bird Mitigation Area

6.9.1 Proposals within the NBBMA will be implemented and managed as described in **Appendix B** of this document, and are not repeated in detail here.

6.9.2 The principal aim of the NBBMA is to deliver mitigation for the loss of habitat for foraging curlew, lapwing and golden plover through the provision of higher quality habitat.

6.9.3 Measures that are proposed are:

i) Provision of additional habitats for SPA species through the creation of scrapes with extensive wet edges.
ii) The inclusion of island features to provide high-tide and safe roosting opportunities for SPA species.
iii) Provide improved foraging opportunities for winter and passage SPA species through control of water levels (i.e., ensuring grassland and scrapes remain wet under normal conditions).
iv) Preventing possible spread of New Zealand Pigmy Weed across Frodsham Marsh, and in particular into existing wetland features associated with mitigation measures for Frodsham Wind Farm.
v) Re-engineering of soil, with re-seeding of grassland and subsequent control of grazing/mowing regime will remove the existing seedbed and therefore solve on-going issues of ruderal vegetation encroachment.
vi) Removal of a small stand of semi-mature sycamore trees, thereby increasing the attractiveness of surrounding habitats to grassland waders (SPA species) and reducing perching/nesting opportunities for avian predators.
vii) Removal of the Canal Pools and associated recreational fishing will lead to a cessation of public access to the NBBMA and therefore reduced disturbance.
viii) Conservation focussed grazing (or cutting) management across the NBBMA area throughout the lifetime of the Proposed Development (with the cessation of the current grazing lease).

ix) Installation of predator fencing around the perimeter of the Cell 3 area of the NBBMA.

6.9.4 Planting within the NBBMA shall be designed so as to avoid enclosure of open habitats which are important for non-breeding wetland species which are associated with the Mersey Estuary SPA, Ramsar and SSSI. Planting between the NBBMA and SADA shall be minimised to preserve open sightlines for roosting and foraging birds, although existing planting along the southern boundary of Cell 3 shall be retained to assist in the screening of vehicles along the existing access road and planting will be provided along Alder Lane to help screen users of the PRoW from Cell 2.

6.10 Skylark Mitigation Area

6.10.1 The Skylark Mitigation Area would be managed as 'other neutral grassland' for the operational life of the Proposed Development. This will provide invertebrate habitat, thus acting as a forging resource, and will also be suitable for use by nesting skylark. Refer to **Section 6.7** for details of management and maintenance.

6.10.2 Throughout the operation of the Proposed Development, the Skylark Mitigation Area shall be managed in a manner which ensures that National Highways are able to access the M56 and its associated structures and assets via the Skylark Mitigation Area.

6.11 Physical Habitat Creation Structures

Bird Screening Measures

6.11.1 Bird Screening Measures would be installed in the broad locations illustrated on the **IEM** (**Appendix A**) unless local topography can provide the desired screening. These measures would have a dual purpose and would be intended to prevent disturbance to birds by movement of people along adjacent routes and also to provide opportunities for bird watching.

6.11.2 The screening measures are anticipated to comprise timber fencing of sufficient height to screen people from view (e.g. up to c.2m), but with 'windows' to allow views though for bird-watchers. Hides may also be installed some locations.

6.11.3 Details of the locations, design, installation and maintenance of the bird screening measures will be specified in the final LEMP. The **DAD [EN010153/DR/5.8]** provides further information and discussion in relation to the design of these measures.

Bat Boxes

6.11.4 A total of 60 no. bat boxes, including a minimum of 5 no. hibernation boxes and 5 no. maternity boxes would be installed. Approximate locations will be specified within the final LEMP.

6.11.5 Bat roost boxes will be installed on suitable mature and semi-mature trees along field boundaries and within woodland within the Order Limits. If the required number of suitable trees cannot be identified, then boxes will be pole mounted. Precise locations will be subject to confirmation during the installation depending on the box and condition of trees. Boxes will be erected in suitable habitats, at an appropriate height (ideally above 4m in height) and with clear flight paths to utilise the Site field boundary features. Bat boxes should ideally be sited in clusters of two or three boxes, in open sunny positions facing different directions to provide a variety of micro-habitats.

6.11.6 Details of the design, installation and monitoring of each different type of bat box will be set out in the final LEMP.

Bird Boxes

6.11.7 A minimum of 2 no. barn owl nest boxes will be installed on suitable mature trees or poles within the SADA, but at least 1km from the M56. The two barn owl boxes would ideally be located between 200 m and 500 m apart; precise locations will be agreed upon with the project ecologist and will be subject to confirmation during the installation depending on tree condition at that time.

6.11.8 A minimum of 2 no. kestrel boxes will be installed, positioned within mature hedgerows or on mature trees or poles within the SADA, in close proximity to areas of grassland to be retained/created.

6.11.9 A minimum of 30 no. small, open-fronted and hole-fronted nest boxes of various designs will be installed, positioned within existing hedgerows, tree belts, or woodland within the SADA. Boxes will be erected at an appropriate height of between 1 to 5 metres. If the required number of suitable trees

cannot be identified, then boxes will be pole mounted. Positioning within or close to hedgerows, tree belts and woodland will increase chances of occupation.

6.11.10 All boxes will be angled so that they face away from the prevailing wind, and all boxes will be positioned so that the front of the boxes are not obstructed and there is a clear flight path into the box.

6.11.11 Details of the design, installation and monitoring of each different type of bird box will be set out in the final LEMP.

Reptile/Amphibian Refugia

6.11.12 A total of 10 no. reptile/amphibian refugia will be installed at locations to be specified within the final LEMP. Refugia will be located adjacent to either a hedgerow or woodland; each will measure approximately 2m x 2m x 1m in height. The hibernacula will be constructed from logs and/or clean bricks/rubble sourced locally as far as possible, or with 'clean' materials brought in from elsewhere where this is not possible and topped with soil and earth. The hibernacula will provide shelter and over-wintering refuge for amphibians, reptiles, small mammals and invertebrates.

6.11.13 Details of the design, installation and monitoring of refugia will be set out in the final LEMP.

Hedgehog Boxes

6.11.14 A total of 20 no. hedgehog boxes will be installed at locations to be specified within the final LEMP. Precise locations will be subject to confirmation during the installation but will be concentrated within sheltered and undisturbed locations within woodland and along boundary features such as hedgerows. The entrances will be placed out of the weather, ideally facing east to south.

6.11.15 Details of the design, installation and monitoring of hedgehog boxes will be set out in the final LEMP.

Insect Hotels

6.11.16 A total of 10 no. insect hotels will be installed at locations to be specified within the final LEMP. Precise locations will be subject to confirmation during the installation depending on the box/hotel and condition of trees (if required). Boxes will be erected at sheltered undisturbed locations and be angled so that they face away from the prevailing wind. A selection of boxes/hotels will be used, providing suitable habitat for a variety of invertebrate species.

6.11.17 Details of the design, installation and monitoring of insect hotels will be set out in the final LEMP.

6.12 Management and Maintenance Schedules

6.12.1 The schedules set out below in **Table 3, Table 4 and Table 5** outline the anticipated timing of the proposed landscape and ecological management and maintenance works.

Table 3: Implementation Works

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Other neutral grassland seeding				✓					✓			
Marshy grassland seeding (*preferred month)			✓	✓			✓	✓*	✓*			
Tree, shrub and hedge planting (*preferred month)	✓	✓									✓*	✓*
Wetland plug planting			✓	✓					✓	✓		
Watering		Water directly following planting, and as required to ensure establishment e.g. during periods of drought										

Table 4: Establishment Management

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Initial cut of other neutral grassland – if autumn sown				✓ (70-100mm)			✓ (40-60mm)	✓ (40-60mm)	✓ (40-60mm)	✓ (40-60mm)		
Initial cut of other neutral grassland – if spring sown				✓ (40-60mm)	✓ (40-60mm)	✓ (40-60mm)	✓ (40-60mm)	✓ (40-60mm)	✓ (40-60mm)	✓ (40-60mm)		
Initial cut of marshy grassland – if autumn sown	✓	✓	✓							✓	✓	✓
Initial cut of marshy grassland – if spring sown	✓	✓	✓					✓	✓	✓	✓	✓
Wetland plug planting cut									✓			
Check of planting stock, stakes, guards, and mulch levels			✓						✓			
Replanting of failed tree and shrub species (* preferred month)	✓	✓									✓*	✓*
Herbicide treatment to tree planting stations and hedgerows – if required				✓		✓		✓				
Fertiliser treatment for trees									✓			
Annual review							✓		✓			
Watering	As required to ensure establishment e.g. during periods of drought											
Litter control	Each visit											

Table 5: Long-term Management

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cut other neutral grassland (August/September leave arisings 5-7 days before removal)		✓						✓				
Grazing (land within solar security fencing)	✓	✓							✓	✓	✓	✓
Management of wetland bankside vegetation – 25% of area cut to 50mm annually (leave arisings 5-7 days before removal)										✓		
Cut reedbeds – 25% of area cut annually (arisings removed)										✓		
Thinning, coppicing or other cutting of trees/shrubs										✓	✓	✓
All hedgerows – 3-year rotational routine: cut $^{1}/_{3}^{rd}$ of site hedgerows each year										✓	✓	✓
Annual review									✓			
Litter control	Every visit											
Maintenance of fencing and access routes	As required											

7.0 MONITORING AND REVIEW

7.1 Introduction

7.1.1 Regular monitoring of the landscape and ecology works is key to identifying whether or not they are likely to meet identified targets and are ultimately meet the Project Design Principles and Design Vision for the Proposed Development.

