

REPORT

Holyhead Waterfront Regeneration Scheme

Biodiversity Assessment

Client: Conygar Holyhead Ltd

Reference: PB8908-RHD-ZZ-XX-RP-Z-0001

Status: S0/P01.01

Date: 15 March 2021

HASKONINGDHV UK LTD.

Manchester One
53 Portland Street
Manchester
M1 3LF
Industry & Buildings
VAT registration number: 792428892

+44 161 2361018 **T**
info@uk.rhdhv.com **E**
royalhaskoningdhv.com **W**

Document title: Holyhead Waterfront Regeneration Scheme

Document short title: Biodiversity Assessment

Reference: PB8908-RHD-ZZ-XX-RP-Z-0001

Status: P01.01/S0

Date: 15 March 2021

Project name: Holyhead Waterfront Regeneration Scheme

Project number: PB8908

Author(s): Stuart Morris

Drafted by: Stuart Morris

Checked by: Claire Smith

Date: 15/03/21 CS

Approved by: Jamie Gardiner

Date: 15/03/21

Classification

Project related

Unless otherwise agreed with the Client, no part of this document may be reproduced or made public or used for any purpose other than that for which the document was produced. HaskoningDHV UK Ltd. accepts no responsibility or liability whatsoever for this document other than towards the Client. Please note: this document contains personal data of employees of HaskoningDHV UK Ltd.. Before publication or any other way of disclosing, this report needs to be anonymized.

Table of Contents

1	Introduction	1
1.1	Project background and location	1
1.2	Requirement for biodiversity assessment	4
1.2.1	Policy background	4
1.3	Consultation	4
1.4	Purpose and structure of this report	4
2	Approach to biodiversity assessment	5
2.1	Habitat area	7
2.2	Habitat classification	7
2.2.1	Terrestrial habitats	7
2.2.2	Intertidal habitats	8
2.3	Habitat condition	8
2.4	Distinctiveness	8
2.4.1	Terrestrial habitats	8
2.4.2	Intertidal habitats	9
2.5	Strategic significance	9
2.6	Connectivity	10
2.6.1	Terrestrial habitats	10
2.6.2	Intertidal habitats	10
3	Biodiversity baseline	10
3.1	Habitats	10
3.2	Baseline biodiversity assessment	11
3.3	Summary of baseline habitats and biodiversity units	13
4	Habitat and biodiversity unit loss	13
5	On-site habitat enhancement	16
5.1	Grassland	16
5.2	Heathland and shrub	16
5.3	Urban	16
5.4	Woodland and forest	21
6	On-site habitat creation	21
6.1	Grassland	21
6.2	Lakes – Ponds (Priority Habitat)	23
6.3	Urban	23

6.4	Heathland and shrub	24
6.5	Rocky shore	24
6.6	Hedgerows and lines of trees	24
6.6.1	Native species rich hedgerows	24
6.6.2	Native species rich hedgerows with trees	24
6.6.3	Line of trees	25
7	On-site summary	26
8	Off-site habitat enhancement and creation	26
8.1	Opportunity mapping	26
8.1.1	Holyhead Breakwater Country Park	26
8.1.2	Baseline biodiversity assessment	29
8.2	Habitat requirements of priority, and locally important species	30
8.2.1	Bats	30
8.2.2	Chough	30
8.2.3	Reptiles	30
8.2.4	Silver studded blue	31
8.3	Off-site habitat enhancement opportunities	31
8.3.1	Grassland	31
8.3.2	Heathland and shrub	31
8.3.2.1	Lowland heathland	31
8.3.2.2	Mixed scrub	32
8.3.3	Woodland and Forest	32
8.4	Offsite enhancement and creation biodiversity units	32
9	Summary of Biodiversity Assessment	35
10	Next steps	35
11	References	36

Table of Tables

Table 2.1	Habitat distinctiveness bands and criteria	8
Table 2.2	Distinctiveness score for intertidal habitats	9
Table 2.3	Multipliers to be applied based on strategic significance	9
Table 2.4	Multipliers to be applied in the Biodiversity Metric to reflect connectivity	10
Table 3.1	Habitats present within the Proposed Development boundary	12
Table 3.2	Summary of baseline biodiversity units within the Proposed Development boundary	13
Table 4.1	Habitat area loss as result of the Proposed Development	15

Table 5.1 On-site habitat baseline, enhancement, and biodiversity unit loss	17
Table 6.1 On-site habitat creation and biodiversity units	22
Table 8.1 Holyhead Breakwater Country Park - site objectives and management	29
Table 8.2 Grassland habitats and biodiversity units of off-site grazed areas	30
Table 8.3 Off-site habitat enhancement and biodiversity units	33

Table of Figures

Figure 1 Proposed Development boundary	2
Figure 2 Proposed Development zones	3
Figure 3 Habitats within the Proposed Development Boundary	6
Figure 4 Habitats lost as a result of the Proposed Development	14
Figure 5 Habitat enhancement and creation (Porth-e-Felin)	19
Figure 6 Habitat enhancement and creation (Newry)	20
Figure 7 Potential off-site enhancement areas	28

Appendices

Appendices

A1	Habitat condition scores
----	--------------------------

1 Introduction

1.1 Project background and location

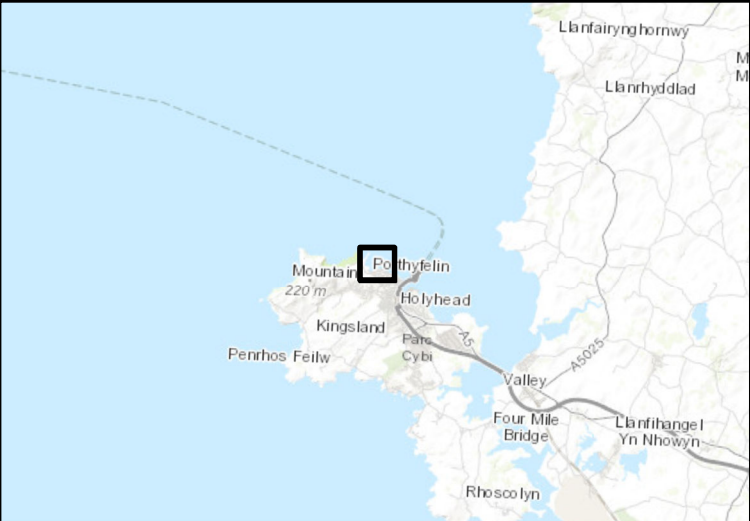
Holyhead Waterfront Regeneration Scheme, herein referred to as “the Proposed Development” is located in Holyhead, Anglesey. The Proposed Development is mixed-use, consisting of a new marina, residential properties, a hotel, commercial, leisure and retail uses together with associated land reclamation and service infrastructure. The development would include some reclamation of land from the sea and would lie along the Holyhead seafront, in the shelter of the Great Breakwater with a new marina, surrounded by a new breakwater, extending into Holyhead Harbour.

The Proposed Development site comprises approximately 34 hectares (ha) of partially developed, seafront land, which stretches approximately 1.4km east to west, on the northern edge of Holyhead town, facing into Holyhead Harbour and towards the Great Breakwater. The site is surrounded by open heathland, enclosed farmland, and grassland to the south and west, with Breakwater Country Park located less than 1km to the south-west. To the east is the village of Porth-Y-Felin. The westernmost extent of the Proposed Development is comprised of rocky outcrop, with the south-western area comprising buildings, hard standing, wooded copses, and a Grade II Listed Building surrounded by woodland, bordered to the north-east by the sea and to the south-west by a road. The Promenade / Newry Beach lies to the east of the existing Holyhead Marine and is comprised of lengths of sandy beach, walkways, and recreational grassland.

The Proposed Development is divided into the following Development Zones:

- **Zone 1** Newry;
- **Zone 2** Porth-y-Felin;
- **Zone 3** Soldier’s Point; and,
- **Zone 4** The Greens.

The Proposed Development boundary (denoted by the red dashed line) and development zones are shown in **Figure 1** and **Figure 2** respectively.



Legend:

Holyhead Waterfront Red Line Boundary

Base map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community
Sources: © Haskoning UK Ltd, 2021. Contains Ordnance Survey data © Crown copyright and database right 2021.

Client:	Project:
Conygar Holyhead Ltd.	Holyhead Waterfront Regeneration Scheme

Title:
Proposed Development boundary

Figure:	1	Drawing No:	PB8908-RHD-ZZ-ZZ-DR-Z-0063
---------	---	-------------	----------------------------

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	04/06/21	JT	SM	A3	1:4,000

Co-ordinate system:	British National Grid
---------------------	-----------------------



Royal HaskoningDHV
Enhancing Society Together

**ROYAL HASKONINGDHV
INDUSTRY & BUILDINGS**
2 ABBEY GARDENS
GREAT COLLEGE STREET
LONDON
SW1P 3NL
+44 (0)20 7222 2115
www.royalhaskoningdhv.com



- Legend:
- Holyhead Waterfront Red Line Boundary
 - Z1 Newry
 - Z2 Porth-y-Felin
 - Z3 Soldiers Point
 - Z4 The Greens

Base map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community
Sources: © Haskoning UK Ltd, 2021. Contains Ordnance Survey data © Crown copyright and database right 2021.

Client:	Project:
Conygar Holyhead Ltd.	Holyhead Waterfront Regeneration Scheme

Title:

Proposed Development zones

Figure:	2	Drawing No:	PB8908-RHD-ZZ-ZZ-DR-Z-0064
---------	---	-------------	----------------------------

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	04/06/21	JT	SM	A3	1:4,000

Co-ordinate system: British National Grid



Royal HaskoningDHV
Enhancing Society Together

**ROYAL HASKONINGDHV
INDUSTRY & BUILDINGS**
2 ABBEY GARDENS
GREAT COLLEGE STREET
LONDON
SW1P 3NL
+44 (0)20 7222 2115
www.royalhaskoningdhv.com

1.2 Requirement for biodiversity assessment

1.2.1 Policy background

Section 40 of the Natural Environment and Rural Communities Act 2006 places a duty on all public authorities in Wales to have regard to the purpose of conserving biodiversity, a key purpose of which is to embed consideration of biodiversity as an integral part of policy and decision making throughout the public sector, which should be seeking to make a significant contribution to the achievement of the commitments made by UK Government in its 25 Year Environment Plan.

Key policy in Wales includes the Environment Wales Act (EAW) (2016) Section 6, which requires the Local Planning Authority to seek to maintain and enhance biodiversity and promote the resilience of ecosystems, whilst carrying out its functions and PPW 10, which requires local planning authorities to seek to maintain and enhance biodiversity in the exercise of their functions. Biodiversity should be protected and enhanced to future proof economic assets. PPW 10 stipulates that while the loss of biodiversity should be avoided where possible, compensation for biodiversity loss should take the form of habitat creation, or the provision of long-term management arrangements to enhance existing habitats.

The Nature Recovery Action Plan also supports legislative requirements to reverse the decline of biodiversity and address underlying causes of biodiversity loss by putting nature at the heart of decision-making.

1.3 Consultation

Consultation with the IACC Ecological and Environment Adviser was undertaken on the 6th May 2020 to discuss the Biodiversity Assessment methodology, the use of the Biodiversity Metric 2.0, and to discuss possibilities of habitat creation to ensure there is no overall loss of biodiversity locally.

A further meeting with IACC Ecological and Environment Adviser was undertaken on the 4th March 2021, to discuss the outcomes of the Biodiversity Assessment, and the potential for habitat management and creation at Holyhead Breakwater Country Park to off-set biodiversity losses as a result of the Proposed Development.

1.4 Purpose and structure of this report

The purpose of this report is to provide an assessment of the losses and gains in terrestrial and intertidal biodiversity as a result of the Proposed Development. This assessment will then be used to inform habitat mitigation and enhancement requirements and opportunities to ensure an overall no net loss of biodiversity as a result of the Proposed Development, thereby satisfying the policy requirements outlined above.

As agreed with IACC, although not a specific policy requirement, the assessment will use the Biodiversity Metric 2.0 in order to quantify habitats to aid decision-making relating to the impacts on biodiversity as a result of the Proposed Development.

The report is structured as follows:

- **Section 1:** Outlines the project and policy background, the requirement for biodiversity enhancement and the purpose and structure of the report.
- **Section 2:** Details the approach, overarching methodology, and limitations of the biodiversity assessment of the Proposed Development.

