Tata Steel UK Limited (Tata Steel)

Electric Arc Furnace

Preliminary Ecological Appraisal Report

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EXECUTIVE SUMMARY

This report presents the results of a preliminary ecological appraisal of the 2021/2022 survey area and red line boundary, comprising a background data search and a Phase 1 habitat survey with an assessment for protected species. The Phase 1 habitat surveys were completed in August 2021 for the 2021/2022 survey area (the site boundary for a previous iteration of the project), with additional surveys between December 2023 and May 2024 to cover the current red line boundary. This report has been produced to support the Electric Arc Furnace project. The appraisal was based on the red line boundary plan of the development site (the 'site') provided by the client.

The site is located within the Tata Steel UK Limited (Tata Steel) Steelworks at Port Talbot South Wales. The majority of the site comprises bare ground/ developed land with scrub and ephemeral short perennial vegetation, semi-improved neutral grassland, broadleaved plantation woodland, standing water and reedbeds. Due to the industrial history of the site this mosaic of habitats would be classed as Open Mosaic Habitat on Previously Developed Land and the southern fields together with their drain network would be classed as coastal floodplain grazing marsh, both of these are habitats of principal importance for the purpose of maintaining and enhancing biodiversity in Wales. There are a number of channels throughout grassland within the southern extent of the site, together with several areas of open water associated with the steelworks, located at the northern extent of the site. Some of the habitats are considered to be species – rich.

The watercourses within the site are all designated as Site of Importance for Nature Conservation (SINC). The Kenfig/ Cynffig European Designated Site is located in close proximity as are Margam Moors and Eglwys Nunydd Reservoir Sites of Special Scientific Interest (SSSI) and two further SINC's. The potential for the Electric Arc Furnace project to impact on the European and other designated sites is likely to require a Habitats Regulation Screening Assessment (HRA) and Ecological Impact Assessment (EcIA).

Japanese knotweed is present within the site and is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Should this species be impacted as part of the works then an invasive species management plan should be implemented.

There is potential for legally protected species to be impacted. The following additional surveys will be required to fully inform the baseline:

- Environmental DNA (eDNA) survey to confirm the absence of great crested newts.
- Reptile surveys.
- Dormouse surveys.
- Breeding bird surveys.
- Wintering bird surveys.
- Invertebrate surveys.
- Water vole and otter surveys.
- Badger surveys.
- Assessment of buildings to support roosting bats.

- Bat activity surveys.
- Detailed botanical surveys (NVC).

Finally, the site offers considerable opportunity for biodiversity enhancement, in particular allowing open mosaic habitat to develop to its full species rich potential, managing the southern grassland and creating additional ditches.

CONTENTS

1.0 INTRODUCTION **1**
1.1 Background 1
1.2 Purpose of this report 1
1.3 Landscape context 1
1.4 Development proposals 1
2.0 METHODS **3**
2.1 Overview 3
2.2 Background data search 3
2.3 Plants and habitats 5
2.4 Protected and notable animals 5
2.5 Constraints and limitations 8
3.0 RESULTS **10**
3.1 Background data search 10
3.2 Plants and habitats 14
3.3 Protected and notable animals 16
4.0 EVALUATION **21**
5.0 RECOMMENDATIONS **24**
5.1 Key constraints to design and construction 24
5.2 Further surveys required 25
5.3 Opportunities for enhancement 28
6.0 CONCLUSIONS **30**
6.2 **Validity of Data** 30
REFERENCES **31**
FIGURES **32**
APPENDIX A – PROTECTED AND NOTEWORTHY SPECIES RECORDS **33**
APPENDIX B – ABBREVIATIONS **44**
APPENDIX C – TARGET NOTES **46**
APPENDIX D – SITE PHOTOGRAPHS **49**

TABLES

Table 1: Data sources 3
Table 2: Statutory sites within 10 km of the site boundary (2km for SSSIs, NNRs and LNRs) 10
Table 3: Non-statutory designated sites within 1 km of the site boundary 12
Table 4: Protected species records within 2 km of the site boundary 33
Table 5: Noteworthy species records within 2 km of the site boundary 36
Table 6: Glossary of abbreviations used in this report 44

1.0 INTRODUCTION

1.1 Background

1.1.1 A preliminary ecological appraisal (PEA) survey was undertaken in August 2021 within the 2021/2022 survey are (shown in purple in Figure 1). Subsequently, adjustments were made to the proposed development and further surveys were required to ensure full survey coverage of the red line boundary.

1.2 Purpose of this report

1.2.1 This report represents the results of a preliminary ecological appraisal (PEA) of Tata Steel UK Limited (Tata Steel) Steelworks in Port Talbot, South Wales (central Grid Ref SS 77524 86021). This includes a background data search and results of JNCC Phase 1 habitat surveys. The Phase 1 habitat surveys were completed in August 2021 for the 2021/2022 survey area (shown in purple on Figure 1), with additional surveys in 2023/2024 to cover the current red line boundary.

1.2.2 The report identifies ecological constraints relevant to the project, specifies any further survey or mitigation requirements (e.g., for an Ecological Impact Assessment), gives recommendations for avoidance and protection through design changes, and suggests opportunities for ecological enhancement, in particular to deliver biodiversity net benefit. The appraisal was carried out on behalf of Turley Planning for their client Tata Steel UK Limited (Tata Steel).

1.3 Landscape context

1.3.1 The approximately 160 ha site is located to the south-east of the town of Port Talbot. The site is predominately bare ground/ developed land. Open mosaic habitat is the most dominant habitat type comprising a mixture of scrub, grassland and ephemeral vegetation. There are a number of channels holding water throughout the site and one large lake associated with the steelworks, located at the northern extent of the site.

1.3.2 The site is immediately bordered to the north, east and west by additional Tata Steel UK Limited (Tata Steel) Steelworks land, with coastal floodplain grassland, reedbed, an access road and Margam Moors Site of Special Scientific Interest (SSSI) adjacent to the south of the site. The surrounding landscape is a mixture of woodland, hedgerows, waterbodies
(reservoir), coastal floodplain grassland and residential properties within Margam. Swansea Bay (Bristol Channel) is located approximately 880 m west of the site. A review of aerial photographs and Ordnance Survey maps shows that there are two ponds located within 500 m of the site.

1.4 Development proposals

1.4.1 The Proposed Development will require the demolition of existing buildings and structures, and the construction of a new EAF steel production facility. The Proposed Development also includes a scrap metal handling facility and associated scrap yards,

chemical and material storage structures, buildings, handling systems, electrical control rooms and power infrastructure, laboratories, offices and ancillary facilities, together with new and amended roads and rail lines, landscaping and green infrastructure, lighting, hardstanding, CCTA, drainage and associated engineering operations.

2.0 METHODS

2.1 Overview

2.1.1 The PEA was undertaken in line with guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017); it therefore included:

- a desk study (here called a background data search (BDS)), which included a review of aerial photographs; obtaining information from the DEFRA and JNCC websites, and the local authority website and requesting data from the local records centre; and
- a field survey that informed habitat mapping, an assessment of the possible presence of protected or species of principal importance and the likely importance of habitat features.

2.1.2 The PEA report includes an ecological description of the site and information about species that may occur there. Notes and mapping of any incidental sightings of invasive non-native plant species and protected or priority fauna species are also provided.

2.1.3 The original survey of the 2021/2022 survey area (purple boundary in Figure 1) was carried out on 17 and 18 August 2021 by Mark Lang and Stephen Hancock. Mark is a Chartered Ecologist and Chartered Environmentalist and therefore a suitably qualified and experienced ecological consultant, a full member of CIEEM, and is experienced in carrying out preliminary ecological appraisals. Mark holds a level 4 botany field identification skills certificate (FISC). Stephen is a Chartered Environmentalist and therefore a suitably qualified and experienced ecological consultant, a full member of CIEEM and is experienced in carrying out protected species surveys.

2.1.4 Additional surveys were carried out between December 2023 and May 2024 by Kailey O'Brien and Alex Ellis. Kailey is an Associate member of CIEEM and holds a level 4 FISC and therefore suitably qualified in carrying out preliminary ecological appraisals. Alex is a Full member of CIEEM and also qualified for carrying out preliminary ecological appraisals.

2.2 Background data search

2.2.1 A search was made in September 2021 for relevant reference materials. A list of sources is given in Table 1.

Table 1: Data sources

Information obtained	Available from
Protected and noteworthy species-records	SEWBReC - South East Wales Biological Record Centre
Designated site locations and citations	Natural Resources for Wales
	Joint Nature Conservation Committee (JNCC) website
	SEWBReC - South East Wales Biological Record Centre

Information obtained	Available from
Designations and legal protection of noteworthy species	Joint Nature Conservation Committee (JNCC) website
Ancient Woodland Inventory	Forestry Commission Website
Details of species and habitats listed on the LBAP	Neath Port Talbot Council Local Biodiversity Action Plan https://www.biodiversitywales.org.uk/Neath-Port-Talbot

2.2.2 A search was made for international and national statutory designated sites of ecological importance within 2 km of the site boundary including Ramsar sites, Special Areas of Conservation (SAC), Special Protection Areas (SPA)1, and Sites of Special Scientific Interest (SSSI), including consideration of SSSI risk zones. The search area was extended to 10 km for SAC, SPA and Ramsar sites.

2.2.3 A search was also made for non-statutory designated sites (often important in a local context) within 1 km of the site boundary.

2.2.4 The BDS also included a search for records within 2 km of the site boundary for noteworthy species, which might be receptors to the proposed development. Species included in the search were:

- European protected species (listed on Schedules 2 and 5 of The Conservation of Habitats and Species Regulations 2017 (as amended));
- nationally protected species under Schedules 1, 5 and 8 of The Wildlife & Countryside Act 1981 (as amended) and The Protection of Badgers Act 1992;
- species listed as critically endangered, endangered or vulnerable based on the IUCN Red List Categories and Criteria 2001;
- all species listed on the RSPB's Birds of Conservation Concern 5 (Stanbury *et al.,* 2021) as red' or 'amber';
- nationally rare or nationally scarce species;
- notable[2] invertebrates; and
- species of principal importance listed on The Environment (Wales) Act 2016 or are priority species under the Neath Port Talbot Council Local Biodiversity Action Plan.

[1] SACs and SPAs were formerly called 'European Sites' and part of the Natura 2000 network; post-'Brexit', they are now considered part of the UK's 'national site network'. Ramsar sites are sites of international importance. Note that SPAs, SACs and Ramsar sites are also underpinned by SSSI designations whose citations/boundaries may be slightly different.

[2] Appendix B includes a description of 'notable' as used in this context.

2.3 Plants and habitats

Phase 1 habitat survey

2.3.1 The field survey was completed following the standard survey methodology within the Handbook for Phase 1 Habitat survey (JNCC 2010), This field survey was undertaken in line with CIEEM 2017 and involved the following elements:

- habitat mapping using a set of standard colour codes to indicate habitat types on a habitat map (Figure 3 (Phase 1 habitat)); and
- a description of features of possible ecological or nature conservation interest in notes relating to numbered locations on the habitat map, called 'target notes' (Figure 2).

2.3.2 Note that due to the habitats on site forming a complex mosaic, large areas of the site being in a constant state of flux due to ongoing industrial activity, and access being restricted in some areas it was not possible to accurately plot every single habitat feature. Therefore, a more pragmatic approach has been taken with the mapping of habitat types on a broad scale with detailed target notes to describe the habitats type present.

2.3.3 Vascular plant species were recorded during the survey, although no attempt was made to produce an exhaustive species list (additional species would almost certainly be found during more detailed surveys or repeat surveys at various times of the year).

2.3.4 Plant nomenclature in this report follows Stace (2019) for native and naturalised species of vascular plant. Plant names in the text are given with common names with the scientific name (in italics) immediately following the first time it is mentioned

Invasive non-native species (INNS)

2.3.5 Phase 1 habitat survey does not involve exhaustive surveying for individual plant species, and various invasive species may be little in evidence at various times of year (depending on the species). A survey seeking to identify habitat types cannot therefore be relied upon to provide firm information about the presence or extent of any INNS. However, any INNS that were encountered during the habitat survey were noted, including Japanese Knotweed (*Reynoutria japonica*), Giant Hogweed (*Heracleum mantegazzianum*) and Himalayan Balsam (*Impatiens glandulifera*), as well as any invasive non-native species of animals identified.

