Defence Infrastructure Organisation

Stantec

Defence Estate Optimisation Portfolio

SETA STAGE 1: PRELIMINARY ECOLOGICAL APPRAISAL

Penally Camp

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EXECUTIVE SUMMARY

WSP was instructed by the Defence Infrastructure Organisation (DIO) to conduct a Preliminary Ecological Appraisal (PEA) to inform and guide the site disposal and redevelopment plans at the Ministry of Defence (MoD) Penally Camp, known hereafter as 'the Site'.

The survey was conducted in accordance with the Preliminary Ecological Appraisal Task directive 14 (DIO, November 2021), with agreed modifications, and with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisals, (CIEEM, 2017).

The Site comprises the main camp located in the north which consisted of grasslands and developed land, a water treatment area south of the Site which consisted of wet woodland was also surveyed.

The Site was located approximately 0.25km north of the Limestone Coast of South West Wales SAC, which is designated for coastal habitats, greater horseshoe bats and early gentian. The Site is also located within 0.38km of the Bristol Channel Approaches SAC, which is designated for harbour porpoise. Six SSSIs were located within 2km of the Site.

The following constraints and opportunities, including requirements for further survey, should be considered during the development of the Proposed Masterplan.

Ecological Constraints

- **Statutory designated sites**: Given the location of the SACs from the Site, a Habitats Regulations Assessment (HRA) screening exercise is required to assess the impact on SACs from future development and determine whether a HRA Appropriate Assessment is required. Habitats suitable to support the species for which the SACs are designated should be retained where possible (woodland and grassland).
- **Non-statutory designated sites**: A B-Line is present across the Site and therefore habitats suitable for invertebrates should be retained in any future developments.
- **Habitats**: The Proposed Development masterplan should, where possible, include the retention of habitats of principal importance (HPI) and irreplaceable habitats, or replacement on a 3:1 basis with like-for-like habitat if removal is unavoidable. HPI within the Survey Area included Lowland Mixed Deciduous Woodland, Wet Woodland and Hedgerows.
- **Protected and notable species**: The habitats within the Site are suitable to support protected and notable species including bats, hazel dormouse, badger, other mammals (hedgehog), breeding birds, reptiles, amphibians, terrestrial and aquatic invertebrates and notable flora. Invasive non-native plant species were present.
- Further survey work is likely to be required to confirm presence and populations of these species, to inform any future ecological impact assessment and identify what necessary impact avoidance and mitigation measures will be required to progress development at the site. Where impacts on protected species cannot be avoided, licences may also be required to be sought from Natural Resources Wales prior to commencement of the Proposed Development.

Opportunities

The Site provides opportunities for enhancements to be incorporated into the Proposed Masterplan. Preliminary enhancements recommended at this stage include:

- **Habitat enhancement and creation**: Enhancement of existing retained habitats to a higher condition in line with the findings of further surveys. These may include removal of INNS, altered management regimes such as reduced mowing of grasslands or enhancement to higher distinctiveness habitats.
- **Incorporate biodiverse and native species-rich habitats within built development**: This may include the use of native flowering and fruiting species within landscaping plans to provide pollinator enhancements; the use of green roofs and walls and the consideration of management practices such as reduced mowing regimes to enhance biodiversity.
- **Creation of features to support protected and notable species**: Enhancements targeted specifically for protected species should be incorporated within the Proposed Development Masterplan. This may include the installation of bat and bird boxes; swift bricks; log piles for invertebrates; and retention/creation of dark corridors for nocturnal species such as bats.

INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. The objective of the Defence Estates Optimisation Portfolio (DEOP) is to create a modern Defence estate designed by, and for, the Armed Forces. Part of the Better Defence Strategy (MoD, 2016) is to optimise the Defence estate by minimising the future running costs by disposing of the most expensive sites by 2040, which in turn will help deliver the government's housing target.

1.1.2. WSP are supporting the Defence Infrastructure Organisation (DIO) with the DEOP. This includes Strategic Environmental and Technical Advisory (SETA) services to support DIO's disposal programme on Lot 2. Stage 1 entails initial baseline studies to create the evidence base to inform the disposal strategies and early master planning being undertaken by Avison Young (Lot 2 Strategic Property Advisor, SPA). Stage 1 will be used to define the requirements for Stage 2 studies.

1.1.3. The Preliminary Ecological Appraisal (PEA) forms part of the Stage 1 requirements under the SETA Task Directives and has been carried out to inform the disposal programme of Ministry of Defence (MoD) Defence Intelligence Training Group (DITG) Penally Camp, hereafter referred to as 'the Site'. The purpose of this report is to identify ecological constraints and opportunities relevant to inform the Site disposal strategy and redevelopment plans, including relating to both allocation in the Local Plan and any future planning application. The PEA has been undertaken in accordance with the Preliminary Ecological Appraisal Task directive 14 (DIO, November 2021), with agreed modifications, and follows the Guidelines for a Preliminary Ecological Appraisal (GPEA) (CIEEM, 2017).

1.2 SITE LOCATION AND DESCRIPTION

1.2.1. The Site is located south-west of Penally, Pembrokeshire, approximately 2.3km south-west of Tenby, it is accessed from the A4139 to the south (central National Grid Reference SS10946 98942). The Site is bounded by arable land, pasture and tree lined/hedged boundaries to the north, with the A4139 running parallel immediately to the south and the railway line situated approximately 120m further south. Residential properties lie to the east and a caravan park and camping grounds lie to the west. In the wider area to the south lies the rocky coastline overlooking the Bristol Channel, to the south-east the sandy beach of Tenby South Beach, Carmarthen Bay and to the south-west the sandy beach of Lydstep Beach, Lydstep Haven.

1.2.2. MoD Penally Camp is a former army training camp. The Site consists of main camp, which is fenced and consists of a large number of buildings, hard standing and grassland. There is a water treatment area and consists of woodland to the south of the Site.

1.3 SCHEME DESCRIPTION

1.3.1. There is no proposed scheme or masterplan available for the Site at the time of writing. It is understood that the Site, or parts of it, may be decommissioned for future development of housing, although the scope of this development is not yet confirmed. This is hereafter referred to as the 'Proposed Development'.

1.4 AIMS AND OBJECTIVES

1.4.1. This PEA has been conducted broadly in accordance with the Preliminary Ecological Appraisal Task directive 14 (DIO, November 2021). The report provides DIO with sufficient information at Stage 1 to understand the likely ecological considerations required to progress the Sites' disposal. This report sets out:

- A description of the ecological baseline based on UK Habitats Classification (UKHab) survey and desk study and appraisal of the likely value of ecological features in accordance with CIEEM guidance;
- A description of likely ecological constraints and opportunities, in the absence of a masterplan or any proposals, taking account of relevant legislation and planning policy, supported by an Ecological Constraints and Opportunities Plan (ECOP); and,
- Recommendations for further survey work or other actions likely to be required to inform the Site disposal strategy and/or redevelopment plans, should Site disposal progress to the next Stage.

1.5 PERSONNEL AND QUALITY ASSURANCE

1.5.1. All ecologists working under this SETA framework through WSP adopt best practice working methods in undertaking surveys including the CIEEM code of professional conduct. All fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior personnel and appropriately licensed ecologists.

1.5.2. The PEA was undertaken by WSP Ecologists, Trevor Fletcher (Senior Ecologist) and Megan Watts (Ecologist).

1.5.3. Trevor has seven years' experience as an ecological consultant. He holds European Protected species (EPS) licences with Natural Resources Wales (NRW) for dormouse, great crested newt and barn owl. Trevor has conducted numerous PEA surveys and designed mitigation and long-term management plans for protected species for major development schemes, including transport infrastructure and housing projects. He has considerable experience in co-ordinating and undertaking protected species surveys, including bats, dormouse, great crested newt, otter, water vole, badger, and reptiles. He has extensive experience in designing and leading a wide range of bird surveys.

1.5.4. Megan is an ecologist with four years of professional experience in ecological consultancy. She has experience undertaking PEA surveys and reporting. Megan is an accredited agent on an NRW Bat Licence (Licence number: S092374-2) and is in training towards holding a personal bat licence. She has experience undertaking protected species surveys and Habitat Regulations Assessments across a range of sites including small- and large-scale developments.

2 METHODOLOGY

2.1 OVERVIEW

2.1.1. This report has been prepared in accordance with Institute of Ecology and Environmental Management Appraisal (CIEEM, 2017). This PEA is based on the following data sources:

- An ecological desk study;
- A UKHabs survey
- A Daytime Bat Walkover; and
- A protected and/or notable species assessment.

2.2 DESK STUDY

2.2.1. The desk study included consideration of:

- Information relating to statutory and non-statutory designated areas for nature conservation within a 2km radius of the Site (extended to 10km for European or internationally designated sites and 30km for internationally designated sites for bats), as held on the Multi-Agency Geographic Information for the Countryside (MAGIC) online interactive mapping resource.

- HPI as listed in accordance with Section 7 of the Environment (Wales) Act 2016 and ancient woodland parcels identified on the Ancient Woodland Inventory within a 2km radius of the Site using open-source data provided by NRW.

- A data search from West Wales Biodiversity Information Centre (WWBIC) was requested in March 2024 to obtain information on protected and notable sites and species within a 2km radius of the Site (5km for bat records). Local wildlife citations were obtained where available.

- Aerial photography and Ordnance Survey (OS) maps were studied to locate water bodies within 500m of the Site with regards to their connectivity to the Site and their potential suitability for supporting a population of breeding great crested newts.

2.2.2. The desk study considers species/habitats protected under legislation such as the Wildlife & Countryside Act 1981 (as amended) and other legislation as outlined in Appendix A. It also considers notable species/habitats which are of national priority as outlined in the Environment (Wales) Act 2016 Section 7 Habitats and Species of Principal Importance and of local priority species as outlined in the Pembrokeshire Local Biodiversity Action Plan (2011) and Nature Recovery Action Plan for Pembrokeshire (2018) (referred to hereafter as local Priority Habitats and Species).

2.3 FIELD SURVEY

HABITAT SURVEY

2.3.1. The survey was carried out during the daytime between 08 and 11 April 2024. The weather conditions during the surveys were generally mild and dry, with occasional showers.

2.3.2. Surveyors completed a systematic walkover across the Site and water treatment area (as shown in **Figure 1)** Where accessible, habitats immediately adjacent to the red line boundary were also recorded.

2.3.3. Habitats on the Site were classified and mapped following the standard UK Habitat classification methodology Version 2 (Butcher *et al.* 2020 and UKHab Ltd, 2023) and ascribed a Primary Habitat and Secondary Code (where necessary).

