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Volume 7E Proposed Development (Onshore) Appendices

Appendix 3-1 Biodiversity Enhancement Report

Caledonia Offshore Wind Farm Ltd.

5th Floor Atria One, 144 Morrison Street, Edinburgh, EH3 8EX

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Volume 7E Appendix 3-1 Biodiversity Enhancement Report

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Acronyms and Abbreviations

AWI	Ancient Woodland Inventory
BNG	Biodiversity Net Gain
cm	Centimetre
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
HDD	Horizontal Directional Drilling
JNCC	Joint Nature Conservation Committee
LPA	Local Planning Authority
LNR	Local Nature Reserve
m	Metre
m^2	Metre squared
MLWS	Mean Low Water Spring
MoRPh	Modular River Surveys
NCA	National Character Area
NPF4	National Planning Framework 4
NVC	National Vegetation Classification
OFTO	Offshore Transmission Owner
ONEC	Onshore Export Cable Corridor
OnTI	Onshore Transmission Infrastructure
RLB	Red Line Boundary
SSEN-T	Scottish and Southern Electricity Networks - Transmission
SSSI	Site of Special Scientific Interest

UKHab	UK Habitat Classification
WFD	Water Framework Directive

1 Introduction

1.1 Overview

1.1.1.1 This technical appendix supports Volume 5, Chapter 3: Terrestrial Ecology and Biodiversity of the Environmental Impact Assessment Report (EIAR).

1.1.1.2 This technical appendix describes the baseline biodiversity units and requirements for biodiversity enhancement within the Onshore Transmission Infrastructure (OnTI) Red Line Boundary (RLB) and the study area for the Biodiversity Net Gain (BNG) Assessment. A description of the Proposed Development (Onshore), outlining the components included within the OnTI is presented in Volume 1 Chapter 4: Proposed Development Description (Onshore).

1.1.1.3 This technical appendix provides details of the potential impacts on the habitats identified within the OnTI RLB to determine the required habitat mitigation and enhancement to achieve a BNG as a result of the Proposed Development (Onshore).

1.1.1.4 It should be noted that the calculations outlined in this technical appendix have been undertaken prior to detailed design and consider the total area of habitats within the OnTI RLB. The actual area of habitat to be assessed at detailed design will be much less than that considered within this assessment. The calculations will be re-done once the final Onshore Export Cable Route and associated infrastructure has been confirmed and the actual area of habitat to be impacted by the Proposed Development (Onshore) is known.

1.1.1.5 The information in this technical appendix has been provided to satisfy the requirements of the fourth National Planning Framework (NPF4) (Scottish Government, 2023a[1]) Policy 3.

1.1.2 The Proposed Development (Onshore)

1.1.2.1 Within the OnTI RLB, a proposed Landfall Site has been identified along with an Onshore Export Cable Corridor (ONEC) and Onshore Substation Site. The Onshore Export Cable Route (the area where the infrastructure would be located and would be required for construction activities) for the Onshore Export Cable Circuits will be up to 100 metre (m) wide. The Onshore Export Cable Route will be defined at detailed design stage through further technical studies. At this stage, the ONEC is identified to allow for micro-siting of the Onshore Export Cable Circuits at detailed design and allow for flexibility within individual locations for differing construction methodologies such as Horizontal Directional Drilling (HDD).

1.1.2.2 The OnTI RLB encompasses:

- The Landfall Site: the area from Mean Low Water Springs (MLWS) to where the Offshore Export Cable Circuits are connected to the Onshore Export Cable Circuits via HDD ducts within Transition Joint Bays (TJBs) (buried box-like structures which house the jointing between the Offshore and Onshore Export Cable Circuits). The Landfall Site is located at a rocky bay named Stake Ness, 1 kilometre (km) west of the village of Whitehills and approximately 5km west of Banff;
- The ONEC: where the Onshore Export Cable Circuits will be located which connects the TJBs at the Landfall Site to the Onshore Substation Site. The ONEC extends approximately 37km from Stake Ness to an area in the vicinity of the existing New Deer Substation;
- The Onshore Substation Site: comprising two co-located Onshore Substations located adjacent to the existing New Deer substation; and
- An Onshore Grid Connection Cable Corridor connecting the Onshore Substation to the Grid Connection Point at the existing New Deer Substation (for Phase 1).

2 Policy and Planning Advice

2.1.1.1 The NPF4[1] was adopted by the Scottish Government on 13 February 2023.

2.1.1.2 NPF4 outlines under Policy 3, a requirement for developments to "protect biodiversity, reserve biodiversity loss, deliver positive effects from development and strengthen nature networks".

2.1.1.3 Under Policy 3a and 3b, further detail is provided on the requirement for development proposals that require Environmental Impact Assessments (EIA), to "contribute to the enhancement of biodiversity" and furthermore that this enhancement must be demonstrable.

2.1.1.4 Following the adoption of NPF4, the Scottish Government set out to provide clarity on how this enhancement should be demonstrated. The 'Research into Approaches to Measure Biodiversity in Scotland (Scottish Government 2023c[2]) identified that BNG Metric 3.1 is considered appropriate for use in most cases within Scotland. However, it is also noted within this report, that Biodiversity Metric 4.0 (Natural England, 2023[3]) was released after this research was completed.

2.1.1.5 Scottish Government's Draft Planning Guidance on Biodiversity, released in November 2023 (Scottish Government, 2023)[4], states that should an established metric or tool be used, the planning submission should demonstrate how Scotland's habitats and environmental conditions have been taken into account.

2.1.1.6 Aberdeenshire Council provided additional guidance in September 2023 with their planning advice 'Securing Positive Effects for Biodiversity in New Development (Aberdeenshire Council, 2023[5]). It outlined the requirements for developments within the council area to adhere to NPF4 Policy 3 and that the Biodiversity Metric 4.0 was "suitable for use on the majority of development sites". The document also sets out a requirement for a 20-year Habitat Management Plan, detailing how any restored or enhanced habitats will be maintained and monitored for at least 20 years.

2.1.1.7 Following the adoption of the above policies and guidance, the Biodiversity Metric 4.0[3] was replaced with the Statutory Biodiversity Metric (Department for Environment Food and Rural Affairs (Defra)[6]), published in February 2024.

2.1.1.8 Under the requirements of NPF4, and guidance provided by the Scottish Government and Aberdeenshire Council, this technical appendix outlines the approach of the Proposed Development (Onshore) to BNG, condition assessments and proposals for biodiversity mitigation and enhancement using the Statutory Biodiversity Metric.

3 Methodology

3.1 Field Surveys

3.1.1.1 Extended Phase 1 Habitat surveys of all land within the OnTI RLB were undertaken between late May and early September 2023.

3.1.1.2 Habitat types were identified and mapped in accordance with Phase 1 Habitat survey guidance provided by the Joint Nature Conservation Committee (JNCC) (JNCC, 2016[7]). Mapping, and details of the habitat identified, including photographs and species compositions, were recorded using ESRI ArcGIS Field Maps.

3.1.1.3 Surveys were carried out during the optimum time of year for botanical surveys, in accordance with the Phase 1 Habitat methodology[7].

3.1.1.4 At the time of the Extended Phase 1 Habitat surveys the RLB of the Proposed Development (Onshore) was at an early design iteration (Figure 3-1.1 in Volume 7E, Appendix 3-1, Annex 1: Biodiversity Enhancement Supporting Figures). The surveys covered this RLB plus a 100 metres (m) buffer where access allowed.

3.1.1.5 Habitat surveys undertaken early in the Proposed Development (Onshore) design process were limited by land access restrictions, however, by the end of the survey period of the 134 land parcels considered during the early iterations of the OnTI RLB, access was granted to 107. Where access was not possible, surveyors undertook surveys from public roads, footpaths and adjacent properties. See Figure 3-1.1 in Volume 7E, Appendix 3-1, Annex 1: Biodiversity Enhancement Supporting Figures, for land access restrictions.

3.2 Biodiversity Metric

3.2.1.1 The BNG calculations were undertaken using the Statutory Biodiversity Metric[6]. It is noted that the Statutory Biodiversity Metric was created for use in England. Where necessary, professional judgement was used to adjust the metric for use in Scotland, such as when assigning condition scoring and strategic significance. Due to the habitats present within the OnTI RLB, adjustments relating to habitat types were not necessary.

3.2.1.2 All habitat types, except for certain urban habitats, hold ecological value within the Statutory Biodiversity Metric[6]. For BNG purposes, the biodiversity value of an area is calculated using the Statutory Biodiversity Metric and measured in area-based Habitat Units, length-based Hedgerow Units and length-based Watercourse Units. Biodiversity Unit values are derived from a range of factors, including habitat type, area, distinctiveness, condition and strategic significance. Once baseline

biodiversity values have been established, the impacts (positive or negative) of the Proposed Development (Onshore) can be assessed.