- **Section 3:** Outlines the ecological baseline with regard to habitats and presents calculations of biodiversity units within the Proposed Development boundary.
- **Section 4:** Outlines the habitat and biodiversity losses as a result of the Proposed Development.
- **Section 5:** Details on-site habitat enhancement within the Proposed Development.
- **Section 6:** Details on-site habitat creation within the Proposed Development.
- **Section 7:** Provides a summary of the on-site biodiversity changes.
- **Section 8:** Details off-site habitat enhancement and creation outside the Proposed Development.
- **Section 8:** Provides a summary of the Biodiversity Assessment.
- **Section 9:** Indicates the next steps to be taken.
- **Section 10:** Lists references supporting the biodiversity assessment and report.

2 Approach to biodiversity assessment

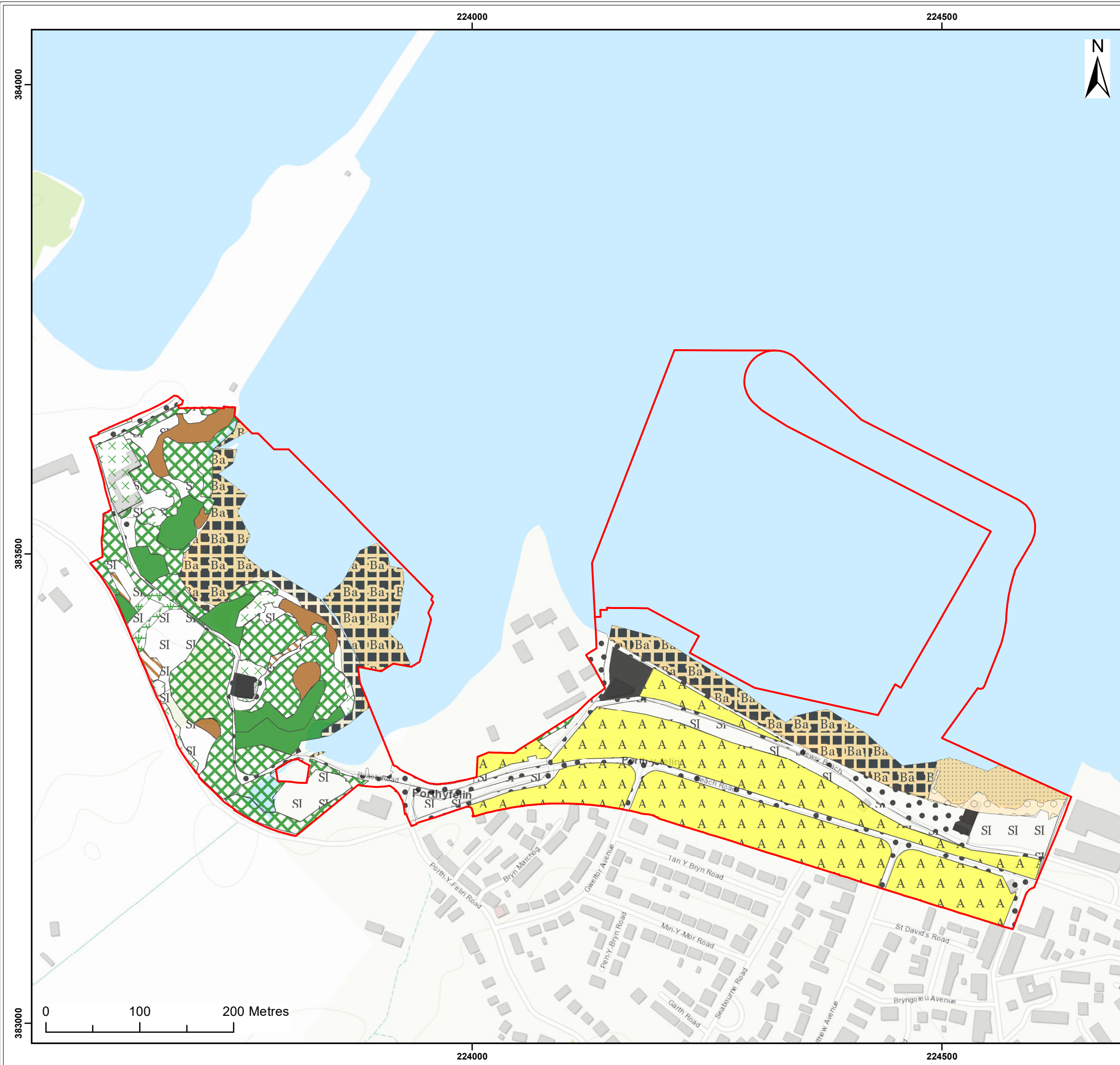
This section of the report outlines the approach taken to the biodiversity assessment. This assessment utilises existing available habitat and species data, namely findings from an Extended Phase One Habitat Survey (EP1HS), undertaken in 2019 (Royal HaskoningDHV (RHDHV) 2019), together with a desk-based assessment, to establish a robust understanding of the existing habitats within the Proposed Development boundary, which in turn has been used to inform the calculation of the biodiversity value of these habitats. Habitats recorded during the EP1HS included the area both within the terrestrial Proposed Development boundary and the intertidal habitats up to mean low water, these are shown in **Figure 3**.

The methodology, as agreed with IACC, followed to calculate baseline biodiversity value has been based on Natural England guidance provided in conjunction with the Biodiversity Metric 2.0 (Natural England, 2019). This includes determining habitat condition, ecological connectivity and strategic significance within local plans using information obtained from field and desk-based study of the habitats present within the Proposed Development boundary.

The Biodiversity Metric 2.0 has been used to quantify the value of the on-site and off-site baseline and proposed habitats, using habitat features as a proxy for wider biodiversity with different habitat types scored according to their relative biodiversity value in the context of the wider landscape and ecological benefits. This value is then adjusted depending on the condition and location of the habitat, resulting in a project specific unit score. This method will assist in establishing habitat losses, as required by the council, paying particular regard to priority habitats

Using the EP1HS data, the existing 'value' of both terrestrial and intertidal biodiversity value of the Proposed Development, were established, following guidance outlined in the Biodiversity Metric 2.0 Beta Edition User Guidelines (Natural England, 2019), subsequent intertidal habitat addendum (Natural England 2019) and intertidal technical guidance (Natural England 2020).

The Holyhead Waterfront Development Masterplan and Landscaping plan were used to identify and calculate areas of habitat lost, enhanced, retained, selected for accelerated succession, or created as part of the Proposed Development. Areas considered to provide benefits to habitats and biodiversity were included in these biodiversity unit calculations, establishing an overall 'score' that demonstrates whether biodiversity would be lost, gained, or remain the same as the baseline value to determine the impact of the Proposed Development on biodiversity.



Legend:

Holyhead Waterfront Red Line Boundary

Phase 1 Habitat Classification
Broadleaved woodland (Woodland and forest – other woodland; broadleaved)

Dense/ Continuous scrub/ Heathland and shrub – mixed scrub

Scattered scrub/ Heathland and shrub – mixed scrub

Poor semi-improved grassland/ Grassland – modified grassland

Continuous bracken/ Grassland - bracken

Tall ruderal/ Sparsely vegetated land – ruderal/ephemeral

Intertidal mud and sand/ Intertidal sediment – littoral sand and muddy sand

Intertidal boulder and rocks/ Rocky shore – low energy littoral rock

Shingle above high tide mark/ Sparsely vegetated land - Coastal vegetated shingle

Boulders/ Rock above high tide line/ Sparsely vegetated land - Maritime cliffs and slopes

Amenity grassland/ Urban – amenity grassland

Hedgerows with trees/ Native Species Rich Hedgerow with trees

Buildings

Bare ground/ Urban – vacant/ derelict land/ bare ground

Client:	Project:
Conygar Holyhead Ltd.	Holyhead Waterfront Regeneration Scheme

Title:
Habitats within the Proposed Development boundary

Figure:	3	Drawing No:	PB8908-RHD-ZZ-ZZ-DR-Z-0065		
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	03/03/21	AB	SM	A3	1:4,000

Co-ordinate system: British National Grid

Royal HaskoningDHV
Enhancing Society Together

**ROYAL HASKONINGDHV
INDUSTRY & BUILDINGS**
2 ABBEY GARDENS
GREAT COLLEGE STREET
LONDON
SW1P 3NL
+44 (0)20 7222 2115
www.royalhaskoningdhv.com

The key principles for using the metric are as follows (reproduced from Natural England Biodiversity Metric 2.0 User Guide, 2019):

- **Principle 1:** The metric does not change the protection afforded to biodiversity: existing levels of protection afforded to protected species and to habitats are not affected by the use of this metric.
- **Principle 2:** The metric sits within a decision framework based on the mitigation hierarchy: it informs decision-making where application of the mitigation hierarchy and good practice principles has concluded that compensation for habitat losses is justified.
- **Principle 3:** The metric is a proxy for biodiversity. While it is underpinned by ecological evidence the metric is only a proxy for biodiversity and to be of practical use has been kept deliberately simple.
- **Principle 4:** The metric focuses on widespread species and typical habitats: it is a suitable proxy for widespread species found in typical examples of different habitats. Scarce and protected species are likely to need separate consideration to the Biodiversity Metric.
- **Principle 5:** The metric recognises the importance of place and connectivity: it seeks to enhance biodiversity in the locality of impacts so far as possible as well as contributing to England's ecological network by creating more, bigger, better, and joined areas for biodiversity.
- **Principle 6:** The metric informs decisions: Decisions and management interventions need to take account of expert ecological advice and not just the biodiversity unit outputs of the metric. The historic or landscape significance of a habitat, and relevant planning policies, are also relevant.
- **Principle 7:** Compensation habitats should, where practical, be local to the impact. Compensation habitats should aim to replicate the characteristics of the habitats that have been lost.
- **Principle 8:** The metric does not enforce a mandatory minimum 1:1 habitat size ration for losses and compensation.

The Biodiversity Metric 2.0 is not designed to be used in designated sites or for irreplaceable habitats.

2.1 Habitat area

For the purpose of the Biodiversity Metric 2.0, habitat areas have been converted into hectares as the unit of measurement. The metric accepts values to two decimal places. Those habitats present with area values less than 0.005ha will not be included within the biodiversity unit calculation but are included in the habitat lists in **Section 3** of this document.

Linear habitats, such as hedgerows and lines of trees are inputted separately into the metric, with a unit measurement of kilometres.

2.2 Habitat classification

The habitat classification systems used in the Biodiversity Metric 2.0 differ between terrestrial and intertidal habitats. The habitat classification systems used in this assessment are detailed below.

2.2.1 Terrestrial habitats

For the purpose of the biodiversity assessment, terrestrial habitat types recorded during the EP1HS using the JNCC habitat classification (JNCC, 2010) have been converted to the UK Habitat Classification using Biodiversity Metric 2.0 tool.

Six broad habitats (as listed below) have been recorded within the footprint of the Proposed Development:

1. Grassland;
2. Heathland and shrub;
3. Urban;
4. Woodland and forest;
5. Sparsely vegetated land; and
6. Hedgerow.

These broad habitats are subdivided further into habitat types, following the UK Habitat Classification system, and are presented in **Section 3.2**.

2.2.2 Intertidal habitats

For intertidal habitats, the Biodiversity Metric 2.0 uses The European Nature Information System, (EUNIS) habitat classification system. Intertidal habitat classifications have been converted to the EUNIS system for the purpose of this biodiversity assessment following current guidance (Natural England, 2020).

Two broad habitats (as listed below) are present within the footprint of the Proposed Development:

1. Intertidal sediment; and,
2. Rocky shore.

These broad habitats are subdivided further into habitat types, following the EUNIS habitat classification system and are presented in **Section 3.2**.

2.3 Habitat condition

Establishing habitat condition is a requirement of the Biodiversity Metric 2.0. Habitat condition is assessed against a set of criteria detailed in Annex 1 of the Natural England guidance (Natural England 2019). This assessment is used to assign a habitat condition score ranging from poor (1) to good (3). A retrospective habitat assessment has been undertaken based on the findings of the 2019 EP1HS. Details of this assessment are provided in **Appendix A1**.

2.4 Distinctiveness

2.4.1 Terrestrial habitats

For the terrestrial habitats, the Biodiversity Metric 2.0 contains pre-determined habitat distinctiveness bands based on the following list of criteria (Natural England, 2019):

- Habitat rarity;
- % of habitat protected in SSSI;
- UK Priority Habitat Status; and
- European Red List Categories for the habitat.