2.3.4. A minimum mapping unit of 5m^2 which was selected as a suitable scale to record the range of different vegetation types present.

2.3.5. Habitats were digitally mapped into polygons, line and point features using the QField fieldwork mobile application on Samsung Galaxy 7 tablets in the field.

2.3.6. A list of plant species was compiled for each habitat, with relative plant species abundance estimated using the DAFOR Scale. The scientific names for plant species follow those in the New Flora of the British Isles (Stace, 2019). The site and its habitats were assessed for their potential to support protected and notable species. The assessment of habitat suitability for protected and notable species was based on professional experience and judgement. This was supplemented by standard sources of guidance on habitat suitability assessment for key faunal groups. The presence of any non-native invasive species was also noted.

2.3.7. The data was subsequently digitised using a Geographical Information System (GIS) to produce a complete habitat map.

2.3.8. Habitats were evaluated to determine whether they qualified, or could qualify, as a Habitat of Principal Importance following the habitat descriptions published by BRIG (JNCC, 2008) and The UK Habitat Classification Habitat Definitions Version 2.0 (UKHab Ltd, 2023).

2.3.9. The habitats were also assessed for their potential to support protected/notable species of plants and/or animals, and observation was made of any incidental signs of protected/notable species.

2.3.10. Photographs are included in this report in Error! Reference source not found. to illustrate the h abitats descriptions. The location and extent of each habitat is provided in **Figure 7** along with Target Notes. Details of the Target Notes are presented in Appendix C. Botanical species identified during the field survey are listed in Appendix D.

DAYTIME BAT WALKOVER

2.3.11. A Daytime Bat Walkover (DBW) was incorporated into the survey, to observe, assess and record any habitats suitable for bats to roost, commute and forage both on the Site and the surrounding area and assess whether further survey was required.

2.3.12. A broad categorisation of the suitability (negligible, low or high) of the buildings and trees on Site to support roosting bats.

ADDITIONAL SPECIES SURVEYS

Preliminary Roost Assessment (PRA) and Ground Level Tree Assessment (GLTA) for bats

2.3.13. Features identified as offering potential to support roosting bats during the DBW were subject to further bat assessments, comprising a Preliminary Roost Assessment (PRA) for bats of structures and Ground Level Tree Assessment (GLTA).

2.3.14. Structures and trees were inspected for any potential access and egress points for bats and evidence of bat use (e.g. droppings, scratches, staining, dead bats).

2.3.15. In line with Bat Surveys for Professional Ecologists Good Practice Guidelines (Collins, 2023) the PRA and GLTA considered local bat records from the last 10 years, locations of bat designated sites within 30km, the surrounding habitats and connectivity (assessed from aerial imagery) and findings from the initial DBW of the Site.

2.3.16. The results of this survey are summarised in Appendix E.

Badger Survey

2.3.17. A badger survey was undertaken within the Site and surrounding area. This survey was undertaken on 12 April 2024 by WSP Ecologists Trevor Fletcher (Senior Ecologist) and Megan Watts (Ecologist).

2.3.18. Surveyors searched for evidence of badger activity such as badger setts; badger pathways under fences and through vegetation; badger footprints; latrines and badger dung; badger hairs caught on wire; and signs of digging for food.

2.3.19. Locations of badger activity found during the field surveys are shown on Drawing 70122627-WSP-74-XX-M2-L-3003–P02 Badger Survey Results Map and listed in Appendix F. Photographs of evidence of badger activity are provided in Appendix B.

2.4 EVALUATION AND APPRAISAL

2.4.1. The evaluation of ecological features was undertaken in accordance with the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018). For ecological features recorded, or likely to be present on the Site, an assessment was made of its likely value within a geographic frame of context (e.g. Local, District, County, Regional, National or International level). Those features of less than local value are described as having negligible value. Where uncertainty existed or further survey was required to confirm a value, a precautionary approach was adopted for evaluation. It should be noted that a full suite of protected species and/or habitat surveys have not been undertaken at this stage. Therefore, any assessment of ecological value is preliminary and provided as an indication subject to further surveys.

2.4.2. An appraisal was then made of potential ecological constraints and opportunities, including possible mitigation requirements and further surveys which would be needed to inform scheme design and assessment.

2.5 LIMITATIONS AND ASSUMPTIONS

2.5.1. The scope of this PEA was broadly in accordance with the PEA Task Directive 14 (DIO, November 2021), with slight amendments to provide a bespoke approach to certain elements as agreed by the client.

2.5.2. A single visit cannot always ascertain the presence or absence of a protected species. However, an assessment is made of the likelihood for protected species to occur based on habitat characteristics and the ecology of each species. Where there is potential for protected species, additional survey work may be required to ascertain their presence or absence.

2.5.3. The survey visit was limited to the land within the Site, land access arrangements for areas outside the Site Boundary were not made and therefore habitats were mapped using satellite images and high-powered binoculars.

2.5.4. This PEA survey and report is generally considered to be valid for up to two years, unless Site conditions change rapidly, for example, due to ecological processes or changes in management.

2.5.5. Data on species records obtained from local biological records centres are sometimes only available at low spatial resolutions and are constrained by the voluntary nature of the contributions and what has been chosen to be submitted as records. While these records provide useful indication of species recorded in the local area, in particular protected or notable species, the data is not necessarily an accurate reflection of species assemblages or abundance in the vicinity.

2.5.6. Ecological value of habitats and features (as detailed in Section 3.3) was undertaken without data from Phase 2 ecological surveys such as botanical or species-specific surveys. As such, any assessment of ecological value has been provided as a preliminary indication, subject to further assessment. At this stage, it is not possible to provide a final assessment of ecological value.

2.5.7. These limitations are considered and addressed in subsequent sections of this report through careful consideration of the habitats recorded and the scope and approach to the further surveys recommended for Stage 2, should this Site development be progressed.

3 RESULTS AND EVALUATION

3.1.1. This section describes the results of the field surveys, with reference to the desk study information, in order to provide context to the findings. Once the desk study and survey findings have been described an evaluation of the likely value of the ecological feature being described is provided, with reference to a geographic frame of reference. Where further survey is required to confirm the value of the ecological feature, a potential value based on information available is provided.

3.2 DESK STUDY

STATUTORY DESIGNATED SITES

3.2.1. Six International statutory Designated Sites including five Special Areas of Conservation (SACs), and one Special Protection Area (SPA) were identified within 10km of the Site. No Ramsar sites were identified within 10km of the Site.

3.2.2. Of the international designated sites identified, two were designated for their bat features: Limestone Coast of South West Wales SAC and Pembrokeshire Bat Sites and Bosherton Lakes SAC.

3.2.3. The SACs are designated for their population of greater horseshoe bats *Rhinolophus ferrumequinum*. No further bat designated SACs were located within 30km of the Site.

3.2.4. The locations of the SACs are presented in **Figure 2**.

3.2.5. Five Sites of Special Scientific Interest (SSSIs) were identified within 2km of the Site.

3.2.6. Little Hoyle and Hoyle's Mouth Caves & Woodlands SSSI was also identified and is notified for bat species including both greater and lesser horseshoe bats (*R. ferrumequinum* and *R. hipposideros*).

3.2.7. No National Nature Reserves (NNR) or Marine Nature Reserves lie within 2km of the Site.

3.2.8. Statutory designated sites are detailed in Table 3-1 below and shown on **Figure 3**.

Table 3-1 - Statutory Designated Sites within 2km (10km for international and 30km for bat designated sites) of the Site.

Designated Site	Approximate distance and direction from Site	Summary Description
Internationally designated sites (10km)		
Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC (UK0014787)	0.25km south	The extensive cliffs of south-west Wales represent hard calcareous cliffs in the south-west of the UK. The nature of the rock and the warm south-facing slopes have resulted in the occurrence of a sequence of important species-rich plant communities. Annex I habitats that are primary reason for selection: • Vegetated sea cliffs of the Atlantic and Baltic Coasts; • Fixed coastal dunes with herbaceous vegetations (grey dunes). Annex I habitats present but not primary reason for selection: • European dry heaths;

Designated Site	Approximate distance and direction from Site	Summary Description
		• Semi-natural dry grasslands and scrubland facies on calcareous substrates (important orchid sites); • Caves not open to the public; • Submerged or partially submerged sea caves. Annex II species that are primary reason for selection: • Greater horseshoe bat *(Rhinolophus ferrumequinum)*; • Early gentian *(Gentianella anglica)*. Annex II species that are present but not primary reason for selection: • Petalwort (*Petalophyllum ralfsii*).
Bristol Channel Approaches / Dynesfeydd MÃ´r Hafren SAC (UK0030396)	0.38km south	The Bristol Channel Approaches SAC lies along the south-west coasts of Wales and England. This site straddles the Bristol Channel from Carmarthen Bay in the north to the northern coasts of Devon and Cornwall in the south. Designated for the protection of harbour porpoise (*Phocoena Phocoena*), this site supports an estimated 4.7% of the UK Celtic and Irish Sea (CIS) Management Unit (MU) population. This site is recognised as important for porpoises particularly during the winter when high densities persistently occur throughout the site. This SAC covers an area of 5,850km^2, and supports a diversity of habitat types, from reefs to mudflats.
Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd SAC (UK0020020)	2.21km east	Carmarthen Bay and Estuaries SAC on the south coast of Wales includes extensive areas of intertidal mudflats, sandflats and estuaries. Large areas of these intertidal flats are dominated by bivalves. Annex I habitats that are primary reason for selection: • Sandbanks which are slightly covered by seawater at all times; • Estuaries; • Mudflats and sandflats that are not covered by seawater at low tide; • Large shallow inlet bays; • Salicornia and other annuals colonising mud and sand; • Atlantic salt meadows. Annex II species that are primary reason for selection: • Twaite shad *(Alosa fallax)*. Annex II species present but not primary reason for selection: • Sea lamprey *(Petromyzon marius)*; • River lamprey *(Lampetra fluvitilis)*; • Allis shad *(Alosa alosa)*; • Otter *(Lutra lutra)*.
Pembrokeshire Marine / Sir	4.92km south-west	Pembrokeshire Marine SAC is located on the south-west coast of Wales.