3.2.1.3 The total biodiversity units (loss, no net loss or net gain) are calculated by valuing the proposed retained, enhanced and created habitats and comparing the resulting Habitat, Watercourse and Hedgerow Units of the pre- and post-development scenarios. As the Proposed Development (Onshore) is not yet at detailed design, the final amount of habitat that will be impacted is not yet known. BNG principles in relation to retained habitats and information regarding landscape planting have been used to calculate habitat 'lost', created and enhanced within the OnTI RLB and the potential requirements for off-site creation and enhancement.

3.2.1.4 To facilitate the BNG calculations, the Phase 1 Habitat data was translated into metric compatible habitat classification using the Statutory Metric 'Phase 1 Translation Tool' accessible within the Statutory Biodiversity Metric Calculator[6].

3.2.1.5 The habitat data collected within the early design iteration of the OnTI RLB, was clipped to the updated and current OnTI RLB to undertake the baseline Statutory Biodiversity Metric[6] calculation.

3.2.1.6 Watercourse Units are only calculated where the OnTI RLB is located within the 'riparian zone' of a watercourse. A buffer of 10 metres (m) was applied to watercourses that extended outside of the OnTI RLB to ensure the impacts to a watercourse and its associated riparian habitat were considered in the Statutory Biodiversity Metric[6] calculations. Further detail is provided in Section 3.2.3.

3.2.1.7 All calculations provided in this technical appendix have been carried across and rounded from the Statutory Metric to two decimal places. As such, some discrepancies from rounding may occur when reading the Statutory Metric sheets in relation to this technical appendix.

3.2.2 Condition Assessment

3.2.2.1 A condition assessment of each habitat was undertaken using the Statutory Biodiversity Metric Condition Assessment (Defra 2024[8]) sheets.

3.2.2.2 Condition assessments were not undertaken on each habitat during the field surveys (Section 4.1.1.1). Instead condition criteria were applied to each habitat type using the best available data. This included photographs taken during field surveys, surveyor notes on species composition and other habitat features, aerial imagery, and Google Streetview (where available). This data was compared against the Statutory Biodiversity Metric Condition Assessment sheets[8] and UKHab definitions (UKHab Ltd, 2023[9]) to determine a condition score for each habitat parcel. If necessary, condition assessments also considered the presence of the habitat within a Scottish context.

3.2.2.3 Select habitats in the southern portion of the OnTI RLB underwent National Vegetation Classification (NVC) surveys. The results of these surveys were also considered in the condition assessments.

3.2.2.4 The condition assessment criteria applied to area-based habitats can be found in Table 3-1, the condition assessment criteria applied to hedgerow habitats can be found in Table 3-2 and the condition assessment criteria applied to watercourse habitats can be found in Table 3-3. If these condition criteria were not reached, the habitat was qualified as poor.

3.2.2.5 Detailed Modular River surveys (MoRPh) were not undertaken during field surveys on each watercourse (Section 4.1.3.1). Data collected during the Phase 1 Habitat surveys, Hydrological Assessments (Volume 7E, Appendix 6-1: Assessment of Value), the survey results from the fisheries habitat assessment (Volume 7E, Appendix 3-5: Fish and Fresh Water Pearl Mussel), as well as aerial imagery and mapping, were used to determine the likely condition of each watercourse in the absence of detailed MoRPh survey information.

3.2.2.6 No habitats within the OnTI RLB were concluded to be of 'good' condition, based off surveyor information and professional judgement of the habitats present, their composition and disturbance levels. Further details are provided in Section 4.1.1.

Table 3-1: Condition Assessment Criteria Applied to Each Area-based Habitat Type

Broad Habitat Type	Area-based Habitat Type	Condition Assessment Criteria
Cropland	Cereal crops	As per the Statutory Biodiversity Metric[6], no condition assessment is required for these habitat types.
	Non-cereal crops	
	Arable field margins tussocky	
Grassland	Modified grassland	If at least six to eight native plant species typical of this habitat type were recorded or the surveyor made specific notes about the condition, this habitat qualified as moderate.
	Other neutral grassland	If this parcel represents a good example of its habitat type by having a good proportion of indicator species present (as listed in the UKHab description[9]), no non-native species, minimal areas of bracken and bare ground, this habitat qualified as moderate.
	Other lowland acid grassland	If this parcel represents a good example of its habitat type by having a good proportion of indicator species present (as listed in the UKHab description[9]), varied sward height, no non-native species, minimal areas of

Broad Habitat Type	Area-based Habitat Type	Condition Assessment Criteria
		bracken and bare ground and low levels of physical damage (poaching, machinery use etc) this habitat qualified as moderate.
Heathland and shrub	Gorse scrub	Although the dominant species present is gorse, the habitat qualified as moderate or above, if additional woody species were present and the scrub had a well-developed edge with tall grassland and or forbs was present, or the surveyor made specific notes about the condition.
	Mixed scrub	If at least three native woody species were recorded, with no single species comprising more that 75% of the cover, a well-developed edge with tall grassland and or forbs was present, this habitat qualified as moderate.
Lakes	Ponds (non-priority habitat)	If the pond had good water quality (no pollution) with little to no algae, was surrounded by semi-natural habitat, with naturally fluctuating water levels and no artificial connections to other waterbodies, as well as limited to no presence of non-native species including fish, the habitat qualified as moderate.
Sparsely vegetated land	Ruderal/ephemeral	If the vegetation type is varied, contains valuable pollen or nectar rich species and no non-native species were recorded, this habitat qualified as moderate.
Urban	Bare ground	If the vegetation type is varied, contains valuable pollen or nectar rich species and no non-native species were recorded, this habitat qualified as moderate.
	Developed land; sealed surface	As per the Statutory Biodiversity Metric[6], no condition assessment is required for this habitat type.
Woodland and forest	Other coniferous woodland	At least three native woody species and no non-native species were recorded to classify as moderate. Where species lists were absent or limited, photographs were examined to identify the number of woody species present, in addition to the number of age classes, tree health and ground flora composition.
	Other Scot's pine woodland	
	Other woodland; broadleaved	
	Other woodland; mixed	
Rocky shore	High energy littoral rock	If no invasive species were present, low levels of pollution, evidence of human activities and litter was minimal then this habitat qualified as moderate.

Broad Habitat Type	Area-based Habitat Type	Condition Assessment Criteria
Individual trees	Rural tree	If the tree was native, mature and showed little to no signs of disturbance from human activities, such as farming, it qualified as moderate.

Table 3-2: Condition Assessment Criteria Applied to Each Hedgerow Type

Hedgerow Habitat Type	Condition Assessment Criteria
Native hedgerow	Where species lists and other identifying features (height, width, gaps) were limited, photographs were utilised to inform the assessment. If hedge species were native with no invasive species recorded and photographs showed a height approximated to be greater than 1.5m, the hedge qualified as moderate.
Native hedgerow with trees – associated with bank or ditch	Where species lists and other identifying features (height, width, gaps, tree health) were limited, photographs were utilised to inform the assessment. If hedge and tree species were native with no invasive species recorded and photographs showed a height approximated to be greater than 1.5m, the hedge qualified as moderate.
Native hedgerow with trees	
Species-rich native hedgerow	Where species lists and other identifying features (number of species, height, width, gaps) were limited, photographs were utilised to inform the assessment. If at least five woody species were present, they were native with no invasive species recorded and photographs showed a height approximated to be greater than 1.5m, the hedge qualified as moderate.
Species-rich native hedgerow - associated with bank or ditch	Where species lists and other identifying features (number of species, height, width, gaps, tree health) were limited, photographs were utilised to inform the assessment. If at least five woody species were present, they were native with no invasive species recorded and photographs showed a height approximated to be greater than 1.5m, the hedge qualified as moderate.
Species-rich native hedgerow with trees	

Table 3-3: Condition Assessment Criteria Applied to Each Watercourse Type

Watercourse Habitat Type	Condition Assessment Criteria
Ditch	If the ditch represents a good example of its habitat type, through meeting the majority of >10 species of aquatic plants, good water quality and sufficient water levels (50 centimetre (cm) minor ditches; 1m in drains), without heavy shading, and a lack of algae or invasive species within the ditch, it qualified as moderate.

Watercourse Habitat Type	Condition Assessment Criteria
Other rivers and streams	If the watercourse represents a good example of its habitat type by having a high proportion of riparian and marginal species, multiple flow rates, minimal to no man-made features impacting natural flow/features, variety in riparian and watercourse substrate, this habitat qualified as moderate or above. In the absence of any descriptions on characteristics, photos were utilised to inform the assessment of watercourses. It is noted that a conservative assessment was taken with condition scoring for these watercourses, in that a baseline of moderate condition was assigned to all rivers and streams unless strong evidence to suggests a poor condition (e.g. no riparian vegetation, unidirectional/no flow, obstructed by man-made features).
Priority habitat	If the watercourse represents a good example of its habitat type by having a good proportion of riparian and marginal species, multiple flow rates, minimal to no man-made features impacting natural flow/features, variety in riparian and watercourse substrate, or the surveyor made specific notes about the condition, this habitat qualified as moderate or above. In the absence of any descriptions on characteristics, photos were utilised to inform the assessment of watercourses. It is noted that a conservative assessment was taken with condition scoring for these watercourses, in that a baseline of moderate was assigned to all areas designated as priority habitat unless strong evidence to suggests a poor condition (e.g. no riparian vegetation, unidirectional/no flow, obstructed by man-made features).