Habitat distinctiveness banding and criteria thresholds are shown below in **Table 2.1**.

Table 2.1 *Habitat distinctiveness bands and criteria*

Distinctiveness Band	Description
Very High Distinctiveness	Small amount of remaining habitat with a lot of it unprotected by designation. Endangered or Critical European red List habitats.

Distinctiveness Band	Description
High Distinctiveness	Remaining Priority Habitats not in very high distinctiveness band & other red list of habitats.
Medium Distinctiveness	Non-Priority Habitats with significant wildlife benefit and 1 replaceable Priority Habitat (Arable field Margins).
Low Distinctiveness	Agricultural and Urban land use of lower biodiversity value.
Very Low Distinctiveness	Urban – with artificial structure which are un-vegetated, unsealed surface or built linear features of very low biodiversity value.

2.4.2 Intertidal habitats

As per Natural England guidance (Natural England, 2020), all naturally occurring intertidal habitats have been assigned a distinctiveness level of at least **'high'** to reflect their nature conservation importance. To distinguish between natural and artificial habitats within the intertidal zone, artificial habitats have been included with a distinctiveness score of **'low'** to reflect their origin. The distinctiveness scores for the intertidal habitats present are shown in **Table 2.2**.

Table 2.2 Distinctiveness score for intertidal habitats

Habitat Type	Distinctiveness
Intertidal sediment	High distinctiveness
Artificial Intertidal sediment	Low distinctiveness
Rocky shore	High distinctiveness
Artificial rocky shore	Low distinctiveness

2.5 Strategic significance

The strategic significance parameter of the metric gives extra value to habitats that are located in optimum locations for biodiversity and other environmental objectives; it recognises that there is a risk for biodiversity from a change in location of a habitat (Natural England, 2019). Table 2.3 presents the multipliers that are applied based on strategic significance.

Table 2.3 Multipliers to be applied based on strategic significance

Strategic significance	Multiplier
High strategic significance: Area within area formally identified in local strategy	1.15
Medium strategic significance: Location ecologically desirable but not in local strategy	1.1
Low strategic significance: Area/compensation not in local strategy/ no local strategy	1

Habitats listed as Section 7 habitats under the Environment (Wales) Act 2016, and those listed in Anglesey's local biodiversity action plan have been allocated a high strategic significance score (a value of 1.15). Those habitats not identified within the aforementioned plan have been allocated a value of 1.1 or 1 and are considered of lower strategic significance.

Section 7 habitats under the Environment (Wales) Act and are considered priority for maintaining and enhancing biodiversity in relation to Wales. These habitats are highlighted in orange in the tables throughout the report for reference.

2.6 Connectivity

2.6.1 Terrestrial habitats

Natural England (2019) states that “the focus of connectivity in the metric is the relationship of a particular habitat patch to other surrounding similar or related semi-natural habitats facilitating flows of species and ecosystem services. In short, this is a way of rating actions that will actually provide a like for like or similar net gain with connection to the area where impact is happening.” Natural England (2019) proposes that the connectivity scores shown in **Table 2.4** are applied in the metric.

Following Natural England guidance, all High and Very High distinctiveness habitats have been assigned a Medium connectivity multiplier, and all other habitats a Low connectivity multiplier.

Table 2.4 Multipliers to be applied in the Biodiversity Metric to reflect connectivity

Score	Multiplier
Low connectivity	1
Medium connectivity	1.1
High connectivity	1.5

2.6.2 Intertidal habitats

Natural England (2020) guidance recommends a precautionary value of 20km in the intertidal zone, which is the figure the Biodiversity Metric calculations use. This distance is based on research conducted by Natural England on the connectivity of the intertidal zone. This value is therefore fixed for the purpose of this assessment at ‘low connectivity’ a multiplier of 1.

3 Biodiversity baseline

As previously detailed in **Section 2**, the ecological baseline data that has been used for the Proposed Development uses the ecological field survey data that was obtained during the 2019 EP1HS. The habitat areas that fall within the Proposed Development boundary are used to define the biodiversity baseline. The results of this survey are summarised below, providing information on the habitats and their extents recorded during this survey.

3.1 Habitats

The 2019 EP1HS recorded the following habitats within the Proposed Development Boundary. These habitats are presented using the JNCC habitat classification and corresponding UK Habitat Classification:

- **Broadleaved woodland (Woodland and forest – other woodland; broadleaved)** (species recorded field maple, sycamore (*Acer pseudoplatanus*), common ash (*Fraxinus excelsior*), wild cherry (*Prunus avium*) with bramble and bracken understorey).
- **Dense/ Continuous scrub (Heathland and shrub – mixed scrub)** comprising species such as bramble and common nettles, common ivy (*Hedera helix*), and mature field maple (*Acer campestre*).
- **Scattered scrub (Heathland and shrub – mixed scrub)** comprising species such as gorse, bracken, bramble, dandelion, scarlet pimpernel (*Anagallis arvensis*), sea arrowgrass (*Triglochin maritima*), teasel (*Dipsacus spp.*), and Yorkshire fog (*Holcus lanatus*), kidney vetch (*Anthyllis vulneraria*), scentless mayweed (*Tripleurospermum inodorum*), yarrow (*Achillea millefolium*), bush vetch (*Vicia sepium*).

- **Poor semi-improved grassland (Grassland – modified grassland)** with scattered scrub and tall ruderals comprising species such as bramble, white clover (*Trifolium repens*), common hogweed (*Heracleum sphondylium*), common nettle (*Urtica dioica*), broad-leaved dock (*Rumex obtusifolius*), ragwort (*Jacobaea vulgaris*).
- **Continuous bracken (Grassland – bracken)** (*Pteridium aquilinum*).
- **Tall ruderal (Sparsely vegetated land – ruderal/ephemeral).**
- **Intertidal mud and sand (Intertidal sediment – littoral sand and muddy sand).**
- **Intertidal boulder and rocks (Rocky shore – low energy littoral rock)** with brown algae (*Fucus spp.*), filamentous green algae, limpets, and barnacles.
- **Shingle above high tide mark (Sparsely vegetated land - coastal vegetated shingle).**
- **Boulders/ Rock above high tide line (Sparsely vegetated land - maritime cliffs and slopes).**
- **Amenity grassland (Urban – amenity grassland).**
- **Hedgerows with trees (Native hedgerow with trees).**
- **Bare ground (Urban – vacant/ derelict land/ bare ground).**

3.2 Baseline biodiversity assessment

The habitats that have been recorded within the Proposed Development boundary are shown on **Figure 3**. A full list of the habitats present within the Proposed Development site, the habitat areas and their respective biodiversity units are presented in **Table 3.1**.

Table 3.1 Habitats present within the Proposed Development boundary

JNCC Habitat Code	UK Habitat Classification	Habitat Area (ha)	Distinctiveness	Condition	Connectivity	Strategic Significance	Biodiversity Units
Broadleaved woodland - semi-natural	Woodland and forest – other woodland; broadleaved	0.87	Medium (4)	Moderate (2)	Low (1)	Medium: Location ecologically desirable but not in local strategy	7.66
Scrub - dense/continuous Scrub - scattered	Heathland and shrub – mixed scrub	3.36	Medium (4)	Moderate (2)	Low (1)	High: Within area formally identified in local strategy	30.91
Poor semi-improved grassland	Grassland – modified grassland	2.18	Low (2)	Poor (1)	Low (1)	Low: Area/compensation not in local strategy/ no local strategy	4.36
Bracken - continuous	Grassland - bracken	0.44	Medium (4)	Moderate (2)	Low (1)	Low: Area/compensation not in local strategy/ no local strategy	3.52
Other tall herb and fern - ruderal	Sparsely vegetated land – ruderal/ephemeral	0.09	Low (2)	Poor (1)	Low (1)	Low: Area/compensation not in local strategy/ no local strategy	0.18
Intertidal - mud/sand	Intertidal sediment – littoral sand and muddy sand	0.43	High (6)	Moderate (2)	Low (1)	Medium: Location ecologically desirable but not in local strategy	5.68
Intertidal - boulders/rocks - brown algal beds	Rocky shore – low energy littoral rock	2.59	High (6)	Moderate (2)	Low (1)	High: Within area formally identified in local strategy	35.74
Shingle above high tide mark	Sparsely vegetated land - Coastal vegetated shingle	0.18	High (6)	Poor (1)	Medium (1.1)	High: Within area formally identified in local strategy	1.31
Boulders/rocks above high tide mark	Sparsely vegetated land - Maritime cliffs and slopes	0.31	High (6)	Poor (1)	Medium (1.1)	High: Within area formally identified in local strategy	2.25
Cultivated/disturbed land - amenity grassland	Urban – amenity grassland	4.62	Low (2)	Poor (1)	Low (1)	Low: Area/compensation not in local strategy/ no local strategy	9.24
Bare ground	Urban – vacant/ derelict land/ bare ground	1.95	Low (2)	Moderate (2)	Low (1)	Low: Area/compensation not in local strategy/ no local strategy	7.80
Hedge with trees - native	Native hedgerow with trees	111 m	Medium (4)	Good (3)	Low (1)	High: Within area formally identified in local strategy	0.76
						Total Habitat Units	108.64
						Total Hedgerow Units	0.76

3.3 Summary of baseline habitats and biodiversity units

The habitat areas and baseline biodiversity units of the eight broad terrestrial habitats and the two broad intertidal habitats within the footprint of the Proposed Development boundary are listed in **Table 3.2**.

Table 3.2 Summary of baseline biodiversity units within the Proposed Development boundary

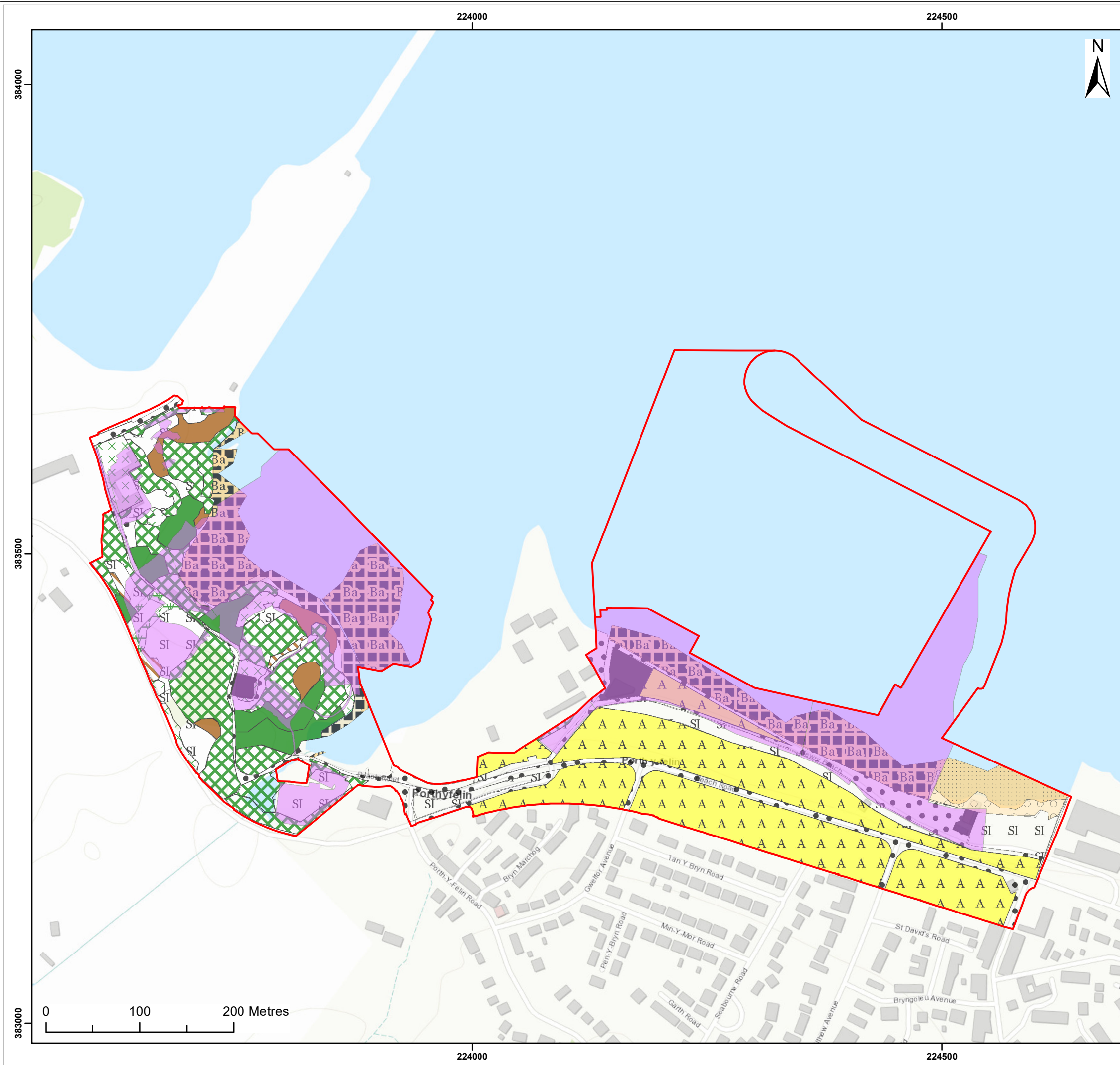
UK Habitat Classification Code	Area (ha)	Baseline Biodiversity Units
Woodland and forest – other woodland; broadleaved	0.87	7.66
Heathland and shrub – mixed scrub	3.36	30.91
Grassland – modified grassland	2.18	4.36
Grassland - bracken	0.44	3.52
Sparsely vegetated land – ruderal/ephemeral	0.09	0.18
Intertidal sediment – littoral sand and muddy sand	0.43	5.68
Rocky shore – low energy littoral rock	2.59	35.74
Sparsely vegetated land - Coastal vegetated shingle	0.18	1.31
Sparsely vegetated land - Maritime cliffs and slopes	0.31	2.25
Urban – amenity grassland	4.62	9.24
Urban – vacant/ derelict land/ bare ground	1.95	7.80
Native hedgerow with trees	111 m	0.76
	Total Biodiversity Units:	109.4