Designated Site	Approximate distance and direction from Site	Summary Description
Benfro Forol SAC (UK0013116)		Annex I habitats that are primary reason for selection: • Estuaries; • Large shallow inlets and bays; • Reefs. Annex I habitats present but not primary reason for selection: • Sandbanks which are slightly covered by sea water at all times; • Mudflats and sandflats not covered by seawater at low tide; • Coastal lagoons; • Atlalntic salt meadows; • Submerged or partially submerged sea caves. Annex II species that are primary reason for selection: • Grey seal *(Halichoerus grypus)*; • Shore dock *(Rumex rupestris)*. Annex II species present but not primary reason for selection: • Sea lamprey *(Petromyzon marinus)*; • River lamprey *(Lampetra fluviatilis)*; • Allis shad *(Alosa alosa)*; • Twaite shad *(Alosa fallax);* • Otter *(Lutra lutra)*.
Bae Caerfyrddin / Carmarthen Bay SPA (UK9014091)	3.44km east.	Carmarthen Bay SPA was the first fully marine SPA classified in the UK. The site was classified in June 2003, qualifying under Article 4.2 of the Birds Directive (79/409/EEC) for wintering common scoter (*Melanitta nigra*), as it is used regularly by at least 1.1% of the biogeographic population. Carmarthen Bay is one of the most important wintering sites in Britain and Ireland for this species.
Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC (UK0014793)	The closest component of the SAC (Carew Castle SSSI) is located approximately 7.69km north-west	The site supports approximately 9.5% of the UKs greater horseshoe bat population. It represents the species at the north-western extremity of its range. The site contains a mixture of maternity, transitory and hibernation sites and as such contains good conservation of features required for survival.
Bat designated sites (30km)		
Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC (UK0014787)	0.25km south	Annex II species that are primary reason for selection: • Greater horseshoe bat Full summary description described in Internationally designated sites (10km) table section above.

Designated Site	Approximate distance and direction from Site	Summary Description
Little Hoyle and Hoyle's Mouth Caves & Woodlands SSSI	0.86km north	Hoyle's Mouth cave is some 49m in length and is the haunt of the rare greater horseshoe and lesser horseshoe (*Rhinolophus hipposideros)* bats. Full summary description detailed in Nationally designated sites (2km) table section below.
Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC (UK0014793)	The closest component of the SAC (Carew Castle SSSI) is located approximately 7.69km north The second closest component (Stackpole SSSI) is located 13.10km south-west.	The site supports approximately 9.5% of the UKs greater horseshoe bat population. Full summary description described in Internationally designated sites (10km) table section above.
Nationally designated sites (2km)		
Lydstep Head to Tenby Burrows SSSI	0.24km south	A 6km length of coastline from Lydstep in the west stretching east and north towards Tenby. This site is of special interest for its sea-cliff vegetation and for its numerous rare and scarce plants including five nationally rare species. On the more sheltered side of the headlands of Giltar and Lydstep, the steep limestone cliffs were once quarried, and a raised beach persists on the more exposed southerly side.
Cors Penally (Penally Marsh) SSSI	0.28km south-east	A diverse fen enclosed between ridges of Carboniferous Limestone and sand dunes. Numerous scarce fen plants occur.
Little Hoyle and Hoyle's Mouth Caves & Woodlands SSSI	0.86km north	Hoyle's Mouth cave is some 49m in length and is the haunt of the rare greater horseshoe and lesser horseshoe bats. Natterer's bat *(Myotis nattereri)* has also been recorded. The greater horseshoe bat hibernation colony is reputed to have been of large size in earlier years. The much smaller Little Hoyle or Longbury Bank cave is situated in a narrow ridge with entrances on both sides, and with a large chimney linking the cave to the surface of the ridge. Both species of horseshoe bat have been recorded hibernating in the cave, along with Natterer's bat, brown long-eared bat *(Plecotus auritus* and Daubenton's bat *(Myotis daubentoni)*.
Ritec Fen SSSI	1.47km north	This site is of special interest for its extensive area of valley and floodplain fen which stretches for two kilometres on the north side of the river Ritec between Tenby and St Florence. The mosaic of wetland habitats consisting of swamp, tall-herb fen, alder *(Alnus glutinosa)* and willow carr and wet meadows

Designated Site	Approximate distance and direction from Site	Summary Description
		is the largest relict of the fen that once occupied the upper reaches of the former Ritec Estuary. Extensive greater pond sedge *(Carex riparia)* swamp occurs.
St Margaret's Island SSSI	1.75km south-east	The island is principally limestone with the spectacular vertical western cliffs being the southern outcrop of the famous South Pembrokeshire Syncline. The southern slopes are shattered and eroded, and there are several stacks of over 30m immediately south of the island. The seabird colonies are mainly confined to the northern and western cliffs, with strong colonies of guillemot *(Uria aalge)*, razorbill *(Alca torda)* and kittiwake *(Rissa tridactyla)*. The principal nesting species is the cormorant *(Phalacrocorax carbo)*, this being one of the largest in England and Wales. A few pairs of puffins *(Fratercula artica)* breed in rock fissures.

NON – STATUTORY DESIGNATED SITES

3.2.9. One Wildlife Trust Reserve (WTR), two Regionally Important Geodiversity Sites (RIGS), one Important Plant Area (IPA) and one B-line area were present within 2km. All are local level non-statutory designated sites for nature conservation are detailed in Table 3-2 below and shown on **Figure 4**.

Table 3-2 - Non-Statutory Designated Sites Within 2km of the Site

Designated Site	Approximate distance and direction from Site	Summary Description
Local Sites		
Giltar Point RIGS	0.4km south/south-east	This RIGS provides an excellent representative section through the Lower Carboniferous strata from Arundian to Asbian age. The limestones become younger towards Giltar Point and they contain the well-preserved remains of brachiopods, crinoids and corals that are typical of limestones deposited in a shallow marine environment. There are several pockets of gash breccia exposed along the coast.
Church Doors - Lydstep Headland RIGS	1.9km south-west	This site comprises Lydstep Headland and the coastal extension westwards to Church Doors. The main interest is in the Lower Carboniferous (Dinantian) succession with the Lower Limestone Shales continuing through the Main Limestone to the base of the Millstone Grit (Namurian). There are also Variscan structures, Permo-Triassic gash breccias and Quaternary deposits, all of which are of interest to geological researchers.
St Margarets Island WTR (also SSSI)	1.75km south-east	See St Margaret's Island SSSI description in Tabe 3-1.

Designated Site	Approximate distance and direction from Site	Summary Description
Important Plant Area (IPA)	330m south-east	IPAs are locally designated areas noted as 'key sites for exceptional botanical richness; rare, threatened and socio-economically valuable plant species; and rare and threatened habitats' in line with Plantlifes's IPA criteria.
B-Lines	Within site	B-Lines are a series of 'insect pathways' running through the countryside and towns. These are areas in which Buglife are working with farmers, landowners, wildlife organisations, businesses and local authorities to restore and create a series of wildflower-rich habitat stepping stones to link up existing wildlife areas across the country.

HABITATS OF PRINCIPAL IMPORTANCE (HPI)

3.2.10. Based on the Priority Habitat Inventory Data available from NRW (accessed via NRW, 2022), and a review of aerial imagery, no HPI/Priority Habitats were identified within the Site and water treatment area during the Desktop Study. HPI Purple Moor Grass and Rush Pasture, Coastal and Floodplain Grazing Marsh and Lowland Fens and Reedbeds lie adjacent to or within 0.25km of the Site.

3.2.11. No parcels of ancient and semi-natural woodland were located within the Site, water treatment area or adjacent to the Site.

3.2.12. A number of additional HPIs were identified within 2km and include:

- Lowland Calcareous Grassland;
- Ancient Woodland;
- Maritime Cliff and Slopes, and
- Wood Pasture.

ANCIENT WOODLAND

3.2.13. Sixteen areas of ancient woodland as listed on the Ancient Woodland Inventory (NRW, 2021) were identified within 2km of the Site (as shown on **Figure 5**). These were all located over 0.5m from the Site.

WATERBODIES/WATERCOURSES

3.2.14. One waterbody was identified on Site. A small ephemeral pond was identified located west of the Site. Within 0.5km of the Site, one pond, lake or man-made waterbody was identified. This was located approximately 0.49km north-west of the Site (as shown on **Figure 6**).

3.2.15. No main rivers or streams were present within the Site.

PROTECTED AND NOTABLE SPECIES

3.2.16. The results of the desk study with respect to protected and/or otherwise notable species have been referenced, where relevant, in the field survey results section (3.3) below to provide context to the field survey results. A summary is provided of information pertaining to protected and otherwise notable species over the period of the last ten years from the West Wales Biodiversity Information Centre (WWBIC).

3.3 FIELD SURVEY

HABITATS

Overview

3.3.1. The following account summarises the findings of the UKHab survey. Fifteen UKHab habitat types were identified within the Site and water treatment area. A description of the dominant and notable species, the composition and management of each habitat is provided and **Figure 7** provides the location and extent of each parcel of habitat type. Alpha-numeric codes used in this section cross-reference to the UKHab Habitat Classification Version 2 (UKHab, 2023).

3.3.2. The Site, which was securely fenced, predominantly comprised buildings interspersed with areas of grassland with scattered trees. Buildings within the Site included an administrative centre, kitchen and dining facilities, training rooms, accommodation and storage facilities. The buildings were connected by an infrastructure of well-maintained tarmac roads and footways, with a large area of hardstanding located in the northwest part of the Site. Broadleaved woodland was present on the northern boundary of the Site, with residential housing and gardens on the eastern boundary. The A4139 road ran along the southern boundary, bordered by an area of scrub. A hedge separated the Site from the field on the western boundary.

3.3.3. A disused water treatment facility set within an area of broadleaved woodland and was separated from the main Site by the A4139 carriageway.

3.3.4. The wider landscape comprised suburban residential housing to the east and a caravan site to the west, all set within pastoral farmland with hedgerows and scattered blocks of woodland. The open grassland of the Penally MOD ranges lay to the south, which were bounded to the south by maritime cliffs and slopes and the Bristol Channel.

HPIs

3.3.5. Three HPIs were identified on Site and water treatment area during the field survey and include:

- Lowland Mixed Deciduous Woodland;
- Wet Woodland; and
- Hedgerows.

Habitat descriptions

g3c (106) Other neutral grassland

3.3.6. There were extensive areas of neutral grassland (g3c) within the confines of the Penally training camp, larger blocks of grassland were present in the southwest area of the Site and along the northern boundary, with strips of grassland present between buildings.

