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Morlais Project

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Applicant: Menter Môn Morlais Limited

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GLOSSARY OF ABBREVIATIONS

AONB	Area of Outstanding Natural Beauty
CoCP	Code of Construction Practice
EAP	Ecological Action Plan
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
HDD	Horizontal Directional Drilling
IoACC	Isle of Anglesey County Council
LMP	Landscape Management Plan
LPA	Local Planning Authority
MDZ	Morlais Demonstration Zone
ML	Marine Licence
MLWS	Mean Low Water Springs
NRW	Natural Resources Wales
ODA	Onshore Development Area
PDE	Project Design Envelope
SLVIA	Seascape and Landscape Visual Impact Assessment
SoCG	Statement of Common Ground
TWAO	Transport and Works Act Order
TWG	Technical Working Group
WG	Welsh Government

1. INTRODUCTION

1.1. BACKGROUND

1. Menter Môn Morlais Limited ('the Applicant', hereafter referred to as Menter Môn) is seeking a Transport and Works Act Order (TWAO) and Marine Licence (ML) for the Morlais Project (hereafter 'the Project').
2. Menter Môn recognises that the provision of an outline Landscape Management Plan (LMP), as part of the Environmental Statement (ES) submission, adds value to the ES and demonstrates consideration of the links between the findings of the ES, works anticipated to be required to construct and operate the Project, and potential consent Conditions.
3. This document seeks to set out a framework for LMP for the Project, and the mitigation proposed to manage seascape and landscape impacts associated with offshore and onshore works.
4. Construction of the Project is anticipated to begin between 2021 for onshore works and 2023 for offshore works.
5. The Project is described in **Chapter 4, Project Description** of the ES. In summary, the Project consists of three distinct areas within which components of the Project will be installed, as follows:
 - The Morlais Development Zone (MDZ), within which arrays of tidal devices and associated infrastructure such as foundations, array hubs, inter array cables, cable protection and other associated infrastructure will be deployed.
 - The Export Cable Corridor (ECC), within which up to nine export cables and associated cable protection will be laid. The ECC also includes the intertidal area, where the export cables will make landfall via either horizontal directional drilling (HDD) or trenching.
 - The Onshore Development Area (ODA) shares the export cable landfall with the ECC, with export cables then passing to a Landfall Substation, and from there via an onshore cable route to a grid substation and connection to grid.
6. The Project will install tidal devices in phases up to a potential maximum installed capacity of 240 MW.

1.2. ONSHORE PROJECT COMPONENTS

7. Works within the ODA from the landfall (at Mean Low Water Springs (MLWS)) to the connection of transmission infrastructure at the Grid Connection Substation, and at the Switchgear Building, are defined to include:
 - Landfall works, including:
 - Up to nine Horizontal Directional Drilling (HDD) ducts or trenched equivalents
 - Up to nine transition pits or bays
 - Up to nine export cable tails (shared with offshore components);
 - Landfall Substation at Ty-Mawr;

- Substation Building at Parc Cybi;
- Onshore cable route joint bays (along onshore cable route between the Landfall Substation and grid connection substation);
- Onshore cable circuits installed between the Landfall Substation and Grid Connection Substation; and
- Grid Connection Substation at Orthios.

8. The offshore project components will be constructed in a series of stages to achieve final 240 MW installed capacity. The onshore works will reflect this as follows:

- Cable ducts would be installed together regardless of the offshore phasing;
- Cable pull through would be done in phases depending on the commissioning of tidal arrays in the MDZ;
- Landfall and Grid Substations, and the Switchgear Building ground preparation and construction works will be done in one phase; and
- The required electrical infrastructure and plant within the Landfall and Grid Substations, and the Switchgear Building will then be installed as required for each phase of offshore construction.