3.2.3 Watercourse Encroachment

3.2.3.1 The Statutory Biodiversity Metric User Guide[6] details the need to consider the level of encroachment on watercourses in relation to the watercourse channel itself, as well as the habitats in the riparian zone. This encroachment is considered at baseline through to post-construction, which allows an assessment to be made of the change in level of encroachment from a development.

3.2.3.2 In line with the guidance from the Statutory Metric User Guide[6], the assessment considered the riparian banks of a river or stream with a buffer of 10m, and the banks of a ditch with a buffer of 5m. From this, the baseline encroachment for each watercourse (ditches, rivers and streams, priority habitat), was calculated using measurement tools in GIS on aerial photography, to determine the encroachment level at baseline on both banks of each watercourse.

3.2.3.3 With respect to the post-development metric, the associated watercourse units within the OnTI RLB as well as those within the 10m applied buffer, are considered to be impacted and therefore the watercourse and riparian zones are concluded as majorly encroached, with the exception of watercourses that will be avoided through use of HDD. This is further explained in Section 4.1.3.2.

3.2.3.4 It is noted that when determining the creation and enhancement of potential watercourses off-site, an approach was used to select a 'moderate-moderate' riparian bank encroachment value for both banks in line with the Statutory Biodiversity Metric[6], as a conservative estimate. Any changes in riparian bank encroachment would need to be updated in future calculations.

3.2.4 Strategic Significance

3.2.4.1 The strategic significance of each habitat at both the baseline and post-development stage is based on a landscape scale assessment. The Aberdeenshire Local Development Plan[10] was used to identify the local priorities for biodiversity and nature improvement. The habitats were then scored accordingly within the Statutory Biodiversity Metric[6], based on their strategic significance categories, which are summarised in Table 3-4Table 3-4.

Table 3-4: Strategic Significance Categories and Associated Scores

Category	Score
High strategic significance. High potential – Area/action formally identified within a local plan, strategy, or policy.	1.15
Medium strategic significance. Good potential – Habitat type is ecologically important within a specific location, but area/action not identified in local plan, strategy, or policy.	1.10
Low strategic significance. Low potential – Area/action not identified in any local plan, strategy, or policy.	1

3.2.5 Mitigation Hierarchy

3.2.5.1 When considering any development, the mitigation hierarchy should be implemented at the earliest stages to avoid or reduce potential impacts on biodiversity. This includes, but is not limited to, the design of the Proposed Development (Onshore).

3.2.5.2 The mitigation hierarchy forms Principle 2 of the Statutory Biodiversity Metric principles, and is as follows:

- Avoidance: This includes placing development outside of protected or sensitive habitats to avoid damage and loss of these habitats. Avoidance is often the easiest and most effective way to reduce potential impacts, but requires biodiversity to be considered at the initial stages of a proposed development;
- Minimisation: Where measures are put in place to reduce the duration, intensity, significance and/or extent of impacts that cannot be completely avoided;
- Restoration: Where measures are put in place to repair degradation or damage to specific biodiversity features and ecosystem services of concern (which might be species or ecosystems/habitats) following proposed development impacts that cannot be completely avoided and/ or minimised; and
- Offset: Measurable conservation outcomes, resulting from actions applied to areas not impacted by the proposed development, that compensate for significant, adverse impacts of a proposed development that cannot be avoided, minimised and/or restored.

3.2.5.3 As part of the early design iterations of the Proposed Development (Onshore) RLB, ecologists worked closely with the design team to identify any ecologically sensitive areas that should be avoided.

3.2.5.4 This included a review of:

- Opensource publicly available data on the location of Ancient Woodlands on the Ancient Woodland Inventory (AWI), Statutory Designated Sites, Local Nature Reserves (LNR) and Wildlife Sites; and
- Phase 1 Habitat survey data to identify any irreplaceable habitats and habitats of very high and high condition status.

3.2.6 Trading Rules

3.2.6.1 The trading rules within the Statutory Biodiversity Metric[6] set minimum habitat creation and enhancement requirements to compensate for specific habitat losses, up to the point of no net loss. They are based on the habitat type and distinctiveness of the lost habitat.

3.2.6.2 Where habitats of very high or high distinctiveness are impacted, losses must be replaced with habitat units of the same habitat type.

3.2.6.3 Where habitats of moderate or lower distinctiveness are impacted, losses must be replaced with the same broad habitat type or habitat from a higher distinctiveness.

3.2.7 Advance or Delay in Habitat Creation and Enhancement

3.2.7.1 This section identifies the phases that were used in the Statutory Biodiversity Metric[6], to determine the habitat creation requirements. Depending on when habitat creation commences (in advance or after construction) has an effect on the total area of habitat creation required.

3.2.7.2 These planting phases align with the two Proposed Development (Onshore) construction phases and are considered within the landscaping proposals in Volume 5 Chapter 4: Landscape and Visual. The phases that were considered for on-site habitat creation and enhancement, are:

- Advanced planting Q1 2027;
- Construction start Q3 2027;
- Phase 1 planting Q4 2030; and
- Phase 2 – Q4 2033.

3.2.8 Spatial Risk Category for Habitat Creation and Enhancement

3.2.8.1 As per the Statutory Biodiversity Metric, where a net-gain in biodiversity units cannot be reached within a proposed development RLB, a spatial risk multiplier is applied to the calculator for off-site habitat measures. This multiplier reflects the relationship between the location of onsite biodiversity loss and the location of the off-site habitat creation. In summary, the Statutory Biodiversity Metric[3] penalises a proposed development where off-site habitat is located at a distance from the impact site.

3.2.8.2 The spatial risk chosen for off-site area-based habitat and hedgerow creation and enhancement in the Statutory Biodiversity Metric[6] was 'Compensation inside Local Planning Authority (LPA) boundary or National Character Area (NCA) of impact site'. This is granted a spatial risk category of 'within' and a score of 1.0, i.e. habitat creation/enhancement measures achieve the same value as on-site habitat measures.

3.2.8.3 The spatial risk chosen for off-site watercourse creation and enhancement in the Statutory Biodiversity Metric[6], was 'within waterbody catchment'. This is granted a spatial risk category of 'within' and a score of 1.0, i.e. watercourse creation/enhancement measures achieve the same value as on-site watercourse measures.

3.2.8.4 It is assumed that creation and enhancement would take place within the waterbody catchments that relate to the OnTI RLB.

3.2.8.5 Any changes to the spatial risk category, e.g. if off-site habitat creation and enhancement is to take place outside of the waterbody catchment or LPA for the Proposed Development (Onshore), this change to the spatial risk category would need to be reflected in the Statutory Biodiversity Metric[6], and results updated.

3.3 Principles of Habitat Mitigation and Enhancement

3.3.1.1 The following principles have been developed to ensure habitat loss caused by the Proposed Development (Onshore) will be adequately and appropriately addressed. These principles ensure that mitigation of impacts and delivery of meaningful biodiversity enhancement are at the forefront of decision making. The design of both on- and off-site habitat measures should seek to maximise increases in biodiversity value. The principles that will be applied, are as follows:

- Principle 1: The mitigation and enhancement will result in on-the-ground habitat creation for biodiversity;
  - This will result in actual physical habitat creation or enhancement and will not relate to biodiversity data collection or research. While data collection and research are important and necessary for biodiversity conservation, they will not be adequate to directly address the loss of habitats within the OnTI RLB.
- Principle 2: The habitat mitigation and enhancement will do no harm to biodiversity and will not inadvertently change or destroy existing habitats of value. This includes direct harm such as causing the spread of invasive non-native species, or modifying the landscape to create habitats that are not representative or appropriate to the area;
- Principle 3: Any habitats created as part of the mitigation and enhancement will be appropriate to the habitats that have been lost, providing a similar ecological function and supporting relevant protected or notable species. This will consider the proportionality and trading rules of the Statutory Biodiversity Metric[6] for the OnTI RLB;
- Principle 4: The habitat interventions are realistic and deliverable;
- Principle 5: The creation of habitats for mitigation and enhancement will, wherever practical, be within the locality of the Proposed Development (Onshore) and deliver strategically important outcomes for nature conservation. This includes providing benefits to species of local provenance as well as linking and improving existing ecological corridors; and
- Principle 6: Any habitat creation and enhancement proposals have a clear and achievable procedure set in place to ensure they will be monitored and maintained for at least 20 years.