3.3.7. The grassland within the camp was dominated by red fescue (*Festuca rubra*) in drier areas, and Yorkshire- fog (*Holcus lanatus*) where ground conditions were damper in the north of the Site. Common bent (*Agrostis capillaris),* creeping bent (*Agrostis stolonifera*), cock's-foot (*Dactylis glomerata*) were frequently present throughout. The large block of grassland to the west of the Site was locally damp and appeared to have been less frequently managed; grassland here included frequent meadow foxtail (*Alopecurus pratensis*) and sweet vernal grass (*Anthoxanthum odoratum*). Soft rush (*Juncus effusus*) was scattered through this area (g3c.14), and glaucous sedge (*Carex flacca*) and hairy sedge (*Carex hirsutum*) were frequent/locally abundant. False oat- grass

(*Arrhenatherum elatius*) and annual meadow-grass (*Poa annua*) were occasionally present across the Site, mainly along path edges.

3.3.8. Creeping soft-grass (*Holcus mollis*) and downy oat grass (*Avenula pubescens*) were rarely present within the Site.

3.3.9. Flowering lesser celandine (*Ranunculus ficaria*) was frequently present across the grassland, as were white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*) and common sorrel (*Rumex acetosella*). Occasionally present species, recorded across the training camp included yarrow (*Achillea millifolium*), red clover (*Trifolium pratense*), dandelion species (*Taraxacum* sp.), daisy (*Bellis perennis*) and common bird's-foot- trefoil (*Lotus corniculatus*).

3.3.10. A diversity of rarely occurring forbs were recorded within the training camp neutral grassland (see Appendix D), which included cuckoo flower (*Cardamine pratensis*), primrose (*Primula vulgaris*), common knapweed (*Centaurea nigra*) and mouse-ear hawkweed (*Pilosella officinarum*). Bluebell (*Hyacinthoides non-scripta*) was present along the northern boundary of the training camp within the Site (TN6 in Drawing 70122627-WSP-74-XX-M2-L-3001) and the invasive species three- cornered garlic (*Allium triquetrum*) was frequently present, and locally dominant in grassland in the south of the camp.

3.3.11. A relatively species rich area of grassland (g3c.18) was noted in the northeast area of the training camp (TN8) where species included abundant common dog-violet (*Viola riviniana*) with commonly occurring common knapweed, black medic (*Medicago lupulia),* hairy sedge, white clover, meadow buttercup (*Ranunculus acris*) and bluebell.

3.3.12. An area of wetter ground was present in the north of the Site. The area was possibly being fed by a rising spring located within the woodland further north, beyond the fence boundary. Water was noted flowing slowly across the grassland, creating an area of boggy ground around the stream. Water was noted pooling around building 68. There was a distinct plant species assemblage in this wet area which included frequently occurring lesser- water parsnip (*Berula erecta*), meadowsweet (*Filipendula ulmaria*), hemlock-water dropwort (*Oenanthe crocata*), the grass species Yorkshire fog was abundant with soft rush, glaucous sedge, broadleaved dock (*Rumex obtusifolius*) and hairy sedge occasionally present.

3.3.13. Other neutral, mown, grassland (g3c.106) was present within the areas of survey where it formed a verge along the A4139. Species in this area included frequently occurring common bent, fescue species (*Festuca* sp.) and perennial ryegrass (*Lolium perenne*), with frequently present species such as ribwort plantain (*Plantago lanceolata*), daisy and creeping buttercup.

g4 Modified grassland

3.3.14. Areas of agricultural grassland were noted to the west of the training camp and to the west of the smaller section of the Site adjacent to the water treatment works. Grassland in both of these areas could not be accessed directly but were confidently classified as modified grassland (g4). There was evidence of grazing (g4.100) of the grassland adjacent to the water treatment works.

w1f7 Lowland mixed deciduous woodland (Priority habitat)

3.3.15. An area of lowland mixed deciduous woodland was present, outside and adjacent to the northern fenced boundary of the Site. Species included mature ash (*Fraxinus excelsior*) sycamore (*Acer pseudoplatinus*) and poplar species (*Populus* sp.). frequently occurring hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), willow species (*Salix* sp.) with occasional gorse (*Ulex*

europaeus) formed a dense lower growing canopy layer with occasional more open rides where ground conditions appeared wet.

3.3.16. A stand of Wildlife and Countryside Act 1981 (as amended) Schedule 9 invasive plant species Japanese knotweed (*Fallopia japonica*) was recorded at the woodland edge, adjacent to the northern fence line of the training camp. The stand of Japanese knotweed extended for 15m along the fence line and was approximately 3m wide; a few stems had established just inside the Site, encroaching into the grassland.

3.3.17. Scattered trees were present on Site including broadleaved and coniferous species.

w1d Wet woodland (30.503.528) (Priority habitat)

3.3.18. Wet woodland was present within water treatment area. Species within the woodland included abundant willow species and frequently occurring mature sycamore with occasional holly (*Ilex aquifolium*). Ground topography was undulating with low lying wet areas interspersed with slightly elevated linear features which may have formed boundary banks when the water treatment works was in operation. The field layer included locally abundant common nettle (*Urtica dioica*), bramble and scattered bracken (*Pteridium aquilinum*) in slightly elevated areas and species such as common ivy (*Hedera helix*) creeping bent and wavy hair-grass (*Deschampsia cespitosa*) were present and flowering species included occasional red campion (*Silene dioica*) and traveller's joy (*Clematis vitalba*). Meadowsweet (*Filipendula ulmaria*), water mint (*Mentha aquatica*) and soft rush were frequently present in the wetter areas.

w2c (29) Other coniferous woodland

3.3.19. A small area of planted coniferous woodland was present on the Site, within the northeast area of the training camp, comprising mature Leyland cypress (*Cupressus* × *leylandii*). Understorey was short sward neutral grassland (g3c).

w2c(30) Other coniferous woodland

3.3.20. A line of mature Leyland cypress formed a shelter belt at the top of a steep bank on the southern margin of the training camp, within the Site.

h2a5 (10.11) Species-rich native hedgerow (Priority habitat)

3.3.21. A species-rich native hedgerow was present immediately outside the fenced western boundary of the training camp where it was present along the entire boundary. There were occasionally present mature trees within the hedge line, including sycamore. The scrubby understorey comprised abundant bramble with occasional common nettle. Hedgerow species included abundant blackthorn, hawthorn and willow species, with occasionally present elder, sycamore and apple species (*Malus* sp.).

h3d (10.12) Bramble scrub

3.3.22. An area of bramble dominated scrub was present in the northeast corner of the training camp, lying behind a boarded- up building. The scrub ran along a bank on the boundary fence line. Othe species included occasional butterfly-bush (*Buddleia davidii*), common ivy, broad-leaved willowherb (*Epilobium montanum*) great willowherb (*Epilobium hirsutum*) three cornered garlic and scattered bracken.

h3h (10.12.14) Mixed scrub

3.3.23. An area of mixed scrub was present to the south of the training camp where it grew in a strip between the main road and the minor access road for the training camp. Species included abundant hawthorn, blackthorn and willow species with scattered bracken. Bramble and common ivy comprised the majority of the field layer, and three- cornered garlic was abundant at the interface between the minor road and scrub.

3.3.24. A generally wet area with some standing water at the western extent of the scrub habitat held species such as lesser pond- sedge (*Carex acutiformis*), pendulous sedge (*Carex pendula*), hemp-agrimony (*Eupatorium cannabinum*) and water figwort (*Scrophularia auriculata*). In the drier hedge bank species such as traveller's joy, cow parsley (*Anthriscus sylvestris*), red campion (*Silene dioicia*), honeysuckle (*Lonicera periclymenum*) and false brome (*Bromus sterilis*) were occasionally present.

u1b5 Buildings

3.3.25. Buildings were present across the Site, within the disused fenced training camp. Structures included substantial multi-roomed administrative buildings, storage buildings, kitchen facilities and single storey open plan sheet metal / corrugated buildings formerly used as sleeping accommodation. A more detailed description of buildings is provided in Appendix E.

u1b6 Other developed land

3.3.26. The Site and wider surrounds included multiple areas of other developed land.

3.3.27. Within the Site there were large areas of concreted hard standing and a road system with access to all the buildings.

3.3.28. Multiple roads were present, including the A4319 located south of the Camp and other smaller roads leading into the housing estate located east of the Site.

u1d Suburban mosaic of developed and natural surfaces

3.3.29. Suburban mosaic of developed and natural surfaces i.e. residential housing and gardens were present on the eastern boundary of the Site, outside the training camp. The housing consisted of a mix of mainly detached properties with gardens, this area was not open to direct access but gardens close to the camp could be seen, and typically comprised well maintained lawns and ornamental planting.

u1e Built linear features

3.3.30. The Camp is fenced on the boundary not allowing public access. Other built linear features included a stone wall located on the entrance road to the camp and the railway line located at the south.

r1g (40.316) Other standing water

3.3.31. A shallow, ephemeral pool was present within grassland to the west of the disused water treatment works. Direct access was not possible due to the waterbody being on fenced, private land, however using binoculars it was possible to ascertain that the water was approximately 20cm deep with gently shelving margins. Aquatic species included occasional water- starwort species (*Callitriche* sp.), floating sweet-grass (*Glyceria flutitans*) and frogbit (*Hydrocharis morsus-ranae*). The margins were dominated by creeping bent and soft rush.

3.3.32. A small area of standing water was present within the dense scrub located south of the access road to the camp.

r2b Other rivers and streams

3.3.33. Within the woodland located at the water treatment area there was an area of running water fed by an underground spring. This running water was not considered to be priority habitat status.

PROTECTED AND NOTABLE SPECIES

3.3.34. Table 3-3 outlines the protected and notable species that were recorded during the site survey and/or that may be present on-site based on the habitats present and taking account of local records. The potential value for these species is also provided based on the findings to date and taking a precautionary approach where detailed survey information is not available.

3.3.35. Full results of the accompanying species assessments/surveys are provided in the following appendices:

- Potential Roost Assessment of structures for bats – Appendix E
- Badger Survey – Appendix F

3.3.36. A summary of the results is included within Table 3-3.

3.3.37.