7.2 General Monitoring

7.2.1 A Site Inspection shall be undertaken every two years, up to Year 10, once the Proposed Development becomes operational, and then every five years[14], to review management successes/ failures gauged against the Project Design Principles outlined in **Section 4.0** of the **oLEMP** (or the equivalent section of the final LEMP), and to make any adjustments to the management/maintenance regime that the findings of such inspections indicate would be appropriate.

7.2.2 Representatives from CWaCC and other key stakeholders, envisaged to include FTC, CWT and the Royal Society for the Protection of Birds ('RSPB'), would be invited to attend the Site Inspections with representatives of the Applicant. Any modifications to management would be made in agreement with CWaCC.

7.2.3 Monitoring will consider the potential effects of climate change upon the works. A changing climate may affect the success of particular species. As such, it may be necessary to substitute particular species, with alternative, more resilient species. Additionally, changes to management and maintenance operations may also be deemed necessary to address specific climate change related issues.

[14] E.g. Years 2, 4, 6, 8, 10, 15, 20, 25, 30, 35, and 40.

7.2.4 An Update Report would be submitted to CWaCC following each visit and would include details of any observations made during the Site inspection, other observations made during ongoing maintenance, results of all monitoring undertaken by the Applicant, and any changes to management and maintenance operations agreed with CWaCC. This allows for further detail regarding the management and restoration of the Site to be provided to CWaCC, as and when such details become available.

7.2.5 The Update Report would include set out details of the activities carried out since the previous Site Inspection[15], and activities programmed up to the next Site Inspection.

7.3 Biodiversity Net Gain Monitoring

7.3.1 While not subject to statutory BNG requirements, the Proposed Development has made a commitment to achieving a minimum of 10% increase in habitat and hedgerow units, and no net loss in watercourse units, and as such the development of the biodiversity interest of the Site will be monitored over time by a suitably experienced ecologist. A walkover survey will be undertaken in Years 1, 2, and 5, and then every five years throughout the operational phase.

7.3.2 This will involve an inspection of the created and retained habitats to ensure that they are being managed in a manner suitable for the enhancement of wildlife interest. The results of these monitoring surveys will be used to inform remedial actions required to achieve the relevant Project Design Principles and/or adhere to relevant wildlife conservation legislation at that time.

7.3.3 Monitoring will include a habitat survey undertaken between May and September, following industry standard UK Habitat Survey ('UKHab') methodology, as used for the BNG assessment, and condition assessment using the relevant condition criteria contained within the Statutory Biodiversity Metric Condition Assessment Guide to ensure created habitats are achieving

[15] Or in the case of the first Update Report, works carried out since implementation.

the stated habitat type and condition. Following completion of monitoring, a report will be compiled and distributed to CWaCC, including any proposed remedial measures.

7.4 Ornithological Monitoring

7.4.1 The requirements for ornithological monitoring will be agreed with NE and CWaCC, and will be detailed within the final LEMP. The monitoring will be undertaken as a minimum in relation to the NBBMA and the SMA. The monitoring shall inform adaptive management where appropriate. However, as set out in the outline NBBMS (Appendix B of this document) monitoring of bird usage and numbers is not on its own a reliable method to determine the success or otherwise of achieving target habitat conditions due to other factors which may influence bird populations and distribution.

7.5 Additional Survey Requirements

7.5.1 Further measures to ascertain the success of habitat management will be considered, for example, within the NBBMA and will be subject to further discussions with NE and CWaCC along with other pertinent stakeholders such as RSPB. The outline NBBMS (Appendix B of this document) identifies a series of objectives which the strategy seeks to achieve. The document sets out that measurable targets on which to determine the success of the outline NBBMS and on-going management will be set and agreed with key consultees in the final NBBMS document.

7.5.2 An assessment of species enhancement measures (including the bat, bird and hedgehog boxes, reptile/amphibian refugia and insect hotels), including an assessment of the integrity of such features, would also be undertaken. Where appropriate, usage of such features will also be assessed.

7.5.3 All surveying/assessment would be undertaken by a suitably qualified ecologist/ornithologist.

7.6 Remedial Measures

7.6.1 If the monitoring outlined above identifies that a habitat is not meeting the target condition or is not meeting the description for the proposed habitat type then contingency measures appropriate for habitat in question would be followed.

7.6.2 In all cases, where a failure is identified, the root cause should be identified and remedial measures implemented.

7.6.3 Remedial measures appropriate for each habitat type will be set out in the final LEMP

7.7 Additional Monitoring

7.7.1 A management and monitoring plan to mitigate any adverse effects to protected and notable habitats and species would be prepared, details of which would be set out within the final LEMP and approved by regulatory authorities prior to implementation. It is expected this would include for monitoring of water quality within surrounding surface watercourses and surveying such as invertebrate abundance monitoring.

7.7.2 Bird, bat, insect and hedgehog boxes, and log piles and hibernacula will be checked to ensure they are in place and in working order. The results of these monitoring surveys will be used to inform the need or otherwise to replace missing boxes/hotels or re-build damaged hibernacula.

7.7.3 As set out in **Section 6.5**, monitoring would be undertaken of any potential car parking along Moorditch Lane and any resulting access issues this may cause for other users of Moorditch Lane. The results of this monitoring would inform the provision of the potential visitor car park, or other potential solutions.