2.4 Protected and notable animals

General

2.4.1 The site was assessed for its suitability to support protected or otherwise notable animals that are likely to occur in the area. Considering the results of the BDS, the geographic location, connectivity to natural habitats in the wider landscape, the nature and extent of habitats at the site, and the proposed development, specific assessment was also carried out for the species/species groups outlined below. Unless stated otherwise, no species specific presence / likely absence surveys were completed.

Looking for evidence whilst on site is not the same as a detailed presence / likely absence survey.

Invertebrates

2.4.2 The site was assessed for its suitability to support notable species and/or assemblage of invertebrates, but no specific surveys were undertaken. The habitat requirements of particular invertebrates are often species-specific, so consideration was given to the presence of features and habitats that might be suitable for the notable species identified in the BDS.

Fish

2.4.3 Waterbodies/watercourses within/alongside the site were broadly assessed for their likely habitat and water quality, and consequent suitability to support fish (and other species); however, no specific fish surveys were undertaken.

Great crested newts

2.4.4 Although standing water is essential for their breeding, great crested newts (*Triturus cristatus)* are terrestrial for most of the year. Ordnance Survey maps and aerial imagery was reviewed to identify any ponds within 500 m of the site boundary, and the site was assessed for its suitability for both terrestrial and breeding great crested newts. Optimal breeding ponds tend to be well-vegetated, relatively clean and unpolluted, free of fish and wildfowl, and retentive of water throughout most summers (but not necessarily all). Highly suitable terrestrial habitats include woodland, scrub and tussocky grassland, although great crested newts can be found in a broad range of sub-optimal habitats as well. Habitat suitability for other amphibians was similarly assessed.

Reptiles

2.4.5 The site was assessed for its suitability for the four most widespread reptile species, with particular attention given to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of rotting vegetation) and opportunities for foraging (e.g. rough grassland and scrub).

2.4.6 Specific habitat requirements differ between species. Common lizards (*Zootoca vivipara*) and slow-worms (*Anguis fragilis*) favour rough grassland. Grass snakes (*Natrix helvetica*) have broadly similar requirements, with a greater reliance on ponds and wetlands. Adders (*Vipera berus*) use a range of fairly open habitats with some cover but are most often found in dry heath.

Birds

2.4.7 Birds nest, forage and roost in a wide variety of habitats including scrub, woodland, hedgerows and trees, wetland, arable and pastoral farmland and rough grassland. Some species also use open bare ground and man-made structures.

2.4.8 The site was assessed for its suitability to support diverse assemblages and/or uncommon species of breeding and non-breeding birds, with an emphasis on those species that are listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as

amended), the red and amber lists of the RSPB's Birds of Conservation Concern 5 (Stanbury *et al*., 2021) and other notable species recorded in the BDS, including any species that are qualifying features of nearby designated sites. Consideration was given to the site's connectivity to landscape features that are likely to be of particular importance to birds, such as extensive areas of semi-natural woodland or wetlands. The presence of nests or signs of nest building were recorded, and buildings within the southern fields were surveyed for their suitability for barn owls and other species, with signs including nesting sites, feathers, droppings and pellets.

Bats

2.4.9 Habitats were assessed for their suitability for foraging and commuting bats, in line with guidance provided in Collins (2016). Areas of particular interest vary between species, but generally include sheltered areas and habitats with good numbers of insects, such as woodland, scrub, rivers and species-rich or rough grassland.

2.4.10 Trees and man-made structures were noted if they had potential suitability for roosting bats (Collins, 2016). This involved identifying features that roosting bats may favour (e.g. holes, cracks and cavities that might be used as bat access-points or roost sites).

2.4.11 Evidence of roosting bats includes droppings, urine stains, staining from fur-oils, wear marks, feeding remains, dead bats, odour, squeaking and chattering, and in some cases the absence of cobwebs. Bat droppings can prove beyond doubt that bats use a building and can help to identify roosting locations because piles often accumulate beneath roosting sites or entrance points.

2.4.12 Surveys undertaken within the 2021/ 2022 survey area were completed following the Collins 2016 survey methodology. New survey methodology was released in 2023, however, to remain consistent, additional surveys completed in 2023/ 2024 were completed using 2016 survey methods.t

Ground-level tree surveys

2.4.13 All trees within the site were surveyed from ground level. Features that might be used by roosting bats were described and categorised according to accepted guidelines (Collins, 2016). Each tree was given a category during the ground-level surveys based on its potential for roosting bats.

2.4.14 Trees may also be categorised as having unknown potential if the surveyor's view of the tree is obscured. This can be caused by dense Ivy (*Hedera helix*) covering the trunk and major limbs so as to conceal potential roosting features from view.

Dormice

2.4.15 Habitats were assessed for their general suitability for dormouse (*Muscardinus avellanarius*). Dormice generally use areas of dense woody vegetation cover (including hedgerows) and are more likely to be found where there is a wide diversity of woody species contributing to three-dimensional habitat complexity, a number of food sources, plants suitable for nest-building material, and good connectivity to other areas of suitable habitat.

Water voles and otters

2.4.16 Waterbodies and watercourses and their surrounding habitats were assessed to determine whether they were suitable for water voles (*Arvicola amphibius*). Suitable habitats include vegetated earth banks, reed beds, flowing water and wet ditches. Incidental signs of water vole activity, including burrows, feeding platforms, food remains and latrines, were recorded if they were encountered.

2.4.17 Waterbodies and watercourses on the site were also assessed for their suitability for otters (*Lutra lutra*). Otters require clean rivers and associated waterbodies with an abundant, varied supply of food and plenty of bank-side vegetation, offering secluded sites for their holts. Other suitable habitats include reed beds and interconnected ditches and streams. Incidental signs of otter activity, including holts, foraging signs, paths (runs), footprints and spraints, were recorded if they were encountered.

Badgers

2.4.18 An initial assessment was carried out to identify areas that might be used by badgers (*Meles meles*) for commuting, foraging or setts within 30 m of all areas potentially affected by works (where access was possible). The area was systematically searched for signs of badgers including setts, foraging signs, paths (runs) and latrines where possible, and the category of sett and levels of activity visible at each sett was recorded.

Other species of principal importance

2.4.19 The UK countries of England, Wales, Scotland and Northern Ireland are obliged by their individual laws to maintain lists of species and habitats of principal importance for biodiversity conservation. In Wales, this obligation derives from Section 7 of the Environment (Wales) Act 2016. An assessment of the suitability and likelihood of the site supporting such species was made (for example, hedgehog (*Erinaceus europaeus*)).

2.5 Constraints and limitations

2.5.1 Due to ongoing industrial activity including the movement of heavy plant and operation access was not possible to some areas and the deposition and movement of fuel ash and other aggregate meant that the distribution of habitat is constantly changing. In addition, the habitats on site were a complex mosaic with dense scrub and reed beds preventing access by foot in other areas. However, it is considered that sufficient access was possible to describe the range of habitat types present and to inform the requirements for additional survey.

2.5.2 Less conspicuous plant species (including INNS) may have been missed as a result of the survey being undertaken outside of the ideal survey season. However, the majority of plants present were confidently identified, and the survey was sufficient to make a broad assessment of the habitats present on the site.

2.5.3 This preliminary appraisal as to whether protected or otherwise notable species might occur on the site is based on the suitability of habitat, the known distribution of relevant species in the local area (from online sources and desk study), and any signs of the

relevant species. It does not constitute a full and definitive survey of any protected species group.

2.5.4 Field signs for protected and valuable species are often difficult to find or absent from a site. The survey conducted was not intended to be a comprehensive presence/absence survey for all species, but rather to provide an indication of the likely presence of such species based on the field signs found, and the nature of the habitats present.

3.0 RESULTS

3.1 Background data search

Statutory designated sites

3.1.1 There are six statutory designated sites within 2 km of the red line boundary, comprising one SAC, three SSSIs, one National Nature Reserve and one Local Nature Reserve. The search for SACs, Ramsar sites and SPAs was extended to 10 km of the site, this identified an additional one Ramsar site and two SACs. These sites are listed in Table 2 in order of proximity to the site; short descriptions are given for the sites.

Table 2: Statutory sites within 10 km of the site boundary (2km for SSSIs, NNRs and LNRs)

Site name	Reasons for designation	Approximate distance (m) from site
Margam Moors Site of Special Scientific Interest (SSSI)	The last remaining example of the once extensive coastal levels in West Glamorgan. Bounded to the seaward by dunes and to landward by high ground, the meadows provide an agriculturally-managed freshwater habitat which hosts many species of plant on the edge of their geographical range, and nationally important invertebrates. Mesotrophic marsh, fen meadow and ditch communities support flowering-rush (*Butomus umbellatus*), frogbit (*Hydrocharis morsus-ranae*), arrowhead (*Sagittaria sagittifolia*), Cyperus sedge (*Carex pseudocyperus*) and brown sedge (*C. disticha*) on the edge of their range, with others such as lesser water-plantain (*Baldellia ranunculoides*), tubular water-dropwort (*Oenanthe fistulosa*) and marsh helleborine (*Epipactis palustris*) of local interest. The nationally rare beetle (*Haliplus mucronatus)*, the dragonfly (*Sympetrum sanguineum)* the regionally rare beetle (*Anacaena bipustulata)*, and the water-bug (*Corixa panzeri*) have all been found in the ditches. The SSSI is located south of the site boundary.	Adjacent to the south of the red line boundary
Eglwys Nunydd Reservoir SSSI	The largest sheet of fresh water in the county. On the site of Margam Moors which, before being reclaimed for the Abbey Steel Works, were a notable site for wildfowl. The reservoir attracts large numbers of wintering waterfowl and passage migrants. Notable species including Great Crested and Little Grebes, Mallard, Gadwall and Coot now breed. The SSSI is located to the south east of the site boundary.	310

Site name	Reasons for designation	Approximate distance (m) from site
Kenfig/ Cynffig Special Area of Conservation (SAC)	Qualifying Annex I habitats: • Fixed dunes with herbaceous vegetation ("grey dunes") • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) • Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) • Hard oligomesotrophic waters with benthic vegetation of Chara spp. • Humid dune slacks Qualifying Annex II habitats: • Fen orchid (*Liparis loeselii*) • Petalwort (*Petalophyllum ralfsii*)	1425
Kenfig/ Cynffig SSSI	Kenfig is of special interest for its extensive sand dune habitats and standing waters together with a mixture of associated coastal habitats including saltmarsh, intertidal areas, swamp, woodland and scrub. In addition, the site is of special interest for the assemblages of plants, fungi and invertebrates that are associated with the sand dunes and standing waters. The following individual species are also of special interest: petalwort, the medicinal leech, the fen orchid, the shrill carder bee, the hairy dragonfly and a weevil.	
Kenfig Pool and Dunes National Nature Reserve (NNR)	Kenfig Nature Reserve is a sand-dune reserve, with Glamorgan's largest natural lake, Kenfig Pool. The reserve is a refuge for wildfowl all year round. Bittern can be seen during the winter.	1434
Kenfig Pool and Dunes Local Nature Reserve (LNR)	Kenfig National Nature Reserve is also designated as a Site of Special Scientific Interest. The area is managed to ensure the dunes aren't overcome by dense grassland and scrub woodland losing important and diverse wildlife.	1466
Cefn Cribwr Grasslands / Glaswelltiroedd Cefn Cribwr SAC	Qualifying Annex I habitats: • *Euphydryas (Eurodryas, Hypodryas) aurinia* • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	6372
Crymlyn Bog Ramsar site	Ramsar Criterion 1 Largest example of valley floodplain topogenous mire in South Wales, and one of the largest surviving fens in the west of Britain. Very few other sites are known to support a comparable complexity and diversity of vegetation. Habitats Directive Annex I features present on the SAC include: • H7140 Transition mires and quaking bogs	8077

Site name	Reasons for designation	Approximate distance (m) from site
	• H7210 Calcareous fens with (*Cladium mariscus*) and species of the (*Caricion davallianae*) • H91E0 Alluvial forests with (*Alnus glutinosa* and *Fraxinus excelsior*). Ramsar criterion 2 Supports a substantial population of the nationally-rare slender cotton-grass (*Eriophorum gracile*), and a rich invertebrate fauna including many rare and highly localised species. Ramsar criterion 3 The site supports 199 vascular plant species including 17 regionally-uncommon and one nationally-rare	
Crymlyn Bog/ Cors Crymlyn SAC	Qualifying Annex I habitats: • Calcareous fens with (*Cladium mariscus*) and species of the (*Caricion davallianae)* • Transition mires and quaking bogs • Alluvial forests with (*Alnus glutinosa* and *Fraxinus excelsior*, [*Alno-Padion, Alnion incanae*, *Salicion albae*])	

Non-statutory Sites

3.1.2 There are three non-statutory designated sites within 1 km of the site boundary, all of which are Sites of Interest for Nature Conservation (SINCs). These non-statutory designated sites are listed in Table 3 along with their proximity to the site.