3.4 Stakeholder Engagement

3.4.1.1 The Scoping Report was submitted to Aberdeenshire Council in December 2022, who then circulated the report to relevant consultees. A Scoping Opinion was received from Aberdeenshire Council on 1 February 2023. Relevant comments from the Scoping Opinion specific to this technical appendix are provided in Table 3-5.

3.4.1.2 Aberdeenshire Council and NatureScot have also been consulted on the methodology and principles of how BNG should be applied to the Proposed Development (Onshore).

3.4.1.3 This has included discussions on the use of the Statutory Biodiversity Metric[6], the principles of enhancement and any assumptions to be applied, if required.

3.4.1.4 Table 3-6 summarises the additional consultation activities carried out relevant to this technical appendix.

Table 3-5: Scoping Opinion Response.

Consultee	Comment	Response (References within Volume 5)
NatureScot	During the course of developing the EIAR it may that positive actions are identified which could help tackle the two crises of climate change and biodiversity loss, over and above those required for mitigation or compensation. We encourage the applicant and Aberdeenshire Council to explore such opportunities.	Pre-application engagement with Aberdeenshire Council and NatureScot have explored opportunities for biodiversity enhancement as part of the Proposed Development (Onshore). A Biodiversity Enhancement Report, based on the outcomes of these discussions, is presented in this document. The potential for the Proposed Development (Onshore) to generate significant effects on climate (including greenhouse gas emissions and climate change risk) and how these are proposed to be mitigated and/or enhanced where practicable are presented in Volume 6 Chapter 3: Climate Change Resilience and Volume 6 Chapter 4: Greenhouse Gases.

Table 3-6: Stakeholder Engagement Activities.

Date	Consultee and Type of Consultation	Summary
17 May 2023	Aberdeenshire Council	Initial meeting held with Aberdeenshire Council Environmental Planner to discuss Terrestrial Ecology and Biodiversity. Meeting introduced biodiversity enhancement and opened discussions on the best strategy for the Proposed Development (Onshore). The Environmental Planner indicated that a staged approach seemed pragmatic and detailed information regarding biodiversity enhancement could come at later application stages.
7 November 2023	NatureScot	Email correspondence with NatureScot regarding biodiversity enhancement. NatureScot advised that at present their advice on biodiversity enhancement measures for individual proposals is very limited. NatureScot recommended consultation with Aberdeenshire Council.
1 February 2024	Aberdeenshire Council	Meeting held with Aberdeenshire Council Environmental Planner and Planning Team to discuss the broad principles of Biodiversity Net Gain and the biodiversity enhancement approach being used for the Proposed Development (Onshore).
5 September 2024	Aberdeenshire Council	Meeting held with Aberdeenshire Council Environmental Planner following adjustment to the OnTI RLB and introduction of Class 1 and 5 peat as defined by the Carbon and Peatland Map[11]. It was discussed that no areas of peatland habitat were identified within the OnTI RLB and therefore consideration of peat or irreplaceable habitats was not required in the BNG calculations.

4 Assumptions and Limitations

4.1.1 Area-based Habitats

4.1.1.1 Area-based habitat mapping was collected across the OnTI RLB using Phase 1 Habitat guidance to provide consistency. JNCC Phase 1 Habitat methodology[7] is a long-standing method that all surveyors undertaking field surveys were familiar and confident with. UKHab survey methodology[9], the standard habitat classification system for BNG calculations, requires a higher level of botanical skills. As the use of the Statutory Metric is not yet mandatory in Scotland, availability of surveyors in Scotland who are competent in UKHab survey methodology was limited. Due to this, detailed condition assessments were not undertaken within the field at the time of the surveys. Condition assessments were undertaken retrospectively by a suitably qualified ecologist who had experience in undertaking UKHab and BNG assessments using best available data including consultation with those who undertook the surveys, aerial imagery, photographs from surveys, species compositions and surveyor notes. Whilst the UKHab assessment was not undertaken in the field, due to the quantity of material used in the post-survey condition assessments, this was considered to be a robust assessment.

4.1.1.2 Due to the scale of the surveys and habitat mapping, some area-based habitats were too small to be appropriately mapped. Therefore, small areas of arable field margins, buildings, bare ground and hardstanding have been incorporated into larger habitat areas. The presence of these habitats were considered in the overall condition assessment of that habitat parcel.

4.1.1.3 Habitats surveyed were often subjected to moderate levels of disturbance as a result of agricultural activities and thus were concluded to have failed certain condition criteria allowing them to achieve a 'good' condition. It was therefore concluded that a condition score of 'good' would have been overly precautionary for any habitats within the OnTI RLB.

4.1.1.4 At detailed design, it is assumed that more comprehensive condition assessments of the habitats being impacted will be undertaken and the Statutory Metric Calculations will be re-done. It is therefore possible that the final condition scores will change at detailed design.

4.1.1.5 It has been agreed that the construction methodology will ensure that, wherever possible, habitats along the ONEC will be replaced on a like-for-like (or better) basis after construction works in that area are complete. This will allow many habitats to begin re-establishment within two years of their removal.

4.1.1.6 As per Section 6 of the Statutory Metric User Guide[6], habitats that can be replaced like-for-like in the original location and reach their baseline condition value within two years of the initial date of impact (i.e. habitat loss) can be considered retained.

4.1.1.7 The area-based habitats which this assumption has been applied to are:

- Cropland: Cereal and non-cereal crops;
- Cropland: Arable field margins tussocky;
- Urban: Bare ground of poor condition;
- Urban: Developed land; sealed surfaces;
- Lakes: Ponds (non-priority habitat) of poor condition;
- Grassland: Modified grassland of poor condition;
- Grassland: Other neutral grassland of poor condition;
- Heathland and shrub: Gorse, hawthorn and mixed scrub of poor condition; and
- Sparsely vegetated land: Ruderal/ephemeral of poor condition.

4.1.1.8 It is known that the actual loss of area-based habitats within the OnTI RLB will be less than what is currently presented within this technical appendix. At detailed design, the ONEC will be refined, to identify the Onshore Export Cable Route with the actual loss of area-based habitats reduced. As it is unknown where the Onshore Export Cable Route will be located within the ONEC at this time, this technical appendix considers that any of the habitats within the OnTI RLB could be lost. At detailed design, it will be possible to calculate the loss of area-based habitats more accurately once the Onshore Export Cable Route and refined RLB are confirmed.

4.1.2 Hedgerows

4.1.2.1 All hedgerows lost as part of construction of the Proposed Development (Onshore) will be replanted, apart from those that will be permanently lost as a result of construction of the Onshore Substation. These will be replaced, where possible, within the Onshore Substation Site. Where this isn't possible, off-site hedgerow creation or other investment in habitat creation will need to be investigated and secured.

4.1.2.2 It is likely that the actual loss of hedgerows within the OnTI RLB will be less than what is currently presented within this technical appendix. At detailed design, the Onshore Export Cable Route and RLB will be defined, with the actual loss of hedgerows reduced. This reduction will be reassessed at this stage.

4.1.2.3 As per Section 6 of the Statutory Metric User Guide[6], the habitats that can be replaced like-for-like in their original location and reach their baseline

condition value within two years of the initial date of loss can be considered retained. The hedgerows which this assumption has been applied to are:

- Native hedgerow of poor condition;
- Native hedgerow with trees - associated with bank or ditch of poor condition;
- Native hedgerow with trees of poor condition;
- Species-rich native hedgerow - associated with bank or ditch of poor condition; and
- Species-rich native hedgerow with trees of poor condition.

4.1.3 Watercourses

4.1.3.1 As outlined in Section 4.1.1.1, MoRPH surveys were not undertaken on the watercourses within the OnTI RLB. The condition of each watercourse was assessed as detailed within Table 3-3.

4.1.3.2 Watercourses that qualify under the Water Framework Directive (WFD), as well as watercourses that have been classified as salmonoid rivers (Volume 7E, Appendix 3-5: Fish and Fresh Water Pearl Mussel) will be avoided through use of HDD.

4.1.3.3 It is assumed that HDD will not have a negative impact on the watercourses and surrounding habitats which it travels under. It is assumed the HDD will not:

- Alter the hydrological regime of the watercourses;
- Lead to compaction of soils;
- Affect nutrient levels of habitats; or
- Impact root zones of woodlands.

4.1.3.4 These watercourses are therefore considered to be retained in their baseline condition. The impact to these habitats, changes to the BNG calculator and enhancement requirements, will need to be re-assessed should HDD not be undertaken.

4.1.3.5 As per Section 6 of the Statutory Metric User Guide[6], the habitats that can be replaced in the original location and to their original habitat type and condition within two years of the initial date of loss can be considered retained. The watercourse type which this assumption has been applied to is ditches of poor condition.

4.1.3.6 It is likely that the actual loss or impact to watercourses within the OnTI RLB will be less than what is currently presented within this technical appendix. At detailed design, the Onshore Export Cable Route and RLB will be defined, with the actual impacts to watercourses reduced. This reduction will be reassessed at this stage.