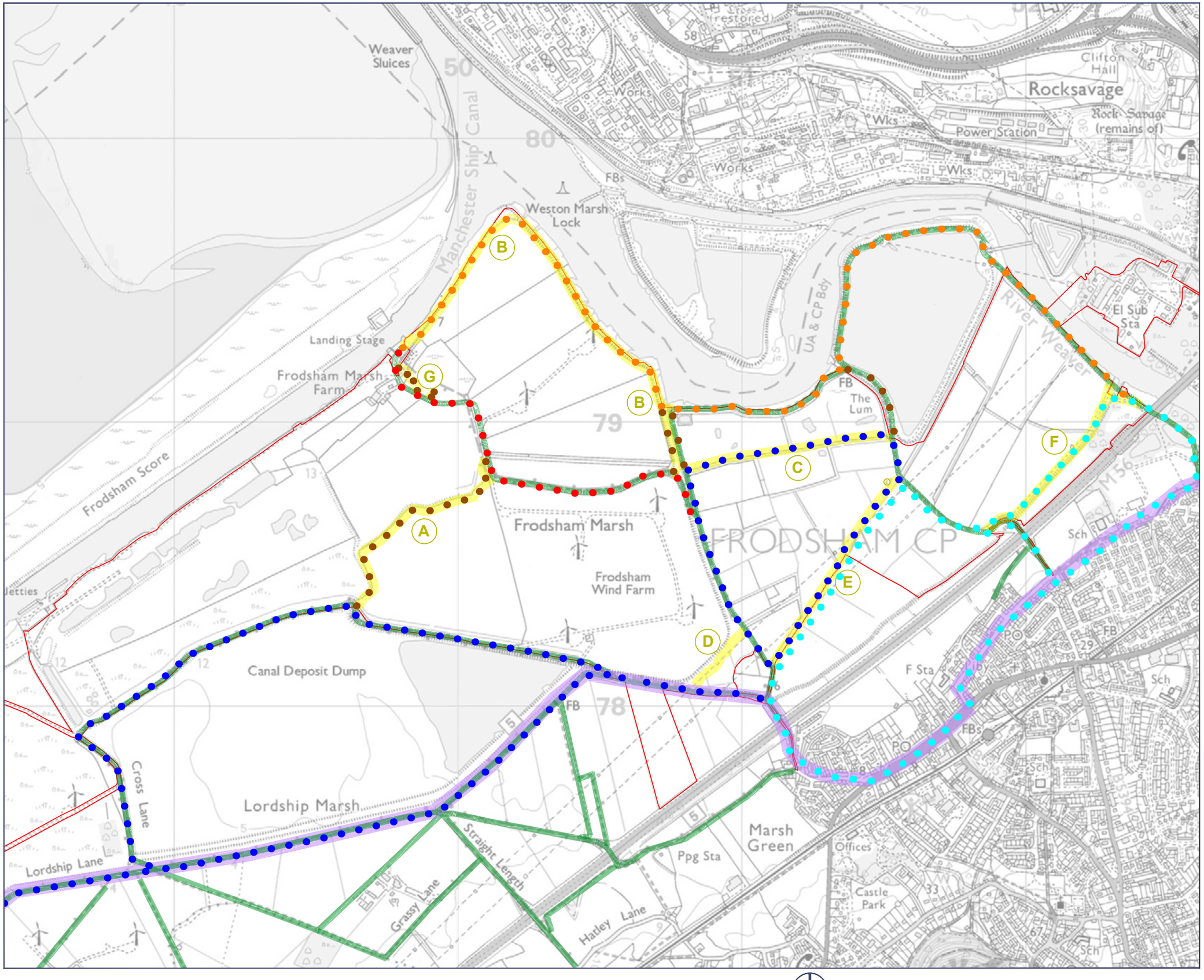
7.8 NBBMA

7.8.1 As set out above the proposed monitoring and review measures for the NBBMA are set out in **Appendix B**.

7.8.2 A management and monitoring plan to mitigate effects on wading birds during the large-scale excavation works required for the creation of the NBBMA will also be prepared to cover works within Cell 3, the ponds to the north and the ongoing management of grassland in Cell 2 for the benefit of SPA birds. It is anticipated that this will entail a watching brief by a suitably qualified ecologist/ornithologist, monitoring of water quality within surrounding surface watercourses, and surveying such as invertebrate abundance monitoring. This would cover the construction period and the first year of operation. This monitoring is detailed in the **oCEMP [EN010153/DR/7.5]** and full details will be set out in the final CEMP, and provisions for implementation will be included in the final LEMP as necessary.

7.8.3 The outline **Soil Management Plan (oSMP) [EN010153/DR/7.10]** describes how soils across the Site will be managed in order to facilitate the proposed landscaping and ecological works across the Site. The oSMP also includes details of how soils which may be subject to contamination would be managed, this is also controlled through measures set out in the oCEMP. Full details will be set out in the final SMP and CEMP, and provisions for implementation will be included in the final LEMP as necessary.

Figures



Order Limits

Public Right of Way

Proposed Permissive Path

National Cycle Route 5

Restricted Byway (current access levels retained)

Access for All

Cycle/Equestrian Loop

Continuous Waterside Trail (pedestrians only)

Pedestrian Access

Refer to the Outline Landscape and Ecology Management Plan document for details of permissive paths A-G

N

0 500 750 1000 1250m

Case Reference: EN010153
Document Reference: EN010153/DR/7.13
Regulation 5(2)(a) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Document

Outline Landscape and Ecology Management Plan

Project

FRODSHAM SOLAR

Figure Number

Figure 1

Figure Title

Indicative Route Hierarchy

Scale

1:12,500 @A3

Date

May 2025

Appendix A – Illustrative Environmental Masterplan

INTERPRETATION PANELS

- Welcome to Frodsham Solar Park (general information and maps
- A. Bird Mitigation Area Information
- B. Pipelines
- C. Reedbeds
- D. Manchester Ship Canal
- E. Mersey Estuary View
- F. Frodsham Wind Farm
- G. Geography/Geology - e.g. River/Sandstone Ridge
- H. Weston Bank Industry and River Weaver
- I. River Weaver and Weaver Navigation

1
2
3
4

- Order Limits
- Solar PV Modules
- Principal Public Access / Biodiversity Enhancement Zones
- Retained/created neutral grassland or modified grassland
- Public Right of Way
- Proposed Permissive Path
- Existing Vegetation
- Proposed Native Woodland
- Proposed Native Scrub
- Proposed Native Trees and Shrubs
- Proposed Native Hedgerow
- Proposed Native Hedgerow (maintained at a low height)
- Area for Potential Skylark Mitigation plots
- Non Breeding Bird Mitigation Area

N

0 250 500 750 1000 1250 1500m

Case Reference: EN010153
Document Reference: EN010153/DR/7.13
Regulation 5(2)(a) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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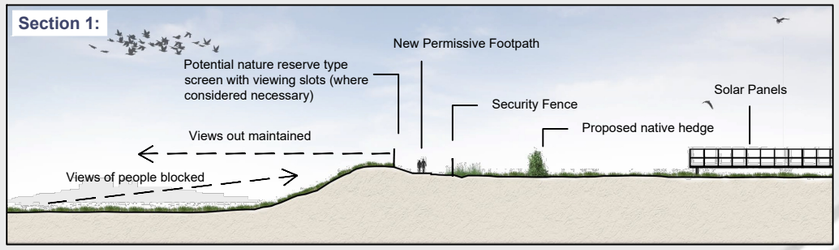
Outline Landscape and Ecology Management Plan

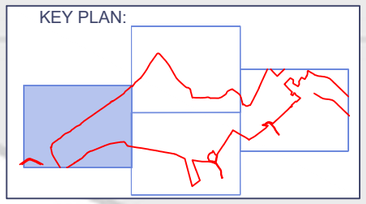
Figure Number: Figure A1.1
Revision: P07

Figure Title: Illustrative Environmental Masterplan Key Plan

Scale: 1:15,000 @A3

Date: May 2025 (revised Apr 2026)





Potential viewing point over the NBBMA

Frodsham Marsh Farm

Existing tree cover removed

Proposed new pond within SSSI

Neutral grassland areas to be managed to provide foraging habitat

Proposed new pond within SSSI

Neutral grassland areas to be managed to provide foraging habitat

Manchester Ship Canal

New island within scrapes to provide roosting and nesting locations for birds

Existing drainage ditch

New wet (marshy) grassland area adjacent to existing and proposed scrapes

New islands within scrapes to provide roosting and nesting locations for birds

New wet (marshy) grassland area adjacent to existing and proposed scrapes

Existing drainage ditch

Potential bicycle parking

Potential bird screening measures (where considered necessary): Timber structures with viewing slots

Proposed permissive path A links Brook Furlong to Moorditch lane, creating a new loop in the network and providing for a wide variety of currently unavailable route options

Sheet 2 (Figure 2-3c)

Sheet 1 (Figure 2-3b)

Sheet 3 (Figure 2-3d)

Sheet 1 (Figure 2-3b)

- Order Limits
- Solar PV Modules
- Solar Array Security Fence (indicative draft layout)
- Solar Array Utility Fence (indicative draft layout)
- Bird Screening Measures
- Public Right of Way
- Proposed Permissive Path
- Existing Vegetation
- Neutral Grassland
- Marshy Grassland
- Existing Drainage Ditch
- Existing Scrape
- Proposed Scrape
- Proposed New Pond within SSSI
- Pipe from Proposed Ponds within SSSI to wetland habitat area
- Section Line
- Non Breeding Bird Mitigation Area

N

0 100 200 300 400 500m

Case Reference: EN010153
Document Reference: EN010153/DR/7.13
Regulation 5(2)(a) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Outline Landscape and Ecology Management Plan