4 Habitat and biodiversity unit loss

The Proposed Development will, by its construction, result in a loss of habitat on-site. The habitat types and respective areas lost are presented below in **Table 4.1** and show in **Figure 4**. Terrestrial habitats lost to the Proposed Development total 6.21ha, these habitats include:

- 0.31ha of Woodland and forest – other woodland; broadleaved;
- 1.77ha Heathland and shrub – mixed scrub;
- 0.80ha Grassland – modified grassland;
- 0.14ha Grassland – bracken;
- 0.03ha Sparsely vegetated land – ruderal/ephemeral;
- 0.01ha Sparsely vegetated land - Coastal vegetated shingle;
- 0.25ha Sparsely vegetated land - maritime cliffs and slopes;
- 0.25ha Urban – amenity grassland; and,
- 0.79m Urban – vacant/ derelict land/ bare ground.

In addition to the above, 0.11km of hedgerow and trees would be lost as a result of the Proposed Development.



Legend:

Holyhead Waterfront Red Line Boundary

Area lost to development

Phase 1 Habitat Classification
Broadleaved woodland (Woodland and forest – other woodland; broadleaved)

Dense/ Continuous scrub/ Heathland and shrub – mixed scrub

Scattered scrub/ Heathland and shrub – mixed scrub

Poor semi-improved grassland/ Grassland – modified grassland

Continuous bracken/ Grassland - bracken

Tall ruderal/ Sparsely vegetated land – ruderal/ephemeral

Intertidal mud and sand/ Intertidal sediment – littoral sand and muddy sand

Intertidal boulder and rocks/ Rocky shore – low energy littoral rock

Shingle above high tide mark/ Sparsely vegetated land - Coastal vegetated shingle

Boulders/ Rock above high tide line/ Sparsely vegetated land - Maritime cliffs and slopes

Amenity grassland/ Urban – amenity grassland

Hedgerows with trees/ Native Species Rich Hedgerow with trees

Buildings

Bare ground/ Urban – vacant/ derelict land/ bare ground

Client:	Project:
Conygar Holyhead Ltd.	Holyhead Waterfront Regeneration Scheme

Title:
Habitats lost as a result of the Proposed Development

Figure:	4	Drawing No:	PB8908-RHD-ZZ-ZZ-DR-Z-0066		
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	03/03/21	AB	SM	A3	1:4,000

Co-ordinate system: British National Grid



Royal HaskoningDHV
Enhancing Society Together

**ROYAL HASKONINGDHV
INDUSTRY & BUILDINGS**
2 ABBEY GARDENS
GREAT COLLEGE STREET
LONDON
SW1P 3NL
+44 (0)20 7222 2115
www.royalhaskoningdhv.com

A total of 2.45ha of intertidal habitats are also lost to the footprint of the development, comprising:

- 0.02ha Intertidal sediment – littoral sand and muddy sand; and,
- 2.43ha Rocky shore – low energy littoral rock.

Table 4.1 *Habitat area loss as result of the Proposed Development*

JNCC Habitat Code	UK Habitat Classification	Baseline Habitat Area / Length (ha / km)	Habitat Area / length Lost as a result of the Proposed Development (ha / km)
Broadleaved woodland - semi-natural	Woodland and forest – other woodland; broadleaved	0.87	0.31
Scrub - dense/continuous	Heathland and shrub – mixed scrub	2.84	0.84
Scrub - scattered	Heathland and shrub – mixed scrub	0.52	0.33
Poor semi-improved grassland	Grassland – modified grassland	2.18	0.80
Bracken - continuous	Grassland - bracken	0.44	0.14
Other tall herb and fern - ruderal	Sparsely vegetated land – ruderal/ephemeral	0.09	0.03
Intertidal - mud/sand	Intertidal sediment – littoral sand and muddy sand	0.43	0.02
Intertidal - boulders/rocks - brown algal beds	Rocky shore – low energy littoral rock	2.59	2.43
Shingle above high tide mark	Sparsely vegetated land - coastal vegetated shingle	0.18	0.01
Boulders/rocks above high tide mark	Sparsely vegetated land - maritime cliffs and slopes	0.31	0.25
Cultivated/disturbed land - amenity grassland	Urban – amenity grassland	4.62	0.25
Bare ground	Urban – vacant/ derelict land/ bare ground	1.95	0.70
Hedge with trees - native species-rich	Native Hedgerow with trees	0.11m	0.11m

Where possible, the mitigation hierarchy should be followed to first avoid, then mitigate, and lastly compensate for losses to habitat area and biodiversity.

5 On-site habitat enhancement

The Proposed Development provides opportunity for the enhancement of existing habitats, which in part can help mitigate and offset the habitat and biodiversity lost as a result of its construction. An outline of habitat enhancement proposed are described below (see **Figure 5** and **6**). A full list of the habitats lost within footprint of the Proposed Development, proposed habitat enhancements, associated areas and their respective biodiversity units are presented below in **Table 5.1**.

5.1 Grassland

Enhancements of modified grassland habitats include the removal of invasive species (where present) and sward diversification with coastal meadow mix and wildflower species, as appropriate. In addition, cutting regimes would be altered to provide a more varied sward height thereby providing improved opportunities for wildlife. In addition to fine grasses, species to include:

- Bird's-foot trefoil (*Lotus corniculatus*)
- Common Cat's ear (*Hypochaeris radicata*)
- Common Evening-primrose (*Oenothera biennis*)
- Haresfoot clover (*Trifolium arvense*)
- Common Knapweed (*Centaurea nigra*)
- Greater Knapweed (*Centaurea scabiosa*)
- Corn marigold (*Glebionis segetum*)
- Lady's bedstraw (*Galium verum*)
- Ox-eye daisy (*Leucanthemum vulgare*)
- Common Poppy *Papaver rhoeas*
- Common St. John's-wort (*Hypericum perforatum*)
- Bladder campion (*Silene vulgaris*)
- Common Toadflax (*Linaria vulgaris*)
- Kidney vetch (*Anthyllis vulneraria*)
- Viper's bugloss (*Echium vulgare*)
- Wild Carrot (*Daucus carota*)
- Yellow rattle (*Rhinanthus minor*)
- Yarrow (*Achillea millefolium*)

5.2 Heathland and shrub

Areas of scrub on-site would be enhanced through selective thinning in favour native species and the removal of non-native species. In addition, the diversity of native species would be increased through planting of the following species:

- Field maple (*Acer campestre*)
- Dogwood (*Cornus sanguinea*)
- Hawthorn (*Crataegus monogyna*)
- Holly (*Ilex aquifolium*)
- Blackthorn (*Prunus spinosa*)
- Gorse (*Ulex europaeus*)
- Guelder Rose (*Viburnum opulus*)

5.3 Urban

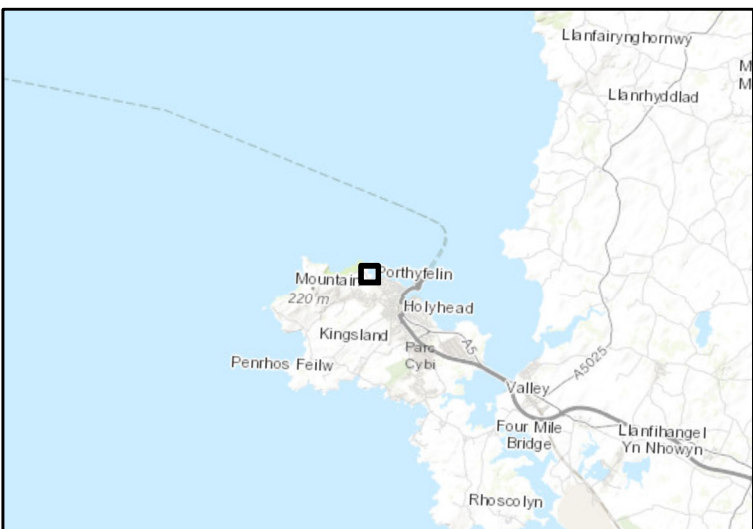
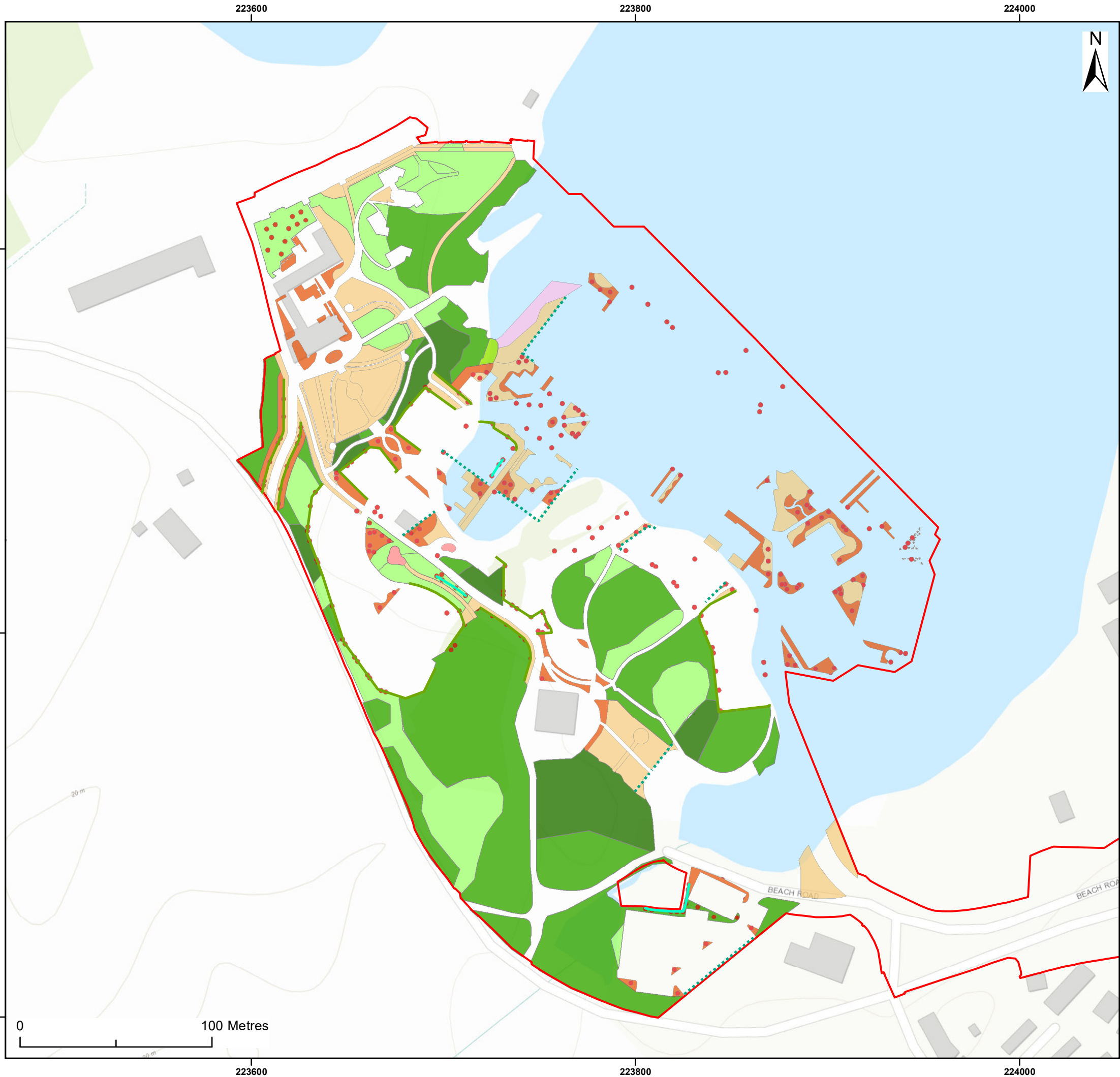
Enhancements of amenity grassland include the sward diversification with coastal meadow mix and wildflower species, as appropriate. In addition, cutting regimes would be altered to provide a more varied sward height thereby providing improved opportunities for flora and fauna.