5 Baseline Conditions

5.1 Field Surveys

5.1.1.1 The Phase 1 Habitat survey results are illustrated in Figure 3-1.2, Volume 7E, Appendix 3-1, Annex 1: Biodiversity Enhancement Supporting Figures.

5.1.1.2 These habitats were then 'clipped' to the OnTI RLB and converted to the Statutory Metric Habitat types. This is illustrated in Figure 3-1.3, Volume 7E, Appendix 3-1, Annex 1: Biodiversity Enhancement Supporting Figures.

5.2 Mitigation Hierarchy

5.2.1.1 This section details the areas within the OnTI RLB that have been avoided.

5.2.1.2 A review of the open-source data identified blocks of AWI within earlier design iterations of the Proposed Development (Onshore) RLB. Where possible these areas were avoided and removed from the OnTI RLB. Where AWI are in proximity to the OnTI RLB, a buffer of at least 15m was applied. Where possible, and in the majority of cases, this buffer has been extended to over 30m.

5.2.1.3 The Stake Ness Coast Site of Special Scientific Interest (SSSI) runs along the coastline and within the Proposed Development (Onshore) RLB. No other areas of Statutory or Non-statutory Designated Sites were present within the early design iterations of the Proposed Development (Onshore) RLB.

5.2.1.4 Using HDD, the high energy littoral rock of high distinctiveness and the other neutral grassland of moderate distinctiveness at the coastline, will be avoided. These habitats sit within the Cullen to Stake Ness Coast Site of SSSI.

5.2.1.5 Following the conversion of the Phase 1 Habitat data to the Statutory Biodiversity Metric[6], hot spot maps were produced which visualised where areas of very high to low habitat distinctiveness existed within the early design iterations of the OnTI RLB. Where possible, habitats of higher distinctiveness were avoided through adjustments to the final OnTI RLB.

5.2.1.6 There are four areas within the OnTI RLB that were classed under the Carbon and Peatland 2016 map (Scottish Government, 2016[11]) as ranging from Class 1 to Class 5 peat. The Phase 1 Habitat, NVC surveys and peat probing undertaken did not identify any areas of peatland habitat within the OnTI RLB. These areas were found to consist of modified, generally species-poor communities and have been recorded as such in the Statutory Metric calculations. However, it should be noted that although these areas do not consist of peatland habitats, carbon-rich soils and areas of deep peat are present. These peatland soils are assessed further in Volume 6,

Chapter 4: Greenhouse Gases and Volume 5, Chapter 7: Geology, Soils and Contaminated Land.

5.2.1.7 Further details on the NVC surveys and habitat findings can be found in Volume 5, Chapter 3: Terrestrial Ecology and Biodiversity.

5.3 Area-based Habitat Units

5.3.1.1 The OnTI RLB is dominated by cereal and non-cereal crops making up approximately 67% of the overall area-based habitats. The remaining 33% consists of grasslands, woodlands, scrub and urban habitats. The total areas and baseline biodiversity units of each area-based habitat type within the OnTI RLB, are provided in Table 5-1.

Table 5-1: Summary of Area-based Habitats, Areas, Condition Range and Total Biodiversity Units

Broad Area-based Habitat Type	Area-based Habitat Type	Condition	Total Area (Hectare [Ha]) (Percentage of total OnTI RLB (%))	Total Biodiversity Units
Cropland	Cereal crops	N/A	507.34 (53.74 %)	1,014.66
	Non-cereal crops		113.90 (12.06%)	227.80
	Arable field margins tussocky		1.48 (0.16%)	5.94
Grassland	Modified grassland	Poor, Moderate	211.65 (22.42%)	478.11
	Other neutral grassland	Poor, Moderate	70.09 (7.42%)	410.12
	Other lowland acid grassland	Moderate	4.87 (0.52%)	42.88
Heathland and shrub	Gorse scrub	Poor	3.48 (0.37%)	13.93
	Mixed scrub	Poor, Moderate	2.21 (0.23%)	12.86
Lakes	Ponds (non-priority habitat)	Poor	0.99 (0.10%)	4.36

Broad Area-based Habitat Type	Area-based Habitat Type	Condition	Total Area (Hectare [Ha]) (Percentage of total OnTI RLB (%))	Total Biodiversity Units
Sparsely vegetated land	Ruderal/ephemeral	Poor, Moderate	0.79 (0.08%)	2.00
Urban	Bare ground	Poor	2.96 (0.31%)	5.92
	Developed land; sealed surface	N/A	7.09 (0.75%)	0
Woodland and forest	Lowland mixed deciduous woodland	Moderate	0.20 (0.02%)	2.76
	Other coniferous woodland	Poor, Moderate	2.37 (0.25%)	5.70
	Other Scot's pine woodland	Poor	0.06 (0.01%)	0.26
	Other woodland; broadleaved	Poor, Moderate	3.78 (0.40%)	27.68
	Other woodland; mixed	Poor, Moderate	1.56 (0.17%)	14.16
Rocky shore	High energy littoral rock	Moderate	9.26 (0.98%)	122.17
Individual trees	Rural tree	Moderate	0.0007 (<0.01%)	0.001
Total			944.08	2,391.31

5.3.1.2 As outlined in Sections 4.1.1.5 and 5.2, several area-based habitats are considered retained at this stage of the Proposed Development (Onshore). Based on this assumption, the number of area-based habitats that are considered in this assessment that may require creation and/or enhancement at this stage of design are detailed in Table 5-2.

5.3.1.3 Based on the assumption of retained habitat, Table 5-2 presents the total number of area-based habitats that are considered in this assessment. During the detailed design stage the Onshore Export Cable Route will be defined within the OnTI RLB and the numbers presented in Table 5-2 of the total area potentially impacted will reduce.

Table 5-2: Total Amount of Area-based Habitats and Biodiversity Units Following Removal of Retained Habitats within the OnTI RLB

Broad Area-based Habitat Type	Area-based Habitat Type	Total Area Potentially Impacted (% Retained of Baseline Area)	Total Biodiversity Units Potentially Impacted
Cropland	Cereal crops	0 (100%)	0
	Non-cereal crops	0 (100%)	0
	Arable field margins tussocky	0 (100%)	0
Grassland	Modified grassland	27.41 (87.05%)	109.65
	Other neutral grassland	7.09 (89.88%)	61.75
	Other lowland acid grassland	4.87 (0%)	42.88
Heathland and shrub	Gorse scrub	0 (100%)	0
	Mixed scrub	0.78 (64.71%)	6.24
Lakes	Ponds (non-priority habitat)	0 (100%)	0
Sparsely vegetated land	Ruderal/ephemeral	0.20 (74.68%)	0.82
Urban	Bare ground	0 (100%)	0
	Developed land; sealed surface	0 (100%)	0
Woodland and forest	Lowland mixed deciduous woodland	0.20 (0%)	2.76
	Other coniferous woodland	2.37 (0%)	5.70
	Other Scot's pine woodland	0.06 (0%)	0.26
	Other woodland; broadleaved	2.01 (46.83%)	11.37
	Other woodland; mixed	0.21 (86.54%)	1.78
Rocky shore	High energy littoral rock	0 (100%)	0

Broad Area-based Habitat Type	Area-based Habitat Type	Total Area Potentially Impacted (% Retained of Baseline Area)	Total Biodiversity Units Potentially Impacted
Individual trees	Rural tree	0.0007 (0%)	0.01
Total		45.20	243.22

5.4 Hedgerow Units

5.4.1.1 The total length and baseline hedgerow units of each hedgerow type within the OnTI RLB is presented Table 5-3.

Table 5-3: Summary of Hedgerows, Their Lengths, Condition Range and Total Hedgerow Units

Hedgerow Type	Condition	Total Length (Kilometres (km))	Total Hedgerow Units
Native hedgerow	Poor, Moderate	5.09	21.03
Native hedgerow with trees - associated with bank or ditch	Poor, Moderate	1.33	10.13
Native hedgerow with trees	Poor, Moderate	0.77	10.82
Species-rich native hedgerow	Moderate	0.29	2.68
Species-rich native hedgerow - associated with bank or ditch	Poor, Moderate	0.94	12.92
Species-rich native hedgerow with trees	Moderate	0.27	3.74
Total		8.69	61.32

5.4.1.2 As outlined in Section 4.1.2.2, several hedgerows were considered retained.

5.4.1.3 Based on the assumption of retained habitat, Table 5-4 presents the total length of hedges that are considered in this assessment. During the detailed design stage the Onshore Export Cable Route will be defined within the OnTI RLB and the numbers presented in Table 5-4 of the total length potentially impacted will reduce.

Table 5-4: Total Length of Hedgerow and Total Hedgerow Units Following Removal of Retained Hedgerows within the OnTI RLB.