Figure Number: **Figure A1.2**

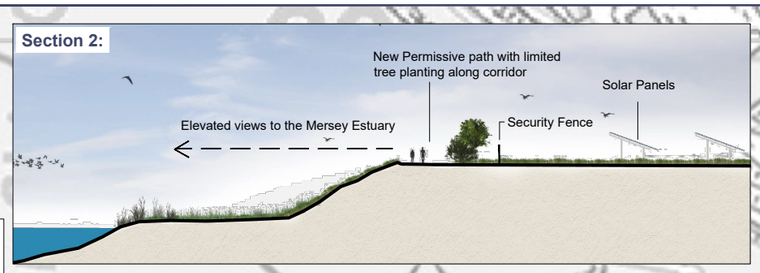
Revision: **P07**

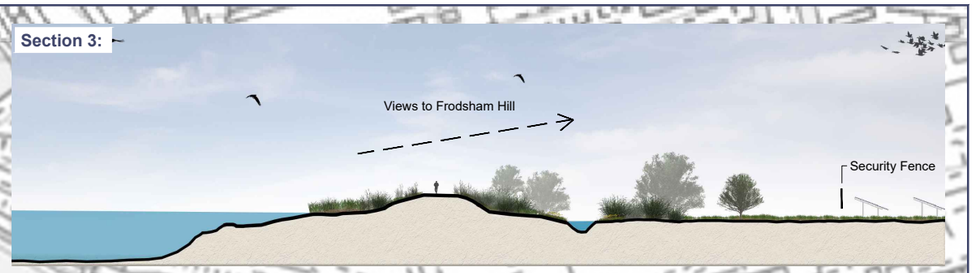
Figure Title

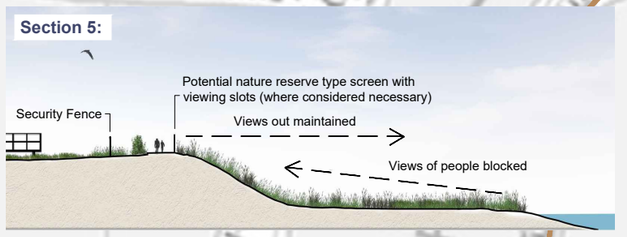
Illustrative Environmental Masterplan Sheet 1

Scale: **1:5000 @A3**

Date: **May 2025 (revised April 2026)**







Permissive path B along top of River Weaver/ship canal embankment connects Frodsham Marsh Farm and Alder Lane to Frodsham via Footpath 81 and Footpath 93 to create loop and provide waterside route

PRoW diverted to follow farm access, maximising the benefits of wetland habitat creation/enhancement. Boardwalks (permissive path G) to lead from the PRoW into the wetland

Potential Bird Screening Measures (where considered necessary): Timber structures with viewing slots allow views of River and birdlife whilst preventing birds from being disturbed by people

New permissive path route B extended along River Weaver and returning alongside Manchester Ship Canal

Maintain open views towards Frodsham and Helsby Hills from footpaths here

New scrapes created close to The Lum

Planting to break up visibility of solar panels, whilst retaining long-range views towards Frodsham Hill and Helsby Hill

Proposed permissive path C links Brook Furlong to Weaver lane, creating a new loop in the network and providing for a wide variety of currently unavailable route options

Retain historic flood bank, which predates the construction of the Ship Canal

Potential to rationalise PRoW network.Currently overgrown and wet, and may benefit from boardwalk

Specimen tree planting to both sides of Alder Lane

Weston Marsh Lock

Manchester Ship Canal

River Weaver

Alder Lane

Existing Pipelines

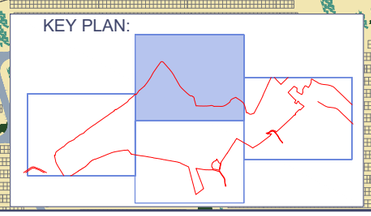
Sheet 1 (Figure 2-3b)

Sheet 2 (Figure 2-3c)

Sheet 3 (Figure 2-3d)

Sheet 4 (Figure 2-3e)

KEY PLAN:



N

0 100 200 300 400 500m

- Order Limits
- Solar PV Modules
- Solar Array Security Fence (indicative draft layout)
- Solar Array Utility Fence (indicative draft layout)
- Indicative Access Track
- Potential Overhead HV Line
- Principal Public Access / Biodiversity Enhancement Zones
- Retained/created neutral grassland or modified grassland
- Retained/created reedbed
- Proposed pond/ditch
- Public Right of Way
- Proposed Permissive Path
- Existing Vegetation
- Proposed Native Woodland
- Proposed Native Scrub
- Proposed Native Trees and Shrubs
- Proposed Native Hedgerow
- Proposed Native Hedgerow (maintained at a low height)
- Section Line
- Non Breeding Bird Mitigation Area

Case Reference: EN010153
Document Reference: EN010153/DR/7.13
Regulation 5(2)(a) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Outline Landscape and Ecology Management Plan

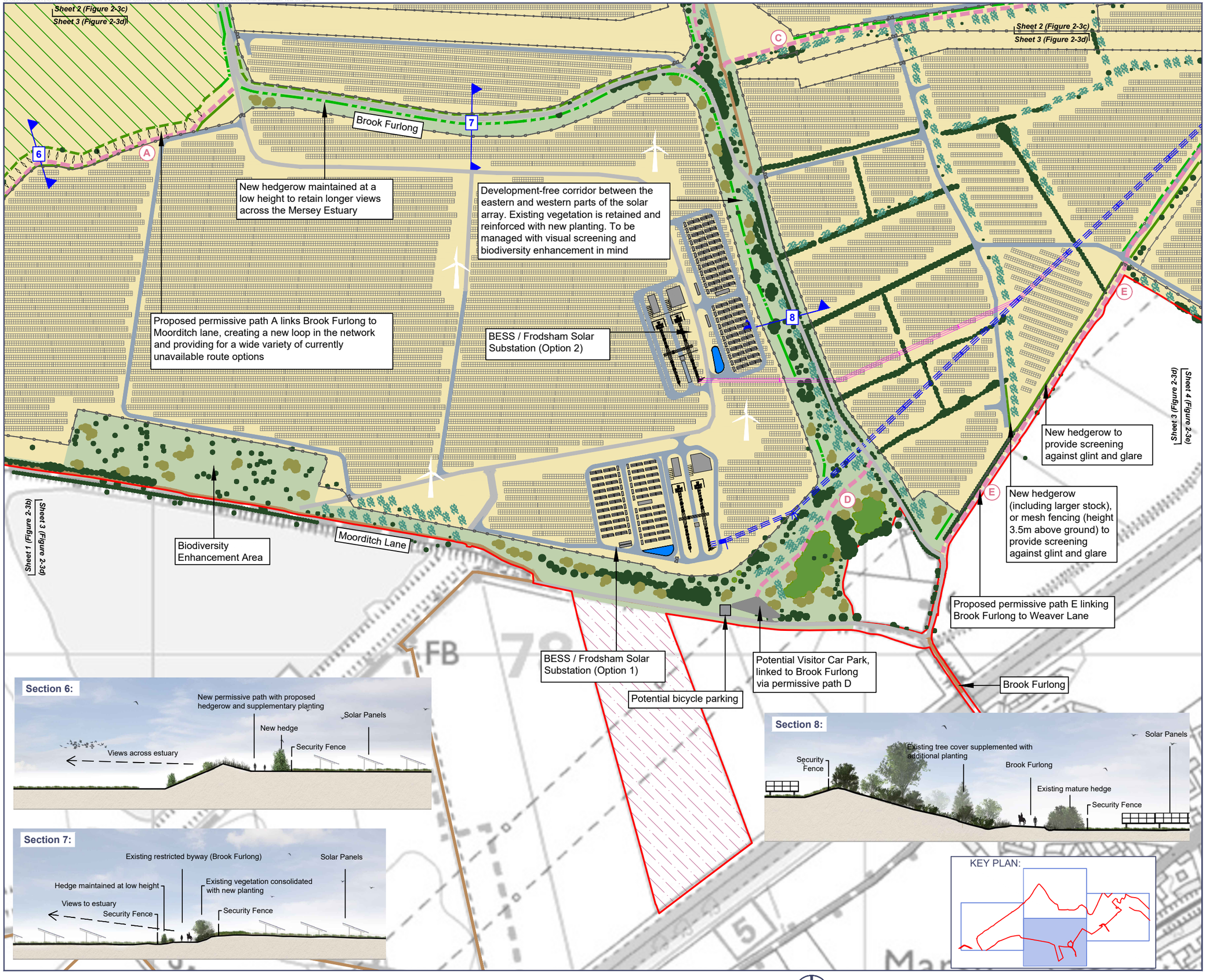
Figure Number: **Figure A1.3**

Revision: **P07**

Figure Title: **Illustrative Environmental Masterplan Sheet 2**

Scale: **1:5000 @A3**

Date: **May 2025 (revised April 2026)**



N

0 100 200 300 400 500m

- Order Limits
- Solar PV Modules
- Solar Array Security Fence (indicative draft layout)
- Solar Array Utility Fence (indicative draft layout)
- Indicative Access Track
- Potential Overhead HV Line
- Principal Public Access / Biodiversity Enhancement Zones
- Retained/created neutral grassland or modified grassland
- Retained/created reedbed
- Proposed pond/ditch
- Public Right of Way
- Proposed Permissive Path
- Existing Vegetation
- Proposed Native Woodland
- Proposed Native Scrub
- Proposed Native Trees and Shrubs
- Proposed Native Hedgerow
- Proposed Native Hedgerow (maintained at a low height)
- Section Line
- Non Breeding Bird Mitigation Area

