

PRELIMINARY ECOLOGICAL APPRAISAL REPORT

Project Dragon, Port Talbot



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REPORT

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1 INTRODUCTION

1.1 Purpose and Scope of this Report

- 1.1.1 RPS was commissioned by LanzaTech to prepare a Preliminary Ecological Appraisal of the EIA Study Area within the Port Talbot Docks, referred to in this report as the site.
- 1.1.2 The preliminary ecological appraisal comprises a desk study, Phase 1 Habitat Survey, and a preliminary protected species assessment (CIEEM, 2017) and the results are presented in this Preliminary Ecological Appraisal Report (PEAR).
- 1.1.3 The PEA aims to:
- undertake a desk study to review designated sites and records of protected species and other species that could present a constraint on development;
 - review aerial imagery to assess the site in relation to its context in the wider landscape.
 - map and describe the habitats present on site;
 - assess the site's potential to support legally protected species, species of conservation concern and species of principal importance; and,
 - review the implications of the site's ecological value / features, for development of the site.
- 1.1.4 Reference is made to the need for mitigation / compensation measures, where relevant, but no details are proposed in relation to these which falls outside the scope of this report.
- 1.1.5 Assessment of the marine habitats associated with the open water dock fall outside the scope of this report.
- 1.1.6 This assessment is considered 'preliminary'. All future development proposals within the EIA Study Area will be supported by a detailed Ecological Impact Assessment (EcIA) and terrestrial ecology chapter of an Environmental Statement (ES). These assessments and mitigation design would be derived using the baseline habitat information presented in this report and the results of Phase 2 survey findings in the context of the detailed development proposals. These reports will assess the effects of the development and present the mitigation and compensation measures that have been incorporated into the development proposals.

1.2 Study Area Location and Context

- 1.2.1 The Project Dragon site is located within the Port Talbot Docks landholding bounded by the Port Talbot Steelworks to the south and by the open water docks to the north.
- 1.2.2 For the purposes of the PEA, the survey area been subdivided into four sections based on their relationship to the development proposals. These comprise the main development site; hereafter referred to as the Production Development Zone (PDZ), three Temporary Construction Areas (TCA1, TCA West and TCA East); and the Marine Unloading/Loading Facility on the side of the open water dock (referred to in this report as Crown Wharf dockside).
- 1.2.3 The survey areas are defined on Figure 1.
- 1.2.4 Phoenix Way adjoins the northern boundary of the PDZ. The disused railway sidings at the western end of the Llanwern Iron Ore Branch Railway bounds the PDZ to the south.
- 1.2.5 The estuarine section of the River Afan lies to the north of the where it flows into Swansea Bay beyond a harbour wall and breakwaters. An enclosed harbour with shallow sloping stony / rocky foreshore lies to the west of the site. The median high-water line is approximately 30m from the

boundary at the closest point with a strip of open grassland between the foreshore and Phoenix Way. This strip is typically 30 to 60m wide but narrows to 5m in one section.

- 1.2.6 Tata Steel steelworks operational areas lie to the south and west of the Llanwern Iron Ore Branch Railway.

1.3 Legislation, Policy and Guidance

- 1.3.1 Relevant legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report where appropriate.

- 1.3.2 The relevant articles of legislation are:

- Planning Policy Wales;
- Technical Advice 5: Nature Conservation and Planning;
- The Conservation of Habitats and Species Regulations 2017;
- The Environment (Wales) Act 2016;
- The Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992;
- Well-being of Future Generations (Wales) Act 2015;
- Natural Environment and Rural Communities Act 2006;
- The Countryside and Rights of Way Act 2000; and
- The Action Plan for Pollinators in Wales.

- 1.3.3 A summary of legislation relevant to protected or other species identified as potential constraints in this report is provided in Appendix A.

2 METHODS

2.1 Desk Study

- 2.1.1 Ecological records were requested from South East Wales Biodiversity records Centre (SEWBRc). The following data were requested:
- Records for protected species or other species of conservation interest recorded within the last ten years and within 2 km of the site.
 - Bat records within the last ten years and within 5 km of the site.
 - Non-statutory sites of nature conservation interest within 2km of the site e.g. Sites of Importance for Nature Conservation (SINCs) and Local Wildlife Sites (LWSs).
 - Local and National statutory sites of nature conservation interest within 2km of the site e.g. Sites of Special Scientific Interest (SSSIs), Local Nature Reserves (LNRs) and National Nature Reserves (NNRs).
 - International statutory sites of nature conservation interest within 10km of the site e.g. Special Protection Areas (SPAs) and Special Area of Conservation (SACs).
- 2.1.2 Additional information on statutory designated sites were accessed via the government 'MAGIC' website (<https://www.magic.defra.gov.uk>), the Natural Resources Wales website (<https://naturalresources.wales/evidence-and-data/maps/>) and the Joint Nature Conservation Committee website (<http://jncc.defra.gov.uk>).

2.2 Habitat Survey

- 2.2.1 The Phase 1 Habitat surveys of the survey area were carried out in June and July 2021 and in July and August 2022 by Tim Oliver, an experienced ecologist supported by Charles Jennings. The Phase 1 Habitat survey broadly followed the standard methodology (JNCC, 2016), and as described in the Guidelines for Preliminary Ecological Assessment (CIEEM, 2017).
- 2.2.2 During the survey visits, an assessment was made of each of the habitats within the survey area. The habitats mapped and described in terms of its botanical species composition. Habitats were classified according to their composition and structure. This broadly followed Phase 1 Habitat types but included non-standard classifications for grasslands to provide distinction between the different plant communities establishing on the post-industrial land.
- 2.2.3 The extent of habitats was defined using a combination of aerial photography and mapping during the walkover survey. The structure and composition of habitats with restricted access were assessed from the margins.
- 2.2.4 The site was assessed for its suitability to support protected species, in particular great crested newt *Triturus cristatus*, reptile species, birds, badger *Meles meles*, bats, and other species of conservation importance that could pose a constraint that would need to be addressed in the planning application.
- 2.2.5 During each of the walkover survey visits, searches were made for evidence of use of the different parts by faunal species. Any signs were noted including burrows, droppings, footprints, paths, hairs, and potential refugia. Areas of bare earth were inspected for mammal prints. Additional notes on habitats and features of value to fauna were made during Phase 2 species.
- 2.2.6 The areas of habitat considered suitable for protected species or those of conservation interest were recorded.

2.3 Botanical Survey

- 2.3.1 Botanical surveys were undertaken for grassland and species diverse ephemeral habitats in July 2022 in the Production Development Zone and Temporary Construction Area 1. Detailed plant species were compiled for the main habitat types and each species was assigned a frequency within the relevant habitat (dominant, abundant, frequent, occasional, rare and local).
- 2.3.2 In the Production Development Zone, plant species lists were compiled for the open regenerating grassland and more established areas of neutral grassland.
- 2.3.3 A plant species list was compiled for the extensive ephemeral and regenerating grassland in Temporary Construction Area 1.

Constraints

- 2.3.4 In the PDZ there was very limited open access through the scrub woodland and extensive Japanese knotweed stands. In 2021 the surveyor avoided walking into stands of Japanese knotweed to minimise the potential for plant fragments to be moved on clothing or footwear. All surveyors followed biosecurity security measures ensuring no Japanese knotweed plant material or substrate was inadvertently transported outside the areas of infestation.
- 2.3.5 Following the cutting down on the dead stems of Japanese knotweed across the most extensive stands and bramble, all areas of grassland become accessible during the surveys in spring and summer 2022.
- 2.3.6 In Temporary Construction Area 2 the dense structure of the scrub woodland and extensive thickets of dense bramble, bracken and Japanese knotweed prevented access through some of the habitats within this area. The boundary of Temporary Construction Area 2 overlaps an extensive reedbed which was not accessed for health and safety. Access through the land at Crown Wharf Berth was restricted to localised areas of more open vegetation with dense stands of bramble and bracken and dense shrub willow growing on the side of the dock.

Survey Data

- 2.3.7 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.
- 2.3.8 The protected/notable species assessment provides a preliminary view of the likelihood of these species occurring on the site, based on the suitability of the habitat, known distribution of the species in the local area provided in response to our enquiries and any direct evidence on the site. It should not be taken as providing a full and definitive survey of any protected/notable species group.

Accurate Lifespan of Ecological Data

- 2.3.9 The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for two years, assuming no significant considerable changes to the site conditions.

3 RESULTS

3.1 Designated Sites

Statutory Designated Sites

- 3.1.1 There are no international statutory designated sites within 5km of the site boundary and no national statutory designated sites within 2km of the site (excluding the Llanwern Iron Ore Branch Railway).
- 3.1.2 The closest internationally protected sites are Kenfig SSSI/NNR/SAC (5km to the south of the Llanwern Iron Ore Branch Railway) and Crymlyn Bog and Pant y Sais SSSI/NNR/SAC (6.6km to the north of Crown Wharf Berth).
- 3.1.3 The closest statutory designated sites to the Production Development Zone are Margam Moor SSSI (3.5km) and Eglwys Nunydd Reservoir (3.6km), both located to the south.

Non-statutory Sites

- 3.1.4 Five non-statutory Sites of Interest to Nature Conservation (SINC) are located within 2km of the EIA Study Area (excluding the Llanwern Iron Ore Branch Railway). The locations of the sites are shown in Figure 2.
- 3.1.5 Harbourside Law Courts SINC is a 3.04ha brownfield site supporting Open Mosaic Habitats on Previously Developed Land located 800m to north-east of the production development Zone. The open habitat mosaic consists of large areas of stonecrop species *Sedum*, kidney vetch *Anthyllis vulneraria*, and bare ground. Plant species listed on the citation include common centaury *Centaureum erythraea*, yellow-wort *Blackstonia perfoliata* and other early pioneer species. Invertebrate populations include small blue butterfly *Cupido minimus*, shrill carder bee *Bombus sylvarum*, and brown-banded carder bee *Bombus humilis*. Slow worm *Anguis fragilis*, linnet *Carduelis cannabina* and starling *Sturnus vulgaris* have also been recorded.
- 3.1.6 The boundary of the Lower River Afan Estuary SINC is 6.63ha comprising coastal saltmarsh and intertidal mudflats located 1km west of production development Zone. These habitats and the population of sea stock *Matthiola sinuate* are the primary reasons for designation.
- 3.1.7 The Lower River Afan Estuary SINC is described as supporting an excellent mosaic of saltmarsh plants along a strip between mudflats and coastal grassland which includes pockets of dune habitat along the higher shore adjoining the Little Warren SINC.
- 3.1.8 Little Warren SINC lies on the opposite side of the mouth of the river 1.2km west of the production development Zone at the closest point. The SINC is 1.47ha and is designated for its coastal sand-dunes with associated slacks, seepages, grassland, and scrub habitat along with an important population of sea stock. The SINC lie adjacent to housing development with connectivity to Lower River Afan SINC and the Baglan Bay dune system SINC to the north.
- 3.1.9 NPT Watercourses SINC is an extensive designation covering watercourses and waterways across the county borough covering coastal, urban and industrial areas including those around the steelworks and docks. The River Afan forms part of this SINC site and the SINC boundary is approximately 700m to the west of production development Zone at the closest point.
- 3.1.10 Bryn Goytre Cycleway SINC is a 2.5 mile linear section of disused railway line and currently a designated cycle track which follows the Cwm Dyffryn Valley between Bryn and Goytre. Near Bryn and Goytre there are verges of low diversity mesotrophic grassland (largely MG1), but much of the track is flanked by ancient Sessile-oak/Birch woodland with abundant ferns plus a suite of Ancient Woodland Indicators. The cycleway is approximately 1.4km north-east of the Production Development Zone.