1.3. OFFSHORE PROJECT COMPONENTS

9. The key components of the offshore works associated with the Project are detailed in **Chapter 4, Project Description** and include:

- Tidal devices deployed in multiple arrays within the MDZ, to a maximum installed capacity of 240 MW;
- Each single array will be comprised of the same type of tidal device (technology type) and located within a discrete berth within the MDZ, with proposed installed capacity per array of 30 MW;
- For deployment of arrays, the MDZ may be spilt into a series of sub-zones, with eight indicative sub-zones are proposed within the MDZ. Water depths and tidal resource vary across the MDZ (average depth across the MDZ is approximately 40 m), and the sub-zones are likely to be located in areas of stronger tidal resource, while offering a range of depth parameters.
- Potential for a number of phases of deployment to the maximum capacity of 240 MW and a first phase of deployment to a maximum of 40 MW;
- Up to a maximum of 620 Tidal Devices within the MDZ;
- Up to 1,648 Tidal Energy Converters (TEC) within the MDZ;
- Up to 740 inter-array cables within the MDZ;
- Up to nine export cables;
- Up to nine export cable tails (shared with onshore components);
- Navigation and environmental monitoring equipment;

- Mooring and foundation structures; and
- Offshore electrical infrastructure, including submerged, floating or surface emergent hubs.

1.4. PURPOSE OF THIS DOCUMENT

10. Chapter 24 of the ES (**Chapter 24, Seascape, Landscape and Visual Impact Assessment, SLVIA**) details the full assessment undertaken and the rationale for mitigation proposed.
11. An initial version of the outline LMP formed part of a set of documents that support the TWAO and ML applications submitted by the Applicant to Welsh Government (WG) and Natural Resources Wales (NRW). It was envisaged that this would be an evolving document and that further information would be required as the Project progresses. It should also be noted that more detail will become known about certain elements of the construction phase during this process.
12. This OLMP comprises an update of the document provided in support of the TWAO and ML applications to demonstrate the linkages with the impact assessment for the Project (in particular the SLVIA as detailed in **Chapter 24** of the ES). This update has been prepared in response to the post application responses from NRW and Isle of Anglesey County Council (IoACC). At this stage it is possible to make certain commitments to the principles that would be adopted in the LMP. Therefore the outline LMP has been updated to provide a more comprehensive framework with a greater level of commitment to the measures that would be implemented.
13. A detailed LMP will be produced prior to construction of the Project, based on the content of this outline LMP and post application consent Conditions. It is anticipated that these Conditions would require more detail to be provided and agreed with statutory consultees (NRW and IoACC), including a requirement for a detailed LMP. The LMP is not intended to be a static document, but would be part of an iterative process that evolves as more information on the construction phase becomes available.
14. SLVIA scoping was carried out in October 2018 as part of the formal scoping exercise described in ES **Chapter 6, Consultation**. In addition, considerable consultation took place with IoACC and NRW during the preparation of the SLVIA. This has taken place through three specific technical working group (TWG) meetings that have focussed on the issues associated with the SLVIA, including the scope of the assessment and the project design envelope (PDE).
15. The development of a statement of common ground (SoCG) through the TWG has been used for the discussion and management of key SLVIA issues, with technical experts from IoACC, NRW and the Applicant, supported by landscape architects.
16. Further TWG meetings have taken place following submission of the TWAO and ML applications and it is intended that dialogue is maintained post application and that discussion of the SoCG is used as the main mechanism for agreement of mitigation for any SLVIA impacts the management of which remains to be agreed.

2. EMBEDDED LANDSCAPE MITIGATION

17. The Applicant has made a decision on a number of techniques and engineering designs/modifications during the pre-application phase, in order to reduce and mitigate landscape as far as possible. Embedding mitigation into the project design is a type of primary mitigation and is an inherent aspect of the EIA process. Further commitments to mitigation have been agreed post submission as described below.
18. The embedded mitigation measures set out below are project commitments and are outlined here to ensure that they are captured and that their delivery is secured. The focus of this document is directed towards the onshore components of the Project. The onshore components will directly affect elements in the local landscape during the construction phase. It is the intention of this report to provide assurance that any removal of or disturbance to such components of the landscape is avoided where possible or appropriate measures are taken to offset the physical changes resulting from construction works.