Table 3: Non-statutory designated sites within 1 km of the site boundary

Site name	Reasons for designation	Approximate distance (m) from site
Neath Port Talbot Watercourses Site of Interest for Nature Conservation (SINC)	Not Available – all Neath Port Talbot watercourses are designated as SINCs	Within the site
Eglwys Nunydd SINC	Eglwys Nunydd is a 260-acre supply reservoir in Margam, originally constructed to provide water for the large steelworks at Margam. The lake supports trout and coarse fishing and is also used for dinghy sailing. The lake is classed as eutrophic standing water but there are numerous habitats forming a cohesive site. These include reedbeds, lowland fen and lowland mixed deciduous woodland. The site is extremely rich in migrant and resident bird species, a great number of which are Schedule 1 and Section 7 species.	180

Site name	Reasons for designation	Approximate distance (m) from site
Junction 38 Wetland Complex SINC	This is a cohesive wetland site comprised of wet woodland, reed beds, ditches, and marshy grassland. Some drier areas support indicators of the neutral grassland NVC type MG5. Much is known about this site because it has been included in several planning applications over recent years. The site is located to the rear of Port Talbot Steelworks near Junction 38 of the M4 motorway. Margam Moors SSSI is approximately 800m southwest of the site and is fairly well connected by the network of drains and ditches in the area. Eglwys Nunydd SSSI is about 750m directly south of the site and is designated due to the waterfowl populations it supports and as a SINC it additionally includes the surrounding wetland and scrub habitats. The area is very wet but is occasionally grazed by cattle. There is a National Grid substation directly west of the site and high voltage power lines cross the site in several directions; resilience clearance works are undertaken under these pylons on a fairly regular basis.	335

Habitats

3.1.3 There are four areas of ancient woodland within 1 km of the site boundary, the closest is 440 m to the east of site.

3.1.4 The site falls within a B-Line and a National Resources Wales Priority Area – Lowland Wetland.

Protected and notable species

3.1.5 At least 363 noteworthy species are recorded from places within 2 km of the site boundary. Noteworthy species include species of principal importance that are listed under Section 7 of The Environment (Wales) Act 2016.

3.1.6 Of these, five are amphibians, four are reptiles, 152 are birds, two are fish, 125 are invertebrates, at least 27 are mammals (of these, 14 are bats), 44 are plants, one alga, three bryophytes. Species that are protected by law under Schedules 2 and 5 of The Conservation of Habitats and Species Regulations 2017 (as amended), Schedules 1, 2, 5 and 8 of The Wildlife and Countryside Act 1981 (as amended) or The Protection of Badgers Act 1992 that have been recorded in the search area are highlighted in the full species list given in Appendix A. Those of relevance to the site and the current proposals are discussed in Sections 4.2 and 4.3.

3.2 Plants and habitats

Rare and notable plant species

3.2.1 The BDS identified a single plant species protected under the Wildlife and Countryside Act located within 2 km of the site boundary. This was for Pennyroyal (*Mentha pulegium*) the record dated 1973. Pennyroyal does occur on the edge of temporary pools within coastal grassland but given the overgrown unmanaged nature of the remaining coastal floodplain grassland (see habitat descriptions below) and the age of the record, it is unlikely to be present within the site boundary.

3.2.2 Of the other notable plants identified from the BDS, Greater Water-parsnip (*Sium latifolium*), Frogbit (*Hydrocharis morsus-ranae*) and Dittander (*Lepidium latifolium*) may persist within the unmanaged coastal floodplain grassland and associated ditches.

3.2.3 It is likely that plant species locally notable and notable for Wales will be identified given the species-richness of the flora, particularly within the ephemeral short perennial vegetation.

Phase 1 survey

3.2.4 The JNCC Phase 1 map is provided as Figure 3 and the location of the target notes referred to in the text below are shown on Figure 2 A full description for each of the target notes is given in Appendix C.

3.2.5 The site comprises a complex mosaic of habitats that have developed over time across different substrates including railway ballast and spent fuel ash resulting from the extensive industrial activity associated with the steel works. Habitat types include:

- Scrub
- Ephemeral short perennial vegetation
- Open water and reedbed
- Swamp
- Semi-improved neutral grassland
- Poor semi-improved grassland
- Broadleaved plantation
- Coastal floodplain grazing marsh (comprised of semi-improved neutral grassland and ditches).
- Line of trees

3.2.6 Collectively the mosaic of habitats (grasslands and ephemeral short perennial vegetation in addition to the areas of bare loose substrate) would be identified as open mosaic habitat on previously developed land, a habitat of principal importance in Wales, listed under Section 7 of the Environment (Wales) Act. Due to the nutrient poor status of the substrate on which vegetation has established the flora is relatively diverse and species rich. A short summary for each habitat type is given below:

Scrub

3.2.7 Scrub is widely distributed in discrete pockets across the site dominated by Butterfly-bush (*Buddleja davidii*), Willow (*Salix* sp), Elder (*Sambucus nigra*) and Bramble (Rubus fruticosus agg.). The majority of the scrub is 3-4m high and quite dense and likely to have established as areas of the site were abandoned (Appendix D, Plate 1; TN11).

Ephemeral and short perennial vegetation (ESPV)

3.2.8 This vegetation has become established on substrate such as railway ballast and areas where coke fuel ash and furnace slag has been spread (Appendix D, Plate 2). Due to the industrial operations the continued movements of such substrate across the site ensures this vegetation is continually being kick – started as new plants colonize bare substrate. Due to the nutrient poor status of the substrate and its free draining nature, a vegetation community comprising annual plants, ruderal weeds and bryophytes and lichens has developed. In places this vegetation is species rich. Specific examples of this vegetation are described further in Target Notes (TN) 1, 2, 3, 6, 8 and 15. The area targeted by TN8 is notable as the vegetation is growing through a dense matt of lichen, this type of vegetation would be termed Lichen Heath.

3.2.9 Where plants have had time to establish, and no fresh spoil has been added vegetation is undergoing succession to neutral grassland and scrub.

Open water and reedbed

3.2.10 Open water is present in a number of discrete lagoons with channels linking the lagoons together, probably as part of the site drainage network (Appendix D, Plate 3, 4 and 12). TN 4 describes an area of derelict unmanaged Coastal Floodplain grassland and here the fields are divided by a network of drainage ditches. Common Reed (*Phargmites australis*) fringes the open water lagoon (TN14) and has also grown extensively over the ditch network to almost totally obscure any open water.

Swamp

3.2.11 Swamp habitat was noted in one location to the west of the lagoon. The area was dominated by Common Reed and is described in detail in TN12 (Appendix D, Plate 11).

Semi-improved neutral grassland

3.2.12 Neutral grassland is widespread across the site growing in a complex mosaic with ESPV and scrub (Appendix D, Plate 5). The grassland is dominated by False Oat-grass (*Arrhenatherum elatius*) and was in general less species rich than the ESPV. Species such as Wild Carrot (*Dacus carota*) and Yellow-wort (*Blackstonia perfoliate*) indicate where the underlying substrate is more base rich. Specific areas are described further in TN 2, 8 and 7.

Poor semi-improved grassland

3.2.13 Poor semi-improved grassland is located around the lagoon in the north of the site (Appendix D, Plate 10). The grassland included Creeping Bent (*Agrostis stolonifera*), Yorkshire-fog (*Holcus lanatus*), Cock's-foot (*Dactylis glomerata*) with Dandelion

(*Taraxacum* agg.) and Creeping Cinquefoil (*Potentilla reptans*). The area is further described in TN 13 and 16.

Broadleaved plantation

3.2.14 Broadleaved plantation was noted in one location to the south of the site and is described in detail in TN5 (Appendix D, Plate 6). The woodland comprised a mixture of native and non-native trees up to 4m in height with a ground flora dominated by Bramble and Common Nettle (*Urtica dioica).*

Coastal floodplain grassland (Semi-improved neutral grassland with a network of ditches)

3.2.15 The BDS has highlighted the presence of Margam Moors SSSI, an area of Coastal floodplain grazing marsh, consisting of grasslands divided by ditches supporting a diverse aquatic plant and invertebrate assemblage (Appendix D, Plate 7). Immediately on the other site of the track and within the red line boundary, is a similar area of grassland fields and ditches that are described further in TN4, coastal grazing marsh is a habitat of principal Importance in Wales.

3.2.16 From aerial photographs this area is clearly a continuation of the coastal floodplain habitat within the SSSI, albeit outside the designated site boundary. As described in TN4 the fields are dominated by grass species whilst the ditches covered in emergent Common reed and scrub with no species-rich aquatic vegetation apparent. The dense nature of the grasses and dense reed growth indicates that this area has not been subject to agricultural management for a considerable period. It is likely that a sympathetic grazing regime would result in significant ecological enhancement of this area.

Line of trees

3.2.17 One line of trees was present within the north-west of the site, it comprised Sea Buckthorn (*Hippophae rhamnoides*), White Poplar (*Populus alba*) and Ash (TN10; Appendix D, Plate 13).

Invasive non-native species

3.2.18 No invasive non-native plant species were identified within the 2021/2022 survey area. Surveys of the red line boundary identified Japanese knotweed (TN9; Appendix D, Plate 13) within the north of the site, in 2024.

3.3 Protected and notable animals

3.3.1 Overall, due to the diversity and extent of the habitats on site, as well as their connectivity within the site and with the habitats off-site, there is good potential for a range of legally protected and/or notable animals to be present on site. The species groups for which there is potential to be present on site are discussed below.

3.3.2 Figure 2 shows the location of the target notes referred to in the text below, which show the location of particular features with suitability for protected and notable animals. A full description for each of the target notes is given in Appendix C.

Invertebrates

3.3.3 The BDS returned records of 125 notable invertebrate species within 2 km of the site, indicating the presence of locations within the local area that are rich with invertebrate species, including many scarce species.

3.3.4 The complex habitats recorded on site, such as open mosaic and coastal grazing marsh, provide suitable habitat for a range of invertebrate species. In addition, the areas of open water and network of ditches also provide valuable habitats for invertebrate species. Locations and further details of these habitat types are provided in TNs 1-4,6-8.

3.3.5 List of incidental invertebrates recorded on site; small heath (*Coenonympha pamphilus*), red admiral (*Vanessa atalanta*), gatekeeper (*Pyronia tithonus*), large white (*Pieris brassicae*), meadow brown (*Maniola jurtina*), speckled wood (*Pararge aegeria*), yellow-faced bee (*Hylaeus*), green-veined white (*Pieris napi*), common darter (*Sympetrum striolatum*), emperor (*Anax imperator*), common carder bee (*Bombus pascuorum*) and common blue (*Polyommatus icarus*), unknown species of solitary bee.

Fish

3.3.6 The BDS returned records of European eel (*Anguilla anguilla*) and brown/sea trout (*Salmo trutta*) within 2 km of the site.

3.3.7 The lagoons and channels within the site have potential to support European eel. . The waterbodies on site are largely surface water drainage features and are unlikely to support a diverse range of fish species. Locations and further details of the lagoons and channels on site are provided in TNs 4, 9 and 10.

3.3.8 The aquatic habitat on site is not considered suitable for brown/sea trout due to lack of flow in channels and unsuitable substrate (silt).

Great crested newts

3.3.9 The BDS revealed records of great crested newts within 2 km of the site boundary. The nearest record was located approximately 2 km south of the site. A review of maps and aerial imagery identified two ponds and numerous ditches within a 500 m radius of the site boundary, which could provide suitable breeding habitat for great crested newts.

3.3.10 A range of aquatic habitats that are potentially suitable breeding habitat for this species are present within the site, including a large lagoon and drainage channels within the operational area and within the fields to the southern extent of the site. Locations and further details of the lagoons and channels on site are provided in TNs 4, 9 and 10.

3.3.11 The aquatic habitats on site are generally in close proximity to areas of suitable terrestrial habitat for great crested newts, including areas of dense scrub bordering the lagoon and areas of neutral grassland and coastal grazing marsh bordering the channels.

Reptiles

3.3.12 The BDS identified records of common lizard, grass snake and slow-worm within 2 km of the site. Grass snake and slow-worm records were within 1 km of the site and the closest record for common lizard occurred within 100m of the site.