Other Designations

B-Lines

- 3.1.11 The steelworks and associated docks form part of a regional 'B-Line' network which is a national initiative led by Buglife for pollinators and wider biodiversity.
- 3.1.12 The B-Lines in Neath Port Talbot and in and around Swansea have been identified by Buglife Cymru working in partnership with local organisations including both planning authorities. Around Port Talbot the B-Lines cover coastal, urban, and industrial land and form wide network of corridors with the objective of facilitating projects that restore, enhance and create wildflower-rich habitat for pollinators as stepping stones along the corridors.

Ancient Woodland

- 3.1.13 A small block of ancient woodland (Tai-bach) lies under 1km to east of the Site on the southern side of the M4 motorway. Further blocks of ancient woodland are located in Bryn Goytre Cycleway SINC between 1.2 and 2km from the site.

3.2 Species Records

- 3.2.1 A number of species of conservation importance or otherwise notable have been recorded within the 2 km search radius of the site in the past. A summary of these records are listed in Table 3.1. Species of local importance recorded within the site or wider docks are also included on the table. Records of seabirds have been omitted.

Table 3.1: Species Records from within 2 km of the Site

Scientific name	Common name	Status*	Nearest distance from site (m)
Bats			
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	WCA5, S7, UKBAP	Recorded within wider docks
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	WCA5, S7, UKBAP	Recorded within wider docks
Greater horseshoe bat	<i>Rhinolophus ferrumequinum</i>	WCA5, S7, UKBAP	2.5km
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	WCA5, S7, UKBAP	2.7km
Myotis species	<i>Myotis sp.</i>	WCA5, S7, UKBAP	1.5km
Brown long eared bat	<i>Plecotus auratus</i>	WCA5, S7, UKBAP	874m
Noctule	<i>Nyctalus noctula</i>	WCA5, S7, UKBAP	200m
Other Mammals			
Otter	<i>Lutra lutra</i>	WCA5, S7, UKBAP	918m
Badger	<i>Meles meles</i>	PBA	625m
Hazel dormouse	<i>Muscardinus avellanarius</i>	WCA5, S7, UKBAP	1.9km
Brown hare	<i>Lepus europaeus</i>	S7, UKBAP	198m from site
Polecat	<i>Mustela putorius</i>	S7, UKBAP	1.4km from site
Western European hedgehog	<i>Erinaceus europaeus</i>	S7, UKBAP	320m from site
Birds			
Whitethroat	<i>Curruca communis</i>	WBR(RSPB), UKBAm (RSPB)	Recorded on site (PDZ)
Gadwall	<i>Anas strepera</i>	S7, UKBAm (RSPB)	Recorded within wider docks
Skylark	<i>Alauda arvensis</i>	S7, WBAm (RSPB), UKBR (RSPB)	Recorded within wider docks
Little Ringed Plover	<i>Charadrius dubius</i>	WCA1.1	Recorded within wider docks
Ringed Plover	<i>Charadrius hiaticula</i>	WCA1.1, S7, WBAm (RSPB), UKBAm (RSPB)	Recorded within wider docks
Reed Bunting	<i>Emberiza schoeniclus</i>	S7, WBAm (RSPB), UKBAm (RSPB)	Recorded on site (PDZ)
Linnet	<i>Linaria cannabina</i>	S7, WBR (RSPB), UKBR(RSPB)	Recorded within wider docks

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Scientific name	Common name	Status*	Nearest distance from site (m)
Hedge Accentor	<i>Prunella modularis</i>	S7, UKBAm (RSPB), UKBAP	Recorded on site (TCA2)
Song thrush	<i>Turdus philomelos</i>	S7, UKBAm (RSPB), UKBAm (RSPB)	Recorded within wider docks
House sparrow	<i>Passer domesticus</i>	S7, WBAM(RSPB), UKBR (RSPB), UKBAP	Recorded within wider docks
Northern Lapwing	<i>Vanellus vanellus</i>	S7, WBR(RSPB), UKBR(RSPB), UKBAP	Recorded within the docks
Woodcock	<i>Scolopax rusticola</i>	WBR(RSPB), UKBR(RSPB)	Recorded within the docks
Yellow wagtail	<i>Motacilla flava</i>	S7, WBR(RSPB), UKBR(RSPB)	Recorded within the docks
Meadow pipit	<i>Anthus pratensis</i>	WBAM (RSPB), UKBAm (RSPB)	Recorded within the docks
Grey wagtail	<i>Motacilla cinerea</i>	WBAM (RSPB), UKBAm (RSPB)	Recorded within the docks
Grey heron	<i>Ardea cinerea</i>	WBAM (RSPB)	Recorded within the docks
Sand martin	<i>Riparia riparia</i>		Recorded within the docks
Starling	<i>Sturnus vulgaris</i>	S7, WBR(RSPB), UKBR (RSPB)	Recorded within the docks
Kestrel	<i>Falco tinnunculus</i>	S7, WBR(RSPB), UKBAM (RSPB)	Recorded on-site (TCA1)
Cetti's warbler	<i>Cettia cetti</i>	WCA1.1	Recorded on site (TCA2)
Mallard	<i>Anas platyrhynchos</i>	WBAM(RSPB), UKBAM (RSPB)	Recorded in open water dock
Wigeon	<i>Anas penelope</i>	WBAM(RSPB), UKBAM (RSPB)	Recorded in open water dock
Common gull	<i>Larus canus</i>	WBR(RSPB), UKBAM (RSPB)	Recorded in open water dock
Black-headed gull	<i>Chroicocephalus ridibundus</i>	S7, WBR(RSPB), UKBAM (RSPB)	Recorded in open water dock
Herring gull	<i>Larus argentatus</i>	S7, WBR(RSPB), UKBR(RSPB)	Recorded in open water dock
Lesser black backed gull	<i>Larus fuscus</i>	WBAM (RSPB), UKBAm (RSPB)	Recorded in open water dock
Great black backed gull	<i>Larus marinus</i>	WBR(RSPB), UKBAM (RSPB)	Recorded in open water dock
Oystercatcher	<i>Haematopus ostralegus</i>	WBAM (RSPB), UKBAm (RSPB)	Recorded in open water dock
Coot	<i>Fulica atra</i>	WBAM (RSPB)	Recorded in open water dock
Pochard	<i>Aythya ferina</i>	WBR(RSPB), UKBR(RSPB)	Recorded in open water dock
Teal	<i>Anas crecca</i>	WBAM (RSPB), UKBAm (RSPB)	Recorded in open water dock
Tufted dock,	<i>Aythya fuligula</i>		Recorded in open water dock
Cormorant	<i>Phalacrocorax carbo</i>	WBAM (RSPB)	Recorded in open water dock
Little gull	<i>Larus minutus</i>	WBAM (RSPB)	Recorded in open water dock
Kingfisher	<i>Alcedo atthis</i>	WCA1.1, WBAM (RSPB), UKBAM (RSPB)	Recorded in lower River Afan
Turnstone	<i>Arenaria interpres</i>	WBAM (RSPB)	Recorded in lower River Afan
Redshank	<i>Tringa totanus</i>	WBAM (RSPB), UKBR (RSPB)	Recorded in lower River Afan
Curlew	<i>Numenius arquata</i>	S7, WBR(RSPB), UKBR(RSPB)	Recorded in lower River Afan
Mediterranean gull	<i>Larus melanocephalus</i>	UKBAm (RSPB)	Recorded in lower River Afan
Common sandpiper	<i>Actitis hypoleucos</i>	WBR (RSPB), UKBAm (RSPB)	Recorded in lower River Afan
Reptiles			
Grass Snake	<i>Natrix natrix</i>	WCA5, S7, UKBAP	Recorded within wider docks
Slow worm	<i>Anguis fragilis</i>	WCA5, S7, UKBAP	684m
Adder	<i>Vipera vipera</i>	WCA5, S7, UKBAP	1.6km
Common Lizard	<i>Zootoca vivipara</i>	WCA5, S7, UKBAP	Recorded on site (PDZ)
Amphibians			
Great crested newt	<i>Triturus cristatus</i>	WCA5, S7, UKBAP	1.2km from site boundary (within steelworks)
Common Toad	<i>Bufo bufo</i>	S7, UKBAP	Recorded within wider docks
Invertebrates			
Brown banded carder bee	<i>Bombus humilis</i>	S7, UKBAP	Recorded on site (PDZ)
Shrill Carder Bee	<i>Bombus sylvarum</i>	S7, UKBAP	Over 1km
Small Blue	<i>Cupido minimus</i>	S7, UKBAP	Recorded on site (PDZ)
Dingy Skipper	<i>Erynnis tages</i>	S7, UKBAP	490m from site

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Scientific name	Common name	Status*	Nearest distance from site (m)
Wall	<i>Lasiommata megera</i>	S7, UKBAP	Recorded on site (PDZ)
Cinnabar moth	<i>Tyria jacobaeae</i>	S7, UKBAP	Recorded on site (PDZ)
Red tailed bumblebee	<i>Bombus lapidarius</i>		Recorded on site (PDZ)
Common carder bee	<i>Bombus pascuorum</i>		Disused railway line
Latticed heath	<i>Chiasmia clathrata</i>	S7, UKBAP	Disused railway line
Small heath	<i>Coenonympha pamphilus</i>	S7, UKBAP	Recorded within wider docks
Flora			
Oxtongue broomrape	<i>Orobancha picridis</i>	WCA8	Recorded within wider docks
Sea Stock	<i>Matthiola sinuata</i>	S7, UKBAP, RD (UK)	230m from site
Basil thyme	<i>Clinopodium acinos</i>	S7, UKBAP,	Recorded within wider docks
Pink water speedwell	<i>Veronica catenata</i>	Locally important	Recorded on site (PDZ)
Hawkweed oxtongue	<i>Picris hieracioides</i>	Locally important	Recorded on site (PDZ)
Yellow wort	<i>Blackstonia perfoliata</i>	Locally important	Recorded on site (PDZ)
Common broomrape	<i>Orobancha minor</i>	Locally important	Recorded on site (PDZ)
Eyebright species	<i>Euphrasia sp</i>	Locally important	Recorded on site (PDZ)
Basil thyme	<i>Clinopodium acinos</i>	Locally important	Recorded within wider docks
Pyramidal orchid	<i>Anacamptis pyramidalis</i>	Locally important	Recorded within wider docks
Viper's bugloss	<i>Echium vulgare</i>	Locally important	Recorded within wider docks
Perennial wall rocket	<i>Diplotaxis tenuifolia</i>	Locally important	Recorded within wider docks
Pale toadflax	<i>Linaria repens</i>	Locally important	Recorded within wider docks
Common broomrape	<i>Orobancha minor</i>	Locally important	Recorded within wider docks
Bee orchid	<i>Ophrys apifera</i>	Locally important	Recorded within wider docks
Sand cat's-tail	<i>Phleum arenarium</i>	Locally important	Recorded within wider docks
Wild mignonette	<i>Reseda lutea</i>	Locally important	Recorded within wider docks
Grey club-rush	<i>Schoenoplectus tabernaemontani</i>	Locally important	Recorded within wider docks
Rough clover	<i>Trifolium scabrum</i>	Locally important	Recorded within wider docks
Frog rush	<i>Juncus ranarius,</i>	Locally important	Recorded within wider docks
Knotted pearlwort	<i>Sagina nodosa,</i>	Locally important	Recorded within wider docks
Long-bracted sedge	<i>Carex extensa</i>	Locally important	Recorded within wider docks
Sea holly	<i>Eryngium maritimum.</i>	Locally important	Recorded within wider docks
Sand couch	<i>Elytrigia juncea,</i>	Locally important	Recorded within wider docks
Sea rocket	<i>Cakile maritima</i>	Locally important	Recorded within wider docks
Sea bindweed	<i>Calystegia soldanella.</i>	Locally important	Recorded within wider docks
Hoary ragwort	<i>Jacobaea erucifolia</i>	Locally important	Recorded on disused railway line
Great plait moss	<i>Hypnum cupressiforme var. lacunosum</i>	Locally important	Recorded on disused railway line
Nicholson's beard-moss	<i>Didymodon nicholsonii</i>	Locally important	Recorded on disused railway line

*Abbreviations used: WCA1: Wildlife and Countryside Act Schedule; WCA1.1: Wildlife and Countryside Act Schedule 1, part 1; WCA5: Wildlife and Countryside Act Schedule 5; WCA8: Wildlife and Countryside Act Schedule 5; S7: Environment (Wales) Act 2016, Section 7 species; WBR (RSPB): RSPB – Wales' Red Bird List; WBAm (RSPB): RSPB – Wales' Amber Bird List; UKBR(RSPB): RSPB – UK Red Bird List; UKBAM (RSPB): RSPB – UK Amber Bird List; UKBAP: UK Biodiversity Action Plan, listed species; The Vascular Plant Red Data List (UK), listed species.