Case Reference: EN010153
Document Reference: EN010153/DR/7.13
Regulation 5(2)(a) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Outline Landscape and Ecology Management Plan

Figure Number: Figure A1.4
Revision: P07

Figure Title: Illustrative Environmental Masterplan Sheet 3

Scale: 1:5000 @A3

Date: May 2025 (revised April 2026)

NB. This area is not open water, but is now covered with grassland and scrub

Planting to break up visibility of solar panels, whilst retaining long-range views towards Frodsham Hill and Helsby Hill

River Weaver

Viaduct

Permissive path F to enhance and connect Weaver Lane to River Weaver

Proposed screen planting to provide glint and glare mitigation

Permissive path F to enhance and connect Weaver Lane to River Weaver

New tree and hedgerow planting to screen solar panels from the south

Weaver Lane

Proposed screen planting to provide glint and glare mitigation

Frodsham

Frodsham Bridge

Viaduct

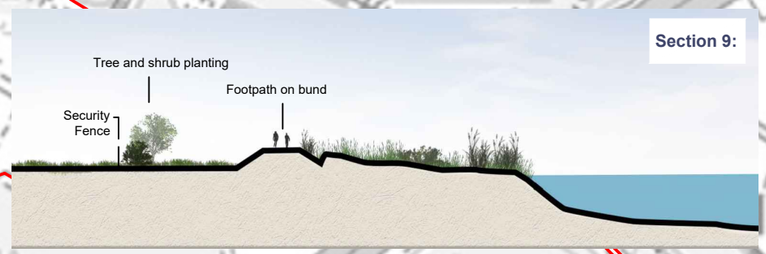
Sheet 2 (Figure 2-3c)

Sheet 4 (Figure 2-3e)

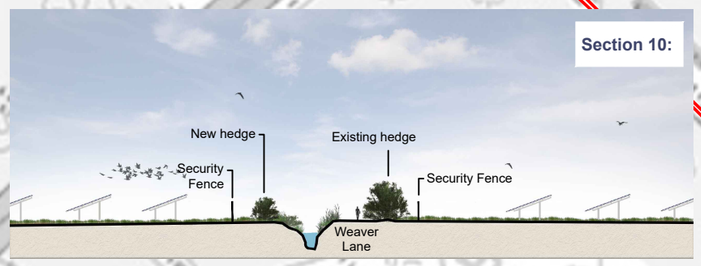
Sheet 3 (Figure 2-3d)

Sheet 4 (Figure 2-3e)

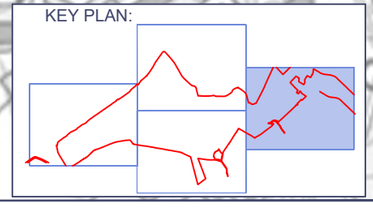
Section 9:



Section 10:



KEY PLAN:



N

0 100 200 300 400 500m

- Order Limits
- Solar PV Modules
- Solar Array Security Fence (indicative draft layout)
- Solar Array Utility Fence (indicative draft layout)
- Indicative Access Track
- Potential Overhead HV Line
- Potential Underground 132kV Cable
- Principal Public Access / Biodiversity Enhancement Zones
- Retained/created neutral grassland or modified grassland
- Retained/created reedbed
- Proposed pond/ditch
- Public Right of Way
- Proposed Permissive Path
- Existing Vegetation
- Proposed Native Woodland
- Proposed Native Scrub
- Proposed Native Trees and Shrubs
- Proposed Native Hedgerow
- Proposed Native Hedgerow (maintained at a low height)
- Section Line

Case Reference: EN010153
Document Reference: EN010153/DR/7.13
Regulation 5(2)(a) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Outline Landscape and Ecology Management Plan

Figure Number: **Figure A1.5**

Revision: **P07**

Figure Title: **Illustrative Environmental Masterplan Sheet 4**

Scale: **1:5000 @A3**

Date: **May 2025 (revised April 2026)**

Appendix B – Outline Non-Breeding Bird Mitigation Strategy (refer to document reference EN010153/DR/8.32)

Appendix C – Condition Assessment Sheets

Condition Sheet: DITCH Habitat Type			
Habitat Type			
Watercourses - Ditches			
Habitat Description			
See the Statutory Biodiversity Metric User Guide.			
On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	The ditch is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.		
B	A range of emergent, submerged and floating-leaved plants are present. As a guide >10 species of emergent, floating or submerged plants present in a 20 m ditch length.		
C	There is less than 10% cover of filamentous algae and or duckweed *Lemna* spp. (these are signs of eutrophication).		
D	A fringe of aquatic marginal vegetation is present along more than 75% of the ditch.		
E	Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessive poaching, damage from machinery use or storage, or any other damaging management activities.		
F	Sufficient water levels are maintained - as a guide a minimum summer depth of approximately 50 cm in minor ditches and 1 m in main drains.		
G	Less than 10% of the ditch is heavily shaded.		
H	There is an absence of non-native plant and animal species[1].		
	Number of criteria passed		

Condition Assessment Result (out of 8 criteria)	Condition Assessment Score	Score Achieved ×/✓
Passes 8 criteria	Good (3)	
Passes 6 or 7 criteria	Moderate (2)	
Passes 5 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – This includes any species listed on the Water Framework Directive UKTAG GB High Impact Species List: Water Framework Directive (WFD) UKTAG (2021) *Classification of aquatic alien species according to their level of impact* [online]. Available from:
UKTAG classification of alien species working paper v8.pdf (wfduk.org)

• Frequently occurring non-native plant species include water fern *Azolla filiculoides* , Australian swamp stonecrop *Crassula helmsii* , parrot's feather *Myriophyllum aquaticum* , floating pennywort *Hydrocotyle ranunculoides* , Japanese knotweed *Reynoutria japonica* and giant hogweed *Heracleum mantegazzianum* (on the bank).

• Frequently occurring non-native animals include signal crayfish *Pacifastacus leniusculus* , zebra mussel *Dreissena polymorpha* , killer shrimp *Dikerogammarus villosus* , demon shrimp *Dikerogammarus haemobaphes* , and carp *Cyprinus carpio* .

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type			
Grassland - Modified grassland			
On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	
Habitat Description			
ukhab – UK Habitat Classification			

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m^2 present, including at least 2 forbs (these may include those listed in Footnote 1). **Note - this criterion is essential for achieving Moderate or Good condition.** Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m^2 (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.		
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.		
C	Any scrub present accounts for less than 20% of the total grassland area. (Some scattered scrub such as bramble *Rubus fruticosus* agg. may be present). Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.		
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.		
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)[2].		
F	Cover of bracken *Pteridium aquilinum* is less than 20%.		
G	There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]).		
		Essential criterion achieved (Yes or No)	
		Number of criteria passed	

Condition Assessment Result (out of 7 criteria)	Condition Assessment Score	Score Achieved ×/✓
Passes 6 or 7 criteria including passing essential criterion A	Good (3)	
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)	
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – Creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris*.

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover.

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Condition Sheet: GRASSLAND Habitat Type (medium, high and very high distinctiveness)

UK Habitat Classification (UKHab) Habitat Types

Grassland - Lowland calcareous grassland
Grassland - Lowland dry acid grassland
Grassland - Lowland meadows
Grassland - Other lowland acid grassland
Grassland - Other neutral grassland
Grassland - Tall herb communities (H6430) [Not to be confused with the Tall forbs secondary code – see UKHab guidance for details.]
Grassland - Upland acid grassland
Grassland - Upland calcareous grassland
Grassland - Upland hay meadows
Sparsely vegetated land - Calaminarian grassland

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Habitat Description

ukhab – UK Habitat Classification

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type (and relative to Footnote 3 suboptimal species which may be listed in the UKHab description).[1] **Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.**		
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.		
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens[2].		
D	Cover of bracken *Pteridium aquilinum* is less than 20% and cover of scrub (including bramble *Rubus fruticosus* agg.) is less than 5%.		
E	Combined cover of species indicative of suboptimal condition[3] and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species[4] (as listed on Schedule 9 of WCA[5]) are present, this criterion is automatically failed.		
	Additional Criterion - must be assessed for all non-acid grassland types		
F	There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type (species referenced in Footnote 3 and 5 cannot contribute towards this count). **Note - this criterion is essential for achieving Good condition for non-acid grassland types only.**		
	Essential criterion for Good condition achieved (for non-acid grassland) (Yes or No)		
	Number of criteria passed		

Condition Assessment Result	Condition Assessment Score	Score Achieved ×/✓
Acid grassland types (Result out of 5 criteria)		
Passes 5 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	
Non-acid grassland types (Result out of 6 criteria)		
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)	
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)	
Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)	

Suggested enhancement interventions to improve condition score

Notes

Footnote 1 - Professional judgement should be used alongside the UKHab description.