3.3.13 The site contains large areas of a range of habitats that are suitable for reptiles, which are well connected within and beyond the site boundary. The areas of ephemeral short perennial vegetation, neutral grassland, scrub and coastal grazing marsh provide optimum foraging and hibernating opportunities for reptiles. In addition, the network of aquatic habitats provides further foraging and migration corridors for grass snake. Locations and further details of these habitat types are provided in TNs 1-4,6-10.

Birds

3.3.14 The BDS returned records of 109 priority bird species from the 2 km radius around the site, with many of these being associated with the reservoirs, coast, woodlands or grassland habitats surrounding these areas, such as: skylark (*Alauda arvensis*), marsh harrier (*Circus aeruginosus*), common gull (*Larus canus*) and Cetti's warbler (*Cettia cetti*).

3.3.15 Priority species identified by the BDS with the potential to be associated with habitats within or immediately adjacent to the site were: Cetti's warbler, skylark.

3.3.16 Extensive areas of the site provide suitable breeding habitat for a range of bird species, including the areas of woodland, scrub, neutral grassland and coastal grazing marsh. In addition, habitats on site may be used by significant number of overwintering birds. Suitable overwintering habitat present on site includes the lagoon and coastal grazing marsh.

3.3.17 List of incidental birds observed on site; raven (*Corvus corax*), starling (*Sturnus vulgaris*), dunnock (*Prunella modularis*), linnet (*Linaria cannabina*), goldfinch (*Carduelis carduelis*), stonechat (*Saxicola rubicola*), robin (*Erithacus rubecula*), blue tit (*Cyanistes caeruleus*), great tit (*Parus major*), meadow pipits (*Anthus pratensis*), jay (*Garrulus glandarius*) and kestrel (*Falco tinnunculus*).

Bats

3.3.18 The BDS returned records of the following bat species within 2 km of the site:

- Noctule bat (*Nyctalus noctula*).
- Common pipistrelle (*Pipistrellus pipistrellus*).
- Soprano pipistrelle (*Pipistrellus pygmaeus*).
- Brown long-eared bat (*Plecotus auritus*).
- Daubenton's bat (*Myotis daubentonii*) and
- Whiskered bat (*Myotis mystacinus*).

3.3.19 The nearest record was common pipistrelle located approximately 1 km north-east of the site.

3.3.20 Trees within the woodland were assessed for potential bat roosting features. No features were identified from the ground.

3.3.21 Several buildings were identified within the site that could potentially provide roosting habitat for bats.

3.3.22 The site features large areas of habitat suitable for foraging by a range of bat species. Specifically, the lagoon, channels and areas of grassland around the operational areas of the site, plus the coastal grazing marsh and woodland to the south of the site. Locations and further details of these habitat types are provided in TNs 1 to 10.

Dormice

3.3.23 The BDS returned no records of dormouse within 2 km of the site. However, dormice are known to be present at greater distances to both the east and west of the site.

3.3.24 Areas of woodland and scrub provide suitable habitat for dormouse on site. The scattered scrub, small areas of woodland and hedgerows adjacent to the southern boundary of the site, and throughout the landscape to the south and southeast of the site, provide connectivity between the site and the surrounding area.

Water voles and otters

3.3.25 The BDS returned records of otter within 2 km of the site, the nearest record approximately 1.4 km east of the site. The BDS returned historic records of water vole (1976) within 2 km of the site.

3.3.26 The lagoon and channels throughout the site provide potentially suitable habitat for otter and water vole. The lagoon is fringed with common reed and the channels are densely filled with common reed, providing potential foraging opportunities and shelter for both otter and water vole. In addition, areas of dense scrub and woodland in close proximity to the lagoon and channels offer further sheltering opportunities for otters. The extensive ditch network to the south of the site provides connectivity between the site and the wider landscape.

3.3.27 The dense vegetation within and around the lagoons and channels made a preliminary visual search from the banks for evidence of otter or water vole activity infeasible. Locations and further details of some of these habitat types are provided in TNs 9 and 10.

Badgers

3.3.28 The BDS returned records of badger within 2 km of the site. The nearest record was located 1 km west of the site.

3.3.29 No badger setts were identified on site during the survey, but a latrine was observed adjacent to an area of dense scrub within one of the fields to the south of the site at approximate grid reference: SS 78291 85300 (TN17).

3.3.30 The southern extent of the site supports areas of woodland, scrub and coastal grazing marsh, which provide suitable foraging habitat for badgers. There is potential for badger setts to be present within the areas of woodland and/or dense scrub on site.

Other species

3.3.31 The BDS returned records of hedgehog (*Erinaceus europaeus*), brown hare (*Lepus europaeus*), harvest mouse (*Micromys minutus*) and polecat (*Mustela putorius*). The nearest record was harvest mouse located approximately 300m south-east within Margam Moors SSSI.

3.3.32 American mink (*Neovison vison*) was recorded approximately 1.4km south of the site.

3.3.33 The field survey did not record the presence of any other animals of nature conservation importance; however, habitats within the site, woodland, reedbed, scrub and grassland were considered suitable for hedgehog and harvest mouse.

4.0 EVALUATION

4.1.1 This section provides a short evaluation on the habitats and species identified.

Internationally designated sites

4.1.2 SACs and SPAs are part of the 'national site network' and are afforded protection under the provisions of The Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations'). These sites are designated as being of international importance for ecology and nature conservation. Furthermore, Ramsar sites are also of international importance, being wetlands that have been designated under the criteria of the Ramsar Convention on Wetlands for containing representative, rare or unique wetland types or for their importance in conserving biological diversity.

4.1.3 Kenfig SAC is over 1 km from the site boundary with some hydrological connection via drains between the site and Kenfig SAC. Therefore, there are potential impact pathways of relevance, and these will require further consideration when the Electric Arc Furnace project undergoes detailed assessment.

4.1.4 Cefn Criwbr SAC and Crymlyn Bog SAC and Ramsar are over 5km from the site. The sites are not hydrologically linked to the site and therefore no impact pathways are anticipated.

Sites of Special Scientific Interest (SSSI)

4.1.5 The site is in close proximity to one SSSI, Margam Moors. It is not known what effect the Electric Arc Furnace project will have on this site, but this will require further consideration when the Electric Arc Furnace project undergoes detailed assessment.

Non-statutory designated sites

4.1.6 Neath Port Talbot Watercourses SINC is within the site boundary. The project is anticipated to impact the SINC; further consideration will be required when the Electric Arc Furnace project undergoes detailed assessment.

Habitats and plants

4.1.7 A number of habitats have been identified at the site, some of which are species-rich and have intrinsic botanical value. They are important in the surrounding landscape.

4.1.8 Open mosaic habitat on previously developed land, coastal floodplain grazing marsh, ponds and reedbeds qualify as habitats of principal importance, being listed under Section 7 of the Environment (Wales) Act 2016. They should all be retained or enhanced where possible.

4.1.9 The linear habitats such as the ditch network provide good connectivity across the site and to the wider landscape. These linear features, along with the woodland, dense scrub, rough grassland and ponds, provide good-quality habitat that is likely to be of ecological importance in at least a local context. These habitats should be a focus for protection and enhancement for ecological purposes.

4.1.10 Japanese knotweed is present on site and is listed on Schedule 9 of the Wildlife and Countryside Act (1981) as amended. No work should take place within 7 m of Japanese knotweed; should works be required within 7 m then it should be completed under an invasive species mitigation method statement.

Protected and other notable species

4.1.11 The site provides areas of high suitability for both terrestrial and aquatic invertebrates. An earth bank through the centre of the site contained a high number of active solitary bee nests, thought to belong to a yellow-faced bee species. However, no individuals were closely observed, and it therefore cannot be confirmed if the species present is a priority species under Section 7 of the Environment (Wales) Act, 2016. It is recommended that further surveys are undertaken to confirm the invertebrate assemblages present and the bank is retained and managed for solitary bees.

4.1.12 The site provides suitable aquatic habitat (lagoons and channels) for European eel species. The lagoons and channels within the red line boundary are connected to channels within the wider landscape (Margam Moors), providing connectivity into the site. Further to this, the site is in close proximity to the Bristol channel; European eel can cross land to reach waterbodies, therefore may be present within the site however this is considered to be unlikely. There is also potential for fish eggs to be transported into site via waterfowl. European eel are listed on Section 7 of the Environment (Wales) Act, 2016. It is therefore likely that the proposed development could affect European eel and other fish species. Given this, a precautionary working method statement should be produced for any works on aquatic habitats, this may include a fish rescue.

4.1.13 The site provides areas suitable for roosting and foraging bats. All species of bat in the UK are European protected species and are afforded protection under the Conservation of Habitats and Species Regulations 2017 (as amended) as well as the Wildlife and Countryside Act 1981 (as amended). It is therefore likely that the proposed development could affect bats and further surveys are required to confirm this. This is outlined further in Section 5 of this report.

4.1.14 There are ponds on the site due to be affected by the proposed development. It is potentially suitable for supporting great crested newts and records of great crested newts were identified within 2 km of the site. Great crested newts are a European protected species and are afforded protection under the Conservation of Habitats and Species Regulations 2017 (as amended) as well as the Wildlife and Countryside Act 1981 (as amended). It is therefore likely that the proposed development could affect great crested newts and further surveys are required to confirm this. This is outlined further in Section 5 of this report.

4.1.15 There are waterbodies throughout the site due to be affected by the proposed development. They are potentially suitable for supporting otter and water voles with records of otter and historic records of water vole identified within 2 km of the site. Otter are a European protected species and are afforded protection under the Conservation of Habitats and Species Regulations 2017 (as amended) as well as the Wildlife and Countryside Act 1981 (as amended). Water vole are afforded protection under the Wildlife and Countryside Act 1981 (as amended). It is therefore likely that the proposed

development could affect otter and water voles and further surveys are required to confirm this. This is outlined further in Section 5 of this report.

4.1.16 The site provides areas of suitable habitat for reptiles and there were records of slow-worm and grass snake within 1 km of the site, and common lizard within 100 m of the site. There is potential that reptiles are present on the site and the potentially suitable areas of vegetation are large and connected to other suitable habitat. All species of reptiles in the UK are afforded protection through domestic legislation. Further surveys are required to confirm the presence or likely absence of reptiles.

4.1.17 The site provides areas of suitable habitat for both breeding and overwintering birds. It is therefore likely that the proposed development could affect birds and further surveys are required to confirm this. This is outlined further in Section 5 of this report.

4.1.18 The site was found to be suitable for supporting badger setts and for foraging purposes. Badgers are afforded protection through domestic legislation. Extensive areas of more suitable habitat are present within the wider landscape, including arable land, woodland and grassland and it is therefore unlikely that the site is of particular importance to badgers.

4.1.19 Further surveys and enhancement measures for invertebrates (including solitary bees), reptiles, great crested newts, badger, birds, bats and water voles are recommended, as outlined in Section 5.

5.0 RECOMMENDATIONS

5.1 Key constraints to design and construction

5.1.1 This section sets out, at a high level the likely impacts of the Electric Arc Furnace project and consider the ecological features that might represent a constraint (or potential constraint).

Sites

5.1.2 The potential for likely significant effects (LSE) from the proposed development on Kenfig/ Cynfig SAC site cannot be ruled out without undertaking a more detailed assessment. There is a requirement under the Habitats Regulations to undertake a screening exercise to determine whether any of these (or other) sites are likely to be significantly affected by the proposed development, either alone or in combination with other plans and projects, as a result of activities that are not directly connected with or necessary to the management of the designated sites. If significant effects cannot be ruled out at screening stage, there will be a need for an Appropriate Assessment (AA) to be carried out. The screening, any AA and any subsequent assessment is known as a Habitats Regulations Assessment (HRA). It is recommended that a HRA Stage 1 screening assessment be undertaken to consider further the potential for the proposed development to result in likely significant effects on internationally important sites.

5.1.3 The site is within close proximity to two SSSIs in the wider area, in particular Eglwys Nunydd Reservior. It is not yet known what effect the Electric Arc Furnace project will have on these sites, but this will require further consideration when the Electric Arc Furnace project undergoes detailed assessment.

5.1.4 There is one non-statutory designated site within the site boundary and two within 1 km of the site boundary, all of which are designated as Sites of Importance for Nature Conservation (SINC) that are recognized as being of County ecological value. Therefore, there may be potential impact pathways of relevance, and these will require further consideration when the Electric Arc Furnace project undergoes detailed assessment.