3.3 Habitats - Overview

3.3.1 Across the survey area as a whole the principal habitat types are listed below with the different habitats present in each part of the survey area are described below:

- Scrub woodland dominated by shrub willow,
- Japanese knotweed stands,

- Naturally regenerated grassland (including coastal grassland),
- Ephemeral vegetation (mixed species composition),
- Sparsely vegetated ephemeral vegetation / bare ground,
- Scrub woodland dominated by shrub willow,
- Bracken,
- Bramble (thicket),
- Dense scrub,
- Non-native scrub (primarily butterfly bush and sea buckthorn),
- Bare ground (unsealed and sealed surface),
- Dune slack vegetation, and
- Seasonally waterlogged ground.

3.3.2 The habitats are mapped on the Habitats Plan (Figure 3). Photographs of the habitat types and areas are presented in Appendix C for the Production Development Zone and Appendix D for the Temporary Construction Areas.

3.4 Production Development Zone

General Description

- 3.4.1 The Production Development Zone (PDZ) is an extensive area of previously developed/disturbed ground that has naturally regenerated over the last 20 years to form a mosaic of regenerating scrub woodland (dominated by shrub willows), with very extensive stands of Japanese knotweed *Reynoutria japonica*. Naturally regenerated grassland, along with bracken *Pteridium aquilinum*, gorse *Ulex europaeus* scrub and bramble *Rubus fruticosus* agg., are more localised in extent. Three small low-lying areas supporting stands of common reed *Phragmites australis* are partially enclosed by scrub and Japanese knotweed.
- 3.4.2 The Phoenix Way road runs along the northern boundary. A steep bank up to the disused railway line/sidings lies beyond the southern boundary.
- 3.4.3 Operational industrial sites comprising buildings and hardstanding and the access roads are located to the east. An extensive reedbed (>1ha in extent) lies between the industrial operations. The railway embankment up to the disused railway sidings forms the southern boundary.
- 3.4.4 Photographs of the range of habitats present in the Production Development Zone are presented in Appendix C.

Scrub Woodland

- 3.4.5 Regenerating scrub woodland dominated by shrub willows is the most extensive habitat within the Production Development Zone and is now approximately 30% of the vegetation cover. The shrub willows are all multi-stemmed and form a continuous 8-10m high canopy across the habitat (Plate 1). Other shrub species occur rarely, most notably silver birch *Betula pendula*. Goat willow *Salix caprea* is occasional and downy birch *Betula pubescens* occurs rarely. The non-native butterfly bush *Buddleja davidii* is present in the edge habitat but largely absent from within the scrub.
- 3.4.6 The ground flora below the young woodland is patchy has low species diversity. Dewberry *Rubus caesius* is abundant throughout (Plates 2 and 3), sometimes dominant and only locally replaced by bramble.

- 3.4.7 Other ground flora species occur at a low frequency reflecting the adjacent habitats. A range of grasses and sedges were noted including Yorkshire fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, rough meadow-grass *Poa trivialis*, false oat-grass *Arrhenatherum elatius*, hairy sedge *Carex hirta*, spiked sedge *Carex spicata*, sand sedge *Carex arenaria* and common reed were all recorded.
- 3.4.8 A few shade-tolerant ruderals (willowherb species, field horsetail *Equisetum arvense* and cleavers *Galium aparine*) occur alongside woodland species (male fern *Dryopteris filix-mas*, herb Robert *Geranium robertianum*). In places the ground flora is very sparse where there is negligible soil cover on the underlying made ground.
- 3.4.9 Much of the willow habitat has established over the last 20 years. In 2008, the aerial photography indicates that young scrub was scattered scrub with only small areas of more mature larger shrub willows. At this time shrubs covered less than 5% of the Production Development Zone area.

Invasive Non-native Species

- 3.4.10 Stands of Japanese knotweed currently cover approximately 40% of the Production Development Zone, with many being long established. The largest expanses are in the south-western quarter, but areas with dense old growth are distributed widely throughout (Plates 4 and 5). In many places, dense Japanese knotweed also grows within willow scrub woodland (Plate 6). Young growth was noted around the edges of most stands of Japanese knotweed and individual young plants were noted growing in the woodland and grassland at a significant distance from other growth.
- 3.4.11 Montbretia *Montbretia Crocosmia x crocosmiiflora* occurs in a few locations in the central part of the Production Development Zone. Wall cotoneaster *Cotoneaster horizontalis* was recorded on the railway embankment on the southern boundary.

Coastal Grassland and Dune Slack Vegetation

- 3.4.12 These two habitat types are very small in extent located only in the central part of the PDZ. The coastal grassland is c0.05ha and is growing on a very sandy substrate. The grassland has an open structure with coarse grasses only present at low frequency. Dewberry is abundant with the associate species of hairy sedge, Yorkshire fog, common restharrow *Ononis repens*, creeping willow *Salix repens*, and ribwort plantain *Plantago lanceolata*. Japanese knotweed is encroaching into this habitat on all sides.
- 3.4.13 It is characterised by a high percentage cover of herbs and sedges with minimal bare ground. The overall species assemblage is moderately diverse with some variation. Locally frequent species include bird's-foot trefoil *Lotus corniculatus*, thyme-leaved sandwort *Arenaria serpyllifolia*, red fescue *Festuca rubra*, sand sedge, common restharrow, *Ononis repens*, and common storks-bill *Erodium cicutarium*.

Naturally Regenerated Grassland

- 3.4.14 There are several areas of naturally regenerated grassland in Production Development Zone, with larger areas in the east, southeast and along the northwest boundary with Phoenix way. Smaller grassland glades bounded by dense willow scrub Japanese knotweed and bramble thicket are scattered throughout.
- 3.4.15 The composition and structure of the different areas of grassland are described below. The botanical species assemblage for grassland habitat is presented in Appendix B.

Eastern section PDZ

- 3.4.16 In the eastern part of Production Development Zone, a linear area of grassland approximately 15m across and 180m in length is bounded on both sides by areas of dense willow scrub and Japanese knotweed and gorse (Plate 7).
- 3.4.17 The grassland has over 80% cover of herbs and grasses with minimal bare ground. The sward height is generally low due to rabbit grazing. The grassland structure is relatively open with coarse grasses only occurring occasionally.
- 3.4.18 The overall species assemblage is moderately diverse. Dewberry is locally abundant with hairy sedge, Yorkshire fog, common restharrow *Ononis repens* and ribwort plantain *Plantago lanceolata*. Locally frequent species include bird's-foot trefoil *Lotus corniculatus*, thyme-leaved sandwort *Arenaria serpyllifolia*, Canadian fleabane *Erigeron canadensis*, red fescue *Festuca rubra*, black medick *Medicago lupulina* and ribbed melilot *Melilotus officinalis*.
- 3.4.19 Species that are widespread but occur at lower frequency include perforate St John's wort *Hypericum perforatum*, yarrow *Achillea millefolium*, agrimony *Agrimonia eupatoria*, evening primrose *Oenanthem* sp., meadow vetchling *Lathyrus pratensis*, heath bedstraw *Galium saxatile*, common storks-bill *Erodium cicutarium*, wild strawberry *Fragaria vesca*, and common knapweed *Centaurea nigra*.
- 3.4.20 On the margins, adjoining the dense scrub, the grassland is coarser with false oat-grass locally frequent along with common tall ruderal species. Montbretia, an invasive non-native plant has also established in the scrub-edge grassland.

North-eastern PDZ Boundary

- 3.4.21 The grassland on the north-eastern boundary of the Production Development Zone supports a species composition similar to the eastern section of grassland (Plates 8 and 9). Additional species including creeping cinquefoil *Potentilla reptans*, red bartsia *Odontites vernus*, yellow-wort, selfheal *Prunella vulgaris*, pyramidal orchid *Anacamptis pyramidalis*, marsh orchid *Dactylorhiza* sp, common broomrape *Orobancha minor*, fern grass *Catapodium rigidum*, sheep's sorrel *Rumex acetosella*, white clover *Trifolium repens*, thistles *Cirsium* sp., hard rush *Juncus inflexus*, common fleabane *Pulicaria dysenterica*, an eyebright *Euphrasia* species, vervain *Verbena officinalis*, common centaury, and wild parsnip *Pastinaca sativa*. Hawkweed oxtongue *Picris hieracioides* is occasional and a single spike of oxtongue broomrape was recorded in late June 2022.
- 3.4.22 Several ruderal species were present: spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, hoary mustard *Hirschfeldia incana* and hogweed *Heracleum sphondylium*. Willow and butterfly bush saplings are also colonising into the grassland with the area adjoining woodland and scrub.

North-western PDZ Boundary

- 3.4.23 The grassland habitat on the north-western boundary of the PDZ, adjoins Phoenix Way. It has a taller sward with a higher proportion of coarse grasses, and bramble patches are establishing. Overall, the habitat retains a diversity of wildflowers but with most species only occurring occasionally or rarely (Plate 10).
- 3.4.24 At the eastern end, the substrate is sandier and the shorter sward is heavily grazed by rabbits. The most frequent species were common restharrow, creeping cinquefoil, and Canadian fleabane (Plate 11).

Grassland 'Glades'

- 3.4.25 Grassland areas in the centre of the PDZ are enclosed by the scrub woodland and bramble. They are characterised by frequent / locally abundant dewberry which forms a low sprawling growth habitat and creates a more closed grassland structure with patches of reed (Plate 12).
- 3.4.26 Yorkshire fog and creeping bent were the most abundant grass species with false oat-grass and cock's-foot *Dactylis glomerata*. There is variation in the structure across this grassland type with some areas having low species diversity. Creeping cinquefoil is frequent throughout with both greater bird's-foot trefoil *Lotus pedunculatus* and hedge bedstraw locally abundant (Plate 13). The more diverse areas of grassland areas supported populations of yarrow, creeping willow, evening primrose, wild parsnip, common vetch *Vicia sativa*, and greater knapweed *Centaurea scabiosa*.
- 3.4.27 The presence of greater bird's-foot trefoil, common figwort *Scrophularia nodosa*, creeping buttercup *Ranunculus repens*, meadow vetchling and square-stemmed St John's wort *Hypericum tetrapterum* indicate that the ground is seasonally damp. Shrubs, bramble and Japanese knotweed are encroaching into the grassland in many locations (Plate 14 and 15).
- 3.4.28 Smaller grassland 'glades' occur on the southern boundary, between the railway embankment and scrub woodland (Plate 16). These areas are characterised by abundant hairy sedge and low open growth of dewberry, which together dominant the composition. The species diversity is low to moderate. Creeping cinquefoil is frequent with occasional sand sedge, glaucous sedge *Carex flacca*, eyebright, agrimony, meadow vetchling, tansy, common fleabane, square-stemmed St John's wort, common knapweed and selfheal.
- 3.4.29 Southern marsh orchids and greater bird's-foot trefoil were both locally occasional. Hard rush was noted in dried out areas of winter pooling. Small but established stands of Japanese knotweed are growing into these grassland areas.