Hedgerow Type	Total Length Potentially Impacted (Km) (% Retained of Baseline Length)	Total Biodiversity Units Potentially Impacted
Native hedgerow	4.46 (12.38%)	19.64
Native hedgerow with trees - associated with bank or ditch	0.21 (84.21%)	2.71
Native hedgerow with trees	0.73 (5.19%)	6.41
Species-rich native hedgerow	0.29 (0%)	2.68
Species-rich native hedgerow - associated with bank or ditch	0.94 (0%)	12.92
Species-rich native hedgerow with trees	0.27 (0%)	3.74
Total	6.90	48.10

5.5 Watercourse Units

5.5.1.1 The total length and baseline watercourse units of each watercourse type within the OnTI RLB, is provided in Table 5-5.

Table 5-5: Summary of Watercourses, Their Lengths, Condition Range and Total Watercourse Units

Watercourse Type	Condition	Total Length (km)	Total Watercourse Units
Ditches	Poor, moderate	6.48	45.67
Other rivers and streams	Moderate	2.64	29.37
Priority habitat	Moderate	1.97	29.42
Total		11.09	104.46

5.5.1.2 As outlined in Section 4.1.3.2, several watercourses were considered retained, including those that would undergo HDD.

5.5.1.3 Based on the assumption of retained habitat, Table 5-6 presents the total length of watercourses that are considered in this assessment. During the detailed design stage the Onshore Export Cable Route will be defined within the OnTI RLB and the numbers presented in Table 5-6 of the total length potentially impacted will reduce.

Table 5-6: Total Length of Watercourses and Total Watercourse Units Following Removal of Retained Watercourses within the OnTI RLB

Watercourse Type	Total Length Potentially Impacted (km) (% Retained of Baseline Length)	Total Watercourse Units Potentially Impacted
Ditches	4.48 (30.86%)	36.24
Other rivers and streams	1.90 (28.03%)	21.18
Priority habitat	1.05 (46.70%)	14.54
Total	7.43	71.96

6 Post-Development Mitigation and Enhancement

6.1 Habitat Mitigation Requirements

6.1.1.1 Landscape planting has been proposed within the OnTI RLB at the Onshore Substation Site as per the principles of mitigation and enhancement outlined in Section 3.2.7. The landscape planting has been identified within the EIAR as proposed mitigation, however the final landscaping design will be finalised at the detail design stage and is therefore subject to change.

6.1.1.2 The landscape planting has been proposed to account for landscape visual impacts however adjustments have been made to ensure the proposed planting maximises outcomes for biodiversity. As this planting is being used to mitigate for visual impacts, the biodiversity unit value has only been accounted for up to a value of no-net loss. Figure 3-1.4 in Volume 7E, Appendix 3-1, Annex 1: Biodiversity Enhancement Supporting Figures, visualises the areas that were included in the planting solely for no-net loss planting. Figures for the remainder of the planting can be found in Volume 5, Chapter 4: Landscape and Visual.

6.1.1.3 The development of this landscape and ecological planting strategy has taken into consideration the following:

- The baseline habitats present within the Onshore Substation Site;
- The types of habitats lost within the OnTI RLB;
- The proportion of the different habitats lost and relevant trading rules (refer to Section 3.2.6); and
- Ecological enhancement opportunities.

6.2 On-site Habitat Creation

6.2.1.1 Table 6-1 outlines the types and target condition of area-based habitats that have been proposed within the Onshore Substation Site and the overall biodiversity units that are achievable from the Statutory Metric, when adopting this habitat mitigation and target condition.

6.2.1.2 Table 6-1 also shows the biodiversity unit loss (-) or gain (+) that is present post-landscaping. All proposed habitats within the Onshore Substation Site are to be created as part of habitat mitigation only, with no enhancement achievable. It is assumed that all newly created habitat would be managed to meet a moderate condition.

6.2.2 Area-based Habitat Units

Table 6-1: Area-based Habitat Proposed within the Onshore Substation Site

Broad Area-based Habitat Type (Including Distinctiveness	Area-based Habitat Type	Target Condition	Total Area (hectares (ha))	Biodiversity Units Achievable	Biodiversity Unit Loss or Gain	Broad Area-based Habitat Unit Loss or Gain
Woodland and forest (Medium)	Other woodland; broadleaved	Moderate	1.21	5.69	-5.69 (offset with units from other woodland mixed surplus units)	+0.13
	Other woodland; mixed	Moderate	2.52	7.86	+6.08 (used to offset deficit of other woodland types of same medium distinctiveness)	
	Other Scot's pine woodland	Not proposed within Onshore Substation Site planting (but planting same distinctiveness woodland to offset unit loss)			-0.26 (offset -0.26 units with other woodland mixed surplus units)	
Woodland and forest (High)	Lowland mixed deciduous woodland	Not proposed within Onshore Substation Site planting			-2.76	-2.76
Woodland and forest (Low)	Other coniferous woodland	Not proposed within Onshore Substation Site planting			-5.70 (units from medium distinctiveness-based habitats used to offset deficit)	-2.47

Broad Area-based Habitat Type (Including Distinctiveness	Area-based Habitat Type	Target Condition	Total Area (hectares (ha))	Biodiversity Units Achievable	Biodiversity Unit Loss or Gain	Broad Area-based Habitat Unit Loss or Gain
Heathland and shrub (Medium)	Mixed scrub	Moderate	1.40	9.35	+3.10	+3.10
Grassland (Low)	Modified grassland	Moderate	9.35	28.13	-81.52	-81.52
Grassland (Medium)	Other neutral grassland	Moderate	3.11	19.88	-42.52	-85.40
	Other lowland acid grassland	Not proposed within Onshore Substation Site planting			-42.88	
Wetland (High)	Reedbeds	Moderate	0.19	1.21	+1.21	+1.21
Sparsely vegetated land (Low)	Ruderal/ephemeral	Moderate	2.06	7.08	+6.26	+6.26
Individual trees (Medium)	Individual trees	Not proposed within Onshore Substation Site planting			-0.01	-0.01
Urban (Low)	Sustainable drainage systems	Moderate	0.23	0.53	+0.53	+0.53
Total			20.07	79.72	-158.19	N/A

6.2.3 Hedgerow Units

6.2.3.1 Table 6-2 outlines the types and areas of hedgerow that have been proposed within the Onshore Substation Site and the overall biodiversity units that are achievable from the Statutory Metric, when adopting this hedgerow mitigation and associated target condition.

6.2.3.2 Table 6-2 also outlines the biodiversity unit loss or gain that then exists for each habitat type found within the Onshore Substation Site.

Table 6-2: Hedgerow Planting within the Onshore Substation Site

Hedgerow Type (Including Distinctiveness)	Target Condition	Total Length (km)	Biodiversity Units Achievable	Biodiversity Unit Loss or Gain
Species-rich native hedgerow with trees (High)	Not proposed within Onshore Substation Site planting			-3.74
Species-rich native hedgerow - associated with bank or ditch (High)	Not proposed within Onshore Substation Site planting			-12.92
Native hedgerow with trees – associated with bank or ditch (High)	Not proposed within Onshore Substation Site planting			-2.71
Species-rich native hedgerow (Medium)	Not proposed within Onshore Substation Site planting			-2.68
Native hedgerow with trees (Medium)	Not proposed within Onshore Substation Site planting			-6.41
Native hedgerow (Low)	Moderate	1.44	5.23	-14.41

Hedgerow Type (Including Distinctiveness)	Target Condition	Total Length (km)	Biodiversity Units Achievable	Biodiversity Unit Loss or Gain
Total		1.44	5.23	-42.87

6.2.4 Watercourse Units

6.2.4.1 With respect to watercourses, no watercourses are proposed within the Onshore Substation Site. Therefore, the watercourse biodiversity units remain as stated in Table 5-6.

6.2.5 Summary

6.2.5.1 It is noted that several area-based habitat types identified in Table 6-1, including other woodland; broadleaved and mixed, achieve a gain in habitat biodiversity units from the on-site creation within the Onshore Substation Site as a result of mitigation requirements. However, this gain in habitat biodiversity units cannot be used for enhancement beyond no net loss. This is because the purpose of the area-based habitat creation within the Onshore Substation Site is for mitigation of habitat loss within the OnTI RLB as well as mitigating visual impacts of the Onshore Substation(s).

6.2.5.2 Therefore, to achieve net gain for these area-based habitat types, habitat creation and/or enhancement off-site would still be required. This creation and/or enhancement off-site will also be required for all habitat types that are in net loss. As habitat creation and enhancement achieve different biodiversity units, these have been outlined in Sections 6.3 and 6.4 respectively.

6.3 Off-site Habitat Creation

6.3.1.1 At this stage in the assessment, no land owners or external parties have been identified for habitat creation off-site. Based on the current OnTI RLB, Table 6-3 provides an estimate of the amount of area-based habitat that could be required to be created off-site to achieve an overall BNG, although the final areas required will reduce following detailed design. These habitats will need to be created off-site, following the principles described in Section 3.2.7.