Table 5.1 On-site habitat baseline, enhancement, and biodiversity unit loss

Baseline UK Habitat Classification	Baseline Habitat Units	Proposed Habitat UK Habitat Classification	Distinctiveness Change	Condition Change	Time to Target Condition	Area Enhanced (ha)	Habitat Units Delivered
Woodland and forest - Other woodland; broadleaved	0.10	Heathland and shrub - Mixed scrub	Medium (4) – Medium (4)	Moderate - Good	3	0.01	0.13
Woodland and forest - Other woodland; broadleaved	3.78	Woodland and forest - Lowland mixed deciduous woodland	Medium (4) – High (6)	Lower Distinctiveness Habitat - Fairly Good	32+	0.39	4.12
Heathland and shrub - Mixed scrub	0.09	Grassland - Lowland meadows	Medium (4) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	0.01	0.17
Heathland and shrub - Mixed scrub	14.9	Heathland and shrub - Mixed scrub	Medium (4) – Medium (4)	Moderate - Good	3	1.62	21.60
Heathland and shrub - Mixed scrub	0.09	Woodland and forest - Lowland mixed deciduous woodland	Medium (4) – High (6)	Lower Distinctiveness Habitat - Fairly Good	32+	0.01	0.11
Heathland and shrub - Mixed scrub	0.55	Grassland - Lowland meadows	Medium (4) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	0.06	1.01
Heathland and shrub - Mixed scrub	0.92	Heathland and shrub - Mixed scrub	Medium (4) – Medium (4)	Moderate - Good	3	0.1	1.33
Grassland - Modified grassland	0.90	Grassland - Lowland meadows	Low (2) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	0.45	5.62
Grassland - Modified grassland	0.30	Grassland - Lowland meadows	Low (2) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	0.15	1.87
Grassland - Modified grassland	0.02	Heathland and shrub - Mixed scrub	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Good	7	0.01	0.11
Grassland - Modified grassland	0.04	Heathland and shrub - Mixed scrub	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Good	7	0.02	0.23
Grassland - Bracken	1.84	Grassland - Lowland meadows	Medium (4) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	0.23	3.85

Project related

Baseline UK Habitat Classification	Baseline Habitat Units	Proposed Habitat UK Habitat Classification	Distinctiveness Change	Condition Change	Time to Target Condition	Area Enhanced (ha)	Habitat Units Delivered
Grassland - Bracken	0.16	Grassland - Lowland meadows	Medium - V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	0.02	0.34
Grassland - Bracken	0.24	Heathland and shrub - Mixed scrub	Medium (4) – Medium (4)	Moderate - Good	3	0.03	0.40
Sparsely vegetated land - Ruderal/Ephemeral	0.12	Grassland - Lowland meadows	Low (2) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	0.06	0.75
Urban - Amenity grassland	9.24	Grassland - Lowland meadows	Low (2) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	12	1.03	12.85
						<u>Total Habitat Units</u>	<u>54.48</u>



Legend:

- Holyhead Waterfront Red Line Boundary

Habitat Creation

- Artificial Rocky Shore Habitat
- Grassland (mixed)
- Open Water
- Heathland and shrub – mixed scrub
- Trees (mixed)

Habitat Enhanced

- Grassland (mixed)
- Intertidal
- Heathland and shrub – mixed scrub
- Broadleaved woodland (Woodland and forest – other woodland; broadleaved)

Hedgerows

- Hedgerow
- Hedgerow with Trees
- Line of Trees

Base map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Client:	Project:
Conygar Holyhead Ltd.	Holyhead Waterfront Regeneration Scheme

Title:
Habitat enhancement and creation (Porth-y-Felin)

Figure:	5	Drawing No:	PB8908-RHD-ZZ-ZZ-DR-Z-0067
---------	---	-------------	----------------------------

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	03/03/21	AB	SM	A3	1:2,000

Co-ordinate system:	British National Grid
---------------------	-----------------------



Royal HaskoningDHV
Enhancing Society Together

**ROYAL HASKONINGDHV
INDUSTRY & BUILDINGS**
2 ABBEY GARDENS
GREAT COLLEGE STREET
LONDON
SW1P 3NL
+44 (0)20 7222 2115
www.royalhaskoningdhv.com



- Legend:
- Holyhead Waterfront Red Line Boundary
 - Habitat Creation**
 - Artificial Rocky Shore Habitat
 - Grassland (mixed)
 - Heathland and shrub – mixed scrub
 - Trees (mixed)
 - Habitat Enhanced**
 - Grassland (mixed)
 - Hedgerows**
 - Hedgerow with Trees

Base map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Client:	Project:
Conygar Holyhead Ltd.	Holyhead Waterfront Regeneration Scheme

Title:
Habitat enhancement and creation (Newry)

Figure:	6	Drawing No:	PB8908-RHD-ZZ-ZZ-DR-Z-0068
---------	---	-------------	----------------------------

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	03/03/21	AB	SM	A3	1:2,500

Co-ordinate system: British National Grid



Royal HaskoningDHV
Enhancing Society Together

**ROYAL HASKONINGDHV
INDUSTRY & BUILDINGS**
2 ABBEY GARDENS
GREAT COLLEGE STREET
LONDON
SW1P 3NL
+44 (0)20 7222 2115
www.royalhaskoningdhv.com

5.4 Woodland and forest

Woodland enhancement within the Proposed Development includes the selective thinning of existing trees in favour native species and to provide open rides and glades. Enhancement to the diversity of the understory would be improved through planting of native shrub species including those listed in **Section 5.2**.

6 On-site habitat creation

The Proposed Development provides opportunity for the creation habitats, in part offsetting the habitat and biodiversity lost as a result of its construction. The provision of habitat creation via the Proposed Development landscaping plans are described below (see **Figure 5** and **6**), with the associated Biodiversity Metric 2.0 data and output presented in **Table 6.1**.

Habitat creation has a temporal implication, with some habitat taking considerably longer to establish than others. The Biodiversity Metric 2.0 provides an indicative time to habitat target condition. The target habitat condition and time taken to achieve this are included in the descriptions below.

6.1 Grassland

Landscaping plans include the creation of 0.47ha of species rich meadows and 0.03ha of wet grassland within the wider mosaic of habitats present on-site. To create lowland meadow in good condition takes 15 years and would potentially deliver 2.76 biodiversity units, to create wet grassland communities of the same condition takes up to 30 years to establish and would potentially deliver 0.08 biodiversity units. Species rich grasslands would be seeded with either a coastal, or lowland meadow mix. Wet grasslands would be seeded with a meadow mix for wetlands.

In addition to fine native grasses, coastal meadow mix may include the following flowering plant species:

- | | |
|---|--|
| ■ Kidney Vetch (<i>Anthyllis vulneraria</i>) | ■ Long-headed Poppy (<i>Papaver dubium</i>) |
| ■ Thrift (<i>Armeria maritima</i>) | ■ Corn Poppy (<i>Papaver rhoeas</i>) |
| ■ Clustered Bellflower (<i>Campanula glomerata</i>) | ■ Sea Plantain (<i>Plantago maritima</i>) |
| ■ Common Knapweed (<i>Centaurea nigra</i>) | ■ Cowslip (<i>Primula veris</i>) |
| ■ Scurvy Grass (<i>Cochlearia danicus</i>) | ■ Yellow Rattle (<i>Rhinanthus minor</i>) |
| ■ Vipers Bugloss (<i>Echium vulgare</i>) | ■ Autumn Hawkbit (<i>Scorzoneroide autumnalis</i>) |
| ■ Lady's Bedstraw (<i>Galium verum</i>) | ■ Red campion (<i>Silene dioica</i>) |
| ■ Rock Rose (<i>Helianthemum nummularium</i>) | ■ White Campion (<i>Silene latifolia</i>) |
| ■ Cats Ear (<i>Hypochaeris radicata</i>) | ■ Sea Campion (<i>Silene uniflora</i>) |
| ■ Scots Lovage (<i>Ligusticum scoticum</i>) | ■ Sea Mayweed (<i>Tripleurospermum maritimum</i>) |
| ■ Birdsfoot Trefoil (<i>Lotus corniculatus</i>) | |

Table 6.1 On-site habitat creation and biodiversity units

UK Habitat Classification	Area (ha)	Distinctiveness	Condition	Ecological Connectivity	Time to Target Condition (yrs.)	Biodiversity Units Delivered
Grassland - Lowland meadows	0.47	V.High (8)	Good (3)	Medium (1.1)	15	2.08
Grassland - Tall herb communities	0.03	High (6)	Good (3)	Medium (1.1)	30	2.76
Lakes - Ponds (Priority Habitat)	0.01	High (6)	Good (3)	Medium (1.1)	10	0.08
Urban - Introduced shrub	0.72	Low (2)	Good (3)	Low (1)	1	0.11
Urban - Amenity grassland	0.58	Low (2)	Moderate (2)	Low (1)	3	4.59
Urban - Street Tree	1.77	Low (2)	Moderate (4)	Low (1)	27	1.75
Heathland and shrub - Mixed scrub	0.19	Medium (4)	Good (3)	Low (1)	7	2.93
Rocky shore - low energy littoral rock	1.08	Low (2)	Good (3)	Low (1)	15	2.98
Native Species Rich Hedgerow	0.28km	Medium (4)	Good (3)	Low (1)	10	1.81
Native Species Rich Hedgerow with trees	0.84km	Medium (4)	Good (3)	Low (1)	20	3.81
Line of Trees (Ecologically Valuable)	0.06km	Medium (4)	Good (3)	Low (1)	30	0.18
					<u>Total Habitat Units</u>	<u>17.26</u>
					<u>Total Hedgerow Units</u>	<u>5.80</u>

Lowland meadow mix may include the following flowing plant species:

- Yarrow (*Achillea millefolium*)
- Common Knapweed (*Centaurea nigra*)
- Wild Carrot (*Daucus carota*)
- Lady's Bedstraw (*Galium verum*)
- Field Scabious (*Knautia arvensis*)
- Rough Hawkbit (*Leontodon hispidus*)
- Oxeye Daisy (*Leucanthemum vulgare*)
- Musk Mallow (*Malva moschata*)
- Ribwort Plantain (*Plantago lanceolata*)
- Salad Burnet (*Poterium sanguisorba*)
- Cowslip (*Primula veris*)
- Selfheal (*Prunella vulgaris*)
- Meadow Buttercup (*Ranunculus acris*)
- Yellow Rattle (*Rhinanthus minor*)
- Common Sorrel (*Rumex acetosa*)

Wet meadow mix may include the following flowing plant species:

- Yarrow (*Achillea millefolium*)
- Common Knapweed (*Centaurea nigra*)
- Meadowsweet (*Filipendula ulmaria*)
- Lady's Bedstraw (*Galium verum*)
- Water Avens (*Geum rivale*)
- Yellow Iris (*Iris pseudacorus*)
- Oxeye Daisy (*Leucanthemum vulgare*)
- Birdsfoot Trefoil (*Lotus corniculatus*)
- Greater Birdsfoot Trefoil (*Lotus pedunculatus*)
- Ribwort Plantain (*Plantago lanceolata*)
- Cowslip (*Primula veris*)
- Selfheal (*Prunella vulgaris*)
- Common Fleabane (*Pulicaria dysenterica*)
- Meadow Buttercup (*Ranunculus acris*)
- Yellow Rattle (*Rhinanthus minor*)
- Common Sorrel (*Rumex acetosa*)
- Great Burnet (*Sanguisorba officinalis*)
- Pepper Saxifrage (*Silene silaus*)
- Dandelion (*Taraxacum officinale*)
- Common Meadow-rue (*Thalictrum flavum*)
- Tufted Vetch (*Vicia cracca*)

6.2 Lakes – Ponds (Priority Habitat)

A pond measuring 0.01ha is included within the landscaping plan and would be planted with marginal plant species. To create a pond in good target condition takes 10 years and would potentially deliver 0.11 biodiversity units. Suggested marginal and aquatic plant species include:

- Water violey (*Hottonia palustris*)
- Water soldiers (*Stratiotes aloides*)
- Frogbit (*Hydrocharis morsus-ranae*)
- Water forget-me-not (*Myosotis scorpioides*)
- Arrowhead (*Sagittaria sagittifolia*)
- Marsh marigold (*Caltha palustris*)
- Yellow Iris (*Iris pseudacorus*)
- Marsh woundwort (*Stachys palustris*)
- Water mint (*Mentha aquatica*)
- Purple loosestrife (*Lythrum salicaria*)

6.3 Urban

Within footprint of the Proposed Development, urban habitat creation would include the following:

- 0.58ha of new amenity grasslands, which would take three years to reach moderate target condition and would potentially deliver 2.08 biodiversity units;

- 0.72ha of introduced shrub, which would take one year to establish to good target condition and potentially deliver 4.59 biodiversity units; and,
- 435 trees, which would take 27 years to reach moderate target condition and potentially deliver 2.98 biodiversity units.