Dune Slack Vegetation

- 3.4.30 A very small, partially shaded, area of regenerating vegetation in the centre of the site is characterised by creeping willow, water mint *Mentha aquatica*, dotted sedge *Carex punctata* and glaucous sedge with sharp rush *Juncus acutus* and sea rush *Juncus maritimus* (Plate 17). Other species occurring at low frequency included creeping bent, lesser spearwort *Ranunculus flammula*, dewberry, eyebright species, bird's-foot trefoil, and selfheal.
- 3.4.31 This habitat has developed on ground that is subject to extended periods of waterlogging each winter and the assemblage of species is typical of areas of seasonally flooding in sand dunes or other coastal habitats.

Seasonally Flooded Ground

- 3.4.32 Small stands of common reed occur in the three low-lying areas, each bounded by dense shrub willows with patches of Japanese knotweed (Plate 18). They are all seasonally flooded during winter, drying up in in summer and primarily support common reedbed occupying c0.09ha. Where reed growth is less dense, a small number of bryophyte species create a dense carpet below the common reed. Other aquatic plants include sea club rush *Bolboschoenus maritimus*, common spike-rush *Eleocharis palustris*, slender spike rush *Eleocharis uniglumis*, reedmace *Typha latifolia*, jointed rush *Juncus articulatus*, and water plantain *Alisma plantago-aquatica*.

Bare Ground / Ephemeral Vegetation

- 3.4.33 An area of recolonising hardstanding (foundations of demolished large buildings and associated yards) lies in the centre of Production Development Zone with a smaller area adjoining the northern boundary.

- 3.4.34 Thin layer of accumulated dry friable substrate lies on top of the hardstanding (bare ground) but remains largely unvegetated (Plate 19). A low diversity bryophyte carpets has formed in some locations, but the cover of herbaceous plants is sparse, comprising species that can tolerant periodic waterlogging including silverweed *Potentilla anserina*, eyebright, water mint and hard rush primarily around the margins where the recolonising shrub willows create partial shade. Yellow-wort was also an occasional colonist of the bare ground.
- 3.4.35 The area of hardstanding is enclosed on all sides by scrub woodland creating sheltered conditions equivalent to a glade (Plate 20).
- 3.4.36 The second small area of concrete hardstanding adjoins Phoenix Way on the northern boundary (Plate 21). It is associated with more established ephemeral vegetation cover and has a high percentage cover of bryophytes. Colonising species include perforate St John's wort, bird's-foot trefoil, eyebright, hard rush, common reed, jointed rush, southern marsh orchid, creeping willow, creeping cinquefoil and hairy sedge.

Railway Embankment

- 3.4.37 The north facing embankment of the railway sidings primarily supports regenerating willow scrub and open areas colonised by bryophytes (Plate 22) with a few areas of sparsely vegetated clinker substrate. Colonising species included maidenhair spleenwort *Asplenium trichomanes*, polypody *Polypodium* sp., herb Robert and male fern along with the invasive non-native species, wall cotoneaster.

3.5 Crown Wharf Dockside and Phoenix Way

- 3.5.1 A linear, broadly rectangular area of level ground adjoins Crown Wharf, located between the open water dock and Phoenix Way. It is separated from the access road by a crash barrier which runs the length of the southern boundary.
- 3.5.2 The habitats are primarily stands of bracken and bramble thicket with scattered butterfly bush, willow scrub and two young sycamore *Acer pseudoplatanus* trees on the side of the dock.
- 3.5.3 The percentage cover of bracken is relatively high at the western end and a layer of dead fronds has built up on the ground beneath. There is a transition to bramble thicket which is the dominant habitat in the eastern part of this area.
- 3.5.4 At the eastern end of this area, part of the old wooden berth remains intact. The surface is sparsely vegetated bare ground with a few bryophyte species form an extensive carpet over the ground with a low percentage cover of drought tolerant herb species growing on the consolidated crushed stone substrates. Locally frequent higher plants include biting stonecrop *Sedum acre*, false oat-grass, hemp agrimony *Eupatorium cannabinum*, hogweed and butterfly bush.
- 3.5.5 A few small stands of Japanese knotweed are present on the side of the Phoenix Way to the east of Crown Wharf dockside.
- 3.5.6 Old berths north of Phoenix Way are bounded by tall ruderal/ neutral grassland, bramble scrub and regenerating willow and butterfly bush.

3.6 Temporary Construction Area 1

General Description

- 3.6.1 Temporary Construction Area 1 (TCA1) is previously developed land with a substrate of unsealed made ground consisting of a mix of materials including crushed concrete, steel waste slag, concrete and sealed tarmac with negligible soil cover.

- 3.6.2 Pioneer habitats are forming on the area through natural colonisation with a mosaic of open naturally regenerating grassland, mixed species ephemeral vegetation and sparsely vegetated bare ground. Shrub species are colonising and starting to coalesce into scrub on the eastern side.
- 3.6.3 This area adjoins the open water dock with a tarmac access track running parallel to the dock edge. The area is bounded to the east by an entrance road into Port Talbot steelworks and docks with a large industrial complex located close to the southern boundary.

Open Mosaic Habitat

- 3.6.4 The mosaic of sparse ephemeral vegetation, mixed species ephemeral vegetation, open structured grassland, and bare ground covers most of this area of the site (Plate 23). The botanical species assemblage for this habitat is presented in Appendix B.
- 3.6.5 The percentage cover of herbs, grasses and bryophytes varies across the habitat influenced by variation in the underlying substrate.
- 3.6.6 In mixed species ephemeral vegetation, the herb cover is generally high (50% herb, 30% bryophyte 25 -50% cover with less than 10% bare ground), with the sparser vegetated areas generally between 50 and 70% bare ground.
- 3.6.7 A number of herb species occur frequently throughout; kidney vetch, black medick, and ribbed melilot and hawkweed oxtongue and becoming locally abundant (Plates 24 and 25). The main colonising grass species are creeping bent and Yorkshire fog which are both occur frequently with more localised areas of red fescue.
- 3.6.8 A wide range of species occur across the area at relatively low frequency including many indicators of neutral grassland. calcareous grassland and open mosaic habitat including wild carrot *Daucus carota*, yellow-wort, common centaury, hare's-foot clover *Trifolium arvense*, hop trefoil *Trifolium campestre*, perforate St John's wort and red clover *Trifolium pratense*.
- 3.6.9 Bird'-foot trefoil, quaking grass *Briza media*, bee orchid *Ophrys apifera*, pyramidal orchid, flattened meadow-grass *Poa compressa*, tansy *Tanacetum vulgare* and sheep's fescue *Festuca ovina* were all rare or present as localised populations.
- 3.6.10 Additional species occurring in most of the sparsely vegetated areas on crushed made ground include eyebright species, which was locally frequent, compact brome *Bromus madritensis*, fern grass, and fescues *Vulpia* spp.
- 3.6.11 Very sparsely vegetated ground in the centre of the site (Plate 26). These were species poor vegetation with buckshorn plantain the principal colonising species along with white stonecrop *Sedum album* and less frequently biting stonecrop. Only a few other herbs and grasses occur, and all at very low frequency.
- 3.6.12 Oxtongue broomrape *Orobanche picridis*, a nationally rare plant that parasitises hawkweed oxtongue, is locally frequent across much of the open mosaic habitat but largely absent from the sparsely vegetated areas in the centre (Plate 27).

Naturally Regenerated Grassland

- 3.6.13 Longer naturally regenerating grassland over 50% grass cover has established locally in the eastern half of the site where a shallow soil is forming over time (Plate 28). Yorkshire fog is the most abundant species. White clover is locally abundant and ribwort plantain is frequent. A few of the species found in the mixed species ephemeral vegetation survive in the grassland most notably black medick, kidney vetch and wild carrot. Grassland herb species include selfheal, ox-eye daisy *Leucanthemum vulgare*, yellow rattle *Rhinanthus minor*, common knapweed, yarrow, hairy tare *Vicia hirsuta*, wild parsnip, and tufted vetch and meadow vetchling. Locally false oat-

grass and red fescue are abundant with cock's-foot frequent. Bramble has also colonised and is likely to be increasing in extent.

Scrub

- 3.6.14 Shrub willows, (primarily grey willow *Salix cinerea*), and butterfly bush have colonised the eastern side of the area, including alongside the eastern boundary fence. Gorse has also colonised and is locally abundant. The shrubs are maturing but have not yet coalesced to form blocks of dense scrub and are associated with the naturally regenerating grassland which in places is becoming rank.
- 3.6.15 Young colonising scrub is scattered across the open mosaic habitat and is abundant on both sides of the surfaced track parallel to the edge of dock (Plates 29 and 30).
- 3.6.16 The dockside habitats have become substantially recolonised and primarily supports a mix of scattered scrub, abundant ivy *Hedera helix* growth and low bramble cover. Wall cotoneaster (invasive non-native) is frequent and hedge bedstraw *Galium mollugo* is locally abundant. A small block of dense willow and butterfly bush scrub is present at the southern end of the dockside.

3.7 Temporary Construction Area (TCA) East

- 3.7.1 TCA East comprises a series of buildings and areas of hardstanding and bare ground. A site access road separates TCA East from the eastern boundary of the PDZ.

Hard Standing Bare Ground and Buildings.

- 3.7.2 The majority of TCA East is sealed hardstanding, unsealed bare ground and disused buildings. These were largely devoid of vegetation but with scattered small individual shrubs of butterfly bush and willow. Dense Scrub
- 3.7.3 Dense mature scrub present on the north-eastern boundary and the southern edge of the main hardstanding area. The scrub is dominated by goat willow and grey willow with frequent gorse and occasional butterfly bush. The ground flora beneath the self-sown regenerating shrubs is indicative of previously disturbed ground. Noted species include spear-leaved orache *Atriplex prostrata*, and common figwort, rosebay willowherb *Chamaerion angustifolium*, redshank *Persicaria maculosa*, bracken, colt's foot *Tussilago farfara*, creeping buttercup, silver birch, winter heliotrope *Petasites pyrenaicus*, bindweed *Calystegia sp.* and wood reed grass *Calamagrostis epigejos*.
- 3.7.4 There are two areas of bramble dominated scrub on the southern boundary where bramble has colonised along a fence line with butterfly bush and gorse. Tall ruderal vegetation alongside the bramble includes tufted vetch, rosebay willowherb, hemp agrimony, hedge mustard *Sisymbrium officinale*, red campion *Silene dioica*, white clover, and stonecrop *Sedum sp.*
- 3.7.5 Butterfly bush and bramble surround a large industrial building in the southwest of TCA East with frequent thistle *Cirsium sp.*, red campion, redshank, hemp agrimony, hedge mustard, and self-heal.

Naturally Regenerating Grassland

- 3.7.6 An area of open regenerating grassland with scattered scrub is located in the western section of the TCA East has colonised over a former access track and patches of bare ground remain. Species present include abundant ribwort plantain, bramble, butterfly bush saplings; frequent, Yorkshire fog, self-heal, white clover, meadow foxtail *Alopecurus pratensis*, perennial rye grass *Lolium perenne*, grey willow saplings, redshank, common nettle *Urtica dioica*, field horsetail,

hawkweed species, red clover, *Jacobaea vulgaris*, St John's wort, cock's foot, wild strawberry, occasional stone crop, gorse, fleabane, red campion, yellow wort, and hemp agrimony.