6.3.1.2 At this stage of the design, no areas within the OnTI RLB, apart from the Onshore Substation Site, have been identified for habitat creation or enhancement due to the inability to guarantee delivery at this stage. However, opportunities for on-site habitat creation and enhancement within the final Onshore Export Cable Route will be explored at detailed design.

6.3.1.3 These numbers have been calculated using the Statutory Metric to inform decision making on the amount of land or investment that may be required for each habitat type, based on when the planting will occur relative to construction timings for the Proposed Development (Onshore). The numbers presented give an indication as to the amount of planting that will be required in each of the yearly scenarios: 2027, 2030 and 2034 based on the current OnTI RLB. These numbers are contingent on when the enhancement planting occurs. Planting will only be required based on one of these yearly scenarios; it is not a cumulative total for all three years. Planting may occur outside of these scenarios and will be recalculated once further detail is known.

6.3.1.4 The delivery of off-site habitat creation or enhancement will be discussed in detail with Aberdeenshire Council at detailed design in order to secure the most appropriate delivery mechanism. The approach to delivery will follow the principles outlined in Section 3.3.

6.3.1.5 For the purposes of this assessment, it is assumed that any areas chosen for off-site habitat creation have a baseline biodiversity value of zero. However, in all likelihood, the area chosen for off-site habitat creation will have its own baseline habitat value. This value will need to be considered when finalising the post-development metric calculation and biodiversity units achieved. As noted, this assessment considers that habitat creation will occur all in the one year, not cumulatively over multiple years.

6.3.2 Area-based Habitat Units

Table 6-3: Area-based Habitat Mitigation Required Off-site to Achieve No Net Loss

Area-based Broad Habitat Type	Area-based Habitat Type	Target Condition	2027 Planting Area Required (ha)	2030 Planting Area Required (ha)	2034 Planting Area Required (ha)
Woodland and forest	Lowland mixed deciduous woodland	Poor (as moderate condition cannot be achieved within 20 years)	2.95	3.28	3.79
Woodland forest	Other coniferous woodland	Poor (as moderate condition cannot be achieved within 20 years)	1.21	1.35	1.56
Grassland	Modified grassland	Moderate	21.12	23.51	27.11
Grassland	Other neutral grassland	Moderate	5.19	5.78	6.66
Grassland	Other lowland acid grassland	Moderate	6.26	6.96	9.03
Individual trees	Rural tree	Poor (as moderate condition cannot be achieved within 20 years)	0.003	0.002	0.002

Area-based Broad Habitat Type	Area-based Habitat Type	Target Condition	2027 Planting Area Required (ha)	2030 Planting Area Required (ha)	2034 Planting Area Required (ha)
Total Required (for each yearly scenario)			35.73	40.88	48.15

6.3.3 Hedgerow Habitat Units

6.3.3.1 Table 6-4 details the length of hedgerows necessary to be created off-site, to mitigate the impacts within the OnTI RLB and achieve no net loss (no loss or gain). These hedgerows will need to be created off-site, following the principles described in Section 3.2.7.

Table 6-4: Hedgerow Mitigation Required Off-site to Achieve No Net Loss

Hedgerow Type	Target Condition	2027 Planting Length Required (km)	2030 Planting Length Required (km)	2034 Planting Length Required (km)
Species-rich native hedgerow with trees	Moderate	0.35	0.39	0.45
Species-rich native hedgerow - associated with bank or ditch	Moderate	1.01	1.12	1.29
Native hedgerow with trees – associated with bank or ditch	Moderate	0.27	0.30	0.34

Hedgerow Type	Target Condition	2027 Planting Length Required (km)	2030 Planting Length Required (km)	2034 Planting Length Required (km)
Species-rich native hedgerow	Moderate	0.32	0.35	0.41
Native hedgerow with trees	Moderate	0.94	1.04	1.20
Native hedgerow	Moderate	3.52	3.92	4.52
Total Required (for each yearly scenario)		6.41	7.12	8.21

6.3.4 Watercourse Units

6.3.4.1 Table 6-5 details the areas of watercourses necessary to be created off-site, to mitigate the impacts within the OnTI RLB and achieve no net loss (0 units deficit or gain). These watercourses will need to be created off-site, following the principles described in Section 3.2.7.

Table 6-5: Watercourse Mitigation Required Off-site to Achieve No Net Loss

Watercourse Type	Target Condition	2027 Watercourse Length Required (km)	2030 Watercourse Length Required (km)	2034 Watercourse Length Required (km)
Ditches	Moderate	7.77	8.65	9.97
Other rivers and streams	Moderate	5.88	6.54	7.54
Priority habitat	Moderate	3.03	3.37	3.89

Watercourse Type	Target Condition	2027 Watercourse Length Required (km)	2030 Watercourse Length Required (km)	2034 Watercourse Length Required (km)
Total Required (for each yearly scenario)		16.68	18.56	21.40

6.4 Off-site Habitat Enhancement

6.4.1 General Principles

6.4.1.1 At this stage in the assessment the baseline value of any off-site habitats being enhanced is unknown. For the purposes of this assessment, it has been assumed that the baseline habitats to be enhanced are of poor condition.

6.4.1.2 Table 6-6, Table 6-7 and Table 6-8 detail the biodiversity units achievable when enhancing a proportion (0.1ha or 1ha) of existing poor condition area-based habitats, hedgerows and watercourses off-site, to a target condition of moderate, per the Statutory Biodiversity Metric Condition Assessments[8].

6.4.1.3 These areas have been provided to inform future decision making when considering off-site habitat enhancement opportunities and the potential biodiversity units achievable depending on the habitat being enhanced.

6.4.2 Area-based Habitats

Table 6-6: Biodiversity Units Achievable from Proportionally Enhancing Area-based Habitat Types Off-site

Area-based Type	Total Area (ha)	Target Condition	Biodiversity Units Achievable (Planting 2027)	Biodiversity Units Achievable (Planting 2030)	Biodiversity Units Achievable (Planting 2034)
Modified grassland	1ha	Moderate	3.56	3.4	3.21

Area-based Type	Total Area (ha)	Target Condition	Biodiversity Units Achievable (Planting 2027)	Biodiversity Units Achievable (Planting 2030)	Biodiversity Units Achievable (Planting 2034)
Other neutral grassland	1ha	Moderate	7.83	7.48	7.07
Other lowland acid grassland	1ha	Moderate	7.83	7.48	7.07
Other woodland; broadleaved	1ha	Moderate	8.18	7.82	7.39
Other woodland; mixed	1ha	Moderate	8.18	7.82	7.39
Other woodland; coniferous	1ha	Moderate	3.20	3.1 (Is it noted that year to achieve moderate would be 25 years)	2.98 (It is noted that year to achieve moderate would be 28 years)
Wet woodland	0.1ha	Moderate	1	0.97	0.93
Ponds (non-priority habitat)	0.1ha	Moderate	0.76	0.73	0.69
Mixed scrub	1ha	Moderate	7.72	7.35	6.9
Individual trees	0.01ha	Moderate	0.07	0.07	0.07

6.4.3 Hedgerow Habitat Units

Table 6-7: Biodiversity Units Achievable from Proportionally Enhancing Hedgerow Types Off-site

Hedgerow Type	Total Length (km)	Target Condition	Biodiversity Units Achievable in Phase A	Biodiversity Units Achievable in Phase 1	Biodiversity Units Achievable in Phase 2
Species-rich native hedgerow with trees	1km	Moderate	13.10	12.47	11.73
Species-rich native hedgerow - associated with bank or ditch	1km	Moderate	15.86	14.95	13.88
Native hedgerow with trees – associated with bank or ditch	1km	Moderate	12.53	11.93	11.22
Species-rich native hedgerow	1km	Moderate	9.20	8.73	8.18
Native hedgerow with trees	1km	Moderate	8.35	7.95	7.48
Native hedgerow	1km	Moderate	4.40	4.18	3.91

6.4.4 Watercourse Units

Table 6-8: Biodiversity Units Achievable from Proportionally Enhancing Watercourse Types Off-site

Watercourse Type	Total Length (km)	Target Condition	Biodiversity Units Achievable in Phase A	Biodiversity Units Achievable in Phase 1	Biodiversity Units Achievable in Phase 2
Ditches	1km	Moderate	7.35	6.98	6.55
Other rivers and streams	1km	Moderate	9.66	9.27	8.82
Priority habitat	1km	Moderate	12.88	12.36	11.76

6.4.5 Summary

6.4.5.1 These enhancement opportunities for area-based habitats, hedgerows and watercourses are necessary for the Proposed Development (Onshore) to implement to ensure that all losses have been accounted for, and further effort has gone into ensuring biodiversity is left better than it was prior to development.

6.4.5.2 Therefore, through using a combination of these enhancement opportunities, the greater the net unit gain for the Proposed Development (Onshore), and the greater the gain for local biodiversity.