6.4 Heathland and shrub

0.19ha of newly planted areas of native species scrub would add to the mosaic of the habitats present, improving the connectivity of habitats across the site and providing shelter and foraging opportunities for fauna. To establish scrub in good target condition takes approximately seven years to establish and potentially deliver 1.75 biodiversity units. Suggested species include:

- | | |
|--|---|
| ■ Field maple (<i>Acer campestre</i>) | ■ Blackthorn (<i>Prunus spinosa</i>) |
| ■ Dogwood (<i>Cornus sanguinea</i>) | ■ Gorse (<i>Ulex europaeus</i>) |
| ■ Hawthorn (<i>Crataegus monogyna</i>) | ■ Guelder Rose (<i>Viburnum opulus</i>) |
| ■ Holly (<i>Ilex aquifolium</i>) | |

6.5 Rocky shore

The Proposed Development includes the creation of a new sea defence structures. These structures would provide, over time, artificial low energy littoral rock habitat within the intertidal zone. 1.08ha of new artificial littoral rock will, in part, replace of the some of the 2.25ha of littoral rock lost as a result of the Proposed Development. These new structures are expected to take 15 years to achieve a good target condition and would potentially deliver 2.93 biodiversity units.

6.6 Hedgerows and lines of trees

6.6.1 Native species rich hedgerows

0.28km of hedgerow creation is included within the Proposed Development landscaping scheme. This would include planting of native hedgerow species improving habitat connectivity across the site and within the wider surrounding thereby increasing foraging opportunity for bats, birds, and other fauna present. The time to good target condition is 10 years and would potentially deliver 1.81 biodiversity units. Suggested hedgerow species include:

- | | |
|---|--|
| ■ Field maple (<i>Acer campestre</i>) | ■ Blackthorn (<i>Prunus spinosa</i>) |
| ■ Dogwood (<i>Cornus sanguinea</i>) | ■ Gorse (<i>Ulex europaeus</i>) |
| ■ Hawthorn (<i>Crataegus monogyna</i>) | ■ Copper beech (<i>Fagus Sylvatica Atropurpurea</i>) |
| ■ Ivy (<i>Hedera helix</i>) | ■ Spindle (<i>Euonymus europaeus</i>) |
| ■ Guelder Rose (<i>Viburnum opulus</i>) | ■ Alder buckthorn (<i>Frangula alnus</i>) |
| ■ Holly (<i>Ilex aquifolium</i>) | |

6.6.2 Native species rich hedgerows with trees

0.84km of hedgerow and tree creation is included within the Proposed Development landscaping scheme. This would include planting of native hedgerow species as described in **Section 6.4**, with the addition of tree planting would to provide shelter belts and foraging opportunities for fauna. The time to good target

condition is 20 years and would potentially deliver 3.81 biodiversity units. Tree planting would comprise the following species:

- Field Maple (*Acer campestre*)
- Wild Cherry (*Prunus avium*)
- Sycamore (*Acer pseudoplatanus*)
- Whitebeam (*Sorbus aria*)
- Alder (*Alnus glutinosa*)
- Scots pine var (*Pinus sylvestris* 'Watereri')

6.6.3 Line of trees

0.06km of tree planning is included within the Proposed Development landscaping scheme adding shelter belts and foraging opportunities for fauna. The time to good target condition is 30 years and would potentially deliver 0.18 biodiversity units.

7 On-site summary

The on-site baseline biodiversity units for the Proposed Development totals 108.64 habitat units and 0.74 hedgerow units. Taking into consideration the habitat lost, enhanced, and created as a result of the Proposed Development, overall, the project would provide 98.74 habitat units and 5.80 hedgerow units, resulting in a net change of -9.70 habitat units (-8.93%) and +5.04 hedgerow units (+664.68%). The overall combined change in biodiversity units as a result of the Proposed Development is therefore -4.66 biodiversity units.

As demonstrated above, a high level overview of the biodiversity assessment shows that the Proposed Development would result in limited change to the overall biodiversity units; however, consideration would need to be given to several high and medium distinctiveness habitat types which are not fully accounted for. These habitats include:

- High distinctiveness habitats:
 - Rocky shore – Low energy littoral rock, baseline 2.59 ha (33.53 biodiversity units), losing 2.43ha (33.53 biodiversity units). Creating 1.08ha of new intertidal habitats (of lower value) with a net loss of -1.35ha of habitat pre- and post-development, equating to -31.33 habitat units.
 - Sparsely vegetated land – Maritime cliff and slopes, of which there is a net loss -0.26ha of habitat equating to -1.89 habitat units.
- Medium distinctiveness habitats:
 - Grassland – Bracken, losing 0.80ha equating to -0.96 habitat units.
 - Woodland and Forest – Other woodland; broadleaved, losing 0.31ha equating to -1.32 habitat units.

8 Off-site habitat enhancement and creation

A bespoke approach to mitigating the loss of high and medium distinctiveness habitats is recommended. Early consultation with the IACC indicated that where like-for-like habitat replacement is not possible, other opportunities for high-quality habitat enhancement and creation should be sought. Habitat creation should be targeted to priority habitats, and the habitat requirements of priority, and locally important species including reptiles.

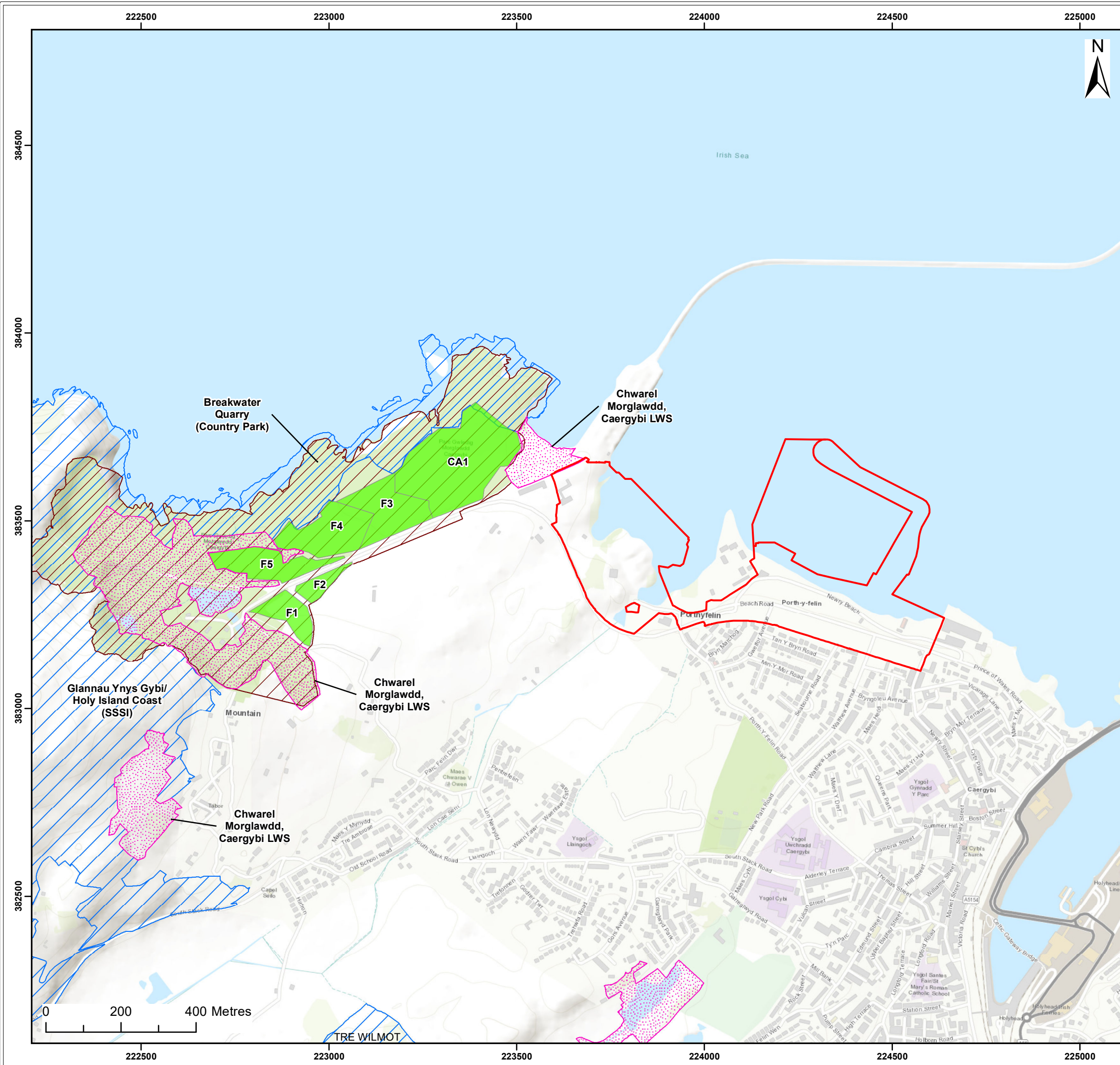
8.1 Opportunity mapping

8.1.1 Holyhead Breakwater Country Park

Holyhead Breakwater Country Park has been identified as a possible location for off-site habitat enhancements and creation. The Country Park is located 100m northwest of the Proposed Development, with high ecological connectivity to the site. The adjoining habitats include mosaic of grasslands, scrub, and gorse. Chwarel Morglawdd LWS is located between the Proposed Development and Holyhead Breakwater Country Park, linking the two sites along the coastline (**Figure 7**).



The Country Park covers 43ha and is owned and managed by the IACC. Habitats present include lowland heathlands, pastures, and areas of planted broadleaved deciduous woodland. A number of water bodies are present on site, the largest of these is Llyn Llwynog. The coastal strip and rocky coastline of the Country Park forms part of the Holyhead Coast Glannau Ynys Cybi SSSI and Holy Island Coast SAC (IACC, 2015).



Legend:

- Holyhead Waterfront Red Line Boundary
- Enhancement Fields
- Site of Special Scientific Interest (SSSI)
- Local Wildlife Site (LWS)
- Country Park

Base map: © NRW, 2021. Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User

Client:	Project:
Conygar Holyhead Ltd.	Holyhead Waterfront Regeneration Scheme

Title:

Potential off-site enhancement areas

Figure:	7	Drawing No:	PB8908-RHD-ZZ-ZZ-DR-Z-0069		
Revision:	01	Date:	03/03/21	Drawn:	AB
				Checked:	SM
				Size:	A3
				Scale:	1:10,000

Co-ordinate system: British National Grid

Royal HaskoningDHV
Enhancing Society Together

**ROYAL HASKONINGDHV
INDUSTRY & BUILDINGS**
2 ABBEY GARDENS
GREAT COLLEGE STREET
LONDON
SW1P 3NL
+44 (0)20 7222 2115
www.royalhaskoningdhv.com

The site supports a number of priority, and locally important species, including:

- Bat: soprano pipistrelle and common pipistrelle (*Pipistrellus pygmaeus*, *P. pipistrellus*);
- Chough (*Pyrrhocorax pyrrhocorax*);
- Common reptile species including adder (*Vipera berus*), common lizard (*Zootoca vivipara*), and slow worm (*Anguis fragilis*); and,
- Silver studded blue butterfly (*Plebejus argus*).