Habitat alteration

5.1.5 The effects of site clearance to facilitate the construction of the proposed development will result in the loss of large areas of semi-improved neutral grassland in a complex mosaic with ESPV and scrub, an area of coastal floodplain grassland with associated drainage ditches and reedbeds, and areas of broadleaved plantation woodland. The scale of habitat loss is considered to be significant in the context of the surrounding habitat. The clearance works themselves could also result in adverse effects on animal species confirmed as present and those which may be present such as bats, breeding birds, dormice, water vole and reptiles.

Protected and Notable Species

5.1.6 Further survey is required to fully inform the impacts of the Electric Arc Furnace project on protected species. Given the extent of semi-natural habitat to be affected by the Electric Arc Furnace project there are likely to be impacts.

Ecological Impact Assessment

5.1.7 Given the likely scale of the Electric Arc Furnace project it is likely that some level of Ecological Impact Assessment (EcIA) will be required.

5.2 Further surveys required

5.2.1 As indicated above the following surveys are required to fully inform the baseline and assess the potential impacts of the Electric Arc Furnace project:

Great crested newts

5.2.2 Great crested newts are protected under the Habitats Regulations and the Wildlife and Countryside Act 1981 (as amended). Surveys should be undertaken on all waterbodies within 500 m of the site, to confirm the presence or likely absence of great crested newts within this area, determine the value of the site for great crested newts (if present), and inform mitigation requirements. Surveys should include a habitat suitability index (HSI) assessment (Oldham *et al.* 2001), environmental DNA (eDNA) for presence/ likely absence (following best practice guidelines Biggs, *et al*. 2014)) and population estimates through bottle trapping and torching surveys if required (following best practice guidelines Natural England, 2001)).

5.2.3 Environmental DNA (eDNA) analysis identifies whether the DNA of great crested newts is present in the water (meaning that great crested newts have recently been there if it is). The process of eDNA testing involves taking water samples from a waterbody thought to be suitable for great crested newts and analysing the environmental DNA content. This method is accepted by Natural Resources Wales as being sufficient to confirm the presence and likely absence or great crested newts if undertaken during the period 15th April to the 30th June. Should great crested newts be confirmed as present, a population size-class assessment will be required to confirm the mitigation requirements and inform a European protected species mitigation licence (EPSML) application.

5.2.4 Population size-class surveys should be undertaken according to the Great Crested Newt Mitigation Guidelines (English Nature, 2001). This would comprise up to six visits in suitably clement weather between mid-March and mid-June, with at least two visits being between mid-April and mid-May. A combination of egg search, torch survey and (if acceptable after taking account of great crested newt welfare) bottle trapping methods should be used, subject to any constraints set by the pond (for example, limited access to the water restricts all three methods).

Reptiles

5.2.5 Reptiles are protected under the Wildlife and Countryside Act 1981 (as amended). Surveys would be required to confirm the presence or likely absence of reptiles and

subsequently any mitigation requirements for the proposed development. The standard method for a reptile survey to identify presence / likely absence involves laying artificial refuges (roofing felt tiles approximately 50 cm^2) in areas of suitable habitat. They attract sheltering reptiles, allowing surveyors to find animals that would otherwise be widely dispersed and well-hidden. The refuges need to be checked on seven occasions during suitable weather conditions, i.e., no rain, and air temperatures between 9 and 15ºC plus bright sunshine, or between 9 and 18ºC plus hazy or intermittent sunshine and little wind Froglife, 1999). Should reptiles be present on the site, additional visits (up to 20 in total) may be required to inform mitigation design.

Birds

5.2.6 All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is recommended that further surveys should be carried out for breeding birds between the months of April and July inclusive and for wintering birds between October and March to identify the importance of the bird assemblages within the site and determine the likely impacts and mitigation requirements for the proposed development. Should birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) be found using the site, mitigation may be required to safeguard them and prevent their breeding sites from being disturbed or destroyed and to prevent the loss of nesting and wintering habitats by the proposed development.

Bats

5.2.7 There are several buildings on site with the potential to support roosting bats. The structures will therefore require further surveys to inform an assessment of likely impacts and mitigation requirements for the proposed development.

5.2.8 A Potential Roost Assessment (PRA) is required to ascertain the buildings' likely value to roosting bats, including an internal inspection of any roof voids, followed by up to three emergence or re-entry surveys. High potential buildings require three emergence and/or re-entry surveys, moderate potential buildings require two surveys, one dusk emergence and one dawn re-entry, and low potential buildings require a single emergence or re-entry survey. These surveys will need to be undertaken during the season when bats are most active, in order to watch and listen for bats emerging from the building at dusk or re-entering at dawn. They should be undertaken between May and September (ideally between May and August). The methods should follow Bat Conservation Trust guidelines (Collins, 2016). This information would be required to support a licence application if bats are found to be roosting.

5.2.9 There are some trees on site which may be suitable for roosting bats and will be subject to further aerial survey. This will be necessary to inform an assessment of likely impacts and mitigation requirements for the proposed development. These checks should involve the aerial inspection of any suitable features using tree climbing techniques and an endoscope, to look for bats or evidence of bats. If, on inspection a feature is identified as having moderate or high potential for roosting bats then further surveys will be necessary. If features are found to have low potential the tree can be felled under precautionary measures (Collins, 2016). If tree climbing is not possible, emergence surveys will be required, the scope of which will be dependent on the value of each feature.

5.2.10 Linear features such as the site boundaries, woodland edge, hedgerows, and watercourses are suitable for commuting bats, whilst the rough grassland, woodland, scrub and the river are suitable for foraging bats.

5.2.11 The northern section of the site was assessed as having 'low potential' and the southern section of the site was assessed as having 'moderate potential' for foraging and commuting bats. It is predicted that the works on site cannot reasonably avoid adverse impacts to bat species using the site, and so further surveys are required to identify the value and nature of use by bats, and level of mitigation required.

5.2.12 One bat activity survey and static detector surveys will need to be undertaken each month through the active season (April-October) to indicate the species and numbers of bats using the site for foraging and commuting, and where possible to incidentally identify roost locations.

Dormouse

5.2.13 Dormice are protected under the Habitats Regulations and the Wildlife and Countryside Act 1981 (as amended). As habitats on site are suitable for dormice, further surveys are required to determine if this species is present on site. Surveys should include multiple visits during the season when dormice are most active (April to October inclusive), and if present, to provide a population estimate to inform a EPSML application. Surveys should follow survey methodology in the dormouse conservation handbook (Bright *et al.* 2006) and comprise a combination of searching for hazel nuts with characteristic marks left by dormice and deploying nest boxes and tubes on site for checking at least once every two months.

5.2.14 A systematic search of hazel nuts should be undertaken in areas dominated by fruiting hazel trees between September and December. Five quadrats of 10 by 10 metres should be searched, with a total of 100 nuts that have been opened by small rodents being checked for signs of dormice.

5.2.15 At least 50 dormouse nest tubes/boxes should be spaced 15 to 20 metres apart within the woodland and scrub habitat present on site prior to May. Each tube and box should then be checked at least once every two months for evidence of dormouse occupation.

Water voles and Otters

5.2.16 Water voles and otters are protected species in the UK. The channels within the site and surrounding habitat is suitable for water voles and otters and so further surveys will be required if the proposed development will be likely to impact the watercourse or habitats within 30m of it. These should be completed in spring and/or autumn to check for signs of water voles and otters and confirm the presence or likely absence of these species. If features such as potential water vole burrows or otter holts are identified, these should be protected during the works. Targeted mitigation and protected species licensing will be required if impacts on such features cannot be avoided.

Badgers

5.2.17 Badgers are afforded protection through the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981 (as amended). A badger survey should be

undertaken in advance of construction to confirm that there are no setts that could be disturbed by the works (the timescale will depend on the season in which works start) and ensure compliance with relevant legislation.

5.2.18 If a sett is discovered and requires removal, a licence will be required from Natural Resources Wales to exclude badgers before it can be removed; removal can only be undertaken between 1 July and 30 November inclusive. A licence would also be required for setts subject to disturbance but not removal.

5.2.19 Further surveys are recommended to monitor the activity of any setts identified during the survey and to understand the territorial boundaries of the social group, in order to identify a potential mitigation plan for the proposed development.

Invertebrates

5.2.20 A scoping assessment by an entomologist is recommended to determine the requirements for further survey and assessment of the site's suitability to support invertebrate assemblages.

Botanical

5.2.21 A detailed National Vegetation Classification (NVC) survey is recommended to provide information on the protected / notable plants and / or assemblages within the identified priority habitats; Open Mosaic Habitat, Coastal Floodplain grazing marsh and ditches.

5.3 Opportunities for enhancement

5.3.1 Given the large extent of the site there are plenty of opportunities for biodiversity enhancement, in particular the set aside and management of coastal floodplain habitat and open mosaic habitat to establish and develop to its full potential.

Landscaping

5.3.2 Many species would benefit from the provision of a semi-natural buffer between the proposed development and the adjacent landscape. This would help protect retained habitats from potential adverse effects associated with proposed development, including noise and light spill. The planting of native species including flower-, berry- and fruit-bearing species would benefit badgers, birds and other noteworthy species. Furthermore, planting trees and hedgerows on site would create a commuting corridor for many species including bats and hedgehogs. These features should be kept as dark corridors and should have strips of rough native grassland planted adjacent to them to attract invertebrates.

Wildlife Tower

5.3.3 A wildlife tower should be incorporated into the development design, suitable for a range of bat species, invertebrates and birds. These features would provide additional roosting/nesting sites for these species groups and help offset impacts associated with habitat loss.

Log piles and hibernacula

5.3.4 Log piles should be incorporated into quiet and varied habitats in the development to offer refuge for hedgehogs, reptiles and other species. Ideally, they should be created using any logs generated from vegetation clearance, or from native and local wood.

5.3.5 The following biodiversity enhancement measures could be incorporated

- A main stem and/or a proportion of any logs created during site clearance should be retained in situ as deadwood features or created into habitat piles at suitable site locations, to benefit saproxylic invertebrates, reptiles, hedgehog and amphibians.
- Management of the site to benefit the resident reptile and amphibian populations, by creation and maintenance of a mosaic of areas of bare rock, open ground, acid grassland, fern and marshy grassland habitats, together with areas of scrub and/or hedgerow habitat.
- Creation of new native species boundary hedgerows along the northern and eastern boundaries of the retained moors area to strengthen habitat connectivity and/or provide habitats or food sources for birds, bats and reptiles.
- Install bat boxes and/or bird boxes on retained buildings and trees within the site to provide additional roosting/nesting sites for these species.

5.3.6 The above enhancement measures should be considered and incorporated into the design phase. Opportunities for additional enhancements may also exist and should be explored during the design phase.

6.0 CONCLUSIONS

6.1.1 HRA and EcIA are likely to be required to fully inform the potential impacts of designated sites. A suite of protected species surveys is recommended to fully inform the baseline (see section 5 above).

6.2 Validity of Data

6.2.1 Unless the site changes significantly, the surveys carried out for this report should remain valid for at least 18 months, and potentially up to 3 years (CIEEM 2019).