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover.

Footnote 3 - Species indicative of suboptimal condition for this habitat type include: creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris*. There may be additional relevant species local to the region and or site.

Footnote 4 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement.

Footnote 5 – Wildlife and Countryside Act 1981 (as amended).

Condition sheet: HEDGEROW Habitat Types

Habitat Type

Native hedgerow
Native hedgerow - associated with bank or ditch
Native hedgerow with trees
Native hedgerow with trees - associated with bank or ditch
Species-rich native hedgerow
Species-rich native hedgerow - associated with bank or ditch
Species-rich native hedgerow with trees
Species-rich native hedgerow with trees - associated with bank or ditch

Habitat Description

ukhab – UK Habitat Classification

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Condition Assessment Details

A series of ten attributes, representing key physical characteristics are used for this assessment. Each attribute is assigned to one of five functional groups (A – E) and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.

This assessment is based on the Hedgerow Survey Handbook[1] and Favourable Conservation Status document[2]. For further clarification please refer to the Hedgerow Survey Handbook.

Best practice would be to record the species, age, spacing and other key information about all trees present along a hedgerow within the 'Habitat Description' box, as well as other key features of the hedgerow.

Hedgerow favourable condition attributes

Attributes and functional groupings (A, B, C, D and E)		Criteria - the minimum requirements for 'favourable condition'	Criteria description	Criterion passed (Yes or No)	Notes (such as justification)
Core groups - applicable to all hedgerow types					
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of the shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is >1.5 m height).		
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (such as blackthorn *Prunus spinosa* suckers) are only included in the width estimate when they are >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice).		
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	This is the vertical 'gappiness' of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).		
B2.	Gap - hedge canopy continuity	Gaps make up <10% of total length; and No canopy gaps >5 m	This is the horizontal 'gappiness' of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall 'gappiness' but are not subject to the >5 m criterion (as this is the typical size of a gate).		
C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: · Measured from outer edge of hedgerow; and · Is present on one side of the hedgerow (at least).	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedgerow. Undisturbed ground is present for at least 90% of the hedgerow length, greater than 1 m in width and must be present along at least one side of the hedgerow. This criterion recognises the value of the hedgerow base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.		
C2.	Nutrient-enriched perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground.	The indicator species used are nettles *Urtica* spp., cleavers *Galium aparine* and docks *Rumex* spp. Their presence, either singly or together, does not exceed the 20% cover threshold.		
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA[3]) and recently introduced species.	Recently introduced species refer to plants that have naturalised in the UK since AD 1500 (neophytes). Archaeophytes count as natives. For information on archaeophytes and neophytes see the JNCC website[4], as well as the BSBI website[5] where the 'Online Atlas of the British and Irish Flora'[6] contains an up-to-date list of the status of species. For information on invasive non-native species see the GB Non-Native Secretariat website[7].		
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities.	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (for example, excessive hedgerow cutting).		
Additional group - applicable to hedgerows with trees only					
E1.	Tree class	There is more than one age-class (or morphology) of tree present (for example: young, mature, veteran and or ancient[8]), and there is on average at least one mature, ancient or veteran tree present per 20 - 50m of hedgerow.	This criterion addresses if there are a range of age-classes or morphologies which allow for replacement of trees and provide opportunities for different species.		
E2.	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.		

The hedgerow condition assessment generates a weighting (score) ranging from 1 - 3, which is used within the Statutory Biodiversity Metric. The scores for each are set out in the tables below.

Condition categories for hedgerows without trees

Category	Category Requirements	Metric Score
Good	No more than 2 failures in total; **AND** No more than 1 failure in any functional group.	3
Moderate	No more than 4 failures in total; **AND** Does not fail both attributes in more than one functional group (for example, fails attributes A1, A2, B1 and C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; **OR** Fails both attributes in more than one functional group (for example, fails attributes A1, A2, B1 and B2 = Poor condition).	1
	Score achieved:	

Condition categories for hedgerows with trees

Category	Category Requirements	Metric score
Good	No more than 2 failures in total; **AND** No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; **AND** Does not fail both attributes in more than one functional group (for example, fails attributes A1, A2, B1, C2 and E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; **OR** Fails both attributes in more than one functional group (for example, fails attributes A1, A2, B1 and B2 = Poor condition).	1
	Score achieved:	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – DEFRA (2007) *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK.* [online] Available on:
layout (hedgelink.org.uk)
Footnote 2 – STALEY, J.T. ET AL. (2020) *Definition of Favourable Conservation Status for Hedgerows.* [online] Available on:
Definition of Favourable Conservation Status for Hedgerows - RP2943 (naturalengland.org.uk)
Footnote 3 – Wildlife and Countryside Act 1981 (as amended).
Footnote 4 – CHEFFINGS, C. M. et al. (2005) *The Vascular Plant Red Data List for Great Britain.* Species Status 7: 1-116. [online] Available on:
The Vascular Plant Red Data List for Great Britain (Species Status No. 7) | JNCC Resource Hub
Footnote 5 – BOTANICAL SOCIETY OF BRITAIN AND IRELAND (BSBI). *Definitions: wild, native or alien?* [online] Available on:
Definitions: wild, native or alien? – Botanical Society of Britain & Ireland (bsbi.org)
Footnote 6 – BSBI and Biological Records Centre (BRC) (2022) *Online Atlas of the British and Irish Flora.* [online] Available on:
Acknowledgements | Online Atlas of the British and Irish Flora (brc.ac.uk)
Footnote 7 – GB NON-NATIVE SPECIES SECRETARIAT (GBNNSS) (2022) Available on:
Home » NNSS (nonnativespecies.org)
Footnote 8 – See gov.uk standing advice on ancient and veteran trees. Available from:
Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)
and
Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Condition Sheet: POND Habitat Type			
Habitat Type			
Lakes - Ponds (priority habitat) **Lakes - Ponds (non-priority habitat)** **Lakes - Temporary lakes ponds and pools (H3170)** [Use this condition sheet for Temporary ponds and pools, use Lake condition sheet for Temporary lakes] **Lakes - Ornamental lake or pond** [Use this condition sheet for Ornamental ponds, use Lake condition sheet for Ornamental lakes]			
Habitat Description			
ukhab – UK Habitat Classification			
On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
Core Criteria - applicable to all ponds (woodland[1] and non-woodland):			
A	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.		
B	There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.		
C	Less than 10% of the water surface is covered with duckweed *Lemna* spp. or filamentous algae.		
D	The pond is not artificially connected to other waterbodies, such as agricultural ditches or artificial pipework.		
E	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams[2], pumps or pipework.		
F	There is an absence of listed non-native plant and animal species[3].		
G	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.		
Additional Criteria - must be assessed for all non-woodland ponds:			
H	Emergent, submerged or floating plants (excluding duckweed)[4] cover at least 50% of the pond area which is less than 3 m deep.		
I	The pond surface is no more than 50% shaded by adjacent trees and scrub.		
	Number of criteria passed		

Condition Assessment Result	Condition Assessment Score	Score Achieved ×/✓
Results for woodland ponds which require assessment of 7 core criteria		
Passes 7 criteria	Good (3)	
Passes 5 or 6 criteria	Moderate (2)	
Passes 4 or fewer criteria	Poor (1)	
Results for non-woodland ponds which require assessment of 9 criteria		
Passes 9 criteria	Good (3)	
Passes 6 to 8 criteria	Moderate (2)	
Passes 5 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnote 1 - A woodland pond will be surrounded on all sides by woodland habitat.

Footnote 2 – This excludes natural dams such as those created by Eurasian beaver *Castor fiber*.