- 3.7.7 A strip of grassland, tussocky in places, is present between the reedbed and industrial land to the west (TN2). The species present include abundant, Yorkshire fog, cock's-foot, ribwort plantain, thistle sp. *Cirsium* sp., wild carrot, male fern, fescue grass *Festuca* sp., wild parsnip, common knapweed, yarrow, horsetail, and a hawkweed *Hieracium* species. Frequent species were bramble, rosebay willowherb, hemp agrimony, maidenhair spleenwort, common fleabane, common mouse-ear *Cerastium fontanum*. Occasional species were sycamore sapling, grey willow, red campion, dandelion *Taraxacum officinale* agg., large flower evening primrose *Oenothera glazioviana*, and common reed.
- 3.7.8 Woody shrubs are colonising throughout and the grassland transitions into dense bramble scrub on the edge of the willow scrub. A non-native *Cotoneaster* species was also recorded within this habitat.

Rank Amenity Grassland

- 3.7.9 A small area of unmanaged amenity grassland located adjacent to Building 2 has become overgrown and rank. Species present include bramble, thistle, Yorkshire fog, yarrow, ragwort, hawkweed, self-heal and stone crop.

Invasive Non-native Species

Japanese Knotweed

- 3.7.10 Stands of Japanese knotweed are present within the scrub habitat alongside the access road on the north-western boundary of TCA East, and on the edge of hardstanding / bare ground in the eastern section of TCA East.

3.8 Temporary Construction Area (TCA) West

Recently Sown Grassland

- 3.8.1 In the south of TCA West is an area of establishing re-seeded grassland sown in 2022 on soil imported into the site to cover an area of hardstanding. In August 2023 the grassland had approximately 80% vegetation cover with 20% bare ground present as patches throughout as the grass cover establishes.
- 3.8.2 The sown grass species mix comprised common species including cock's-foot, bent grass, crested dog's tail and false oat grass. Herb species were uncommon but included ox eye daisy and yarrow which are likely to have been part of the species mix. Ruderals have also colonised the bare soil in spring with greater plantain the most frequent, and dandelion, scarlet pimpernel, redshank and American willowherb all recorded.
- 3.8.3 White clover and common mouse-ear (species associated with nutrient enriched soil) are most likely to have been present as seed or roots in the imported soil.

Willow Scrub

- 3.8.4 In the centre of the area is a large stand of willow scrub dominated by grey willow with occasional multi-stemmed goat willow. The habitat has developed from self-sown plants over the last 10-15 years and now forms an even aged canopy about 6-8m high and with main stems typically <10cm at breast height.

- 3.8.5 The ground flora is dominated by extensive monotypic patches of dewberry. A small number of butterfly bush shrubs are present.
- 3.8.6 There is a large extent of dense mixed scrub forming a patchy mosaic of bramble (~45% cover), butterfly bush (~15% cover), mature shrub willows (~20% cover), and gorse (~15% cover) with very localised areas of sprawling dewberry with herb species and bracken.

Naturally Regenerating Grassland

- 3.8.7 Several small areas of open structured grassland are bounded willow, bramble or Japanese knotweed.
- 3.8.8 Dewberry is typically abundant and in places forms a virtual monoculture. Yorkshire fog, red fescue and sand sedge are locally frequent but the percentage cover of grass is typically less than 10% with between 10-30% bare ground/bryophyte. A range of dry and neutral grassland herb species occur at low frequency. The following species were recorded in at least one of the areas of grassland: common restharrow, ribwort plantain, ribbed melilot, yarrow, bird's-foot trefoil, creeping cinquefoil, wild carrot, selfheal, evening primrose, common ragwort, spear thistle, field woodrush, black medick, meadow vetchling, wood sage *Teucrium scorodonium*, hairy rock-cress *Arabis hirsute* and agrimony.
- 3.8.9 Bramble, bracken and shrub saplings are spreading into each of the small areas of grassland.

Bracken

- 3.8.10 Dense bracken is present in a patchwork of open regenerating ground with frequent ivy and localised areas of accumulated dead bracken fronds and stems. Species colonising more open ground within the bracken include Yorkshire fog, red fescue, evening primrose, ribwort plantain, hemp agrimony, perforate St John's-wort, Yorkshire fog, common toadflax *Linaria vulgaris*, and a hawkweed species.

Invasive Non-native Species

Japanese Knotweed

- 3.8.11 An extensive stand of Japanese Knotweed in the south-western section of the PDZ extends into the eastern part of TCA West. A separate smaller stand (approximately 15m x10m) lies close to the main stand, partially enclosed by scrub.
- 3.8.12 A further dense stand of JKW (0.4ha) is present in the northwest of TCA West, bounded by bracken bramble and scrub and starting to extend into these adjacent habitats.

Himalayan Balsam

- 3.8.13 Himalayan balsam *Impatiens glandulifera* is establishing adjacent to the north-east boundary of the main TCA West land parcel.

Off-site Habitats

- 3.8.14 TCA East is bounded to the south by reedbed, and willow scrub with an area of wet woodland establishing beyond the south-western boundary of this temporary construction area.

Reedbed

- 3.8.15 A large area of reedbed adjoins the southern boundary of TCA East. The reedbed is dominated with common reed, with occasional bull rush and widely scattered willow sp., hawthorn *Crataegus*

monogyna and bramble. A raised pipeline runs through this area from the northwest to the southeast corner.

Scrub Woodland

- 3.8.16 The scrub woodland to the south and east of TCA East is largely dominated by goat willow and grey willow with locally frequent dogwood *Cornus sanguineus*. The grey willow shrubs form a 10m high canopy. The ground flora is largely dominated by bramble common nettle cleavers and ivy. Other species occurring less frequently include male fern, red campion, hogweed and hemp agrimony. Herbaceous species recorded in localised areas with less bramble cover included water mint, great willowherb *Epilobium hirsutum*, St John's wort and horsetail *Equisetum* spp.
- 3.8.17 The margins of the scrub woodland support a mix of immature willow, bramble, butterfly bush, bracken, and tall ruderals.

Wet Woodland

- 3.8.18 The north-western part of the woodland comprises a mix of alder *Alnus glutinosa*, grey willow and goat willow on the margin of the reedbed. This area of woodland becomes seasonally flooded, and the ground is sparsely vegetated. Common reed and hard rush occur at low frequency in areas of seasonal pooling with hairy sedge, remote sedge *Carex remota*, water mint, horsetail, great willowherb, bramble and dewberry growing on the drier edges. Pendulous sedge *Carex pendula* and hemp agrimony occur rarely. The ground has a partial cover of bryophytes.

Dense Scrub

- 3.8.19 An area of scrub dominated by large gorse shrubs is located between two areas of woodland south of TCA East. Other species present include abundant water mint, St John's wort, horsetail, frequent goat willow and grey willow, bramble, bird's vetch, butterfly bush. Japanese knotweed is present within this habitat, in addition a large *Cotoneaster* sp. shrub (TN4) is also present in this habitat.

4 DISCUSSION AND RECOMMENDATIONS

4.1 Designated Sites

- 4.1.1 There are no statutory designated nature conservation sites within 2km of the site boundary of the Harbourside site.
- 4.1.2 The closest nationally important sites lie over 3km from the survey area: Margam Moors SSSI lies to the south of the steelworks and comprises coastal/floodplain grazing marsh. Eglwys Nunydd SSSI is designated for its waterfowl populations. Both designated sites are separated from the development areas by the steelworks with negligible habitat connectivity or linkage.
- 4.1.3 Kenfig SSSI/NNR/SAC, and Crymlyn Bog and Pant y Sais SSSI/NNR/SAC are all located within 10km of the survey with a small part of the Glaswelltiroedd Cefn Cribwr SSSI/SAC is located within 10km of the disused railway line.
- 4.1.4 There are five non-statutory designated sites located within 2km of the survey area.
- 4.1.5 Potential effects on statutory and non-statutory sites from the detailed development proposals will be assessed within the EclA and ES chapter.

4.2 Habitats

- 4.2.1 Scrub willow has grown up over the last 20 years and as a habitat lacks structural and species diversity. Willow scrub is present extensively in the PDZ, and TCA West, with smaller stands around the edges of TCA East and along the Crown Wharf dockside.
- 4.2.2 The ground flora beneath the willow scrub typically has low diversity and substantial areas remain sparsely vegetated beneath the multi-stemmed shrubs.
- 4.2.3 The very extensive stands of Japanese knotweed in the PDZ and smaller stands in TCA West, TCA East and verge of Phoenix Way have low biodiversity value.
- 4.2.4 There are several areas of naturally regenerated grassland within the PDZ, the largest area being in the eastern half with further areas on the northern boundary adjoining the Phoenix Way and grassland 'glades' in between blocks of willow scrub and Japanese knotweed. The grasslands generally support a diversity of plants with over 30 grassland indicator species recorded across the habitats as a whole, reflecting the low nutrient status of the underlying substrates. This level of diversity confers the grassland habitats with county level importance.
- 4.2.5 Smaller areas of lower diversity grassland that have naturally developed on previously disturbed ground occur in TCA West and TCA East. The composition of the smaller areas includes dry grassland pioneer species as well as common ruderals.
- 4.2.6 The very localised stand of dune slack vegetation and seasonally waterlogged ground supporting stands of reed are restricted to the PDZ.
- 4.2.7 The other habitats present in the PDZ, and TCA West are stands of bracken, bramble, hawthorn scrub.
- 4.2.8 TCA 1 supports primarily sparsely vegetated ground with scattered scrub, adjoining the eastern boundary of the open water dock. The regenerating habitats create a mosaic of bare ground, ephemeral vegetation and grassland which together classifies as an 'open mosaic habitat on previously developed ground' (OMH), a Section 7 Habitat of Principal Importance.
- 4.2.9 The large reedbed, bounded by willow scrub, adjoining the southern boundary of TCA East is a Section 7 Habitat of Principal Importance. The south-eastern boundary of TCA East adjoins a small seasonally flooded area of wet woodland with a canopy of alder and willow scrub which also classifies as a Section 7 Habitats of Principal Importance.

- 4.2.10 A mitigation, compensation and biodiversity enhancement strategy should be designed for the development to fully offset the loss / damage to habitats and achieve an overall gain for biodiversity.

4.3 Species and Species Assemblages

Bats

Roosts

- 4.3.1 There are 19 industrial buildings, some derelict in TCA East. These buildings have been assessed for the presence/ absence of bat roosts through Preliminary Bat Roost Appraisal (PBRA) and emergence/re-entry surveys.
- 4.3.2 An open-sided car port adjoins the eastern boundary of the PDZ and a daytime inspection of this structure should be undertaken to assess its potential to be used by roosting bats.
- 4.3.3 There are no larger trees within the survey area with gaps or cavity features that would have the potential to provide roosts sites for bats. The open ivy cover on the two young semi-mature sycamores on the edge of the dock at Crown Wharf, have negligible value as potential roost features. The multi-stemmed willow shrubs have narrow diameter trunks and lack features that could be used by roosting bats.

Foraging / Commuting

- 4.3.4 Overall, the habitats in the Production Development Zone and TCA West will be associated with an invertebrate fauna and would be expected to have a reasonable abundance of aerial invertebrates on which bats could prey, in particular the edges of scrub woodland and adjoining grassland and reedbed. The reedbed and willow scrub adjoining the southern boundary of TCA East has the potential to be used by foraging bats.
- 4.3.5 The disused railway sidings to the south of the PDZ and the railway line to the east also have potential value as flightlines.
- 4.3.6 In contrast the majority of TCA1 is sparsely vegetated cover with only scattered young scrub and has lower potential value for foraging bats.
- 4.3.7 Bat activity surveys comprising transects and remote recording have been completed for the site to assess the assemblage of bat species that use the site and levels of activity for each species.