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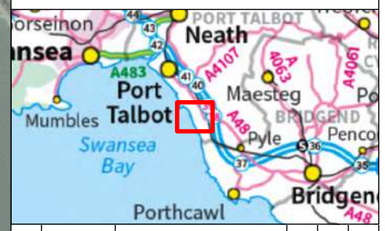
FIGURES

Figure 1 Site Location Plan
Figure 2 Broad Scale Habitat Survey Plan
Figure 3 Phase 1 Habitat Plan

Legend:

- Site boundary
- 2021/2022 survey area



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P&C EAF

RSK biocensus
EXPERTS IN ECOLOGY

TITLE: Figure 1:

Site Location Plan

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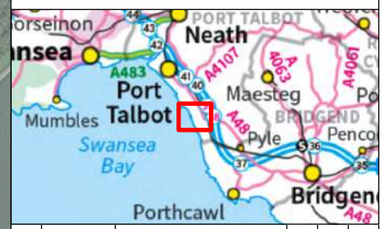
World Imagery: Maxar, Microsoft
OS Open Rasters: Contains OS data © Crown Copyright and database right 2022

Legend:

- Site boundary
- 2021/2022 survey area
- Broad scale habitat points



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P&C EAF

RSK biocensus
EXPERTS IN ECOLOGY

TITLE: Figure 2:

Broad scale habitat survey

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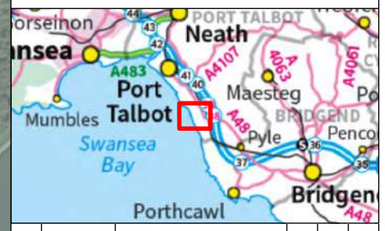
Legend:

- Site boundary
- 2021/2022 survey area

Phase 1 Habitats

- Broadleaved woodland - plantation
- Dense scrub
- Semi-improved neutral grassland
- Poor semi-improved grassland
- Swamp
- Standing water
- Ephemeral / short perennial
- Bare ground
- Buildings
- Hardstanding
- Line of broadleaved trees
- Standing water



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P&C EAF

RSK biocensus
EXPERTS IN ECOLOGY

TITLE: Figure 3:

Phase 1 Habitats Map

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SCALE: 1:10,500 @ A3

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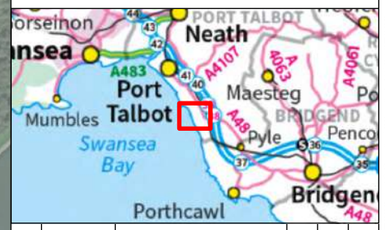
Legend:

- Site boundary
- 2021/2022 survey area

UKHab Habitats

- Other neutral grassland
- Dense scrub
- Reedbeds
- Standing open water and canals
- Open mosaic habitat on previously developed land
- Developed land; sealed surface
- Buildings
- Artificial unvegetated, unsealed surface
- Built linear features
- Lowland mixed decidous woodland
- Line of trees
- Ditch



Rev	Date	Description	Drn	Chk	App
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P&C EAF

RSK biocensus
EXPERTS IN ECOLOGY

TITLE: Figure 4:

UKHab Habitats Map

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APPENDIX A – PROTECTED AND NOTEWORTHY SPECIES RECORDS

Species that are protected by law under Schedules 2 and 5 of The Conservation of Habitats and Species Regulations 2017, Schedules 2, 5 and 8 of The Wildlife and Countryside Act 1981 or The Protection of Badgers Act 1992 and have been recorded in the search area are listed in Table 4 (excluding species protected only against collection for sale). These species records were obtained from the South East Wales Biological Record Centre. The Latin and common names for species are given, along with the year of the most recent record and their level of designation. Any species that is recorded within 100 m of the site boundary is also highlighted.

Table 5 displays all noteworthy species that were returned within the search area. A glossary defining abbreviations used in the table is given in Table 7, Appendix B. If a species is not included in the tables below it does not necessarily mean the species is absent from the search area, but rather that data-holding organizations do not have records of it in these locations.

Table 4: Protected species records within 2 km of the site boundary

Latin Name	Common Name	Designation	Most Recent	Within 100m
Amphibians				
Triturus cristatus	great crested newt	EPS(Sch2), WCA5, S7	2016	**No**
Birds				
Accipiter gentilis	goshawk	WCA1.1	2015	**No**
Alcedo atthis	kingfisher	WCA1.1, Amber	2021	**No**
Anas acuta	pintail	WCA1.2, Amber, GB RDB(CR)	2017	**No**
Ardea purpurea	purple heron	WCA1.1	2020	**No**
Aythya marila	scaup	WCA1.1, Amber, GB RDB(EN)	2011	**No**
Botaurus stellaris	Eurasian bittern	WCA1.1, S7, Amber, GB RDB(VU)	2020	**No**
Bucephala clangula	goldeneye	WCA1.2, GB RDB(VU)	2020	**No**
Calidris maritima	purple sandpiper	WCA1.1, Amber, GB RDB(CR)	2014	**No**
Calidris pugnax	ruff	WCA1.1, Amber, GB RDB(CR)	2014	**No**
Cettia cetti	Cetti's warbler	WCA1.1	2020	**No**
Charadrius alexandrinus	Kentish plover	WCA1.1	1981	**No**
Charadrius dubius	little ringed plover	WCA1.1	2020	**No**
Chlidonias niger	black tern	WCA1.1	2015	**No**
Circus aeruginosus	western marsh harrier	WCA1.1, Amber	2021	**No**
Circus cyaneus	hen harrier	WCA1.1, S7, Red, GB RDB(VU)	2010	**No**
Circus pygargus	Montagu's harrier	WCA1.1, GB RDB(CR)	1939	**No**
Clangula hyemalis	long-tailed duck	WCA1.1, Red	2020	**No**

Latin Name	Common Name	Designation	Most Recent	Within 100m
Cygnus columbianus	Bewick's swan	WCA1.1, S7, Red, GB RDB(CR)	2007	**No**
Cygnus cygnus	whooper swan	WCA1.1, GB RDB(EN)	2010	**No**
Falco columbarius	merlin	WCA1.1, Red, GB RDB(EN)	2018	**No**
Falco peregrinus	peregrine	WCA1.1	2019	**No**
Falco subbuteo	hobby	WCA1.1	2013	**No**
Fringilla montifringilla	brambling	WCA1.1, Amber	2008	**No**
Gavia	indet. diver	WCA1.1	1987	**No**
Gavia arctica	black-throated loon	WCA1.1, Amber, GB RDB(VU)	2013	**No**
Gavia immer	common loon	WCA1.1, Amber	2015	**No**
Gavia stellata	red-throated loon	WCA1.1, Amber	2015	**No**
Haliaeetus albicilla	white-tailed eagle	WCA1.1, GB RDB(EN)	1859	**No**
Hydrocoloeus minutus	little gull	WCA1.1, Amber	2014	**No**
Ixobrychus minutus	little bittern	WCA1.1	1970	**No**
Jynx torquilla	wryneck	WCA1.1	2012	**No**
Limosa limosa	black-tailed godwit	WCA1.1, Amber, GB RDB(EN)	2015	**No**
Loxia curvirostra	red crossbill	WCA1.1	2013	**No**
Lullula arborea	woodlark	WCA1.1, S7, GB RDB(VU)	2011	**No**
Melanitta fusca	velvet scoter	WCA1.1, Red, GB RDB(VU)	1995	**No**
Melanitta nigra	common scoter	WCA1.1, S7, Amber, GB RDB(CR)	2015	**No**
Milvus milvus	red kite	WCA1.1, Amber	2019	**No**
Numenius phaeopus	Eurasian whimbrel	WCA1.1, Amber, GB RDB(CR)	2020	**No**
Oceanodroma leucorhoa	leach's storm petrel	WCA1.1, Amber	2006	**No**
Pandion haliaetus	western osprey	WCA1.1, Amber	2008	**No**
Panurus biarmicus	bearded reedling	WCA1.1, Amber	2013	**No**
Pernis apivorus	European honey buzzard	WCA1.1, Amber, GB RDB(EN)	2001	**Yes**
Phalaropus lobatus	red-necked phalarope	WCA1.1, GB RDB(EN)	2013	**No**
Phoenicurus ochruros	black redstart	WCA1.1, Amber, GB RDB(EN)	2010	**No**
Platalea leucorodia	spoonbill	WCA1.1, Amber, GB RDB(EN)	2010	**No**
Plectrophenax nivalis	snow bunting	WCA1.1, Amber, GB RDB(EN)	1996	**No**
Podiceps auritus	Slavonian grebe	WCA1.1, Red, GB RDB(CR)	2013	**No**
Podiceps nigricollis	black-necked grebe	WCA1.1, Amber, GB RDB(EN)	2015	**No**
Pyrrhocorax pyrrhocorax	chough	WCA1.1, S7, Amber, GB RDB(VU)	1957	**No**
Regulus ignicapilla	common firecrest	WCA1.1, Amber	2007	**No**
Sterna dougallii	roseate tern	WCA1.1, S7, Red, GB RDB(EN), OSPAR	1986	**No**

Latin Name	Common Name	Designation	Most Recent	Within 100m
Sternula albifrons	little tern	WCA1.1, Red, GB RDB(VU)	2020	**No**
Tringa glareola	wood sandpiper	WCA1.1, GB RDB(EN)	2013	**No**
Tringa nebularia	greenshank	WCA1.1	2013	**No**
Tringa ochropus	green sandpiper	WCA1.1, Amber, GB RDB(EN)	2011	**No**
Turdus iliacus	redwing	WCA1.1, Amber, GB RDB(CR)	2017	**No**
Turdus pilaris	fieldfare	WCA1.1, Amber, GB RDB(CR)	2019	**No**
Tyto alba	western barn owl	WCA1.1	2020	**No**
Bryophytes				
Petalophyllum ralfsii	petalwort	WCA8, S7	2007	**No**
Mammals				
Arvicola amphibius	European water vole	WCA5, S7, GB RDB(EN)	1976	**No**
Barbastella barbastellus	western barbastelle	EPS(Sch2), WCA5, S7, GB RDB(VU)	2015	**No**
Chiroptera	bats	EPS(Sch2)	2004	**No**
Delphinus delphis	common dolphin	EPS(Sch2), WCA5, S7	2021	**No**
Eptesicus serotinus	serotine	EPS(Sch2), WCA5, GB RDB(VU)	2016	**No**
Hyperoodon ampullatus	northern bottlenose whale	EPS(Sch2), WCA5, S7	2016	**No**
Lutra lutra	European otter	EPS(Sch2), WCA5, S7	2019	**No**
Meles meles	Eurasian badger	BA	2019	**No**
Myotis	unidentified bat	EPS(Sch2), WCA5	2015	**No**
Myotis brandtii	Brandt's bat	EPS(Sch2), WCA5	2016	**No**
Myotis daubentonii	Daubenton's bat	EPS(Sch2), WCA5	2019	**No**
Myotis mystacinus	whiskered bat	EPS(Sch2), WCA5	2020	**No**
Myotis nattereri	natterer's bat	EPS(Sch2), WCA5	2016	**No**
Nyctalus leisleri	lesser noctule	EPS(Sch2), WCA5	2016	**No**
Nyctalus noctula	noctule bat	EPS(Sch2), WCA5, S7	2020	**No**
Phocoena phocoena	common porpoise	EPS(Sch2), WCA5, S7, OSPAR	2005	**No**
Pipistrellus	pipistrelle	EPS(Sch2), WCA5, S7	2014	**No**
Pipistrellus nathusii	Nathusius's pipistrelle	EPS(Sch2), WCA5	2016	**No**
Pipistrellus pipistrellus	common pipistrelle	EPS(Sch2), WCA5, S7	2020	**No**
Pipistrellus pygmaeus	soprano pipistrelle	EPS(Sch2), WCA5, S7	2020	**No**
Plecotus auritus	brown long-eared bat	EPS(Sch2), WCA5, S7	2020	**No**
Rhinolophus ferrumequinum	greater horseshoe bat	EPS(Sch2), WCA5, S7	2016	**No**
Rhinolophus hipposideros	lesser horseshoe bat	EPS(Sch2), WCA5, S7	2016	**No**
Plants				
Limosella australis	Welsh mudwort	WCA8, NR	1942	**No**
Liparis loeselii	fen orchid	EPS(Sch5), WCA8, S7, GB RDB(EN), NR	2004	**No**
Reptiles				

Latin Name	Common Name	Designation	Most Recent	Within 100m
Anguis fragilis	slow-worm	WCA5, S7	2015	**No**
Natrix helvetica	grass snake	WCA5, S7	2019	**No**
Vipera berus	adder	WCA5, S7	2012	**No**
Zootoca vivipara	common lizard	WCA5, S7	2020	**Yes**

Table 5: Noteworthy species records within 2 km of the site boundary

Latin Name	Common Name	Designation
Algae		
Tolypella glomerata	clustered stonewort	NS
Amphibians		
Bufo bufo	common toad	WCA5, S7
Lissotriton helveticus	palmate newt	WCA5
Lissotriton vulgaris	smooth newt	WCA5
Rana temporaria	common frog	WCA5
Birds		
Acanthis cabaret	lesser redpoll	S7, Amber
Actitis hypoleucos	common sandpiper	Red, GB RDB(VU)
Aegithalos caudatus	long-tailed tit	Amber
Alauda arvensis	Eurasian skylark	S7, Amber
Alca torda	razorbill	Amber
Anas crecca	teal	Amber
Anas platyrhynchos	mallard	Amber
Anser albifrons	white-fronted goose	Red, GB RDB(CR)
Anser fabalis	bean goose	GB RDB(CR)
Anthus pratensis	meadow pipit	Amber
Anthus spinoletta	water pipit	GB RDB(VU)
Anthus trivialis	tree pipit	S7, Amber
Apus apus	swift	Amber, GB RDB(EN)
Ardea cinerea	grey heron	Amber
Arenaria interpres	turnstone	Amber, GB RDB(VU)
Asio flammeus	short-eared owl	Red, GB RDB(EN)
Aythya ferina	pochard	Red, GB RDB(EN)
Calidris alba	sanderling	Amber
Calidris alpina	dunlin	Red, GB RDB(EN)
Calidris canutus	knot	Red
Calidris ferruginea	curlew sandpiper	Amber
Caprimulgus europaeus	nightjar	S7, Amber
Charadrius hiaticula	common ringed plover	S7, Red, GB RDB(VU)
Chloris chloris	greenfinch	Amber, GB RDB(EN)
Chroicocephalus ridibundus	black-headed gull	S7, Red, GB RDB(VU)