Table 3-3 - Protected and Notable Species: Desk Study and Site Survey Results

Taxa	Local Records	Site Findings and Rationale for Evaluation	Potential Value
Bats	A total of 157 records of bats were identified within 2km of the Site in the last ten years. These included records of common pipistrelle (*Pipistrellus pipistrellus),* soprano pipistrelle *P. pygmaeus, (Pipistrelle* sp)*.,* Nathusius's pipistrelle (*P. nathusii),* Daubenton's bat (*Myotis daubentoniid), Myotis sp.,* Natterer's bat (*M. nattereri),* noctule (*Nyctalus noctule),* brown long-eared (*Plecotus auritus),* greater horseshoe bat (*Rhinolophus ferrumequinum) and* lesser horseshoe bat (*R. hipposideros).* The majority of records were from hibernation or roost count surveys. None of the records were located within the Site directly. Common pipistrelle, lesser horseshoe bat, *Myotis* species and soprano pipistrelle were recorded flying nearby approximately 0.4km east of the Site by Gould Ecology in 2021. Numerous bat roost records were identified within 2km of the Site. The closest was for lesser horseshoe bat roost (Tenby Site key 3170030) approximately 0.7km north-west of the Site, with yearly counts record between 2013 and 2018.	Suitable foraging and commuting habitats for bats including woodland, grassland, tree lines and waterbodies were present on Site. Features which connect the Site to the wider landscape including areas of woodland, hedgerows and grassland were also present. In line with the Bat Conservation Trust (BCT) Guidance (Collins, 2023), the site was assessed to have high suitability for foraging and commuting bats. Recommendations for further survey are included within Section 4. A Preliminary Roost Assessment (PRA) was undertaken on all of the buildings on Site. 79 buildings were present on Site with 73 identified with potential for roosting bats. 12 buildings were identified with high potential for bats, five with moderate potential, 49 with low potential and seven with negligible potential for roosting bats. Evidence of bat use (droppings) was identified in four buildings	**County** – the Site provides high suitability foraging and commuting habitat. Areas of woodland and numerous buildings are present within the Site which may provide suitable opportunities for roosting bats, including potential for maternity and hibernation roosts. A preliminary value of county level has been assigned for bats on a precautionary basis.

Taxa	Local Records	Site Findings and Rationale for Evaluation	Potential Value
		across the Site (Buildings 46, 57, 62 & 64). Full PRA results provided in Appendix E. No trees were identified on Site with bat roosting potential. As buildings are likely to be suitable to support roosting bats, further surveys for bats are recommended in Section 4.	
Hazel dormouse (*Muscardinus avellanarius)*	No records of hazel dormouse were identified within 2km of the Site, within the last 10 years or from older records dating back to 1848.	No incidental observations of field signs of hazel dormouse were observed during the survey. Habitats on Site, including woodland and hedges were considered suboptimal for dormouse (limited connectivity to the wider landscape and lack of food plant species). A precautionary approach should be taken for further work in relation to dormouse.	**Local** – due to suboptimal habitat being present on Site for dormouse and no local records. Precautionary evaluation.

Taxa	Local Records	Site Findings and Rationale for Evaluation	Potential Value
Otter (*Lutra lutra)*	The desk study identified one record of otter within 2km of the Site. This was for spraints recorded in 2020 located approximately 1.7km north-east of the Site between and pond and the Ritec River.	No suitable habitat for otter was identified on Site.	**NA** – no suitable habitat for otter to access the Site was present during the field survey.
Water Vole (*Arvicola amphibius)*	The desk study did not identify any records of water vole within 2km of the Site, recorded within the last ten years. Four records between 1937 and 1971 were located over 1.5km north/north-east of the Site near the Ritec River. No suitable waterbodies are present within the Site.	No suitable habitat for water vole was identified on Site.	**NA** – no suitable habitat for water vole was present.
Other mammals	Five records of hedgehog (*Erinaceus europaeus*) were identified during the desk study. Two of which (recorded in 2017) were located at the boundary of the Site along the A4139. One record of stoat was identified during the desk study, located approximately 1km east of the Site crossing a footpath.	A fox kill (a bird) was found on Site within the Camp (TN1 in Drawing 70122627-WSP-74-XX-M2-L-3001). Mammal runs and scrapes (TNs 10, 11 & 12 in Drawing 70122627-WSP-74-XX-M2-L-3001) were found during the survey, these were in addition to evidence attributed to badger. Habitats on Site including woodland, grassland and scrub	**County** – suitable habitat for hedgehog exists within the grassland, gardens and hedgerows within and around the Site. Precautionary evaluation.

Taxa	Local Records	Site Findings and Rationale for Evaluation	Potential Value
		were suitable for mammals to forage, commute and breed.	
Reptiles	One record for reptiles was identified within 2km of the Site. The record was for common lizard *(Zootoca vivipara)* located approximately 1km south-west of the Site.	Habitats on Site including grassland, scrub, woodland edges and sealed developed land were considered suitable for reptiles.	**Local** – the Site had potential for reptile species.
Amphibians	Seven records of amphibians were identified within 2km of the Site in the last ten years. These included four records of common toad (*Bufo bufo)* and three records of palmate newt (*Lissotriton helveticus).* No records of great crested newt (*Triturus cristatus)* were identified during the desk study. The closest waterbody (pond/lake) was located approximately 0.5km north-west of the Site.	One ephemeral pond, with potential to support common and widespread amphibians such as common frog, common toad and smooth newt, was identified within the Survey Area A Habitat Suitability Index assessment (HSI) was not undertaken on the pond as it was not suitable for great crested newt due to being ephemeral. A small area of running water was identified within the Survey Area, near the water treatment area that was supplied by a natural spring. The stream had a moderate flow and was considered likely to be unsuitable for amphibians.	**Local** – the Site had potential for common amphibian species to breed, forage and commute.
Terrestrial Invertebrates	A total of 47 records for eight species of notable or protected invertebrates were identified within 2km of the Site as part of the desk study. The closet of these was for grayling (*Hipparchia semele semele)* located approximately 0.6km	Habitats present on Site are suitable to support a range of terrestrial invertebrate species.	**County** – the site contains a range of habitats which may have potential to support protected and notable terrestrial invertebrates. Precautionary evaluation.

Taxa	Local Records	Site Findings and Rationale for Evaluation	Potential Value
	south-west of the Site along the coastline near Frank's Shore. All species are listed as Section 7 Priority species under the Environment (Wales) Act 2016 for their importance for maintain biodiversity in Wales. Records also included seven records for small blue (*Cupido minimus)* which is listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). The closest record located approximately 1km south-west along the coast headland of Proud Giltar. Remaining records were located over 1km south-east of the Site along the headland of Giltar Point.		
Aquatic Invertebrates	No records for aquatic invertebrates were identified within 2km of the Site within the last 10 years.	The waterbody present within the Survey Area had some potential for common aquatic invertebrates, although is not expected to be impacted by future works.	**NA –** unlikely to impact local aquatic invertebrate populations.
Plants	Two records of notable or protected plant species were identified within the desk study both comprising bluebell *Hyacinthoides non-scripta*. The closest was located approximately 0.6km south of the Site along the coastal footpath. The surrounding coastal SAC/SSSIs are cited as supporting important sea cliff vegetation.	During the field survey, bluebells were identified on Site. It should be noted that a full botanical survey was outside of the scope for this assessment.	**County** – due to the presence bluebells.
Invasive, non-native species (INNS) - flora	A total of 29 records for five species listed on under Schedule 9 of the Wildlife and Countryside Act were identified within the desk study within the last 10 years.	During the field survey three-cornered garlic was present in abundance across the Site. Japanese knotweed was also present on Site (located at TNX in	**N/A** – INNS may have an adverse effect on the value of habitats within the Site.

Taxa	Local Records	Site Findings and Rationale for Evaluation	Potential Value
	Japanese knotweed (*Fallopia japonica*) was recorded, at its closest, 0.3km east of the Site along the village to coast path under the railway bridge. Montbretia (*Crocosmia pottsii x aurea = C. x crocosmiiflora)* and Japanese knotweed were recorded 0.4km east of the Site near the entrance to Penally Court Farm campsite. Most records were for Himalayan balsam (*Impatiens gladulifera)* all located over 1.4km north of the Site around the Ritec River. Three cornered garlic (*Allium triquetrum)* was recorded 1.5km south-west of the Site along the coast path. An extensive colony of water fern (*Azolla filiculoides)* was recorded 1.7km north of the Site in a ditch north of Marsh Rd.	Drawing 70122627-WSP-74-XX-M2-L-3001). Any future construction works have potential to spread Schedule 9 invasive non-native plant species if recommendations listed in Section 4 are not followed.	
Invasive Non-Native Species - fauna	Three records of invasive non-native fauna listed on Schedule 9 of the Wildlife and Countryside Act included one record for night heron *(Nycticorax nycticorax)* and two records for grey squirrel (*Sciurus carolinensis).*	No invasive non-native fauna species were identified on Site at the time of survey. However, there is potential for grey squirrel to be present on Site.	**N/A** – INNS may have an adverse effect on the success of native flora and fauna within the Site.

3.4 SUMMARY RESULTS AND EVALUATION

3.4.1. A summary of the designated sites, habitats, protected and notable species likely or confirmed to be present on Site, together with their potential value is given in Table 3-4.

3.4.2. Taxa which are likely to be absent and for which the Site is considered to hold negligible value are not considered further in this report. All other taxa are discussed further in Section 4.

Table 3-4 - Summary Results and Evaluation

Ecological Feature	Potential Value*
Statutory Designated Site	National/international
Non-Statutory Designated Site	County/Local
Other Neutral Grassland	Local
Modified Grassland	Local
Lowland mixed deciduous woodland	County
Wet woodland	County
Other coniferous woodland	Local
Hedgerows	County
Bramble scrub	Local
Mixed scrub	Local
Urban	Local
Other standing water	Local
Other rivers and streams	Local
Bats	County
Badger	County
Birds	County
Amphibians	Local
Reptiles	County
Hedgehog	County
Otter	N/A
Water Vole	N/A
Hazel Dormouse	Local

Ecological Feature	Potential Value*
Aquatic Invertebrates	N/A
Terrestrial Invertebrates	County
Fish	County
Plants	County
INNS	N/A

*Pending further survey and taking a precautionary approach to value assessment.

4 ECOLOGICAL CONSTRAINTS, OPPORTUNITIES AND RECOMMENDATIONS

4.1.1. This section seeks to identify where the presence of designated areas, or the potential presence of protected or otherwise notable habitats and species has the potential to provide constraints or opportunities for development within the Site. Constraints and opportunities are described in the light of the findings presented in the previous section, and in the light of relevant policy and legislation. The identified potential constraints and opportunities are shown on the Ecological Constraints and Opportunities Plan (**Table 5-1**).

4.1.2. The described constraints and opportunities provide the framework for recommendations that should be considered in future development, and with regards to further survey work necessary to confirm the ecological value of the Site and its associated ecological features. These surveys would be required to support the disposal of the Site and any planning application associated with its redevelopment.