The Holyhead Breakwater Country Park Management Plan 2015-2020 (IACC, 2015), details the objectives and action points for the management of the site. In relation to the opportunity mapping for off-site habitat enhancement and creation the following areas identified in **Table 8.1** are considered to have potential.

Table 8.1 Holyhead Breakwater Country Park - site objectives and management

Area of the site	Site Objectives	Current Management
Rocky Coast (part of the Glannau Ynys Cybi SSSI Holy Island Coast SAC)	■ Ensure the protection of the heathland on the Rocky Coast; ■ Improve the condition, of the heathland through grazing; ■ Raise awareness and understanding of this habitat; and, ■ Re-establish heathland in the adjacent fields.	■ Bracken control in July each year; and, ■ Conservation grazing.
Quarry areas	■ Identify and safeguard fragile habitats from the effects of visitor pressure; and, ■ Give priority to the identification, monitoring and conservation of protected species found within the quarry floor areas	Scouts Glen: ■ 5-year rotational cuts of gorse to encourage silver studded blue butterfly. Abseiling Quarry to top lake: ■ Control of sycamore and European Gorse; and, ■ Late cut of rough grassland where orchids present.
Scrub Areas	■ Ensure that the scrub areas are safe for use through regular safety audit procedures; ■ Give priority to the identification, monitoring and conservation of protected species found within the scrub areas; and ■ Enhance the scrub areas.	■ Small scale scrub clearance; and, ■ Management of scrub of conservation value adjacent to the SSSI.
Grazed areas	■ Two parcels of land are rented from April – December each year. ■ One parcel of land borders on to the Glannau Ynys Cybi SSSI – envisioned that it would become part of a grazing experiment with aim to restore lowland heathland.	■ Grazing; and, ■ Maintaining fencing ensuring no stock can escape

Of those areas of the site listed above in **Table 8.1**, the grazed areas south of the SSSI and SAC boundary are considered further in this assessment due to their proximity to the Proposed Development and the SSSI and SAC. In addition to the preferential location of these area, the grazed parcels are managed via commercial grazing and not for their ecological value. These areas therefore offer opportunities to improve ecological value through changes in management, habitat enhancements and creation.

8.1.2 Baseline biodiversity assessment

The off-site grassland habitats of the grazed areas identified in **Table 7.1** are shown on **Figure 7** (F3-5, and CA1). A list of the habitats, habitat areas, and their respective biodiversity units within these grazed areas are presented in **Table 8.2**. JNCC Habitat Codes have been taken from a phase one habitat survey undertaken in 2012 (IACC, 2012).

Table 8.2 Grassland habitats and biodiversity units of off-site grazed areas

JNCC Habitat Code	UK Habitat Classification	Habitat Area (ha)	Distinctiveness	Condition	Connectivity	Strategic Significance	Biodiversity Units
Neutral Grassland	Grassland – Other neutral grassland	5.16	Medium (4)	Poor (1)	Low (1)	Location ecologically desirable but not in local strategy	20.59
Poor Semi-Improved Grassland	Grassland – Modified grassland	6.55	Low	Poor (1)	Low (1)	Location ecologically desirable but not in local strategy	14.41
Acid Grassland	Grassland – Lowland acid grassland	0.48	Medium (4)	Poor (1)	Low (1)	Location ecologically desirable but not in local strategy	2.11
	<u>Total</u>	<u>12.19</u>				<u>Total Habitat Units</u>	<u>37.11</u>

8.2 Habitat requirements of priority, and locally important species

As detailed previously in Section 7, any proposed off-site habitat enhancement or creation should be targeted around local BAP objectives and the habitat requirements of priority, and locally important species. Habitat requirements for the species listed in Section 7 are present below.

8.2.1 Bats

Pipistrelle species are generally associated with semi-open vegetation found between different habitats. Tree lines and bankside vegetation are used as flight paths, although this species will also cross open areas (JNCC, 2001). Soprano pipistrelle area frequently reported to make particular use of riparian habitats, secondary habitats include woodland edges. Whilst common pipistrelle favour sympathetically managed grazed pasture and deciduous woodland (Bat Conservation Trust, n.d.).

8.2.2 Chough

Chough require short unimproved pastures, typically under 5cm, that provides accessibility to soil invertebrate which they feed on. Higher intermittent grazing may be required to provide a suitable mosaic of habitats and short and open areas for feeding; however, the provision for such habitat requirement is in conflict with other conservation priorities including the dry heath for which Glannau Ynys Cybi SSSI and SAC is designated (Ratcliffe, J, Bateson, D, 2015). Outwinter livestock can provide dung suitable for insects, which chough feed on. Arable land may also be important to this species during the autumn months. Caves and sheltered ledges along the coastline provide nest sites (RSBP, n.d.).

8.2.3 Reptiles

The common reptile species present an open mosaic habitat with variable structure and vegetation heights, these open habitats may include heathlands, rough grasslands, and scrub. Open areas allow access to direct sunlight for basking, which they rely on to maintain body temperature. A varied habitat structure should provide sufficient cover to avoid predators and to shelter. During the winter months, reptiles hibernate. Hibernation sites are usually south facing and underground, providing frost free, humid, and safe

conditions away from predators. Brash and log piles can create additional cover, structure, and enhance prey availability (Edgar et al., 2010).

8.2.4 Silver studded blue

Habitats supporting silver studded blue include lowland heathland, calcareous grassland, and sand dunes. The species requires short or sparse vegetation, such as grazed heathland, or where there are thin, eroding soils. The species feeds on a wide variety of ericaceous and leguminous plants including Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Cross-leaved Heath (*E. tetralix*), gorses (*Ulex spp*) Common Bird's-foot trefoil (*Lotus corniculatus*), Common Rock-rose (*Helianthemum nummularium*), and Horseshoe Vetch (*Hippocrepis comosa*) (Butterfly Conservation, n.d.).

8.3 Off-site habitat enhancement opportunities

The areas of grazed land (see **Figure 7**) have been identified due to their proximity to the Proposed Development and the SSSI and the SAC. These areas are currently managed via commercial grazing and not for their ecological value. Opportunities for habitat enhancements would require changes to the grazing regime to reduce grazing pressure and allow habitats to develop. In addition, soil sample analysis should be undertaken within the areas proposed for habitat enhancement to ascertain any underlying soil chemistry which may prevent or restrict the growth key species within the habitat areas.

Proposed habitat enhancements aim to create a mosaic of habitats across the area comprising grasslands, heathland, scrub, and tree planting. Habitat enhancements are targeted to the priority and locally important species listed above in **Section 7.1.3.2**.

8.3.1 Grassland

Changes in grazing regimes would allow for a more varied sward structure to establish, adding to its biodiversity interest. In addition to changes in sward structure, existing grasslands can be enhanced with the addition of flowering native plant species. These enhancements would create grasslands with greater botanical diversity, and improved pollen and nectar resource for insects, which in turn are the food source for other species including lizards, birds, bats, and invertebrates. The inclusion of Common Bird's-foot trefoil, Common Rock-rose, and Horseshoe Vetch would also benefit Silver Studded Blue butterfly which feed on these species. Additional flowering plant species which could be included are listed in **Section 6.1**.

The time to target condition taken to enhance the grassland habitats through changes to grazing regime and the inclusion of native flowering plant species is estimated by the Biodiversity Metric 2.0 to be 12 to 25 years.

8.3.2 Heathland and shrub

8.3.2.1 Lowland heathland

Lowland heathland is a priority habitat in Wales and is one of the designated features of the adjoining SSSI and SAC. Lowland heathland is present along the coastal fringe at Holyhead Breakwater Country Park, directly north of the grazed fields (see **Figure 6**).

Increasing the extent of heathland adjoining the SSSI and SAC would improve opportunities for heathland specialists and help buffer and protect the existing habitat within the SSSI and SAC. Heathland habitats are an important resource for the priority and locally important species identified in **Section 7.1.2.1**. Various methods are available for heathland re/creation, depending on soil chemistry and pre-existing vegetation types, including:

- Scarification of existing swards where soil chemistry is in optimum range and limited organic thatch layer is present;
- Soil stripping and removal of existing vegetation and topsoil to remove organic matter and nutrient build up; and,
- Sulphur soil treatment to bare soils, in particular, ex-agricultural land where soil chemistry is outside optimum range.

Where there is inadequate heather seed in the soil seedbank, the spreading of locally collected heather brash from donor sites can accelerate the development of heathland communities, whilst maintaining local genetic diversity of plants.

Heathland species should normally start to appear within 1 to 3 years. Management should aim for structural diversity and a mosaic habitat that includes undisturbed bare ground and varied vegetation of different ages. The time to target condition taken to enhance the grassland habitats to heathland, through heathland restoration techniques and heather brash spreading, is estimated by the Biodiversity Metric 2.0 to be 20 years.

8.3.2.2 Mixed scrub

Succession from grassland to native shrub would provide increased opportunities for a range on fauna, by providing additional vegetation structure, shelter, and food sources. Transitions between habitats are also particularly valuable for wildlife. Areas of scrub can be established naturally, over time, through reduced grazing and or cutting, allowing natural succession of habitats. This process may be accelerated with the planting of native shrub species listed in **Section 6.2**. Once established, rotational cutting of scrub would create a mosaic of scrub of different age ranges and structure, maximising opportunities for a range of fauna. The inclusion of cut brash and log piles would also benefit common reptile species known to be present on-site.

The time to target condition taken to enhance the grassland habitats to native shrub, through changes to grazing regime and planting, is estimated by the Biodiversity Metric 2.0 to be 10 years.

8.3.3 Woodland and Forest

Areas of previously planted woodland may be extended to and in doing so provide woodland of various age and structure, creating habitat increased habitat opportunities for birds, bats, reptiles, and invertebrates. Tree planting should include a mixed variety of species, and where possible include mature maidens or standards. Suggested species include:

- | | |
|--|-------------------------------------|
| ■ Pedunculate oak (<i>Quercus rober</i>) | ■ Wych elm (<i>Ulmus glabra</i>) |
| ■ Downy birch (<i>Betula pubescens</i>) | ■ Holly (<i>Ilex aquifolium</i>) |
| ■ Silver birch (<i>Betula pendula</i>) | ■ Hazel (<i>Corylus avellane</i>) |
| ■ Ash (<i>Fraxinus excelsior</i>) | |

Existing woodland should be managed to benefit wildlife by removing invasive or undesirable understorey species and retaining deadwood and brash/log piles.

8.4 Offsite enhancement and creation biodiversity units

Table 8.3 details the potential gains in offsite biodiversity units.