2.1.1. Offshore Project Components Visible from Land

19. No Visually Prominent devices will be placed in the northern area of the MDZ as detailed in the TWA Order and the ES, **Chapter 4, Project Description, Figure 4.1**. This is to reduce potential landscape and visual effects in relation to seascape/landscape and visual receptors to the north west of Holyhead Mountain.
20. Any Tidal Device installed within the area designated for “no visually prominent emergent devices” will not have any element emerging from the surface which is considered to be visually prominent by the regulatory authority. Any element that is emergent would need the approval from the regulatory authority prior to deployment via the Device Deployment Protocol. Whilst there are no existing examples of devices falling into this category within the Morlais developer group, it is readily conceivable that a submerged device could have a requirement for a small communications mast which would be surface emergent, whilst the vast majority of the device was completely submerged. In the strict sense this would then be a surface emergent device, but would not be expected to be able to be easily perceived from the coastline of the Isle of Anglesey (including Holy Island).
21. A minimum separation distance of 1 km will be applied from the coastline for Visually Prominent devices, helping to increase the separation distance between such structures from the coastline.
22. Surface emergent project components will be minimised elsewhere within sub-zones to help ensure the composition of offshore elements is as simple as possible.
23. Consideration is currently being given to the colour of the offshore structures and the navigation lighting that is required as part of the Project. Post application consultation has been undertaken with the relevant navigation consultees (Trinity House and MCA), recognising that marine safety is a paramount consideration. The outcome of the consultation is that the colouring on the structures can be altered and the lighting requirement can be reduced compared with those assumed in the SLVIA.
24. Colouring can be altered so that only a proportion of the structures is coloured yellow. A number of potential colour schemes were discussed with Trinity House with reference to other offshore

installations where visual impact is an important factor. One scheme proposed was to have only the devices at the edge of each array yellow, and the devices within a grey or other less conspicuous colour to be agreed. However it has been concluded that given the length of the devices at up to circa 70m in length, Trinity House would require yellow marking at both ends of all devices as mitigation in case any of the units broke away and was left floating by itself. Also this colour scheme would maintain the marking should any of the devices on the array edge need to be removed for maintenance.

25. For this reason Menter Môn can commit to marking the ends of each of the devices yellow, or a band 5m high on hubs or similar vertically shaped infrastructure. The extent of the yellow marking would depend on the design of the devices and would comprise a 5m band at the ends of each device. The remainder of the devices would be coloured grey, although the exact colour grey would be agreed with NRW and IoACC.
26. Through consultation with Trinity House it has also been possible to reduce the navigation lighting requirements compared with the design envelope assumptions applied in the LVIA. This would mean that navigational markers and floating devices can use lights that are limited in visibility.
27. On the inshore side of the MDZ the markers can use 2NM lighting – i.e. visible for 2 nautical miles. On the offshore side they would be 5NM lights. In addition, the devices themselves only need to have identification lighting with a visibility of 150 metres.
28. If considered appropriate the layout configurations of tidal devices within arrays e.g. curved rows of devices or irregular placement may also help to reduce the prominence of offshore structures. However, such detailed consideration could only take place when more specific development proposals for arrays of devices within the MDZ come forward, and in the context of maintaining navigational safety.