4.2 DESIGNATED SITES

STATUTORY DESIGNATED SITES

4.2.1. There will be no direct impacts on the statutory designated site that are designated for habitat features due to the distance from the Site and lack of hydrological connectivity. However, there is potential for sites that have bats and birds as the designatory feature to be impacted (Limestone Coast of South West Wales SAC) due to the mobility of the species and potential for designated species such as greater horseshoe bats to be using the habitats on Site.

4.2.2. The SSSIs are largely designated for bats, bird and wetland habitats present. There is potential for the species of interest for which the SSSI is notified to be using the habitats on the Site.

4.2.3. The wetland within the SSSI's is not hydrologically or physically connected to the Site and therefore no adverse effects are expected to result from the Proposed Development on the habitats.

4.2.4. At the time of writing, the details of the Proposed Development are not confirmed, although it is understood that the Site is intended to be decommissioned for future development. Further assessment will be required when details of the Proposed Development are confirmed.

Recommended Actions

4.2.5. Under the Conservation of Habitats and Species Regulations 2017 (as amended), any development which may have an adverse effect on a SAC, SPA or Ramsar is required to be screened by the Competent Authority (the Local Planning Authority where planning applications are concerned) for Likely Significant Effects (LSE) as part of a Habitats Regulations Assessment (HRA) screening. The HRA screening will consider the potential for LSE on the international designated sites qualifying species and habitats with regard to its conservation objectives. If LSEs are identified, the second stage of a HRA, an Appropriate Assessment will be required to consider any mitigation measures and confirm the avoidance of any LSEs.

4.2.6. Environmental best practice guidelines listed in Section 4.6 are to be followed for any future construction or decommissioning works to ensure no impacts on statutory sites from airborne pollution arise.

4.2.7. The final Proposed Development masterplan should be reviewed alongside the results of any bat surveys to identify whether there is potential for impacts on the Limestone Coast of South West Wales & Pembrokeshire Bat Sites and Bosherton Lakes SACs. Should potential pathways for impacts be identified a HRA screening is likely to be required. The full consideration of LSEs, considerations of potential effects on designated area integrity and requirements for mitigation, as required for HRA, are beyond the scope of this assessment. In addition, LSEs would need to be informed by further survey work to confirm the nature and extent of habitats and species within or near to the Proposed Development.

4.2.8. In order to avoid potential impacts on barbastelle and horseshoe species of bats, it is recommended that wherever possible, woodland and grassland habitats are retained to avoid the loss of potential roosting, foraging and commuting habitats for the species.

4.2.9. Appropriate unlit buffer zones (e.g. 10m) should be maintained around woodland habitats and dark corridors should be maintained in accordance with current artificial lighting guidance (Institute of Lighting Professionals (ILP) and BCT, 2023) to minimise impact on light-averse bat species.

NON-STATUTORY DESIGNATED SITES

4.2.10. St Margarets Island WTR is located 1.75km from the Site and designated for sea birds. It is not expected that any species of interest associated with the WTR will be affected by future works due to the distance from the Site.

4.2.11. The IPA is not hydrologically or physically connected to the Site. There is potential for airborne pollution from the decommission phase, or any future development, of the Site to adversely affect the IPA.

4.2.12. The whole Site is encompassed in a B-Line, any significant habitat change is likely to cause negative impacts to invertebrates using the Site and therefore mitigation measures are required.

Recommended Actions

4.2.13. Environmental best practice guidelines listed in Section 4.6 are to be followed for any future construction or decommissioning works to ensure no impacts on non-statutory sites from airborne pollution arise.

4.2.14. Habitats on Site that are of value for invertebrates, including grasslands and woodland, should be retained as best as possible to lower risk of negative impacts on invertebrate species protected by the B-Line. Planning for future development should include measures to improve habitats for invertebrates within the design stages.

4.3 HABITATS OF PRINCIPAL IMPORTANCE/ANCIENT WOODLAND

4.3.1. Ancient woodland is considered an irreplaceable habitat and developments that affect ancient woodland are unlikely to gain permission under the policies of the National Planning Policy Framework. These receptors were identified within the Site as part of the desk study. The HPIs identified include Lowland Calcareous Grassland, Ancient Woodland, Maritime and Cliff Slopes and Wood Pasture. These are high value habitats for biodiversity.

4.3.2. Lowland Mixed Deciduous woodland and Hedgerow was present within the Survey Area but was located outside of the Site itself and therefore not expected to be impacted by future works.

4.3.3. Planning Policy Wales (2021) states that development plans should 'provide for the conservation of and where appropriate, enhancement of biodiversity…identifying opportunities to conserve important local habitats and species…'. This duty also extends to the MOD.

Recommended Actions

4.3.4. Where possible, the HPI within the Site should be retained and protected. In addition, buffers around the retained habitat should be implemented to avoid impacts during construction. Measures must be taken to prevent dust and other emissions from construction affecting land beyond the Site.

4.3.5. Retained trees must be protected in accordance with BS5837 – trees in relation to design, demolition and construction. A minimum of a 15m buffer to lowland mixed deciduous woodland is recommended.

4.3.6. Where possible, the loss of HPI should be avoided. Where construction within HPI is required to facilitate the Proposed Development, compensation for the loss of these habitats should be included within the Proposed Development masterplan.

4.3.7. Opportunities for HPI creation should be considered within the Proposed Development masterplan. This may include the creation of native species rich hedgerows within the Site to provide connecting linear features, and the creation of native species woodlands which are managed in perpetuity for biodiversity benefits and therefore may eventually develop into Lowland Mixed Deciduous Woodlands. Existing HPI may also be enhanced through improved management, informed by condition assessments of the habitats.

4.3.8. Creation of wildlife friendly ponds should also be considered as part of the Proposed Development. These ponds may provide wider ecosystem service benefits and may be incorporated into a wider Sustainable Drainage Scheme (SuDS).

4.3.9. Any landscaping and planting on Site should include the use of UK native species including those of high value for pollinators and other wildlife including flowering and fruiting species.

4.4 SPECIES

BATS

4.4.1. All species of bats recorded within the UK are protected from killing, injury and disturbance[1] and their roosts protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural Resources Wales for certain purposes.

[1] Disturbance is defined within the Conservation of Habitats and Species Regulations 2017 (as amended), the 'Habitats Regulations' as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

4.4.2. Habitats within the Site including deciduous woodland, grassland, scrub and hedgerow provide suitable foraging and commuting habitat for bats. In line with the Bat Conservation Trust (BCT) Guidance (Collins, 2023), the site was assessed as having high suitability for foraging and commuting bats. The grassland located south of the Site provides connectivity to the Limestone Coast of South West Wales SAC, designated for greater horseshoe bats.

4.4.3. Buildings on Site provided varying degrees of potential for roosting bats. Evidence of bat use was found in four buildings within the Site. Full PRA results summarised in Appendix E.

Recommended Actions

4.4.4. Significant habitat change and loss is expected from decommissioning and potential future development. Therefore, in line with bat survey guidelines (Collins, 2023) bat activity surveys are required. As the Site had high suitability to support foraging and commuting bats three Nighttime Bat Walkover (NBW) surveys are required to be undertaken encompassing all seasons in the bat active period (Spring: April-May; Summer: June-August; Autumn: September-October). This will allow a baseline level of bat activity on Site to be established and help to identify buildings potentially being used as bat roosts.

4.4.5. Buildings identified with potential for roosting bats that will be removed in the decommissioning or construction stages require emergence surveys in line with the guidelines (Collins, 2023) to determine whether bat roosts are present.

4.4.6. Buildings identified with high potential require three emergence surveys to be undertaken using Night Vision Aids (NVAs), buildings with moderate potential require two emergence surveys and buildings with low potential require one emergence survey, between May and August/September.

4.4.7. Should a roost be identified during the surveys a European Protected Species (EPS) licence from Natural Resources Wales will be required to facilitate works. As part of any licence, appropriate mitigation and compensation will be required.

4.4.8. Further to the recommended activity and emergence surveys, buildings where bat activity was noted, but no presence of bat roosts identified, will require a preconstruction inspection to check for roosting bats prior to any demolition works. Structures in which Potential Roosing Features (PRFs) were identified but where no bat activity was recorded can be demolished by soft stripping the structures under the supervision of a licenced bat worker. If the presence of a bat/bats is identified at any point during demolition all works must cease until a licence has been obtained from NRW.

4.4.9. In order to avoid impacts on bats which may utilise the Site, it is recommended that negative impacts to suitable foraging and commuting habitats are avoided and minimised wherever possible. Woodland trees should be retained, along with other suitable foraging habitats such as grassland, scrub and hedgerow habitats wherever possible. The masterplan and any landscaping and lighting designs should be informed by bat activity surveys and the locations of any known roosts.

4.4.10. It is recommended that buffers of natural vegetation suitable to support bats should be implemented around retained habitats to avoid light spill, noise and vibration disturbance both during construction and following completion of the Proposed Development. The extent of the buffers should be informed by the surveys but should be at least a minimum of 10m in width.

4.4.11. A sensitive lighting design should be implemented both during construction and operational phases. Lighting during construction should be task-specific and directional, and switched off when not in use. Permanent lighting should follow best practice guidance (ILP and BCT, 2023) for maximum

intensities and brightness of lights, and where possible use hoods/louvres to direct light and avoid light spill onto retained vegetation.

4.4.12. Where possible, works during construction should be carried out during daylight hours (commencing at least one hour after sunrise and finishing at least one hour before sunset) to avoid disturbance of nocturnal species.

4.4.13. It is recommended that opportunities to create habitat for foraging and commuting bats should be identified, through the creation of hedgerows, tree lines and enhanced woodland and grassland. Bat boxes may also be installed on retained trees to provide additional roosting habitats.

BADGER

4.4.14. The Protection of Badgers Act 1992 makes it illegal to wilfully kill, injure or take any badger, or attempt to do so. It also makes it an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural Resources Wales for certain purposes.

4.4.15. As a badger sett was identified close to the Site and signs of badger use, such as signs of foraging and commuting, were also noted across the Site itself, the proposed works may result in the loss or damage of badger setts if any are established on the Site following the survey, and/or the obstruction of access to them. There is also potential for commuting or foraging routes or territories on or around the Site to be severed.

Recommended Actions

4.4.16. A check to determine whether any badger setts have been established on the Site, in the interim period between the survey and works commencing, should be carried out prior to any works commencing on the Site. If a sett is identified on the Site, or within 30m of works, and the proposed development would result in unavoidable disturbance of the sett, a licence will be required from Natural Resources Wales. If the loss of a main sett is predicted, the creation of an artificial sett as compensation is likely to be necessary.