Latin Name	Common Name	Designation
Cinclus cinclus	dipper	Amber
Coccothraustes coccothraustes	hawfinch	S7, Amber, GB RDB(EN)
Cuculus canorus	cuckoo	S7, Red, GB RDB(VU)
Delichon urbicum	common house martin	GB RDB(VU)
Emberiza citrinella	yellowhammer	S7, Red
Emberiza schoeniclus	common reed bunting	S7, Amber
Falco tinnunculus	kestrel	S7, Red, GB RDB(VU)
Ficedula hypoleuca	European pied flycatcher	S7, Red, GB RDB(VU)
Fulica atra	Eurasian coot	Amber
Fulmarus glacialis	fulmar	Amber
Gallinago gallinago	snipe	Amber
Haematopus ostralegus	oystercatcher	Amber
Hydrobates pelagicus	European storm petrel	Amber
Larus argentatus	European herring gull	S7, Red, GB RDB(EN)
Larus canus	common gull	Red
Larus fuscus	lesser black-backed gull	Amber
Larus glaucoides	Iceland gull	GB RDB(VU)
Larus hyperboreus	glaucous gull	GB RDB(VU)
Larus marinus	great black-backed gull	Red, GB RDB(EN)
Larus michahellis	yellow-legged gull	GB RDB(EN)
Limosa lapponica	bar-tailed godwit	S7, Red
Linaria cannabina	linnet	S7, Red
Locustella naevia	grasshopper warbler	S7, Red
Lymnocryptes minimus	jack snipe	Amber
Mareca penelope	wigeon	Amber
Mergellus albellus	smew	Amber, GB RDB(CR)
Mergus serrator	red-breasted merganser	Amber, GB RDB(VU)
Morus bassanus	gannet	Amber
Motacilla cinerea	grey wagtail	Amber
Motacilla flava	western yellow wagtail	S7, Red
Muscicapa striata	spotted flycatcher	S7, Red
Numenius arquata	curlew	S7, Red, GB RDB(EN)
Passer domesticus	house sparrow	S7, Amber
Passer montanus	tree sparrow	S7, Red, GB RDB(VU)
Perdix perdix	grey partridge	S7, Red, GB RDB(VU)
Phalacrocorax aristotelis	shag	Amber, GB RDB(EN)
Phalacrocorax carbo	cormorant	Amber
Phylloscopus sibilatrix	wood warbler	S7, Red, GB RDB(VU)
Phylloscopus trochilus	willow warbler	Red
Picus viridis	European green woodpecker	Amber
Pluvialis apricaria	golden plover	S7, Red

Latin Name	Common Name	Designation
Pluvialis squatarola	grey plover	Red, GB RDB(VU)
Podiceps cristatus	great crested grebe	GB RDB(VU)
Podiceps grisegena	red-necked grebe	Amber, GB RDB(CR)
Poecile montanus	willow tit	S7, Red, GB RDB(EN)
Poecile palustris	marsh tit	S7, Red, GB RDB(VU)
Prunella modularis	dunnock	S7
Puffinus puffinus	Manx shearwater	Amber
Pyrrhula pyrrhula	Eurasian bullfinch	S7, Red
Regulus regulus	goldcrest	Amber
Saxicola rubetra	whinchat	Red
Scolopax rusticola	woodcock	Red, GB RDB(VU)
Somateria mollissima	eider	Amber, GB RDB(VU)
Spatula clypeata	shoveler	Amber
Stercorarius parasiticus	parasitic jaeger	Amber, GB RDB(CR)
Stercorarius pomarinus	pomarine jaeger	Amber
Sterna hirundo	common tern	Amber
Sterna paradisaea	arctic tern	Red, GB RDB(VU)
Streptopelia turtur	turtle dove	S7, Red, GB RDB(CR)
Sturnus vulgaris	starling	Red, GB RDB(VU)
Tadorna tadorna	shelduck	Amber, GB RDB(EN)
Thalasseus sandvicensis	sandwich tern	Amber
Tringa erythropus	spotted redshank	Amber, GB RDB(EN)
Tringa totanus	redshank	Red, GB RDB(VU)
Turdus philomelos	song thrush	S7, Amber
Turdus torquatus	ring ouzel	S7, Red, GB RDB(VU)
Turdus viscivorus	mistle thrush	Amber, GB RDB(VU)
Uria aalge	common murre	Amber
Vanellus vanellus	lapwing	S7, Red, GB RDB(EN)
Bryophytes		
Didymodon icmadophilus	pointed beard-moss	NR
Pseudocalliergon lycopodioides	large hook-moss	S7
Fish		
Anguilla anguilla	European eel	S7, OSPAR
Salmo trutta	brown/sea trout	S7
Invertebrates		
Abdera flexuosa	N/A	NS, Notable:B
Acronicta psi	grey dagger	S7
Acronicta rumicis	knot grass	S7
Allophyes oxyacanthae	green-brindled crescent	S7
Amphipoea oculea	ear moth	S7
Apamea remissa	dusky brocade	S7

Latin Name	Common Name	Designation
Arctia caja	garden tiger	S7
Beris fuscipes	short-horned black legionnaire	Notable
Boloria selene	small pearl-bordered fritillary	S7
Bombus humilis	brown-banded carder-bee	S7
Bombus muscorum	moss carder-bee	S7
Bombus ruderarius	red-shanked carder-bee	S7
Bombus sylvarum	knapweed carder bee	S7, Notable:B
Bombylius canescens	western bee-fly	NS, Notable
Brachylomia viminalis	minor shoulder-knot	S7
Callicera rufa	N/A	NS
Campiglossa absinthii	N/A	Notable
Caradrina morpheus	mottled rustic	S7
Ceramica pisi	broom moth	S7
Chesias legatella	streak	S7
Chiasmia clathrata	latticed heath	S7
Coenonympha pamphilus	small heath	S7
Coenosia atra	N/A	Notable
Coenosia verralli	N/A	Notable
Colobaea bifasciella	N/A	Notable
Cossus cossus	goat moth	S7
Cryptocephalus aureolus	N/A	Notable:B
Cupido minimus	small blue	WCA5, S7
Dasypoda hirtipes	pantaloon bee	Notable:B
Diarsia rubi	small square-spot	S7
Dicranocephalus agilis	N/A	Notable:B
Dolichopus signifer	N/A	NS
Donacia clavipes	N/A	Notable:B
Ecliptopera silaceata	small phoenix	S7
Ennomos erosaria	September thorn	S7
Ennomos fuscantaria	dusky thorn	S7
Ennomos quercinaria	august thorn	S7
Epirrhoe galiata	galium carpet	S7
Erynnis tages	dingy skipper	S7, GB RDB(VU)
Erynnis tages tages	dingy skipper	S7, GB RDB(VU)
Eudonia delunella	pied grey	Notable:B
Eugnorisma glareosa	autumnal rustic	S7
Eutropha fulvifrons	N/A	Notable
Euxoa nigricans	garden dart	S7
Euxoa tritici	dusky dart	S7
Forficula lesnei	Lesne's earwig	NS
Georissus crenulatus	N/A	NS

Latin Name	Common Name	Designation
Glocianus punctiger	N/A	Notable:B
Gymnetron veronicae	brooklime gall weevil	Notable:B
Gymnetron villosulum	N/A	Notable:B
Hadroplontus trimaculatus	N/A	Notable:B
Helotropha leucostigma	crescent	S7
Hemistola chrysoprasaria	small emerald	S7
Hepialus humuli	ghost moth	S7
Herina palustris	N/A	Notable
Hipparchia semele	grayling	S7, GB RDB(VU)
Hydraecia micacea	rosy rustic	S7
Lasiommata megera	wall	S7
Lasiopogon cinctus	spring heath robberfly	NS, Notable
Leucania comma	shoulder-striped wainscot	S7
Limnichus pygmaeus	N/A	NS
Limnophora nigripes	N/A	Notable
Limnophora scrupulosa	N/A	Notable
Limnophora uniseta	N/A	Notable
Lipara rufitarsis	N/A	Notable
Lispe nana	N/A	Notable
Litoligia literosa	rosy minor	S7
Malacosoma neustria	lackey	S7
Mantura obtusata	N/A	NS, Notable:B
Melanchra persicariae	dot moth	S7
Melieria cana	N/A	Notable
Meloe proscarabaeus	black oil-beetle	S7
Methocha articulata	N/A	Notable:B
Mimumesa littoralis	N/A	Notable:A
Mniotype adusta	dark brocade	S7
Mycetophagus populi	N/A	GB RDB(VU), NR, Notable:A
Notiophilus quadripunctatus	N/A	NS, Notable:B
Odacantha melanura	N/A	NS, Notable:B
Orchesia minor	N/A	NS, Notable:B
Orellia falcata	N/A	Notable
Orthonama vittata	oblique carpet	S7
Oxybelus argentatus	silver spiny digger wasp	Notable:A
Oxycera morrisii	white-barred soldier	NS, Notable
Paederus fuscipes	N/A	Notable:B
Panagaeus bipustulatus	N/A	NS, Notable:B
Paralimnus phragmitis	N/A	Notable:B
Pelurga comitata	dark spinach	S7
Perizoma albulata	grass rivulet	S7

Latin Name	Common Name	Designation
Perizoma albulata albulata	grass rivulet	S7
Phaleria cadaverina	N/A	NS
Phaonia atriceps	N/A	Notable
Pherbellia dorsata	N/A	Notable
Pherbellia griseola	N/A	Notable
Phthiria pulicaria	flea bee-fly	NS, Notable
Platycheirus immarginatus	N/A	NS, Notable
Platycleis albopunctata	grey bush-cricket	NS
Platyrhinus resinosus	cramp-ball fungus weevil	Notable:B
Polia bombycina	pale shining brown	S7
Protapion dissimile	N/A	Notable:B
Psacadina verbekei	N/A	Notable
Pyrgus malvae	grizzled skipper	S7, GB RDB(VU)
Rhamphomyia caliginosa	N/A	NS
Saldula orthochila	N/A	NS
Sapromyza opaca	N/A	Notable
Sarcophila latifrons	N/A	Notable
Scathophaga scybalaria	N/A	Notable
Sciapus laetus	N/A	NS
Scotopteryx chenopodiata	shaded broad-bar	S7
Sphecodes ferruginatus	dull-headed blood bee	Notable:B
Spilosoma lubricipeda	white ermine	S7
Spilosoma lutea	buff ermine	S7
Stratiomys singularior	flecked general	Notable
Temnocerus coeruleus	N/A	Notable:B
Tetanocera punctifrons	N/A	Notable
Tetrix ceperoi	Cepero's ground-hopper	NS
Thinophilus ruficornis	N/A	NS
Tholera cespitis	hedge rustic	S7
Tholera decimalis	feathered gothic	S7
Timandra comae	blood-vein	S7
Tychius squamulatus	N/A	Notable:B
Tyria jacobaeae	cinnabar	S7
Watsonalla binaria	oak hook-tip	S7
Xanthorhoe ferrugata	dark-barred twin-spot carpet	S7
Xestia agathina	heath rustic	S7
Xestia castanea	neglected rustic	S7
Mammals		
Erinaceus europaeus	west European hedgehog	S7, GB RDB(VU)
Lepus europaeus	brown hare	S7
Micromys minutus	harvest mouse	S7