6.5 Principles of Habitat Creation and Enhancement

6.5.1 Criteria Requirements

6.5.1.1 The following section outlines the criteria required for any created and enhanced habitats to achieve a moderate or higher habitat condition. This has been derived from the Statutory Biodiversity Metric Condition Assessments[8]. This is assuming that the baseline habitats being enhanced are either of a different habitat type or are of poor condition and the criteria outlined will aid in achieving a higher habitat condition.

Grassland

6.5.1.2 Modified grassland, which comprises approximately 23% of the OnTI RLB, does not rely as heavily on soil conditions to meet the habitat type, and can more easily reach moderate to good condition than other grassland types. This habitat is typical within the ONEC.

6.5.1.3 Other neutral grassland, which comprises approximately 6% of the OnTI RLB, is a widespread and commonly encountered grassland. Farmed land often becomes this habitat type and the species sward is typical of habitats found within the ONEC.

6.5.1.4 To achieve moderate to good condition for both of these habitat types, there needs to be an inclusion of at least six to eight different vascular plant species per metres squared (m^2) for modified grassland, and at least 10 per m^2 for other neutral grassland. In addition, there needs to be at least two forb species, such as creeping thistle, spear thistle, curled dock, broad-leaved dock, common nettle, creeping buttercup, greater plantain, white clover and cow parsley. All of these species have been recorded within the ONEC and would be suitable for planting.

6.5.1.5 These habitats should also contain a varied sward height, minimal bare ground and little no bracken or scrub species.

Woodlands

6.5.1.6 All woodlands comprise approximately <1% each of the OnTI RLB.

6.5.1.7 To achieve a moderate to good condition for the woodland habitat types there needs to be at least two age classes present comprised of three or more native species, with a total of one veteran tree per ha. Further to this, level of disturbance within the woodland has to be limited (<20%) or absent, with moderate amounts of deadwood present (>25%) and the presence of >20% of temporary open space.

6.5.1.8 These woodland habitats should also contain little (<10%) to no invasive species, with >25% presence of tree mortality or die back and contain a shrubby understory comprised of predominately native species (>50%).

Ponds (non-priority habitat)

6.5.1.9 Ponds (non-priority habitat) comprise approximately <1% of the OnTI RLB.

6.5.1.10 To achieve a moderate to good condition for this habitat, the pond needs to have good water quality without pollution, little (<10%) to no algae or fish species (if fish are present, they are native in low quantities), and an absence of listed non-native flora and fauna. In addition to these, the ponds are required to contain a semi-natural habitat at least 10m from the pond edge, and not be artificially connected to other waterbodies (e.g. including agricultural ditches).

6.5.1.11 The pond can have natural fluctuating water levels, must have at least half of its area covered by emergent or floating plants, and <50% of the pond surface area shaded by adjacent trees and scrub.

Scrub

6.5.1.12 Mixed scrub is present in two main forms within the OnTI RLB: mixed scrub and gorse scrub. Both forms of scrub habitat type comprise approximately <1% each of the OnTI RLB.

6.5.1.13 To achieve a moderate to good condition for mixed scrub it would require at least 80% native species of three native woody species where no one species is more than 75% dominant (with some exceptions including hazel and common juniper). The mixed scrub is also required to have structural complexity (saplings to mature shrubs), an absence of invasive species and a well-developed edge that graduates from scattered scrub, into grasslands and/or forbs between adjacent habitats.

6.5.1.14 The final requirement for mixed scrub to achieve a score of moderate or good, would be ensure the habitat has sheltered edges and clearings.

Hedgerows

6.5.1.15 Hedgerows are found in five main forms across the OnTI RLB. The total length of hedgerows is approximately 19km, within the OnTI RLB.

6.5.1.16 To achieve a moderate to good condition for hedgerows (without trees) it must pass at least one of the criteria in each of the following four categories:

- Is >1.5m in height and/or is >1.5m in length;
- Hedgerow vertical gaps are <0.5m for >90% of the hedgerow length and/or hedgerow horizontal gaps are 10% of total length and no gaps are >5m;
- Undisturbed ground and perennial vegetation with >1m width of undisturbed ground with perennial herbaceous vegetation for >90% of length and/or plant species indicative of nutrient-rich soils dominate <20% of cover of the area of undisturbed ground;
- >90% of hedgerow is free from invasive non-native species and recently introduced species and/or >90% of hedgerow is free from human-caused damage (e.g., pollution or inappropriate management regimes).

6.5.1.17 To achieve a moderate to good condition for hedgerows (with trees), the hedgerow must score the same as stated in Section 6.5.1.16, and additionally must achieve at least one of the following:

- There is more than one tree age class, with on average at least one mature, ancient or veteran tree per 20 to 50m of hedgerow; and/or
- At least 95% of hedgerow trees are in a healthy condition with limited adverse impact on tree health from things such as damage from livestock or human activity.

Marginal Vegetation

6.5.1.18 Marginal vegetation, which includes ruderal/ephemeral habitats, comprise approximately <1% of the OnTI RLB. It is noted that further marginal vegetation, has been proposed to be planted within the Onshore Substation Site.

6.5.1.19 To achieve a moderate to good condition for ruderal/ephemeral vegetation, the habitat must be varied and provide opportunities for vertebrates and invertebrates where a vegetation type does not account for >80% of the total area. The ruderal/ephemeral vegetation must contain different plant species for biodiversity and invasive non-native species and others detrimental to wildlife, cover <5% of total cover (no invasive non-native species for good condition).

6.5.1.20 To achieve a moderate to good condition for reedbeds, it must represent a good example of its habitat type, there must have a diverse structure between 60-80% reeds (*Phragmites australis*), and other others may include open water (which comprises at least 10%), species-rich fen and/or wet woodland. Bare ground must be <5% and cover from scrub and scattered trees must be <10%. Further, there must be an absence of invasive non-native plant species with <5% ground cover of species indicative of suboptimal conditions. In terms of water supplies to the reedbeds, they must be good water quality, with clear water and no signs of pollution.

6.5.1.21 The final requirement that must be met to achieve good to moderate is that vegetation of vascular and non-vascular plants in the habitat is between 5-50%.

6.6 Management and Maintenance

6.6.1.1 An Outline Habitat Management Plan, Application Document 8, has been produced to present the management and maintenance protocols that are necessary for the long-term establishment and success of any habitats created or enhanced as part of the Proposed Development (Onshore).

6.6.1.2 These measures are required to be implemented for a total of 20-years in a Habitat Management Plan, per the planning guidance provided by Aberdeenshire Council[5].

6.6.1.3 The adoption and long-term implementation of the Habitat Management Plan is the responsibility of the Caledonia Offshore Wind Farm Limited (the Applicant) and the associated landowners where confirmation from such landowners is obtained. Following the sale of any assets, it is assumed these responsibilities will pass on to the Offshore Transmission Owner (OFTO).

7 Conclusion

7.1.1.1 In summary, at the current stage of the Proposed Development (Onshore), the exact amount of habitat to be lost is unknown. However, several actions have been taken to avoid impact to and loss of habitats within the OnTI RLB.

7.1.1.2 This includes implementation of construction practices that enable habitats to be reinstated within two years of their initial impact, thus allowing these habitats to be considered retained. This has meant that a potential loss of 2160.57 area-based habitat units can be reduced to 266.18.

7.1.1.3 Only a portion of land within the Onshore Substation Site is available for habitat creation. The achievement of no-net loss or net gain is possible for the following habitats:

- Other woodland; broadleaved;
- Other woodland; mixed;
- Other Scot's pine woodland;
- Reedbeds;
- Ruderal/ephemeral; and
- Sustainable drainage systems.

7.1.1.4 As no net loss cannot be achieved for the other habitats, off-site habitat creation and/or enhancement will be required. Sections 6.3 and 6.4 outline the different habitats and the amount (area or length) that can be created and/or enhanced to achieve no net loss and net gain.

7.1.1.5 Principles of habitat mitigation and enhancement have been outlined in Section 3.3. These principles have been provided to ensure that any proposals brought forward for habitat creation and/or enhancement align with the requirements of the Statutory Metric[6] and provide on-the-ground benefits for biodiversity in the locality of where the impact is occurring.

7.1.1.6 Section 6.5 outlines the criteria required to ensure any habitats created or enhanced achieve the target habitat type and condition. Through appropriate management and maintenance (Section 6.6) it is believed that no net loss and net gain of biodiversity could be achieved off-site.

7.1.1.7 It is assumed that the actual loss of area-based habitats within the OnTI RLB will be less than what is currently reflected in this technical appendix.

7.1.1.8 This technical appendix presents the assumed area of habitat loss and habitat mitigation and enhancement necessary at this design stage of the Proposed Development (Onshore) using the available OnTI RLB. At detailed design, it will be possible to calculate the loss of area-based habitats more accurately on confirmation of the Onshore Export Cable route and refined RLB.

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Caledonia Offshore Wind Farm
5th Floor, Atria One
144 Morrison Street
Edinburgh
EH3 8EX

www.caledoniaoffshorewind.com

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