2.1.2. Landfall Substation

29. Careful consideration has been given to the siting, layout and design of the Landfall Substation. This approach has been taken due its location within the Isle of Anglesey Area of Outstanding Natural Beauty (AONB). The required location for the substation is also in a relatively exposed position, close to the coastline, where introducing woodland screening vegetation is unlikely to establish effectively and would be incongruous in the context of the baseline landscape character. Therefore, the site for the Landfall Substation has been selected reduce its prominence, and the proposed layout and materials will help integrate this component of the project into the landscape. The location and fabric of the Landfall Substation has been the subject of pre-application discussions with NRW and IoACC with both parties raising no objection to the specific proposals.
30. The mitigation measures incorporated in Landfall Substation comprise:
 - Selecting a recessive location in the landscape, in a relatively low-lying position and using the landform to help integrate the Landfall Substation (cutting into the valley side rather than building a platform out);

- Arrangement of plant and equipment within three buildings, resulting in a collection of buildings that break up the scale of the development and create a form and massing that is comparable with local agricultural buildings;
- Using colours and materials (including natural materials) that are consistent with the vernacular associated with agricultural buildings and are recessive in the local context;
- Using the buildings to define the boundaries of the Landfall Substation, reducing the requirement for security fencing;
- Using stone walls and stock proof fencing as part of new boundaries; and
- Minimising the use of external lighting in this rural location.

31. In addition to the above measures shrub planting will be incorporated within the land around the Landfall Substation. The exposed, windswept, coastal context of the Landfall Substation means it would be inappropriate to suggest that vegetation could provide effective visual screening. However careful use of planting, using appropriate species, around the Landfall Substation would be effective in helping to integrate the new buildings. This has been considered further in Section 3.6.4 of this document.

2.1.3. Grid Connection Substation

32. The Grid Connection Substation has been positioned in a location where industrial structures form an established part of the baseline context, and where established vegetation surrounding the site provides effective visual enclosure. Therefore, no further landscape and visual mitigation, including planting, is considered necessary.

2.1.4. Switchgear Building

33. The Switchgear Building comprises a relatively small structure (9.5 m x 4 m, with a maximum height of 4 m). It is also positioned within an allocated employment site, adjacent to an existing substation and where surrounding development will be comparable in form, massing and appearance. Therefore, no further landscape and visual mitigation, including planting, is considered necessary.

2.1.5. Onshore Cable Corridor

34. The main mitigation of likely seascape, landscape and visual effects resulting from the construction of the onshore cable comprises the use of underground cabling to provide the connections between all Project elements. This avoids the need for overhead cables, although there is still the potential for disturbance to the landscape during the construction phase.

35. It is proposed to route the underground cable within road corridors where possible and feasible to do so. This will reduce potential disturbance of the landscape, including disruption to field boundaries. However, parts of the cable route will cross agricultural and undeveloped land. This includes fields between Abraham's Bosom and the Landfall Substation, and agricultural land to the south west of Holyhead Leisure Centre. In addition, the cable corridor between the Switchgear Building and Grid Connection Substation (to the south west of the A55) comprises a mix of agricultural land, woodland, undeveloped land within Parc Cybi employment site and highway verges adjacent to the A55.

36. Whilst it is proposed to route the onshore cable corridor primarily within the road network, there are also locations where the road width is insufficient and the verge and adjacent fields will need to be utilised.

2.1.6. Across the Onshore Development area

37. Further consideration will be given to mitigation that specifically relates to planting and the reinstatement of landscape elements at the detailed design stage. These measures would be addressed in the detailed LMP (secured under Condition) and would include:
- Restoration and reinstatement of agricultural/undeveloped land crossed by the ODA;
 - Detailed proposals/agreements for the types/design of field boundaries to be reinstated following the construction phase e.g. stone walls, cloddiau (hedge banks) or hedgerows; and
 - Planting proposals around the substation sites.
38. Section 3 of this document provides further details on these measures and broad commitments around how they would be delivered.