Latin Name	Common Name	Designation
Mustela putorius	polecat	S7
Plants		
Allium schoenoprasum	chives	NS
Alopecurus bulbosus	bulbous foxtail	NS
Anacamptis morio	green-winged orchid	GB RDB(VU)
Brassica oleracea	wild cabbage	NS
Calystegia sepium subsp. roseata	bindweed	NS
Calystegia soldanella	sea bindweed	GB RDB(VU)
Carex maritima	curved sedge	GB RDB(EN), NS
Catabrosa aquatica	whorl-grass	GB RDB(VU)
Centaurea cyanus	cornflower	S7
Centaurium littorale	seaside centaury	NS
Chamaemelum nobile	chamomile	S7, GB RDB(VU)
Clinopodium acinos	basil thyme	S7, GB RDB(VU)
Daucus carota subsp. gummifer	sea carrot	NS
Equisetum variegatum	variegated horsetail	NS
Erodium lebelii	sticky stork's-bill	NS
Galium parisiense	wall bedstraw	GB RDB(VU), NS
Glebionis segetum	corn marigold	GB RDB(VU)
Hippophae rhamnoides	sea-buckthorn	NS
Hornungia petraea	Hutchinsia	NS
Hyacinthoides non-scripta	bluebell	WCA8
Hydrilla verticillata	Esthwaite waterweed	GB RDB(VU), NR
Hypochaeris glabra	smooth cat's-ear	GB RDB(VU)
Hypopitys monotropa	yellow bird's-nest	GB RDB(EN)
Hypopitys monotropa subsp. hypophegea	bird's-nest	GB RDB(EN)
Juncus acutus	sharp rush	NS
Limosella aquatica	mudwort	NS
Matthiola sinuata	sea stock	S7, GB RDB(VU), NR
Meconopsis cambrica	Welsh poppy	NS
Moenchia erecta	upright chickweed	GB RDB(VU)
Muscari neglectum	grape-hyacinth	NR
Oenanthe fistulosa	tubular water-dropwort	S7, GB RDB(VU)
Parapholis incurva	curved hard-grass	NS
Poa infirma	early meadow-grass	NS
Pyrola rotundifolia subsp. maritima	wintergreen	NS
Rorippa islandica	northern yellow-cress	NS
Sagina nodosa	knotted pearlwort	GB RDB(VU)
Salsola kali subsp. kali	prickly saltwort	S7, GB RDB(VU)
Scirpoides holoschoenus	round-headed club-rush	GB RDB(VU), NR
Sibthorpia europaea	Cornish moneywort	NS

Latin Name	Common Name	Designation
Trifolium fragiferum	strawberry clover	GB RDB(VU)
Viola canina	heath dog-violet	GB RDB(VU)
Vulpia fasciculata	dune fescue	NS

APPENDIX B – ABBREVIATIONS

Table 6 displays abbreviations of protected species legislation.

Table 6: Glossary of abbreviations used in this report

Code	Full Title	Explanation
Amber	Amber list	Amber listed species have a population status in the UK of medium conservation concern.
EPS (Sch 2)	European protected species (Schedule 2)	European protected species of animals, listed on Schedule 2 of The Conservation of Habitats and Species Regulations 2017.
EPS (Sch 5)	European protected species (Schedule 5)	European protected species of plants, listed on Schedule 5 of The Conservation of Habitats and Species Regulations 2017.
GB RDB	Red data book species	Species identified in one of the UK Red Data 2001.
GB RDB(CR)	Critically endangered	An IUCN Red List designation for species at an extremely high risk of extinction.
GB RDB(EN)	Endangered	An IUCN Red List designation for species at a very high risk of extinction.
GB RDB(VU)	Vulnerable	An IUCN Red List designation for species at high risk of extinction.
Notable	Scarce and threatened invertebrates	Invertebrate species which are estimated to occur within the range of 16 to 100 10km squares but subdivision into Notable A and Notable B categories is not possible as there is insufficient information available).
Notable: A	Scarce and threatened invertebrates	Taxa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid or, for less well-recorded groups, within seven or fewer vice-counties.
Notable: B	Scarce and threatened invertebrates	Taxa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid or, for less-well recorded groups between eight and twenty vice-counties.

Code	Full Title	Explanation
NR	Nationally rare	Species in 15 or fewer hectads in Great Britain.
NS	National scarce	Species in 16-100 hectads in Great Britain.
Red	Red list	Red listed species have a population status in the UK with high conservation concern.
S7	Species of principal importance	Species of Principal Importance in Wales under The Environment (Wales) Act (2016)
WCA1	Schedule 1 of The Wildlife and Countryside Act 1981 (as amended)	This Schedule lists birds protected by special penalties at all times, but virtually all wild birds have some protection in law. Acts which are prohibited for all wild birds (except derogated 'pest' species) include intentional killing, injuring or taking; taking, damaging or destroying nests in use or being built; taking or destroying eggs; possessing or having control of (with certain exceptions but including live for dead birds, parts or derivative); setting or permitting certain traps, weapons, decoys or poisons. Selling, offering or exposing for sale, possessing or transporting for sale any live wild bird, egg or part of an egg or advertising any of these for sale, or dead wild bird including parts or derivatives are also prohibited. Many birds must be formally registered and ringed if kept in captivity. Schedule I WCA birds are additionally protected from intentional or reckless disturbance while building a nest, or when such a bird is in, on or near a nest containing eggs or young, or intentional or reckless disturbance of dependent young.
WCA5	Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	Schedule 5 animals are protected from intentional killing, injuring or taking; possessing (including parts or derivatives); intentional or reckless damage, destruction or obstruction of any structure or place used for shelter or protection; selling, offering or exposing for sale, possessing or transporting for the purpose of sale (alive or dead, including parts or derivatives). Protection of some species is limited to certain Sections of the Act (e.g. S9(1), S9(4a), S9(4b), S9(5)).
WCA8	Schedule 8 of The Wildlife and Countryside Act 1981 (as amended)	Plants and fungi protected from intentional picking, uprooting, destroying, trading (including parts or derivatives), etc.

APPENDIX C – TARGET NOTES

The locations of the following target notes are shown in Figure 2.

Target Note Number	Description
1	Area of habitat adjacent to the slab yard. Slab yard is an area of dense unvegetated aggregate used to store slab steel from the furnace. Around the edges and also on railway track ballast are large areas supporting ephemeral short perennial vegetation a carpet of Bryophyte moss species with forbs including Common Toadflax (*Linaria vulgaris*), Ribwort Plantain (*Plantago lanceolata*), Wild Parsnip (*Pastinaca sativa*), Mouse-ear-hawkweed (*Pilosella officinarum*), Canadian Fleabane (*Conyza canadensis*), and Viper's-bugloss (*Echium vulgare*). On spoil mounds Butterfly-bush (*Buddleja davidii*) and bramble scrub present. Between the slab yard and railway sidings is an area of open water (1-2m deep) which appears to part of a drainage system running north to south through the Steel works it was fringed with dense Common Reed (*Phragmites australis*).
2	Rail sidings with vegetation growing on railway ballast. This area supports a mosaic of grassland, scrub and ephemeral short perennial vegetation (ESPV). The ESPV was sparse and short (5-10cm high) and supports a similar suite of species to TN 1 but includes additional species including Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Evening-primrose (*Oenothera biennis*), English Stonecrop (*Sedum anglicum*), and Barren Strawberry (*Potentilla sterilis*). On mounds between the rail tracks deeper soils supported grassland dominated by False Oat-grass (*Arrhenatherum elatius*) and Wild Carrot (*Daucus carota subsp. carota*). Areas of dense scrub include Butterfly-bush, Willow (*Salix* sp.), Hawthorn (*Crataegus monogyna*) and Elder (*Sambucus nigra*). A drainage channel with areas of open water dominated by Common Reed.
3	Dense scrub and ESPV similar suite of species to TN 1 and 2.
4	Area of coastal floodplain grassland. An area of unmanaged coastal floodplain grassland very similar in appearance to the Margam Moos SSSI adjacent to the south. Fields are divided by ditches completely obscured by dense Common Reed and scrub. Fool's-water-cress (*Apium nodiflorum*) and Water Mint (*Mentha aquatica*) noted amongst open patches in the emergent reeds but otherwise virtually no aquatic vegetation. Fields themselves dominated by grass species including False Oat-grass, Creeping Bent (*Agrostis stolonifera*), Yorkshire-fog (*Holcus lanatus*) and Cock's-foot (*Dactylis glomerata*). Dense areas of Common Reed adjacent to plantation woodland detailed in TN 5. Grassland fields were species-poor as were the ditches but

Target Note Number	Description
	active grazing management would be likely to restore these areas to habitat of considerable ecological value.
5	Area of Plantation woodland. Approximately 5m high planted trees include Italian Alder (*Alnus cordata*), Ash (*Fraxinus excelsior*) and Pine (*Pinus* sp.). Interior of woodland has an understorey dominated by Elder with a ground flora of Common Nettle (*Urtica dioica*) and Bramble. The western edge of the woodland has a fringe of Butterfly-bush and Sea-buckthorn (*Hippophae rhamnoides*).
6	Species-rich area of ESPV notable for having a carpet of lichen species growing on fuel ash or similar substrate, this would constitute lichen heath and may support some notable or scarce species. Growing through the lichen matt are a range of ruderal and ephemeral plant species with a similar composition to other areas of ESPV but including Hare's-foot Clover (*Trifolium arvense*), Hawkweed Oxtongue (*Picris hieracioides*) and Ribbed Melilot (*Melilotus officinalis*).
7	A complex area of recently dumped spoil, and grassland and on areas of shallower substrate ESPV with a similar suite of plant species found on other areas.
8	Area of species rich grassland and ESPV growing on railway ballast similar suite of species found on other areas.
9	Three stands of Japanese Knotweed
10	Line of trees made up of Sea Buckthorn, White Poplar and Ash.
11	An area of scrub, mainly consisting of Willow scrub with species present such as Butterfly-bush , Cotoneaster (*Cotoneaster* cf. *divaricatus*), False Oat Grass (*Arrhenatherum elatius*), Cocks Foot, Common Nettle and Hemp Agrimony (*Eupatorium cannabinum*).
12	An area of marginal vegetation was present bordering the lagoon made up predominantly of Common Reed (*Phragmites australis*) also with Great Willowherb (*Epilobium hirsutum*) and Hemp Agrimony.
13	Large area of poor semi-improved grassland adjacent to the lagoon. The grassland had been recently mowed which presented a limitation to identification. The vegetation in the area included species such as Creeping Bent (*Agrostis stolonifera*), Ribwort Plantain , Fescue (*Festuca* sp.), Yorkshire Fog , Cocks Foot , Common Dandelion (*Taraxacum officinale*), Creeping Cinquefoil (*Potentilla reptans*) and Black Medick (*Medicago lupulina*).

Target Note Number	Description
	Adjacent to the area of willow scrub, species such as Creeping Willow (*Salix repens*), Burnet Rose (*Rosa pimpinellifolia*) and Cotoneaster (*Cotoneaster* cf. *conspicuus*) were present.
14	A large area of open water present with no obvious signs of aquatic vegetation besides in the marginal areas of the water body, with these plants being described in Target Note 12. The lagoon is known to fluctuate in water level.
15	Area of ephemeral short perennial vegetation and other neutral grassland adjacent to road. The species present at the time of surveying were limited and included *Anisantha* sp., White Melliot (*Melilotus albus*), Vipers-Bugloss (*Echium vulgare*), Great Mullein (*Verbascum Thapsus*), Wild Carrot and Round-leaved Crane's-bill (*Geranium rotunifolium*)
16	Other neutral grassland similar to that in Target Note 13. Located adjacent to lagoon
17	Badger latrine

APPENDIX D – SITE PHOTOGRAPHS

Plate Number	Photograph
1 **Area of ESPV habitat (TN1) along railway with scrub habitat adjacent. Photo taken in the south-east of the site, north westerly viewpoint.**	
2 **Slab yard in the centre of site, westerly viewpoint.**	

3 **Small lagoon present in the east of the site (adjacent to TN1), easterly viewpoint.**	
4 **Access road between slab yard and drainage channel, northerly viewpoint.**	

5 Species rich area of EPSV (TN6) with adjacent woodland (TN5), southerly viewpoint.	
6 Woodland north of Longlands lane.	

7 **Example of floodplain grassland (TN4), northerly viewpoint.**	
8 **Example of ditch in southern fields choked with common reed (TN4)**	

9 **Structure in southern fields adjacent to Longlands lane.**	
10 **Area of poor semi-improved grassland (TN13) adjacent to large lagoon (TN14) in the north of site, northerly viewpoint.**	

11 Reedbed in large lagoon.	
12 Large lagoon and area of grassland, northerly viewpoint.	
13 Line of trees shown on left hand side of photograph. One of three stands of Japanese knotweed (TN9)shown on the right hand side.	