Footnote 3 - Any species included on the Water Framework Directive (WFD) UKTAG GB High Impact Species List should be absent: WFD UKTAG (2021) *Classification of aquatic alien species according to their level of impact* [online]. Available from:

UKTAG classification of alien species working paper v8.pdf (wfduk.org)

• Frequently occurring non-native plant species include water fern *Azolla filiculoides*, Australian swamp stonecrop *Crassula helmsii*, parrot's feather *Myriophyllum aquaticum*, floating pennywort *Hydrocotyle ranunculoides* and Japanese knotweed *Reynoutria japonica*, giant hogweed *Heracleum mantegazzianum* (on the bank).
• Frequently occurring non-native animals include signal crayfish *Pacifastacus leniusculus*, zebra mussels *Dreissena polymorpha*, killer shrimp *Dikerogammarus villosus*, demon shrimp *Dikerogammarus haemobaphes*, carp *Cyprinus carpio*.

Footnote 4 - If the pond is seasonal (as in, it dries out in most summers) then emergent species alone are likely to be found.

Condition Sheet: SCRUB Habitat Type

Habitat Types

Heathland and shrub - Blackthorn scrub
Heathland and shrub - Gorse scrub
Heathland and shrub - Hawthorn scrub
Heathland and shrub - Hazel scrub
Heathland and shrub - Mixed scrub
Heathland and shrub - Dunes with sea buckthorn (H2160)
Heathland and shrub - Willow scrub

Habitat Description

For Dunes with sea buckthorn see:	Dunes with sea-buckthorn (Dunes with Hippophae rhamnoides) - Special Areas of Conservation (jncc.gov.uk)		
For other scrub types see:	ukhab – UK Habitat Classification		
On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	**Criterion passed (Yes or No)**	**Notes (such as justification)**
A	The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range).[1] - At least 80% of scrub is native, - There are at least three native woody species[2], - No single species comprises more than 75% of the cover (except hazel *Corylus avellana* , common juniper *Juniperus communis* , sea buckthorn *Hippophae rhamnoides* (only in its restricted native range), or box *Buxus sempervirens* , which can be up to 100% cover).		
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran[3]) shrubs are all present.		
C	There is an absence of invasive non-native plant species[4] (as listed on Schedule 9 of WCA[5]) and species indicative of suboptimal condition[6] make up less than 5% of ground cover.		
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.		
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.		
		Number of criteria passed	

Condition Assessment Result (out of 5 criteria)	**Condition Assessment Score**	**Score Achieved ×/✓**
Passes 5 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – Professional judgement should be used alongside the UKHab description.

Footnote 2 – Native woody species as defined and listed in the Hedgerow Survey Handbook: DEFRA (2007) *Hedgerow Survey Handbook: A standard procedure for local surveys in the UK.* 2nd ed. [online]. Defra, London. PB1195. Available from: Hedgerow Survey Handbook (publishing.service.gov.uk).

Footnote 3 – See gov.uk standing advice on ancient and veteran species. Available from:

Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)	and
Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)	

Footnote 4 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 5 – Wildlife and Countryside Act 1981 (as amended).

Footnote 6 – Species indicative of suboptimal condition for this habitat type may include: non-native conifers, tree-of-heaven *Alianthus altissima* , holm oak *Quercus ilex* , European turkey oak *Quercus cerris* , cherry laurel *Prunus laurocerasus* , snowberry *Symphoricarpos* spp., shallon *Gaultheria shallon* , American skunk cabbage *Lysichiton americanus* , buddleia *Buddleja* spp., cotoneaster *Cotoneaster* spp., Spanish bluebell *Hyacinthoides hispanica* and hybrid bluebells *Hyacinthoides x massartiana* . There may be additional relevant species local to the region and or site.

Condition Sheet: WETLAND Habitat Type

Habitat Types

Grassland - Floodplain wetland mosaic and CFGM - See the Statutory Biodiversity Metric User Guide.
Wetland - Blanket bog
Wetland - Depression on peat substrates (H7150)
Wetland - Fens (upland and lowland)
Wetland - Lowland raised bog
Wetland - Oceanic valley mire [1] (D2.1)
Wetland - Purple moor grass and rush pastures
Wetland - Reedbeds
Wetland - Transition mires and quaking bogs (H7140)

Habitat Description

For Oceanic valley mires - see EUNIS

See the Statutory Biodiversity Metric User Guide for Floodplain wetland mosaic (FWM) and coastal and floodplain grazing marsh (CFGM). For CFGM also see the below:

Coastal and floodplain grazing marsh UK BAP Priority Habitat description

Priority Habitat Inventory (England) - data.gov.uk

All other wetland habitats - see UK Habitat Classification (UKHab):

UKHab

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	**Criterion passed (Yes or No)**	**Notes (such as justification)**
Core Criteria - must be assessed for **all wetland habitat types**:			
A	The water table is at, or near the surface throughout the year - this could be open water or saturation of soil at the surface. There is no artificial drainage, unless specifically to maintain water levels as specified above. **Note - this criterion is essential for achieving Good condition.**		
B	The parcel represents a good example of its specific habitat type - the appearance and composition of the vegetation closely matches its UKHab description, with vascular and non-vascular characteristic indicator species consistently present.[1]		
C	The water supplies (groundwater, surface water and or rainwater) to the wetland are of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.		
D	Cover of scrub and scattered trees are less than 10%.		
E	Cover of bare ground is less than 5%.		
F	There is an absence of invasive non-native plant species[2] (as listed on Schedule 9 of WCA[3]) and species indicative of suboptimal condition[4] make up less than 5% of ground cover.		
Additional Criterion - must be assessed for **Fen and Purple moor grass and rush pasture** habitats only:			
G	No more than 25% of the habitat area has a continuous cover of litter (such as dead vegetation) preventing regeneration.		
Additional Criterion - must be assessed for **Bog** habitats only:			
H	Sphagnum moss *Sphagnum* spp. and cottongrasses *Eriophorum* spp. are at least Frequent[5]. Cover of ericaceous dwarf shrubs[6] is less than 75%.		
Additional Criterion - must be assessed for **Reedbed** habitats only:			
I	The reedbed has a diverse structure with between 60% and 80% reeds *Phragmites australis*. Other areas may include open water (at least 10%), species-rich fen and or wet woodland.		
Additional Criterion - must be assessed for **Floodplain wetland mosaic and CFGM** only:			
J	All ditches recorded within the habitat achieve Good condition as assessed using the Ditch condition sheet.		
	Essential criterion achieved (required for Good condition) Yes or No:		
	Number of criteria passed		

Condition Assessment Result	**Condition Assessment Score**	**Score Achieved ×/✓**
Results for habitats requiring assessment of 6 criteria (Depression on peat substrates (H7150) and Oceanic valley mire [1] (D2.1)):		
•Passes 5 or 6 core criteria, including criterion A.	Good (3)	
•Passes 3 or 4 core criteria; OR •Passes 5 core criteria but fails criterion A.	Moderate (2)	
•Passes 2 or fewer core criteria.	Poor (1)	
Results for habitats requiring assessment of 7 criteria - core criteria and additional criterion specified for habitat type - all habitat types except Depression on peat substrates (H7150) and Oceanic valley mire [1] (D2.1):		
•Passes 5 or 6 core criteria including criterion A; AND •Passes additional criterion G, H, I or J (choose the one specified for the habitat type).	Good (3)	
•Passes 4 or 5 of 7 criteria; OR •Passes 6 of 7 criteria but fails criterion A or additional criterion G, H, I or J (choose the one specified for the habitat type).	Moderate (2)	
•Passes 3 or fewer criteria.	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – Professional judgement should be used alongside the UKHab description.

Footnote 2 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 3 – Wildlife and Countryside Act 1981 (as amended).

Footnote 4 – Species indicative of suboptimal condition for this habitat type include: creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, common nettle *Urtica dioica*, docks *Rumex* spp., and common ragwort *Jacobaea vulgaris*. There may be additional relevant species local to the region and or site.

Footnote 5 – According to the relative abundance DAFOR scale – Dominant, Abundant, Frequent, Occasional or Rare.

Footnote 6 – Ericaceous dwarf shrubs include: crowberry *Empetrum nigrum*, cowberry *Vaccinium vitis-idaea*, bilberry *Vaccinium myrtillus*, cranberry *Vaccinium oxycoccos*, heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, and bell heather *Erica cinerea*. There may be additional relevant species local to the region and or site.

Footnote 7 – For fens, specify what fen type is present using base-status and trophic status - alkaline, neutral, or acidic; eutrophic, mesotrophic or oligotrophic.