3. MEASURES TO MITIGATE DIRECT EFFECTS ON LANDSCAPE ELEMENTS

3.1. OVERVIEW

39. All recommendations included in the following sections set out the principles for and commitments to the measures that are proposed, and how they would be established and maintained. However, it is not intended to be used as the basis for construction activities.
40. Detailed landscape proposals for the ODA are secured through Condition and will be provided when more information relating to the construction phase is available. This would include an appraisal of vegetation located within the ODA and which would be potentially lost to the proposed development, together with vegetation in the surrounding landscape.
41. The final alignment of the underground cables and buildings/structures at the Landfall Substation, Grid Connection Substation and Switchgear Building will be identified at Detailed Design stage. This may give rise to minor adjustments to the layout and location of the proposed infrastructure, however, this is not expected to affect the broad principles set out in this document.
42. The key aspects of the reinstatement of the ground and landscape elements within the ODA include:
- The reinstatement of field boundaries (stone walls, cloddiau and hedgerows) where these are disrupted by the construction of the underground cable;
 - The planting of individual trees/shrubs where there is corresponding removal of such vegetation at a ratio of at least three trees/shrubs planted for each one that is removed;
 - The restoration of road verges, field margins and agricultural land that are disturbed by the construction works.

43. The detailed proposals will consider the composition of the vegetation that will be removed and the potential for local enhancement including the species of trees and plants appropriate in the local context and prevailing conditions.

3.2. PROTECTION AND RETENTION OF EXISTING VEGETATION

44. All vegetation outside of the ODA boundary would be retained and protected using appropriate measures where necessary. Trees outside the ODA would be protected during the construction phase through a combination of fencing and the detailed design for the Project. Where appropriate a tree survey would be undertaken to identify indicative extents and locations for fencing to be installed on the edges of the ODA to protect trees. These details will be included in the LMP secured under planning Condition.
45. Trenchless construction techniques may be used where the export cables cross South Stack Road, between the cable landfall and the Landfall Substation. This would enable retention of the existing field boundaries either side of this road. The exact extent of field boundary loss would be reviewed when full details of the construction works are available, with the aim being to retain such elements and vegetation where possible and compensate where this is not possible.

3.3. HISTORIC LANDSCAPE FEATURES

46. The ODA does not cross any designated heritage assets. However, there is potential for undesignated archaeology to be found during the construction phase. This would be monitored through a watching brief during the construction works.
47. The field boundary pattern is a distinctive component of the landscape which also has inherent heritage value. The routing of the cable connection within the road network where possible reduces the potential for disruption to the existing field boundaries. Although as described in section 2.1.5 there are locations where the cable corridor will diverge from the local road network. The proposals comprise the reinstatement of the existing field boundary pattern where this is affected by the Project. Depending on the baseline condition of the field boundary affected, there may also be potential for local enhancement of these.
48. Field boundaries that would be affected by the Project would be assessed to establish their baseline condition prior to development. This condition would be surveyed, including appropriate photography, to ensure this baseline condition is recorded for future reference.

3.4. VEGETATION REMOVAL

49. All vegetation suitable for nesting birds requiring removal, including trees, shrubs and hedgerows, would be cleared outside the bird nesting season (March to August inclusive) or under the supervision of a qualified ecologist. Further details in relation to this will be provided in the Ecological Action Plan (EAP) secured under Condition.
50. Specific detail on the likely vegetation removal and loss of other elements (e.g. stone walls) within the ODA would be calculated as part of the detailed design stage. This would provide a baseline against which replacement vegetation and boundary elements can be identified.

51. It is anticipated that the construction working area would be reduced where field boundaries are crossed to reduce potential loss. The total length of field boundaries that would be affected by the construction phase would be calculated at the detailed design stage and could include sections of existing field boundaries that are fragmented and in decline as well as intact, continuous sections. Therefore, there is potential for local enhancement of some sections of field boundaries as a result of the proposed reinstatement measures.
52. There would be temporary disturbance to agricultural and undeveloped land within the ODA. This land largely comprises pasture and grassland, but there are some areas of woodland/scrub between the Switchgear Building and the Grid Connection Substation, to the south west of the A55. The land would be reinstated and returned to land uses consistent with the surrounding field on completion of the construction of the cable.