Otter

- 4.3.8 There are past records of otter from the River Afan to the north-west of Port Talbot Docks. As otter is a species with large territories it is assumed that the intertidal section of this river falls within the territory of an otter.
- 4.3.9 The open water dock lies adjacent to the mouth of the river and has the potential to be a foraging habitat for otter.
- 4.3.10 The extensive 1ha reedbed located to the south of TCA East could also attract otter but its context, separated from the open water dock, by series of industrial operational units and areas of hardstanding means that there is no direct connectivity.
- 4.3.11 The multi-stemmed willow shrubs comprising the scrub woodland, generally lack areas of dense cover and ground level in which otters could remain hidden and undisturbed during the day.

- 4.3.12 Following a precautionary approach, the presence/absence of potential laying up places within the site should be assessed with a focus on any areas of dense cover within 100m of the open water dock.

Badger

- 4.3.13 No signs of badger activity were recorded within the survey area during the habitat walkover surveys in 2021 and 2022 or during other daytime walkover surveys. The potential value of the habitat for the establishment of setts and as foraging habitat is considered to be sub-optimal because of the nature of the site which is flat with limited burrowing opportunities and in part subject to winter waterlogging. No field signs of badger have been recorded during any of the walkover survey visits. There is very high confidence in the absence of active setts within the survey area.

Breeding Birds

- 4.3.14 A number of the habitats present within the site have potential to be used by nesting birds. Bramble thicket, stands of gorse and hawthorn having highest potential value due to the cover they provide, while the stands of common reed and the stands of bracken are also habitats that could support nest sites.
- 4.3.15 The multi-stemmed willows and areas of butterfly bush have lower value providing fewer potential nesting opportunities to their very open growth structure (lacking areas of dense cover) and the narrow diameter of the limbs without internal cavities.
- 4.3.16 The stands of Japanese knotweed have low value as a habitat in which birds could nest. Following the removal of the accumulation of standing and fallen dead Japanese knotweed stems in spring 2022 there is minimal cover for nesting birds in the base of the stands.
- 4.3.17 An assessment should be made of the assemblage breeding birds in each part of the survey area.

Wintering Birds

- 4.3.18 The scrub woodland and grassland habitats within the PDZ and TCA West have the potential to be used by a range of passerine species over winter feeding on seeds and invertebrates. Areas of seasonal pooling within the site could attract waders particularly snipe *Gallinago gallinago* which feed on invertebrates in wet mud in dense cover.
- 4.3.19 The open water dock has value for a number of gull and waterbird species. The sections of the dock adjoining Crown Wharf, Phoenix Way and TCA1 will form part of the habitats available to these species during winter months. The old berth structures on the side of the dock provide a potential roost site for gulls. An area of reedbed extends between Crown Wharf and TCA1 on the northern bank of the eastern section of the dock.
- 4.3.20 The edges of the dock are vertical sided with deep open water with no areas of tidal mud on the margins which could attract wader species to feed.
- 4.3.21 A survey of the wintering bird activity should be completed for the parts of the open water dock within and adjoining the proposed development and temporary working areas.

Reptiles

- 4.3.22 Reptile surveys in the wider docks in 2021 confirmed the presence of the common lizard, slow worm and grass snake with populations associated with grassland, scrub and wetland habitats.
- 4.3.23 The composition of habitats in the survey have potential value for reptiles and the record centre hold a past record of common lizard from the northern boundary of the Production Development

Zone with the grassland, scrub woodland margins and reedbed being features of highest potential value.

- 4.3.24 A reptile survey covering the PDZ, Crown Wharf dockside, TCA1 and the railway sidings was completed in 2023 to assess the presence /absence of species in the different parts of the survey area and define the potential population size class of the different species occurring within the site.

Amphibians

Great Crested Newts

- 4.3.25 There is a past record of great crested newt from a waterbody in the southern part of the Port Talbot steelworks, approximately 2.5km from the boundary of the survey area.
- 4.3.26 Surveys for great crested newts in the two waterbodies in wider Harbourside site, undertaken in 2021, have confirmed their very likely absence from the waterbody in the former mineral extraction (c675m west of the Production Development Zone) and the concrete sided pond below the artificial sand martin bank (c375m west of the Production Development Zone).
- 4.3.27 Within the Port Talbot steelworks the closest area of permanent open water with vegetated margin lies over 500m from the Production Development Zone and Temporary Construction Area 2.
- 4.3.28 Areas of unvegetated, potentially seasonal, open water within the steelworks should be assessed to determine if they have the potential to support breeding great crested newts. Any potential breeding habitat within 250m of the development/working areas should be subject to environmental DNA testing and traditional survey methods to determine the presence/absence of this species.

Invertebrates

- 4.3.29 The range of habitats and micro-habitats within the survey areas as a whole offers a wide range of opportunities for invertebrates within the Site. Open mosaic habitats in the Temporary Construction Area 1, flower-rich naturally regenerating grassland, and scrub will all contribute to the value of the site for invertebrates.
- 4.3.30 Many invertebrate species have very precise requirements for habitat 'niches' and the range of ground conditions increases the diversity of micro-habitats available to invertebrates. The wildflower populations will provide valuable sources of nectar and pollen in the context of the site and its surroundings.
- 4.3.31 Detailed surveys of terrestrial invertebrates in 2021 in the wider Harbourside site confirmed the presence of a number of red data book and Section 7 species, primarily associated with the grassland, banks, and flower-rich habitat features.
- 4.3.32 A precautionary assessment of the assemblage of invertebrates should be completed for the survey area, drawing upon surveys of equivalent habitats completed in the wider port.

Higher Plants

- 4.3.33 The botanical composition of the habitats has been assessed alongside the habitat surveys and have confirmed the presence of a range of positive indicator species and indicator species listed in the Guidelines for the Selection of Wildlife Sites in South Wales (The South Wales Wildlife Sites Partnership, 2004) and species listed as of local importance in the SEWBRc datasets.
- 4.3.34 A detailed survey of the legally protected Schedule 8 plant, oxtongue broomrape, was completed within the survey area in early July 2023 with guidance from the national experts Chris Thorogood and Fred Rumsey. The survey was undertaken alongside a survey of the wider Harbourside site

to assess the distribution of the plant within the docks. A strategy will be required to protect the population of oxtongue broomrape.

- 4.3.35 In addition, basil thyme *Acinos arvensis*, a Section 7 species of principal importance, has recorded in the sidings area to the south of the Production Development Zone.
- 4.3.36 The development proposal should address the effects on locally important species associated with open naturally regenerating grassland and flower-rich ephemeral vegetation through measures integrated into the mitigation, compensation and biodiversity enhancement strategy.

Lower Plants

- 4.3.37 Bryophytes form a widespread component of many of the pioneer habitats establishing on the previously developed ground. A bryophyte survey has been undertaken to assess the species assemblages present in areas of habitat of higher potential value within the survey area. The survey confirmed the presence/likely absence of species of conservation concern and local importance.

4.4 Invasive Species (Schedule 9)

Japanese Knotweed

- 4.4.1 Japanese knotweed has been present throughout large areas of PDZ for many years and now forms very extensive stands which extend into TCA West. More localised stands occur within and adjoining TCA East and in the verge of Phoenix Way.
- 4.4.2 An Invasive Non-native Species (INNS) eradication strategy for the whole of the Port Talbot Docks is being designed and implemented by Associated British Ports (ABP) to eradicate the established stands and prevent future spread across. The first stage of the ABP management works is to remove the Japanese knotweed infestation within the PDZ. These works are programmed for spring and summer 2023 and will result in the felling of scrub and disturbance of grassland habitats into which Japanese knotweed is spreading.
- 4.4.3 Biosecurity measures and procedures should be fully incorporated into the Construction Environment Management Plan (CEMP).

Other Schedule 9 Species

- 4.4.4 The other non-invasive species listed under Schedule 9 have been recorded within or adjacent to the site are Montbretia, Cotoneaster species and Himalayan balsam.
- 4.4.5 Montbretia is present in localised patches in the PDZ primarily in the central sections. The dense clumps that have formed will be increasing in extent over time, typically growing on the boundary of the willow scrub.
- 4.4.6 Wall cotoneaster occurs extensively on the edge of the dock at Margam Wharf outside the boundary of TCA1 and is colonising into the open mosaic habitat, probably from seed spread by birds which feed on the fruits. Wall cotoneaster is also present on the railway embankment beyond the southern boundary of the PDZ where it has a more localised distribution than at Margam Wharf. In addition a few plants are present in the north-eastern section of the PDZ.
- 4.4.7 Other cotoneaster species that have been recorded at low frequency in the PDZ and TCA East are also potentially included on Schedule 9.
- 4.4.8 Himalayan balsam has started to colonise habitats to the west of TCA West and is increasing in abundance. No plants have been found within the TCA West area but with a nearby expanding population, colonisation of this prior to the start of construction is possible.

- 4.4.9 All Schedule 9 species should be subject to systematic excavation in advance of earth movements to avoid spread. Materials could be temporarily stored and then subject to burial or removed from site. The control measures should form part of the INNS strategy and be implemented in advance of the development.

Sea Buckthorn

- 4.4.10 Although sea buckthorn is not listed in Schedule 9 in Wales or England, it is non-native in South Wales and is an invasive species in the docks where it has colonised a number of grassland habitats.
- 4.4.11 A few established small stands occur in the PDZ plants are spreading into the surrounding grassland. Following good environmental practice enabling works and construction activities should be designed to avoid the spread of sea buckthorn. The avoidance of the spread of the sea buckthorn should be included in the measures to control the spread on invasive plant species.

5 CONCLUSIONS

- 5.1.1 A range of habitats occur within the site, the majority of which have established on previously developed ground.
- 5.1.2 Across the PDZ and TCA West there are extensive areas of open structured grassland, rank grassland and scrub woodland (dominated by young willows).
- 5.1.3 The willow scrub that has regenerated on previously developed ground is of recent origin and has relatively low nature conservation value. Japanese knotweed is very extensive growing alongside and encroaching into willow scrub, and grassland habitats across the PDZ.
- 5.1.4 The floristic diversity of the grassland is locally high.
- 5.1.5 In localised areas where the substrate is very sandy the plant assemblage mirrors a coastal grassland. A further small area of dune slack vegetation has established on the edge of seasonally flooded hardstanding in the central part of the PDZ. The coastal grassland and dune slack vegetation classify as a S7 habitat of principal importance.
- 5.1.6 The naturally regenerating grassland does classify as a S7 habitat. The number of indicator plant species present in all the grassland areas combined is indicative of a habitat of county value, however, the encroachment of Japanese knotweed and willow scrub habitats into these habitats reduces their biodiversity value.
- 5.1.7 The localised stands of reed in the PDZ are dry for over half of the year and have been classified as seasonally inundated ground.
- 5.1.8 The mosaic of naturally regenerating vegetation in TCA1 classifies as an open mosaic habitat on previously developed ground (a S7 habitat of principal importance). The nationally rare legally protected plant species oxtongue broomrape and a number of locally important plant species occurs within TCA1, primarily associated with ephemeral vegetation.
- 5.1.9 Outside the site boundary the extensive reedbed overlapping the boundary of TCA East qualifies as a S7 Habitats of Principal Importance.
- 5.1.10 Consistent with planning policy, the development should seek to retain existing high value habitats through avoidance within the site layout and masterplan. Where avoidance is not possible, new areas of high value replacement habitat should be created within the wider port and/or as part of off-site compensation.
- 5.1.11 A specific strategy will need to be implemented for the conservation of the nationally important population of oxtongue broomrape. The potential for re-use of surface substrates and feasibility of the relocation of key plant species should be explored.
- 5.1.12 The recently established flower-rich pioneer habitats that characterise TCA1 should be allowed to re-establish and any losses compensated as part of the development proposal.
- 5.1.13 The development proposal should minimise the fragmentation of retained and created habitats and avoid indirect disturbance of off-site habitats through separation from construction activities.
- 5.1.14 Several invasive non-native species listed on Schedule 9 of the Wildlife and Countryside Act are present within the survey area (Japanese knotweed, Montbretia, and cotoneaster species). Himalayan balsam is growing in the vicinity of the northern boundary of PCA West.
- 5.1.15 The control/eradication of Japanese knotweed and other Schedule 9 species will need to be integrated into the development of the site and its implementation will create benefits for biodiversity.
- 5.1.16 The survey area has value for a range of faunal populations. Phase 2 surveys have been completed for bats, badger, otter, birds, reptiles, great crested newts and bryophytes.