Condition Sheet: WOODLAND Habitat Type

UK Habitat Classification (UKHab) Habitat Types

Woodland and forest - Lowland beech and yew woodland
Woodland and forest - Lowland mixed deciduous woodland
Woodland and forest - Native pine woodlands
Woodland and forest - Other coniferous woodland
Woodland and forest - Other Scot's pine woodland
Woodland and forest - Other woodland; broadleaved
Woodland and forest - Other woodland; mixed
Woodland and forest - Upland birchwoods
Woodland and forest - Upland mixed ashwoods
Woodland and forest - Upland oakwood
Woodland and forest - Wet woodland

Habitat Description

ukhab – UK Habitat Classification

This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here:
Woodland Wildlife Toolkit (sylva.org.uk)

IMPORTANT: This biodiversity metric woodland condition assessment must be used to assess woodland being input into the biodiversity metric. The outputs of this condition assessment are not equivalent to, nor are they comparable with the scores from the EWBG condition assessment, because the EWBG assessment has been adapted for the biodiversity metric, including the removal of EWBG Indicator 7 (Proportion of favourable land cover around woodland) and Indicator 14 (Size of woodland), and minor changes to other indicators.

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Condition Assessment Criteria

	Indicator	Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator	Notes (such as justification)
A	**Age distribution of trees**	Three age-classes[1] present.	Two age-classes[1] present.	One age-class[1] present.		
B	**Wild, domestic and feral herbivore damage**	No significant browsing damage evident in woodland[2].	Evidence of significant browsing pressure is present in less than 40% of whole woodland[2].	Evidence of significant browsing pressure is present in 40% or more of whole woodland[2].		
C	**Invasive plant species**	No invasive species[3] present in woodland.	Rhododendron *Rhododendron ponticum* or cherry laurel *Prunus laurocerasus* not present, and other invasive species[3] <10% cover.	Rhododendron or cherry laurel present, or other invasive species[3] ≥10% cover.		
D	**Number of native tree species**	Five or more native tree or shrub species[4] found across woodland parcel.	Three to four native tree or shrub species[4] found across woodland parcel.	Two or less native tree or shrub species[4] across woodland parcel.		
E	**Cover of native tree and shrub species**	>80% of canopy trees and >80% of understory shrubs are native[5].	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native[5].	<50% of canopy trees and <50% of understory shrubs are native[5].		
F	**Open space within woodland**	10 - 20% of woodland has areas of temporary open space[6]. Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted[7].	21 - 40% of woodland has areas of temporary open space[6].	<10% or >40% of woodland has areas of temporary open space[6]. But if woodland <10ha has <10% temporary open space, please see Good category[7].		
G	**Woodland regeneration**	All three classes present in woodland[8]; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland[8].	No classes or coppice regrowth present in woodland[8].		
H	**Tree health**	Tree mortality 10% or less, no pests or diseases and no crown dieback[9].	11% to 25% tree mortality and or crown dieback or low-risk pest or disease present[9].	Greater than 25% tree mortality and or any high-risk pest or disease present[9].		
I	**Vegetation and ground flora**	Recognisable NVC plant community[10] at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community[10] at ground layer present.	No recognisable woodland NVC plant community[10] at ground layer present.		
J	**Woodland vertical structure**	Three or more storeys across all survey plots, or a complex woodland[11].	Two storeys across all survey plots[11].	One or less storey across all survey plots[11].		
K	**Veteran trees**	Two or more veteran trees[12] per hectare.	One veteran tree[12] per hectare.	No veteran trees[12] present in woodland.		
L	**Amount of deadwood**	50% of all survey plots within the woodland parcel have deadwood, such as standing and fallen deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities[13].	Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing and fallen deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	Less than 25% of all survey plots within the woodland parcel have deadwood, such as standing and fallen deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].		
M	**Woodland disturbance**	No nutrient enrichment or damaged ground evident[14].	Less than 1 hectare in total of nutrient enrichment across woodland area, and or less than 20% of woodland area has damaged ground[14].	1 hectare or more of nutrient enrichment, and or 20% or more of woodland area has damaged ground[14].		
				Total Score (out of a possible 39)		

Condition Assessment Result	Condition Assessment Score	Result Achieved
Total score >32 (33 to 39)	Good (3)	
Total score 26 to 32	Moderate (2)	
Total score <26 (13 to 25)	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnotes below refer to the EWBG woodland condition assessment details: EWBG (No date). *Assessing your Woodland's Condition* [online]. Available from:
Woodland Wildlife Toolkit (sylva.org.uk)

The woodland condition assessment survey methodology is outlined in the EWBG toolkit. However the criteria on this sheet are those specific to the Statutory Biodiversity Metric and must be used when assessing woodland condition.

Footnote 1 - See EWBG method INDICATOR 1 for more information. If tree species is not a birch *Betula* sp., cherry *Prunus* sp. or *Sorbus* sp.: 0 – 20 years (Young); 21 - 150 years (Intermediate); and >150 years (Old). For birch, cherry or *Sorbus* species; 0 - 20 years = Young; 21 - 60 years =Intermediate; >60 years = Old. A recognisable age-class should be a consistent recognisable layer across the woodland or stand being assessed. Presence of a few saplings would not indicate that the woodland has an 'age-class' of young trees.

Footnote 2 - See EWBG method INDICATOR 2 for more information. Browsing pressure is considered to be significant where >20% of vegetation visible within each survey plot shows damage from any type of browsing pressure listed.

Footnote 3 - See EWBG method INDICATOR 3 for more information. Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly.

Check for the presence of all plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), particularly the following invasive non-native species: American skunk cabbage *Lysichiton americanus* ; Himalayan balsam *Impatiens glandulifera* ; Japanese knotweed *Reynoutria japonica* ; cherry laurel *Prunus laurocerasus* ; shallon *Gaultheria shallon* ; snowberry *Symphoricarpos albus* ; variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum* ; rhododendron *Rhododendron ponticum* ; and tree-of-heaven *Alianthus altissima* .

Footnote 4 - See EWBG method INDICATOR 4 and Table 2 for more information. The number of different native tree or shrub species including young trees and shrubs. A list of commonly found native tree and shrub species is provided in Table 2. Not all species listed are native to all parts of the UK. Note a list of commonly found non-native tree species are also included and should be recorded if present.

Footnote 5 - See EWBG method INDICATOR 5 and for more information. The abundance of native tree species in upper (>5 m) and understorey (up to 5 m) layers including young trees and shrubs.

Footnote 6 - See EWBG method INDICATOR 6 for more information. Open space within woodland in this context is temporary open space in which trees can be expected to regenerate (for example, glades, rides, footpaths, areas of clear-fell). This differs from permanent open space where tree regeneration is not possible or desirable (for example, tarmac, buildings, rivers). Area is at least 10 m wide with less than 20% covered by shrubs or trees.

Footnote 7 – Given the increased ratio of edge habitat to woodland where the woodland is <10ha.

Footnote 8 - See EWBG method INDICATOR 8 for more information. This indicator measures regeneration potential of the woodland by considering three classes: seedlings; saplings; and young trees of 4-7 cm DBH. All three classes would fall in the 'young' category of the 'age distribution of trees' indicator, but the regeneration indicator gathers additional information by considering regeneration potential - if seedlings, saplings and young trees are all present that means natural regeneration processes are happening.

Footnote 9 - See EWBG method INDICATOR 9 for more information and Table 3 for a list of diseases and pests and their risk level.

Footnote 10 - See EWBG method INDICATOR 10 directing to NVC key for more information. The 'UKHab to NVC translation table' in the UK Habitat Classification resources may also be useful to assess this.

Footnote 11 – This criterion looks at structural diversity and is useful to understand in conjunction with the age of trees in a woodland. Vertical structure is defined as the number of canopy storeys present. Possible storey values are: 1) Upper; 2) Complex: recorded when the stand is composed of multiple tree heights that cannot easily be stratified into broad height bands (such as upper, middle or lower); 3) Middle; 4) Lower; and 5) Shrub layer. There might be no storeys where the woodland has been felled. See EWBG INDICATOR 11 for more information.

Footnote 12 - See EWBG method INDICATOR 12 for more information. See gov.uk standing advice on ancient and veteran trees. Available from:

Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)
and:
Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

EWBG INDICATOR 12 is the relevant indicator.

Footnote 13 – See EWBG method INDICATOR 13 for more information. This includes logs, large dead branches on the forest floor and stumps (<1 m tall) >20 cm diameter at narrowest point and >50 cm long. Also includes standing dead trees (>1 m tall) and also deadwood on standing live trees. Diameter is measured at the narrowest point on the stem. Minimum diameter of 20 cm.

Footnote 14 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment; soil compaction from trampling, machinery, animal poaching or litter.