3.5. REPLACEMENT MEASURES

53. The location and extent of the proposed areas of replacement field boundaries, new planting and seeding would be calculated and illustrated by relevant drawings secured under Condition. This would include the following key elements:
- Reinstatement of field boundaries, consistent in type (i.e. cloddiau, stone walls or hedgerow) with the baseline;
 - Planting of trees and shrubs e.g. at the Landfall Substation and within hedgerows;
 - Reinstated verges alongside roads and at field margins; and
 - Establishment of grassland where crossed by the cable corridor.
54. The proposed replacement measures would be carried out in accordance with the principles set out below.

3.5.1. Site Preparation / Ground Clearance

55. Prior to commencement of all landscape works on site, all areas will be suitably cleared and excavated when the areas are available in accordance with the requirements of the Code of Construction Practice (CoCP) and EAP. All planting areas will be cleared of all unwanted rubbish, and any debris. Unwanted vegetation/weeds will be identified and removed prior to planting.
56. The location of any existing services within the site will be established/confirmed by the contractor before clearance works and planting begins. The exact location of these services and any required easements may influence the extent of the proposed planting. Any amendments to the planting would be agreed with the Local Planning Authority through the LMP secured through Condition..

3.5.2. Soil Preparation, Handling, Storage and Stockpiling

57. A methodology for stripping, handling, storing and reinstatement of topsoil and subsoil will be detailed in the final CoCP secured through Condition. Reinstatement of agricultural land, including replacement of the stored topsoil, reseeding of pastureland and installation of post-construction land drainage schemes, will be carried out within the same year as construction,

unless prevented by adverse weather. Reinstatement may include deep cultivation or ripping of the subsoil if it has been significantly compacted and spreading of the stored topsoil. To reduce the potential for compaction, if areas of land within the working area are required for the regular and repeated movement of vehicles, consideration will be given to the temporary removal of topsoil, or the use of a temporary track surface. This will be considered further at the detailed design stage and secured by Condition.

58. All soil handling operations will follow the guidelines set out in the guidance documents *BS:3882: Specification for Topsoil* and *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra, 2009). This approach will make best use of the available soil resource and minimise compaction. It is expected that soils within the site will be used in the landscape work and any additional imported topsoil would conform with BS:3882.
59. Areas for planting will be assessed for compaction prior to planting and, if necessary, de-compaction will be carried out to a depth of 500mm, with soils loosened, aerated and broken up, when ground conditions are reasonably dry. All areas to be sown with seed will require good preparation in order to control weeds and produce a good quality seed bed before sowing. Cultivation would then be undertaken to bury the surface vegetation and then the ground harrowed or raked to produce a medium tilth, and then rolled to produce a firm surface. The soil would be left for a first flush of weeds to emerge before treating within a suitable herbicide. The seed mix would then be broadcast and the surface of the soil rolled.

3.5.3. Sources of Plant Stock / Plant Handling

60. Plants will be sourced as locally as possible and all effort will be made to source stock of native genetic origin as appropriate. All plant handling and planting operations will comply with relevant clauses of Committee for Plant Handling and Establishment (CPSE) 'Handling and Establishing of Landscape Plants' (obtainable from the Horticultural Trades Association).
61. All trees and shrubs will be planted, and grasses sown, as specified in the following sections. The health and well-being of all planting stock will be ensured before commencing replacement planting, including root system condition.

3.6. OUTLINE SPECIFICATION

3.6.1. Grass seeding

62. The seed mix to be used in areas disturbed by construction activities would be agreed with NRW and IoACC, with an expectation that different mixes would be required on verges or field margins, and within fields used as pasture. Verges and field margins would be restored to a width that is comparable with the adjacent land in order to create continuity. Grass seeding would only be applied to those verges or margins that are directly affected by construction activities, which would be defined through the Detailed Design.
63. The sowing rates for the mixes to be used would also be agreed through the LMP secured through Condition. Seeds would be broadcast onto bare ground after raking the surface and removing weeds, with deeper cultivation carried out on compacted ground. It is anticipated that seed mixes, particularly those used on verges, would contain a wide range of species and have the potential to create a diverse sward of grasses and wild flowers. Bulking up the seed with an

inert carrier, such as sand, may be used to make distribution easier. The seed must be surface sown and can be applied by machine or broadcast by hand. The newly seeded areas will be fenced off using pegs and tapes until the grass is well established.