4.4.17. Environmental best practice guidelines listed in Section 4.6 must be followed in relation to any excavations on Site to ensure badger are not trapped overnight.

4.4.18. Where possible, works during construction should be carried out during daylight hours (commencing at least one hour after sunrise and finishing at least one hour before sunset) to avoid disturbance of nocturnal species.

BIRDS

4.4.19. Habitat suitable to support breeding birds was recorded across the Survey Area with the potential to support a range of notable species including Species of Principal Importance. All wild bird species, their eggs and nests are protected by law. The Proposed Development may result in significant loss of and alterations to local habitats of value which may be supporting breeding birds including woodland, scrub, grassland, hedgerow and buildings.

4.4.20. Nesting birds could be impacted during construction if removal of buildings, dense vegetation, trees or grasslands suitable to support ground nesting birds is undertaken during March to August inclusive.

4.4.21. There is limited potential for barn owl *(Tyto alba)* to be present within the buildings on Site over winter.

Recommended Actions

4.4.22. Vegetation clearance should be avoided within the bird nesting season (generally March to August inclusive). Where avoidance of this period is not possible, an Ecological Clerk of Works (ECoW) will be required to undertake a nesting bird check no more than 24 hours before any vegetation removal to determine the presence or absence of nesting birds. Should nesting birds be identified, an appropriate (species-specific) exclusion zone should be implemented around the nest until all the chicks have fledged, or the nest is deemed inactive by the ECoW.

4.4.23. Prior to any demolition of buildings on Site a preconstruction breeding bird check is required no more than 24 hours before demolition to ensure no nesting birds are present within the building.

4.4.24. If buildings are to be removed during the winter months, a pre-demolition check for barn owl is required prior.

AMPHIBIANS

4.4.25. Great crested newts are protected from killing, injury and disturbance and their places of rest or shelter (occupied habitat) protected from damage or destruction under the Habitats Regulations.

4.4.26. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural Resources Wales for certain purposes.

4.4.27. Great crested newt and common toad are also listed as priority species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation under Section 7 to have regard for these species when carrying out their functions.

4.4.28. Habitats on Site were not suitable for great crested newt and therefore no specific recommendations relating to great crested newt are required.

4.4.29. Grassland, scrub, woodlands and the waterbody identified within the Survey Area were suitable for common amphibians such as common frog and toad which would be at risk of injury/killing from vegetation clearance.

Recommended Actions

4.4.30. A Precautionary Method of Working (PMoW) is required to ensure common amphibians are not harmed by any works. Where vegetation clearance is required to facilitate works vegetation it should be carried out in a two-stage cut under the supervision of an ecologist. Vegetation should be kept at a low level between the time of clearance and the start of any proposed development to ensure amphibians do not recolonise.

REPTILES

4.4.31. Widespread native reptile species (common or viviparous lizard, adder, grass snake and slow worm) are afforded partial protection under Schedule 5 of the Wildlife and Countryside Act. This includes protection from killing and injury.

4.4.32. All reptile species are also listed as priority species in accordance in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation under Section 7 to have regard for these species when carrying out their functions.

4.4.33. The grassland, scrub and areas of hard standing within the Camp in the west and centre of the site provides suitable basking and foraging habitat for reptiles, and hedgerow, scrub and woodland provide suitable potential refugia and hibernation habitat and the desk study identified records of common lizard within 2km of the Site.

4.4.34. Works within the grassland and scrub habitats on the Site have the potential to lead to the loss of supporting habitat for widespread reptile species and may lead to accidental injury or mortality of reptiles during vegetation clearance.

Recommended Actions

4.4.35. A reptile survey should be carried out on the Site, following best practice methodology to determine species presence/ absence and a population size estimate. Data obtained will inform appropriate mitigation and development design to minimise impact on reptiles, should they be present.

OTHER MAMMALS - HEDGEHOG

4.4.36. Hedgehogs are listed as priority species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation under Section 7 to have regard for these species when carrying out their functions.

4.4.37. While no evidence of hedgehog was identified during the survey, the Site contained suitable habitat for foraging including areas of grassland, hedgerows, woodland and scrub.

4.4.38. Vegetation clearance to facilitate the Proposed Development may result in loss of habitat for hedgehog, and potential for accidental injury or mortality.

Recommended Actions

4.4.39. A PMoW is required to ensure mammals are not harmed by any works. The PMoW is likely to specify a two-stage clearance methodology, appropriate timing, ecological supervision and actions to be taken should hedgehog be encountered.

4.4.40. Recommendations in relation to excavations listed in Section 4.6 should be followed for the duration of works.

HAZEL DORMOUSE

4.4.41. The hazel dormouse is a European Protected Species protected from killing, injury and disturbance, and their places of rest or shelter (occupied habitat) protected from damage or destruction under the Habitats Regulations.

4.4.42. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural Resources Wales for certain purposes.

4.4.43. The hazel dormouse is also listed as a priority species in accordance with Section 7 of the Environment (Wales) Act 2016.

4.4.44. Whilst there were no records of dormouse returned and habitat on Site was considered sub-optimal for the species, best practice in line with the Dormouse Conservation Handbook (English Nature, 2006), is that '*the presence of dormice should be assumed in any areas of woody habitat (including plantations and, hedgerow and scrub) within their range…*' and therefore the species should be considered in the context of vegetation clearance on the Site.

Recommended Actions

4.4.45. A PMoW is required when working within woodlands, scrub and hedgerows. The PMoW is likely to specify two stage clearance methodology, suitable timings and supervision by an appropriately qualified ecologist.

AQUATIC INVERTEBRATES

4.4.46. A number of invertebrates are listed as rare and most threatened species under Section 7 of the Environment (Wales) Act 2016. Public bodies (including local planning authorities) have an obligation to have regard for the conservation of biodiversity (including priority species) when discharging their duties (including determining planning applications).

4.4.47. Waterbodies present on Site were suitable for common aquatic invertebrates to be present.

Recommended Actions

4.4.48. Best practice environmental measures should be implemented to minimise the risk of adverse effects on water quality such as through pollution events or sediment runoff. Further details listed in Section 4.6.

TERRESTRIAL INVERTEBRATES

4.4.49. Certain invertebrate species are protected under Schedule 5 of the Wildlife and Countryside Act 1981. For those listed in Schedule 5, amongst other actions, it is an offence to intentionally kill, injure or take the species, or possess or control them (alive or dead). It is also an offence to intentionally or recklessly damage or destroy a place of shelter or protection, disturb them in a place or shelter protection or obstruct access.

4.4.50. A number of invertebrates are listed as rare and most threatened species under Section 7 of the Environment (Wales) Act 2016. Public bodies (including local planning authorities) have an obligation to have regard for the conservation of biodiversity (including priority species) when discharging their duties (including determining planning applications).

4.4.51. Suitable habitat is present within the Site to support a range of notable and protected invertebrates, particularly within the woodland, grassland and scrub habitats within the Site.

Recommended Actions

4.4.52. Where possible, it is recommended that large areas of other grassland, broadleaved woodland, scrub and hedgerows should be retained, and any removal minimised.

4.4.53. Best practice environmental measures should be implemented to minimise the risk of adverse effects on habitat quality such as through pollution events or sediment runoff. Further details listed in Section 4.6.

FISH

4.4.54. The Carmarthen Bay and Estuaries SAC is designated for multiple fish species. Pollution from airborne dust associated with decommissioning and future construction on the Site has potential to negatively impact fish species.

Recommended Actions

4.4.55. Best practice environmental measures should be implemented to minimise the risk of adverse effects on water quality such as through pollution events or sediment runoff. Further details listed in Section 4.6.

Plants

4.4.56. Bluebells were recorded on the Site. Native bluebells are protected in the UK under the Wildlife and Countryside Act, 1981 and there is a risk that that the plants and bulbs may be damaged or destroyed and/or removed from the Site during any future excavation associated with development.

4.4.57. The Important Plant Area (IPA) located 330m from the Site is not hydrologically or physically connected to the Site, but there is a risk of airborne pollution impacting the IPA.

Recommended Actions

4.4.58. Best practice environmental measures should be implemented to minimise the risk of adverse effects on water quality such as through pollution events or sediment runoff. Further details listed in Section 4.6.

4.4.59. In areas where notable flora (i.e. bluebells) were present on the Site where excavation is required, topsoil should be stored separately and reinstated in a suitable location on the Site to ensure there is no loss of notable species.

INNS

4.4.60. Species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were identified within the Site including three-cornered garlic and Japanese knotweed. Under this act, it is an offence to cause or allow the spread of these species into the wild.

Recommended Actions

4.4.61. Invasive Non-Native Species (INNS) mapping survey is required prior to any works to understand the extent of the Schedule 9 invasive plant species present on Site.

4.4.62. Subject to the results of the INNS mapping survey, where works are required in areas where INNS are present, or within close proximity, works should be carried out under an method statement to ensure that the species are not spread and that where removal of excavated material from the Site is necessary it is disposed of appropriately.

4.5 GUIDING PRINCIPLES FOR MASTERPLAN DEVELOPMENT

MITIGATION HIERARCHY

4.5.1. Redevelopment proposals will be considered against national and local planning policy in addition to relevant legislation. The key relevant National and Local Planning policies are presented in Appendix A, with a key overarching aim of protecting and enhancing the natural environment. A summary of the constraints and opportunities are provided on **Figure 8**.

4.5.2. To enable redevelopment to be demonstrably compliant with planning policy and to protect features of ecological value within the around the Site, the 'Mitigation Hierarchy' needs to be applied in the development of the proposal through Stage 1 and 2. This is a set of principles, in sequential order of preference which can be defined as follows (Adapted from Business and Biodiversity Offsets Programme, 2012):

- **Avoidance:** measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to avoid impacts on certain components of biodiversity. For this scheme, careful master planning will need to demonstrate avoidance of impacts to higher quality habitats such as the broadleaved woodland present on the Site. In addition, any impacts on habitats found to be of high value for wildlife identified through further survey, such as hedgerows providing bat flight lines, should be avoided. This may also include the carrying out of works under Precautionary Working Method Statements to avoid impacts on protected species or the spread of INNS.