Development proposals should seek to limit impacts where possible and include the creation of new habitats for the species groups affected by development proposals.

- 5.1.17 Avoidance, mitigation and compensation should specifically be addressed for the faunal populations within the site and the assemblages of species.
- 5.1.18 Features of value for specific faunal species should be incorporated into areas of replacement habitat and compensation areas. Broader species interests should also be considered in the mitigation and compensation offsetting effects associated with the development of the Harbourside site.
- 5.1.19 Faunal species protection measures will need to be implemented as part of the enabling works to comply with legislative obligations.
- 5.1.20 The mitigation, compensation and biodiversity enhancement should ensure that the development achieves an overall gain for biodiversity to fully offset the value of habitats that will be lost or damaged.

REFERENCES

CIEEM (2017). *Guidelines for Preliminary Ecological Assessment*. Chartered Institute of Ecology and Environmental Management, Winchester.

JNCC (2016). *Handbook for Phase 1 Habitat survey: a technique for environmental audit* (revised reprint). Joint Nature Conservation Committee, Peterborough.

The South Wales Wildlife Sites Partnership (2004) *Guidelines for the Selection of Wildlife Sites in South Wales*.

Figures

Figure 1: Site Area Plan

Figure 2: Non-statutory Designations Plan within 2km Radius

Figure 3: Habitat Plan



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Legend

Application Boundary

Rev	Description	By	CB	Date



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Client LanzaTech UK Limited

Project Project Dragon SAF Production Facility

Title Development Areas

Status	Drawn By	PM/Checked By
ISSUE	OW	PT
Project Number	Scale @ A3	Date Created
ECO02340	1:3,900	SEP 2023
Figure Number		Rev
1		-

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- Legend
- Application Boundary
 - 2km buffer
 - Ancient Semi Natural Woodland
 - NRW Priority Area (Woodland - PAWS)
 - Plantation on Ancient Woodland Site
 - Wildlife Site / SINC (Adopted)

Rev	Description	By	CB	Date



MAKING
COMPLEX
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Project Project Dragon SAF
Production Facility

Title Non-Statutory designations plan
within 2km radius Project Dragon

Status Final	Drawn By HM	PM/Checked By TO
Project Number ECO02340	Scale @ A3 1:18,000	Date Created 30/10/23
Figure Number 2		Rev -

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- Legend
- Application Boundary
 - Bare Ground/Sparsely Vegetated Ground
 - Rubble
 - Bracken
 - Bramble Scrub
 - Bramble Scrub and Japanese Knotweed
 - Broadleaved Woodland
 - Scrub Woodland (Grey Willow)
 - Buildings
 - Coastal Grassland (Intermediate)
 - Coastal Grassland (Rank)
 - Dune Slack Vegetation
 - Dense Scrub
 - Ephemeral Vegetation
 - Gorse Scrub
 - Hardstanding
 - Ivy/Bramble/Scattered Scrub
 - Japanese Knotweed
 - Line of trees - Broadleaved
 - Mature Conifer Tree Line
 - Naturally Regenerating Grassland
 - Naturally Regenerated Grassland (Semi-improved)
 - Neutral Grassland (Rank)
 - Non-Ruderal (Ivy and Ferns)
 - Non-native - invasive species
 - Reedbed
 - Reseeded grassland
 - Scattered Scrub
 - Scattered Trees
 - Sea Buckthorn
 - Standing Water
 - Open Water
 - Security Fence
 - Scattered scrub
 - Scattered tree - broadleaved
 - Inaccessible Area

Rev	Description	By	CB	Date



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Client **LanzaTech UK Limited**

Project **Project Dragon SAF Production Facility**

Title **Habitat Plan**

Status	Drawn By	PM/Checked By
ISSUE	OW	PT
Project Number	Scale @ A3	Date Created
ECO02340	1:3,900	SEP 2023
Figure Number		Rev
3		-

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Appendix A

Relevant Legislation

Great Crested Newt

Great Crested Newt *Triturus cristatus* is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended), which affords the species protection under Section 9. The species is also listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017. In combination, this makes it an offence to:

- intentionally kill, injure or take (capture etc.) a Great Crested Newt;
- possess a great crested newt; or,
- intentionally or recklessly damage, destroy, obstruct access to any structure or place used by Great Crested Newt for shelter or protection, or disturb any animal occupying such a structure or place; and sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative) or advertise for buying or selling such things.

Great Crested Newt is listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016.

Reptiles

All common UK reptile species (Adder *Vipera berus*, Grass Snake *Natrix helvetica*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis*) are protected through part of Section 9(1 and 5) of the Wildlife & Countryside Act 1981 (as amended). This prohibits:

- intentional or reckless injuring or killing;
- selling, offering or exposing for sale, or having in possession or transporting for the purpose of sale, any live or dead wild animal or any part of, or anything derived from, such an animal; or
- publishing or causing to be published any advertisement likely to be understood as conveying buying or selling, or intending to buy or sell, any of those things.

These species are listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016.

Nesting Birds

All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- intentionally take or destroy the egg of any wild bird.

Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

Water Vole and Otter

Water vole and Otter and their habitats are fully protected under the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to:

- capture, kill or injure a Water Vole or Otter;

- damage, destroy or obstruct access to a breeding site or resting place (i.e. burrow);
- disturb a Water Vole or Otter whilst in a place of shelter;
- possess or control a Water Vole or Otter (live or dead), any part of a Water Vole or Otter or anything derived from a Water Vole or Otter;
- sell, barter or exchange a Water Vole or Otter (live or dead), any part of a Water Vole or Otter or anything derived from a Water Vole or Otter; and / or
- advertise or offer for sale, barter or exchange a Water Vole or Otter (live or dead), any part of a water vole or Otter or anything derived from a Water Vole or Otter.

Offences can result from intentional or reckless actions. Penalties include fines of up to £5000 and / or imprisonment for up to six months, per offence. Under certain circumstances a licence can be granted by Natural England to permit activities that would otherwise constitute an offence.

Otters have additional protection, being listed as a European Protected Species (EPS) under Conservation of Habitats and Species Regulations 2017. This makes it an offence to deliberately or recklessly:

- capture, injure or kill an Otter;
- harass an Otter or group of Otters;
- disturb an Otter in a holt or any other structure or place it uses for shelter or protection;
- disturb an Otter while it is rearing or otherwise caring for its young;
- obstruct access to a holt or other structure or place Otters use for shelter or protection or to otherwise deny the animal use of that place;
- disturb an Otter in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species;
- disturb an Otter in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

It is also an offence to:

- damage or destroy a breeding site or resting place of such an animal (note that this does not need to be deliberate or reckless to constitute an offence);
- keep, transport, sell or exchange or offer for sale or exchange any wild Otter or any part or derivative of one (if obtained after 10 June 1994).

Both species are listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016.

Bats

All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All British bats are also included on Schedule 2 of The Conservation of Habitats and Species Regulations 2017 as European Protected Species. It is an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts

A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.

A licence will therefore be required by those who carry out any operation that would otherwise result in offences being committed.

The following bat species are listed as Species of Principal Importance within the Environment (Wales) Act 2016: Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Common Pipistrelle, Brown Long-eared, Greater Horseshoe, and Lesser Horseshoe.

Badger

Badgers are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;
- Intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes.

A sett is defined as “any structure or place that displays signs indicating current use by a badger”.

Grassland and Ephemeral Plant Species Assemblages

Scientific name	Common name	Production Development Zone				TCA 1	Locally / Nationally Important	SINC Indicator Species
		Naturally Regenerated Grassland (Semi-improved)	Naturally Regenerating Grassland (Open structure)	Dune slack vegetation	Coastal Grassland	Ephemeral / Pioneer Grassland		
<i>Achillea millefolium</i>	Yarrow	LF	LF		O			
<i>Agrostis capillaris</i>	Common bent	O	LF		LF			
<i>Agrostis stolonifera</i>	Creeping bent	F	LF	O		LF		
<i>Agrimonia eupatoria</i>	Agrimony	O						NG
<i>Anacamptis pyramidalis</i>	Pyramidal orchid	VLF	O			O	Local	CG
<i>Anagallis arvensis</i>	Scarlet pimpernel					R		
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	R	O			R		
<i>Anthyllis vulneraria</i>	Kidney vetch	O	O		O	F/LA	Local	CG
<i>Arenaria serpyllifolia</i>	Thyme-leaved sandwort	R			LF	F		
<i>Arrhenatherum elatius</i>	False oat-grass	LF/VLA	R			O		
<i>Artemisia vulgaris</i>	Mugwort	R						
<i>Betula sp.</i>	Birch saplings	O		LF		R		
<i>Blackstonia perfoliata</i>	Yellow-wort	R	O			O/LF	Local	CG
<i>Briza media</i>	Quaking grass					VR		NG/CG
<i>Bromus hordeaceus</i>	Soft brome	O	R			R		
<i>Bromus madritensis</i>	Compact brome					O		
<i>Buddleia davidii</i>	Butterfly bush sapling	O	R			LF	Non-native invasive	
<i>Carex arenaria</i>	Sand sedge	R	O	O	LF	VLF		PI
<i>Carex flacca</i>	Glaucous sedge	LO	O	F		L		NG/CG/MG
<i>Carex hirta</i>	Hairy sedge	F/LA	O		A	R		
<i>Carex otrubae</i>	False fox sedge	R				R		
<i>Carex spicata</i>	Spiked sedge					R		NG
<i>Carex punctata</i>	Dotted sedge			VLF			Local	
<i>Catapodium marinum</i>	Fern grass		R			O		PI
<i>Centaurea nigra</i>	Common knapweed	LF	O		O	R		NG
<i>Centaurea scabiosa</i>	Greater knapweed	R						CG
<i>Centaureum erythraea</i>	Common centaury	O	O			VLF		NG/CG
<i>Centranthus ruber</i>	Red valerian					LF		
<i>Cerastium arvense</i>	Common mouse-ear	O	R		O	O		
<i>Cerastium semidecandrum</i>	Little mouse-ear				O			
<i>Cirsium arvense</i>	Creeping thistle	O	R					
<i>Cirsium vulgare</i>	Spear thistle	O						
<i>Conyza canadensis</i>	Canadian fleabane	O	LF		F	LF		