64. Alternative approaches to restoring field margins and verges could be considered. A nurse grass mix could be sown at a low density to stabilise the soils but also allow colonisation by surrounding wildflowers. Alternatively, a locally collected green hay could be used as a potential source of seeds of local provenance. The final proposals will be agreed with IACC through the LMP secured through Condition.
65. Well timed preparation and sowings are important for successful establishment, however it will be necessary to establish the grass mixes as soon as possible following soil preparation to stabilise the surface and reduce the potential for weed growth. The timing for establishment of the grass mixes would be the first autumn or spring after construction activities are complete.

3.6.2. Cloddiau and Stone Walls

66. Where field boundaries that currently comprise cloddiau and stone walls are affected by the construction of the onshore components of the Project these would be reinstated. Cloddiau and stone walls are locally distinctive components of the landscape with local variations in style/type and specific construction techniques and design would be agreed as part of the detailed LMP secured under Condition. As set out in Section 3.3 field boundaries would be recorded prior to removal so that the baseline characteristics are clearly recorded and the features can be restored to match these.

3.6.3. Hedgerows

67. Where field boundaries affected by the Project comprise hedgerows, these would be reinstated following construction works. Replacement planting would comprise native, locally prevalent species, particularly those better suited to growing in open coastal locations. This planting is likely to consist of six plants per metre in double staggered rows with a spacing of approximately 33cm between plants and approximately 45cm between rows. The plants would comprise 40-60cm bare rooted transplants or cell grown plants.
68. Hedgerow plants will be individually protected either by 0.6m height translucent plastic spiral guards supported by a single stout cane or, in the case of the bushier, species, a 0.6m high shrub shelter and softwood timber stakes.
69. If appropriate, individual trees would be included in the hedgerows. These would be planted and protected so that they grow above the height of the hedgerow. Native tree species that are locally prevalent would be selected. Further information would be provided as part of the detailed LMP secured under Condition. Such trees could comprise 1+1 transplants and as bare-root stock. Hedgerow trees would be individually protected by 0.6m height coloured plastic tree guards. They would be supported by a 2m stake and tie with an above ground stake height of approximately 1.2m (approximately 0.8m buried). As well as providing support, the stakes would help to mark the location of the trees.

3.6.4. Tree and shrub planting

70. Tree and shrub planting would be provided in the vicinity of the Landfall Substation, Switchgear Building and Grid Connection Substation should it be required. The main location where this is proposed is at the Landfall Substation where planting of shrubs and trees could be undertaken to soften the appearance of these buildings. The exposed location of the Landfall Substation will limit the degree to which planting could screen the buildings and this has resulted in the careful consideration of the design of this component of the Project. However, selective planting around the Landfall Substation would help to integrate it with the local context.
71. Species to be planted would have to be selected carefully to ensure they would establish in this location, and could include hawthorn, blackthorn, willow and gorse. The approach to, and extent of, this planting would be agreed as part of the detailed LMP secured under Condition. Planting could comprise staggered rows with approximately 0.5m between row and 0.75m along each row.
72. In addition, it may be appropriate to plant replacement trees and shrubs within the land between the Switchgear Building and Grid Connection Substation. This requirement would depend on the extent and nature of vegetation removed in this part of the ODA.
73. All proposed tree and shrub planting will be individually protected either by 0.6m height translucent plastic guards supported by a single stout cane or, in the case of a bushier species, a 0.6m high shrub shelter and softwood timber stakes.