Table 8.3 Off-site habitat enhancement and biodiversity units

Baseline UK Habitat Classification	Baseline Habitat Units	Proposed Habitat UK Habitat Classification	Distinctiveness Change	Condition Change	Time to Target Condition	Area Enhanced (ha)	Habitat Units Delivered
Grassland - Other neutral grassland	5.87	Grassland – Other neutral grassland	Medium (4) – Medium (4)	Poor - Fairly Good	12	1.16	10.10
Grassland - Other neutral grassland	5.06	Grassland – Other neutral grassland	Medium (4) – Medium (4)	Poor - Fairly Good	12	1	8.70
Grassland - Other neutral grassland	5.06	Grassland – Other neutral grassland	Medium (4) – Medium (4)	Poor - Fairly Good	12	1	8.70
Grassland - Other neutral grassland	5.06	Heathland and shrub – Lowland heathland	Medium (4) – High (6)	Lower Distinctiveness Habitat - Moderate	20	1	8.77
Grassland - Other neutral grassland	2.63	Heathland and shrub – Mixed scrub	Medium (4) – Medium (4)	Poor - Good	10	0.52	5.49
Grassland - Other lowland acid grassland	2.43	Grassland – Lowland dry acid grassland	Medium (4) – V. High (8)	Lower Distinctiveness Habitat - Fairly Good	25	0.48	5.33
Grassland - Modified grassland	2.53	Grassland – Other neutral grassland	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Fairly Good	12	1	7.94
Grassland - Modified grassland	2.02	Heathland and shrub – Lowland heathland	Low (2) – High (6)	Lower Distinctiveness Habitat - Moderate	20	0.8	5.59
Grassland - Modified grassland	1.34	Heathland and shrub – Mixed scrub	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Good	7	0.53	5.71
Grassland - Modified grassland	2.53	Grassland – Other neutral grassland	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Moderate	10	1	6.82
Grassland - Modified grassland	2.02	Heathland and shrub – Lowland heathland	Low (2) – High (6)	Lower Distinctiveness Habitat - Moderate	20	0.8	5.59
Grassland - Modified grassland	1.34	Woodland and Forest – Other woodland; broadleaved	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Good	32+	0.53	2.42

Project related

Baseline UK Habitat Classification	Baseline Habitat Units	Proposed Habitat UK Habitat Classification	Distinctiveness Change	Condition Change	Time to Target Condition	Area Enhanced (ha)	Habitat Units Delivered
Grassland - Modified grassland	1.75	Grassland – Other neutral grassland	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Moderate	10	0.69	4.71
Grassland - Modified grassland	1.52	Heathland and shrub – Lowland heathland	Low (2) – High (6)	Lower Distinctiveness Habitat - Moderate	20	0.6	4.19
Grassland - Modified grassland	1.52	Heathland and shrub – Mixed scrub	Low (2) – Medium (4)	Lower Distinctiveness Habitat - Good	7	0.6	6.46
					<u>Total Habitat</u>	<u>11.71</u>	<u>96.53</u>

9 Summary of Biodiversity Assessment

The on-site baseline biodiversity units for the Proposed Development totals 108.64 habitat units and 0.74 hedgerow units. Taking into consideration the habitat lost, enhanced, and created as a result of the Proposed Development, overall, the project would provide 98.74 habitat units and 5.80 hedgerow units, resulting in a net change of -9.70 habitat units (-8.93%) and +5.04 hedgerow units (+664.68%). The overall combined change in biodiversity units as a result of the Proposed Development is therefore -4.66 biodiversity units.

This high level overview of the biodiversity assessment shows that the Proposed Development would result in limited change to the overall biodiversity units; however, consideration would need to be given to several high and medium distinctiveness habitat types that are not fully accounted for, including:

- Rocky shore – Low energy littoral rock;
- Sparsely vegetated land – Maritime cliff and slopes;
- Grassland – Bracken; and,
- Woodland and Forest – Other woodland; broadleaved.

Early consultation with the IACC indicated that where like-for-like habitat replacement is not possible, other opportunities for high-quality habitat enhancement and creation should be sought. Opportunity mapping Holyhead Breakwater Country Park, located 100m north west of the Proposed Development at its closest point, highlighted the potential for habitat enhancements to commercially grazed fields immediately south of the SSSI/SAC boundary.

The baseline grassland habitats present within the grazed fields of Holyhead Breakwater Country Park (see **Figure 6**) include total 37.11 biodiversity units. Habitat enhancements within this area to improve the condition and distinctiveness of grasslands and create a mosaic of native scrub and heathland, targeting the requirements of priority and locally important species, results in a potential increase of 59.42 biodiversity units.

The off-site habitat enhancements, and resulting increase in biodiversity units, have been shown to have the potential of off-set the total loss of biodiversity unit on-site as a result of the construction of the Proposed development.

10 Next steps

A feasibility study and habitat restoration plan would be required for off-site habitat enhancement, and a Landscape and Ecological Management Plan produced for the Proposed Development. Biodiversity enhancements both on- and off-site should be discussed and agreed with IACC and Natural Resource Wales.

The enhancement and creation of habitats to target condition has a temporal lag. Effective habitat management of the areas both on- and off-site would need to be secured for the time indicated in the time to target condition generated by the Biodiversity Metric if the biodiversity units presented in this assessment are to be realised. On-going habitat condition monitoring is recommended in order to track the desired ecological outcomes.

11 References

- Anglesey Local Biodiversity Action Plan [online]. Available at <https://www.anglesey.gov.uk/en/Residents/Countryside/Biodiversity/What-are-we-doing-to-help-biodiversity-on-Anglesey.aspx#:~:text=Anglesey's%20Local%20Biodiversity%20Action%20Plan,help%20important%20habitats%20and%20species>. Accessed 10/08/20.
- Bat Conservation Trust (n.d). Core sustenance zones and habitats for biodiversity net gain [online]. Available at: <https://www.bats.org.uk/resources/guidance-for-professionals/bat-species-core-sustenance-zones-and-habitats-for-biodiversity-net-gain>. Accessed 10/02/21
- Butterfly Conservation (n.d.) Factsheet: Silver Studded Blue [online] Available at: https://butterfly-conservation.org/sites/default/files/silver-studded_blue-psf.pdf. Accessed 10/02/21/
- CIRIA (2019) Biodiversity net gain. Good practice principles for development: A practical guide. ISBN: 978-0-86017-791-3
- Edgar, P., Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth [online] Available at: <https://www.arc-trust.org/for-reptiles>. Accessed 10/02/21
- Environment (Wales) Act 2016 Section 7 – list of the habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales [Online]. Available at: <https://www.biodiversitywales.org.uk/Environment-Wales-Act> . Accessed 16/09/20
- EUNIS habitat classification [online]. Available at: http://eunis.eea.europa.eu/habitats-code-browser.jsp?expand=A#level_A. Accessed 10/08/20.
- IACC (2012) Holyhead Breakwater Country Park – Phase One and NVC Habitat Surveys.
- IACC (2015) Holyhead Breakwater Country Park Management Plan 2015-2020 [online] Available at: <https://www.anglesey.gov.uk/en/Residents/Countryside/Holyhead-Breakwater-Country-Park.aspx>. Accessed 10/02/21.
- IACC (2020) (VAR/2020/20/EIA). Consultation response
- JNCC (2001) Habitat Management for Bats – A guide for land managers, land owners and their advisors. [online] Available at: <https://data.jncc.gov.uk/data/23745574-3756-40ef-81cd-e6fea30decc0/habitat-management-for-bats.pdf>. Accessed 10/02/21
- JNCC, (2010), Handbook for Phase 1 habitat survey – a technique for environmental audit, JNCC, Peterborough, ISBN 0 86139 636 7.
- Natural England Joint Publication JP029 (2019). Addendum. Intertidal Habitats: Biodiversity Metric 2.0 Beta Edition. ISBN 978-1-78354-582-7
- Natural England Joint Publication JP029 (2020). Biodiversity Metric 2.0. User Guide Beta Version. ISBN 978-1-78354-537-7.

Natural England Joint Publication JP029 (2020) Biodiversity Metric 2.0: Technical Guidance for Intertidal Habitats. ISBN978-1-78354-588-9.

Ratcliffe, J.B., Bateson, D.M (2015) Holy Island coast, Anglesey: a review of conservation management, issues and solutions. J Coast Conserv 19, 875–883 (2015). <https://doi.org/10.1007/s11852-014-0348-6>

Royal HaskoningDHV (2019) Holyhead Waterfront Development: Extended Phase One Habitat survey. 29/07/19

Royal HaskoningDHV (2020) Holyhead Waterfront Development: Environmental Impact Assessment. 29/07/19

RSPB (n.d.) Case Studies: Chough [online]. Available at: <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/safeguarding-species/case-studies/chough/>. Accessed 10/02/21

Appendices

A1 Habitat condition scores

Habitat Type	UK Habitat Classification	Habitat Area (ha)	Distinctiveness	Condition	Score	Assessment Criteria Met
Poor semi-improved grassland	Grassland – modified grassland	2.87	Low	Poor	1	Agricultural grasslands is characterised by vegetation dominated by a few fast growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of rye grass and white clover. These grasslands are typically either managed as pasture or mown regularly for silage production or in non-agricultural contexts for recreation and amenity purposes. Significant cover of undesirable species including common ragwort, common nettle, white clover, broad-leaved dock. Cover of bare ground greater than 10%. Cover of bracken less than 20% and cover of scrub and bramble less than 5%.
Scrub - dense/continuous	Heathland and shrub – mixed scrub	2.86	Medium	Moderate	2	There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs. The scrub has a well-developed edge with ungrazed tall herbs. The single woody species cover is greater than 75%. Cover of undesirable and invasive species at 5-20% (rhododendron).
Intertidal - boulders/rocks - brown algal beds	Rocky shore – moderate energy littoral rock	2.77	High	Moderate	2	Clear evidence of pollution. Two or more non-native species are present at a 'Frequent' level on the SACFOR scale. Non-native seaweeds may occupy no more than 10-19% of the rocky shore. No high-risk undesirable species present. Macroalgae Tool suggests water quality is 'Moderate'. Rocky shore communities/biotopes are missing one or more notable/structural/key species.
Bare ground	Urban – vacant/ derelict land/ bareground	2.58	Low	Moderate	2	The site contains some vegetation, including ruderals, open grassland species. The site contains unvegetated, loose bare substrate. The areas of bare ground with little species colonisation are large, with a high potential for improvement with better wildlife management.

Habitat Type	UK Habitat Classification	Habitat Area (ha)	Distinctiveness	Condition	Score	Assessment Criteria Met
Urban – Built up area	Urban – developed land; sealed surface	2.23	Very low	Poor	1	Condition criteria are being failed (i.e. very little vegetation and loose, bare substrate. No pools).
Cultivated/disturbed land - amenity grassland	Urban – amenity grassland	1.97	Low	Poor	1	Amenity and road verge grasslands with similar species to description for agriculture grasslands (rye-grass and white clover).
Broadleaved woodland - semi-natural	Woodland and forest – other woodland; broadleaved	0.86	Medium	Moderate	2	Native species are dominant. Non-native and invasive species account for less than 10% of the vegetation cover. A diverse age and height structure of the trees. Free from damage. The area is protected from damage by agricultural and other adjacent operations. There is no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction). Invasive non-native plants are below 5%. No signs of significant nutrient enrichment present. No more than 1 of the indicators of poor condition are present.
Scrub - scattered	Heathland and shrub – mixed scrub	0.84	Medium	Moderate	2	There are at least three woody species, with no one species comprising more than 75% of the cover. There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs. Pernicious weeds and invasive species make up less than 5% of the ground cover.
Intertidal – mud/sand	Intertidal sediment – littoral sand and muddy sand	0.48	High	Moderate	2	Evidence of low-level pollution, with more widespread with growth of filamentous algal growth or sewage fungus. Several of the indicators of poor condition are present. There are some structures present e.g. groyne which impede the natural movement of sediments. Transitions to other habitats show a low level of disturbance. Non-native species should occupy between 5%-10% of the site and be infrequently encountered on shores. The ecological status of the overlying water body is classified under the Water Framework Directive as Moderate. Litter is covering up to 5% of the area of the site.

Habitat Type	UK Habitat Classification	Habitat Area (ha)	Distinctiveness	Condition	Score	Assessment Criteria Met
Bracken – continuous	Grassland – bracken	0.44	Medium	Moderate	2	There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs. Pernicious weeds and invasive species make up less than 5% of the ground cover.
Boulders/rocks above high tide mark	Maritime cliffs and slopes	0.31	High	Poor	1	Maritime cliffs and slopes (supralittoral rock). Vegetation structure is varied and not uniform. Coastal processes needed to support the habitat are functional are not modified by hard engineering or other forms of intervention. The landform reflects the interaction of coastal processes and geology, and there is a varied topography present supporting the range of habitat types. Habitat management is at appropriate levels for the habitat type – non-intervention. Non-native and invasive species are absent or infrequent (less than 5% cover and not expanding).
Shingle above high tide mark	Sparsely vegetated land - Coastal vegetated shingle	0.17	High	Poor	1	Vegetation structure is varied and not uniform. Non-native species are absent or infrequent (less than 5% cover and not expanding). Other negative indicators of damage or modification are not present. Five or more of the assessment criteria are being failed. Hard engineering or other forms of intervention will prevent restoration and are unlikely to be removed in short term.
Hedge with trees - native species-rich	Native Species Rich Hedgerow with trees	0.08	Medium	Good	3	Mature trees with continuous canopy – trees are at least 1/3 expected fully mature height, gaps make up <10% of total length.
Other tall herb and fern - ruderal	Sparsely vegetated land – ruderal/ephemeral	0.08	Low	Poor	1	Ruderal habitat with low biodiversity value.