Scientific name	Common name	Production Development Zone				TCA 1	Locally/Nationally Important	SINC Indicator Species
		Naturally Regenerated Grassland (Semi-improved)	Naturally Regenerating Grassland (Open structure)	Dune slack vegetation	Coastal Grassland	Ephemeral / Pioneer Grassland		
<i>Cotoneaster horizontalis</i>	Wall cotoneaster	LO	R			LF	Schedule 9 INNS	
<i>Crepis capillaris</i>	Smooth hawk's-beard	R			O	R		PI
<i>Crepis vesicaria</i>	Beaked hawk's-beard					LF		
<i>Crocasmia x crocosmiiflora</i>	Montbretia	VLF					Schedule 9 INNS	
<i>Dactylis glomerata</i>	Cock's-foot	O	O		R	O		
<i>Dactylorhiza sp.</i>	Marsh orchid species	O						MG
<i>Daucus carota</i>	Wild carrot	O	O		O	LF		CG
<i>Dipsacus fullonum</i>	Teasel							PI
<i>Dryopteris filix mas</i>	Male fern	R						
<i>Echium vulgare</i>	Viper's bugloss		R		R	O	Local	NG
<i>Elymus (athericus / x obtusiuscula)</i>	Sea / hybrid couch grass	VLF			LA			
<i>Epilobium ciliatum</i>	American willowherb		O			O		
<i>Epilobium hirsutum</i>	Great willowherb	O				O		
<i>Epilobium parviflorum</i>	Hoary willowherb		O			O		
<i>Equisetum arvense</i>	Field horsetail	R	R		R	R		
<i>Erodium cicutarium</i>	Common stork's-bill	R	L		O	O		
<i>Eupatorium cannabinum</i>	Hemp agrimony	O			R			MG
<i>Euphrasia spp.</i>	Eyebright species	R	O/LA	R	O	VLF	Local	NG
<i>Festuca rubra</i>	Red fescue	O/VLA	O/LF		LF			
<i>Festuca ovina</i>	Sheep's fescue					L		CG/PI
<i>Foeniculum vulgare</i>	Fennel					R		
<i>Fragaria vesca</i>	Wild strawberry	R	R			R		
<i>Galium mollugo</i>	Hedge bedstraw	O/VLA				LA		NG
<i>Galium saxatile</i>	Heath bedstraw		VR					
<i>Geranium dissectum</i>	Cut-leaved crane's-bill	O	O			O		
<i>Geranium molle</i>	Dove's-foot crane's-bill	O	O			O		
<i>Geranium pyrenaicum</i>	Hedgerow cranesbill	R				R		
<i>Geranium robertianum</i>	Herb Robert					R		
<i>Geranium rotundifolium</i>	Round-leaved crane's-bill					O		
<i>Heracleum sphondylium</i>	Hogweed	O						
<i>Hieracium spp.</i>	Hawkweed species	R	O			O/VL		
<i>Hippophae rhamnoides</i>	Sea buckthorn (sapling)	R					Non-native invasive	
<i>Hirschfeldia incana</i>	Hoary mustard	R				O		
<i>Holcus lanatus</i>	Yorkshire fog	A	O	O	O	A		
<i>Hypochaeris radicata</i>	Common cat's ear	R		R	O			NG
<i>Hypericum perforatum</i>	Perforate St John's wort	O/LF	O		O	O		NG/CG
<i>Hypericum tetrapterum</i>	Square-stemmed St John's wort	R						MG
<i>Jacobaea vulgaris</i>	Common ragwort	R						
<i>Juncus acutus</i>	Sharp rush			O			Local	
<i>Juncus articulatus</i>	Jointed rush		R					

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		Naturally Regenerated Grassland (Semi-improved)	Naturally Regenerating Grassland (Open structure)	Dune slack vegetation	Coastal Grassland	Ephemeral / Pioneer Grassland		
<i>Juncus inflexus</i>	Hard rush	R	O / VLF	F				
<i>Juncus maritimus</i>	Sea rush			O				
<i>Lathyrus pratensis</i>	Meadow vetchling	LF				R		NG
<i>Leontodon hispidus</i>	Rough hawkbit	R				R		NG/CG
<i>Leucanthemum vulgare</i>	Oxeye daisy	O				O		NG
<i>Linum bienne</i>	Pale flax	O				LF	Local	
<i>Linum catharticum</i>	Fairy flax		R		R	R		NG/CG
<i>Linaria purpurea</i>	Purple toadflax	R						
<i>Linaria vulgaris</i>	Common toadflax	VR			R	R		PI
<i>Lotus corniculatus</i>	Common bird's-foot trefoil	O	LF		LF	O/LF		NG/CG/PI
<i>Lotus pedunculatus</i>	Greater bird's-foot trefoil	O/LA		R				MG
<i>Luzula campestris</i>	Field woodrush	O	O					
<i>Medicago lupulina</i>	Black medick	O	O/LF		O	F/LA		CG
<i>Melilotus officinalis</i>	Ribbed Melilot	O/LA				O/VLA		
<i>Mentha sp</i>	Mint species	R	LF	F		R		MG
<i>Myosotis arvensis</i>	Field forget-me-not		O		O	O		
<i>Odontites vernus</i>	Red bartsia	O	O		R	O		
<i>Oenothera spp.</i>	Evening primrose species	O	LF		O	O		
<i>Ononis repens</i>	Common restharrow	O	O/LF		F/LA	O		NG/CG
<i>Ophrys apifera</i>	Bee orchid					R	Local	CG
<i>Orobanche minor</i>	Common broomrape		R			O	Local	PI
<i>Orobanche picridis</i>	Oxtongue broomrape		VR			F	National	
<i>Pastinaca sativa</i>	Wild parsnip	O	LF		R	O/LF		CG
<i>Phragmites australis</i>	Common reed	R		O				MG
<i>Picris hieracioides</i>	Hawkweed oxtongue	R	O			F	Local	CG
<i>Pilosella officinarum</i> agg.	Mouse eared hawkweed				O	L		NG/CG/PI
<i>Plantago coronopus</i>	Buck's-horn plantain					VLA		PI
<i>Plantago lanceolata</i>	Ribwort plantain	LF	F		O	LF		
<i>Plantago major</i>	Greater plantain		R					
<i>Poa compressa</i>	Flattened meadow-grass					O		PI
<i>Poa pratensis</i> agg.	Smooth meadow-grass	O	O		O	F		
<i>Poa trivialis</i>	Rough meadow grass	LF						
<i>Potentilla anserina</i>	Silverweed	O/LF	O		O			
<i>Potentilla anglica</i>	Trailing tormentil		VR					NG
<i>Potentilla reptans</i>	Creeping cinquefoil	F/LA	F		O/LF	LF		
<i>Prunella vulgaris</i>	Selfheal	O	O		O	O		
<i>Pulicaria dysenterica</i>	Common fleabane	O	O		O	O		MG

Scientific name	Common name	Production Development Zone				TCA 1	Locally / Nationally Important	SINC Indicator Species
		Naturally Regenerated Grassland (Semi-improved)	Naturally Regenerating Grassland (Open structure)	Dune slack vegetation	Coastal Grassland	Ephemeral / Pioneer Grassland		
<i>Ranunculus acris</i>	Meadow buttercup	R						
<i>Ranunculus flammula</i>	Lesser spearwort	R		R				MG
<i>Ranunculus repens</i>	Creeping buttercup	LF		O				
<i>Reynoutria japonica</i>	Japanese knotweed (young)	LF	LF		O			
<i>Rhinanthus minor</i>	Yellow rattle	VL				O		
<i>Rubus caesius</i>	Dewberry	A/LD	O/LA	O	A	F		
<i>Rubus fruticosus</i> agg.	Bramble	O	R		R	R		
<i>Rumex acetosella</i>	Sheep's sorrel		VR					
<i>Rumex crispus</i>	Curled dock	O	O			O		
<i>Salix repens</i> var. <i>argentea</i>	Creeping willow	O/VLF	R	A	F			MG
<i>Salix</i> spp. (<i>sapling</i>)	Willow shrub saplings	O	O/LF	LF	O	O		
<i>Saxifraga tridactylites</i>	Rue-leaved saxifrage					VL		NG
<i>Scrophularia nodosa</i>	Common figwort	R						
<i>Sedum acre</i>	Biting stonecrop		R			LF		
<i>Sedum album</i>	White stonecrop		O/VLD		LF	LF		
<i>Senecio squalidus</i>	Oxford ragwort		R					
<i>Silene flos-cuculi</i>	Ragged robin	R						MG
<i>Sonchus oleraceus</i>	Smooth sow-thistle					R		
<i>Tanacetum vulgare</i>	Tansy				O	R		PI
<i>Taraxicum</i> agg.	Dandelion	O	R		R	R		
<i>Trifolium arvense</i>	Hare's-foot clover		R			LF		
<i>Trifolium campestre</i>	Hop trefoil		R		O	LF		CG/PI
<i>Trifolium dubium</i>	Lesser trefoil		R			R		
<i>Trifolium medium</i>	Zig-zag clover	R						NG
<i>Trifolium pratense</i>	Red clover	LF			R	O		NG
<i>Trifolium repens</i>	White clover	O/VLA				O/VLA		
<i>Tussilago farfara</i>	Colt's-foot	O	O					PI
<i>Urtica dioica</i>	Common nettle	R			R	R		
<i>Verbascum thapsus</i>	Great mullein		R					PI
<i>Veronica chamaedrys</i>	Germander speedwell	O	O		O			
<i>Vicia cracca</i>	Tufted vetch	O/LF				R		
<i>Vicia hirsuta</i>	Hairy tare					L		
<i>Vicia sativa</i> agg.	Common vetch	O				O		
<i>Vicia tetrasperma</i>	Smooth tare	LF		O				
<i>Verbena officinalis</i>	Vervain		R					
<i>Vulpia bromoides</i>	Squirrel's-tail fescue					LF		NG/CG/PI
<i>Vulpia myuros</i>	Rat's-tail fescue					O		PI

REPORT

Scientific name	Common name	Production Development Zone				TCA 1	Locally / Nationally Important	SINC Indicator Species
		Naturally Regenerated Grassland (Semi-improved)	Naturally Regenerating Grassland (Open structure)	Dune slack vegetation	Coastal Grassland	Ephemeral / Pioneer Grassland		
SINC INDICATOR SPECIES		37	26	7	22	39		

Appendix C

Habitat Photographs – Production Development Zone

Habitat Photographs – Production Development Zone

Plate 1: Regenerating willow scrub with sparse ground flora



Plate 2: Dense young willow scrub with dewberry field layer



Plate 3: Open structured willow scrub with dewberry field layer



Plate 4: Regrowth of extensive Japanese knotweed



Plate 5: Extensive Japanese knotweed with dead stems removed



Plate 6: Willow scrub with Japanese knotweed (background)



Plate 7: South-eastern grassland strip on sandy substrate



Plate 8: North-eastern grassland



Plate 9: North eastern boundary grassland



Plate 10: Northern boundary grassland



Plate 11: Northern boundary grassland with sandy substrate



Plate 12: Grassland 'glade' with reed, JKW, dewberry and bramble



Plate 13: Central grassland glade with wildflowers



Plate 14: Central grassland glade with encroachment of bramble



Plate 15: Central 'glade' – bramble thicket



Plate 16: Southern grassland strip



Plate 17: Dune slack plant assemblage



Plate 18: Scrub enclosing stand of common reed



Plate 19: Central area of bare ground with scattered scrub



Plate 20: Part of central bare ground subject to seasonal pooling



Plate 21: Ephemeral vegetation establishing on hardstanding



Plate 22: Railway Embankment



Habitat Photographs – Temporary Construction Areas

Habitat Photographs – Temporary Construction Area 1

Plate 23: Naturally regenerating grassland mosaic



Plate 24: Ephemeral vegetation on tracksides



Plate 25: Flower-rich naturally regenerating grassland



Plate 26: Sparsely vegetated ground



Plate 27: Oxtongue broomrape spikes



Plate 28: Longer grassland and scattered scrub



Plate 29: Scattered scrub and wall cotoneaster and on dockside



Plate 30: Scattered scrub along track and dockside



Habitat Photographs – Temporary Construction Area 12

Plate 31: Bramble thicket within scrub woodland



Plate 32: Scrub woodland with bramble field layer



Plate 33: Wet scrub woodland adjoining reedbed



Plate 34: Boundary of reedbed and scrub woodland



Plate 35: Naturally regenerating grassland



Plate 36: Tall ruderal and rank grassland on edge of scrub



Plate 37: Woodland edge habitat (Buddleia)



Plate 38: Off-site reedbed and pipeline infrastructure