3.6.5. Timing/programme for implementation

74. The trees, hedgerows and grasses areas around the proposed pipeline would be planted or sown during the first suitable season following the completion of construction activities. Construction activities are currently anticipated to commence mid-2022. All trees and hedgerow stock will be planted in accordance with good horticultural practice and in the dormant season, generally from the end of November to the end of March (depending on weather conditions). It will be important for the soils to be seeded as soon as possible following cultivation to help stabilise the surface and reduce weed growth. The timing for establishment of the grass mixes would be autumn or spring, however should this not complement the timing of construction activities, the programme for undertaking the seeding would be agreed with NRW and IoACC through the LMP secured by Condition.

3.7. AFTERCARE/MANAGEMENT

3.7.1. Grassland, field margins and verges

75. In the first two years the verges, field margins and larger areas for seeding would be cut in early spring to suppress more vigorous species and weeds. The second cutting would take place in August to September (after the wildflowers have finished flowering and set seed), the arisings would be left in situ for between two days and one week and then removed. This approach would prevent nutrient enrichment of the soil but allow the retention of seeds on site. After the first two years the areas would only be cut once during August to September, following the same approach as set out for the first two years. Watering of the grassed areas would take place during periods of drought.

76. The management of areas of replacement pasture would be consistent with the surrounding fields i.e. once the grass sward is established it would be cut or grazed as part of the same regime as the adjacent land.

3.7.2. Field boundaries, shrubs and trees

77. The integrity of cloddiau and stone walls would be inspected twice per year for five years and remedial works identified and undertaken if necessary. In the case of cloddiau, the management of associated vegetation will depend on their detailed design e.g. whether the cloddiau are topped with turf or hedge planting.
78. All planted shrubs and trees, including replacement hedgerows, will be inspected twice per year for the first five years following planting and dead or damaged plants will be replaced during the next planting season. During these inspections protection measures will be checked and repaired if necessary. All plants will be checked to ensure that they are firmly bedded in the ground, and re-firmed as necessary by treading round the base. A 0.5m area, or in the case of hedgerows a 0.5m wide strip either side of the centre line, will be maintained weed-free through hand weeding, the application of a suitable herbicide, or use of a suitable mulch for the first three growing seasons. Spiral guards and canes would be removed at the end of the five-year period. Watering of the planting would take place during periods of drought.
79. Occasional cutting or coppicing may be required and this would be monitored during inspections. This would comprise a maximum of one third of the vegetation in any one year on a three year rotation. Cutting of the vegetation would take place outside the bird nesting season. At the end of the aftercare period the management of the field boundaries would revert to the landowner.

3.8. REPLACEMENTS

80. All planting failures (including where removed, dies or becomes seriously damaged or diseased) will be replaced on an annual basis, to ensure a minimum 90% success rate at the end of the aftercare period.
81. All replacements will use plants of the same species or other such species as agreed with NRW and IoACC. If abnormal plant failures persist then investigations and proposals for the remedying of site conditions will be prepared and agreed with NRW and IoACC.

3.9. FENCING/TREE AND SHRUB ACCESSORIES

82. The new hedgerows would be protected by a stock proof timber post and wire fence on the field sides. The need for the post and wire fence will be reviewed five years after planting and removed if the vegetation is sufficiently established.
83. All guards and canes which have become loose, over-tight or broken will be re-adjusted and any plants that become loose will also be re-firmed and adjusted, during early spring, on an annual basis.
84. Stakes and tubes will be removed from trees and shrubs and disposed of at a suitable facility when plants are sufficiently established or if the tubes split.

3.10. PERNICIOUS WEEDS

85. All areas of the site will be monitored for non-native invasive plant species (such as giant hogweed and Japanese knotweed) and injurious weeds on a twice-yearly basis, during the growing season. Where these plants are identified, appropriate measures, specific to the plant species, will be taken to eradicate them as detailed within the Onshore Invasive Species Management Plan secured through Condition.