- **Minimisation:** measures taken to reduce the duration, intensity and / or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible. The detailed design should be prepared following recommendations to minimise ecological impacts. The detail of these measures will be guided by the results of further survey, however likely pertinent considerations include minimising loss of habitats, in particular those of greater ecological value, as well as incorporating suitable lighting and drainage designs, management of public access and outlining construction methods to minimise adverse ecological effects. This is also likely to require the inclusion of buffers around retained habitats such as woodland, grassland and hedgerows to minimise impacts on these habitats and species they support. Specific details of required buffers or other mitigation measures will be informed by further surveys and may require species specific mitigation in line with best practice guidance and/or licencing requirements.

- Rehabilitation/restoration/enhancement: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimised. The scheme offers several opportunities to restore degraded ecosystems which is likely to be presented in the form of a Landscape and Ecology Management Plan (LEMP) and may aid in the achievement of any required Planning Policy Wales requirements. Initial opportunities for restoration at this stage include the removal of INNS including Japanese knotweed and three-cornered garlic present within the Site. There may also be opportunities for enhancement of existing habitats to those of more ecological value through habitat creation or altering management regimes. One example of this is the enhancement of modified grassland

with improved species diversity, reduced mowing to increased sward height, and the planting of wildflower species.

- Compensation: measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and/or rehabilitated or restored. Compensation can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity. The specific requirement and design of any compensation should be developed in response to the findings of the baseline surveys, and the habitats to be lost as a result of redevelopment but may include like-for-like replacement or creation of higher quality habitat on a 3:1 ratio. For example, loss of woodland or hedgerows should be avoided wherever possible, but their loss should be compensated for with creation of woodland and trees habitats of a higher quality. It may not be appropriate to compensate for loss of habitats such as modified grassland, which are of lower ecological value and could be easily replaced by higher value habitats. Compensation should also be undertaken in line with the trading rules associated with Planning Policy Wales.

4.5.3. During the construction phase of the proposed scheme it is likely that a Construction Environmental Management Plan (CEMP) will be required to detail general environmental protection measures. Such measures include best environmental practice guidance as outlined in the government guidance for pollution prevention (Gov.uk, 2023).

4.6 ENVIRONMENTAL BEST PRACTICE

4.6.1. In addition, general environment protection measures must be implemented during the decommissioning and construction phase of the works. Such measures include environmental practice guidance outlined in the NRW Guidance for Pollution Prevention (GPP) documents (NRW, 2018) and those outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015). The following minimum standards must be adhered to prevent ecological impacts beyond the Site boundary:

- Measures must be taken to prevent dust and other emissions from construction affecting land beyond the construction site;
- Chemicals and fuels must be stored in secure containers located away from watercourses or water bodies. Spill kits must be available;
- Deep excavations must be covered or securely fenced (with no potential access points beneath fencing) or provided with a sloping ramp (45o) when the site is closed (e.g., overnight) to prevent animal entrapment;
- Retained trees must be protected in accordance with British Standard (BS5837 Trees in Relation to Design, Demolition and Construction (British Standards Institute, 2021), and works in proximity to root zones must be in accordance with an arboricultural method statement for the Site or under arborist advice / supervision;
- Noise and vibration must be controlled and kept to a minimum where necessary; and
- Lighting used for construction must be switched off when not in use and positioned so as not to spill onto adjacent land or retained vegetation within the Site.

5 CONCLUSIONS

5.1.1. The Site was located approximately 0.25km north of the Limestone Coast of South West Wales SAC, which is designated for coastal habitats, greater horseshoe bats and early gentian. The Site is also located within 0.38km of the Bristol Channel Approaches SAC, which is designated for harbour porpoises. Six SSSIs were located within 2km of the Site.

5.1.2. Three HPIs were present within the Survey Area (lowland mixed deciduous woodland, wet woodland and hedgerows).

5.1.3. The majority of habitats within the main camp were assessed as having relatively low value for wildlife, with the exception of the areas of high flora biodiversity on the northern boundary. The area of the Site located south of the main camp had high potential for wildlife with priority habitat wet woodland being present. The woodland and hedgerow habitats surrounding the were of assessed as having high ecological value.

5.1.4. The Site was found to have potential to support a range of protected and notable species including bats; badger; breeding birds; amphibians; reptiles; other mammals (hedgehog); hazel dormouse; terrestrial and aquatic invertebrates; notable flora; and INNS.

5.1.5. Bat droppings were identified in four buildings within the Site.

5.1.6. A badger sett was identified close to the Site.

5.1.7. To inform the Proposed Development masterplan and site disposal strategy, further survey and assessment will be required. Additional habitat and protected species surveys are likely to be required to assess the baseline of the Site, and to meet legislative requirements. This information will also be used to inform the scheme design, identify required mitigation and compensation and identify any licence requirements for protected species.

5.1.8. The scope of work for any further surveys will depend on the scope of the Proposed Development, however, based on the initial PEA survey it is likely to include:

- Habitats Regulations Assessment screening.
- Three Night-time Bat Walkover (NBW) surveys to be undertaken during optimal survey season (April to October).
- Emergence surveys to be undertaken on buildings dependent on the results of the NBW.
- Preconstruction inspection of buildings prior to demolition for bats and birds.
- Invasive Non-Native Species mapping to be undertaken during optimal survey season (May to August).

5.1.9. Table 5-1 broadly summarises the ecological constraints and opportunities for development at the Site and provides recommended actions. Full details are provided in Section 4.

Table 5-1 - Ecological Constraints and Opportunities Summary

Ecological Feature	Constraints	Opportunities	Recommended Actions
Statutory designated sites	The Limestone Coast of South West Wales and Bristol Channel Approaches SACs are both located within 2km of the Site. The Limestone Coast of South West Wales SAC is designated for greater horseshoe bats, early gentian, petalwort and habitats present. The Site has woodland suitable for horseshoe foraging.	None identified at this stage.	Where possible, avoid the loss of woodland habitats. Review of the Proposed Development masterplan to identify the potential for impact on greater horseshoe bats following additional surveys. Requirement for a HRA screening.
Non-statutory designated sites	Three non-statutory ecologically designated sites were identified within 2km of the Site (Wildlife Trust Reserve, B-Line and Important Plant Area).	Opportunities to enhance the existing B-Line within the Site, including enhancement through management practices.	Retention of habitats on Site including grasslands and woodlands where possible. Improvement of habitats for invertebrates.
HPI	HPIs identified within the Site including Lowland Mixed Deciduous Woodland and Hedgerows.	Enhancement of existing HPIs to achieve improved condition.	Where possible, avoid the loss of HPI as part of the Proposed Development design. Where loss of HPI is necessary, replacement of the habitat to an equivalent or greater extent will likely be required.
Bats	Buildings in the Site may support roosting bats. The Site is of high suitability to support foraging and commuting bats. Loss of buildings, and construction within the Site may result in the	Opportunities to create additional habitats for foraging and commuting bats through the creation of hedgerows, tree lines and enhanced woodland and grassland habitats.	Nighttime Bat Walkover and emergence surveys are recommended to be undertaken on the Site to understand the habitat use by bats and to confirm roosting within buildings. Where possible, the loss of any buildings which support roosting bats should be avoided. Where the loss of roosts is required, an EPS licence will be required through Natural Resources Wales.

Ecological Feature	Constraints	Opportunities	Recommended Actions
	loss of bat roosts, foraging and commuting habitats.		Bat activity surveys are required to inform any mitigation for loss of commuting or foraging habitats. The potential works should include a sensitive lighting design and habitats to support bats.
Badgers	A badger sett was identified in close proximity to the Site. The Site also contains suitable habitat for foraging and commuting badgers.	No opportunities to enhance the Site for badger.	Where possible suitable habitats for use by badgers including grassland, woodland and scrub should be retained. A pre-works check should be carried out prior to any works on the Site commencing, to determine whether any badger setts have been established on the Site in the interim period between the survey and the start of works.
Birds	The Site contains suitable habitat to support a range of breeding bird species. Multiple nests were found on Site during the field survey. Construction may have the potential to lead to the direct damage or disturbance of nesting birds, or the loss of bird habitat.	New habitats could be created to support birds such as scrub, woodland and ponds with shallow sloping margins. Artificial bird boxes could be placed on retained trees throughout the Site. Construction of new buildings could include features for breeding birds including swift bricks, and bird boxes.	Where possible, areas grassland, woodland and scrub should be retained. Where vegetation clearance is required to facilitate the works, this should be undertaken outside of nesting bird season (March to August inclusive). Where this is not possible an ECoW should carry out checks for nesting birds no more than 24 hours prior to clearance.

Ecological Feature	Constraints	Opportunities	Recommended Actions
Amphibians	The potential works could lead to loss of suitable habitat for common amphibians to forage, commute and breed,	The works could incorporate pond creation in order to provide additional aquatic habitat for common amphibians.	Where vegetation clearance works is required to facilitate works, this should be undertaken following a Precautionary Method of Working and ecological supervision.
Reptiles	Habitats within the Site are suitable to support widespread reptile species.	Log piles and piles of cut vegetation could be retained on site to provide hibernacula and refugia for reptiles.	Where vegetation clearance works is required to facilitate works, this should be undertaken following a Precautionary Method of Working and ecological supervision.
Other Mammals (Hedgehog)	Habitats within the Site including grassland, woodland and scrub are suitable to support hedgehog.	Any future works should ensure corridors of vegetated habitat are retained to allow the movement of hedgehogs throughout the Site. Any proposals for housing development could include the use of fencing which will allow hedgehogs to move through the Site.	Loss of habitat suitable to support hedgehogs should be avoided and minimised wherever possible. Construction methods should be designed sensitively to avoid injuring hedgehog. Where vegetation clearance works is required to facilitate works, this should be undertaken following a Precautionary Method of Working and ecological supervision.
Hazel dormice	Due to the presence of suitable habitat on Site hazel dormice cannot be ruled out. Clearance of scrub, woodland and hedgerow habitats may lead to mortality, harm or disturbance of hazel dormice and the loss of supporting habitat.	Woodland and hedgerow within the Site may be able to be enhanced to provide more suitable habitat for dormice. This may include maintaining a diverse and continuous scrub/shrub layer within woodland.	Removal of suitable habitat for hazel dormice should be avoided where possible. Should woodland, scrub or hedgerow clearance be required to facilitate future works, Where vegetation clearance works is required to facilitate works, this should be undertaken following a Precautionary Method of Working and ecological supervision. In the event that dormice are found to be present an EPS licence would be required from Natural Resources Wales to facilitate works.

Ecological Feature	Constraints	Opportunities	Recommended Actions
Invertebrates	Suitable habitat to support a range of terrestrial invertebrate species exists within the Site in areas of other grassland, scrub, and woodland. Future works may result in the loss of supporting habitat for any protected invertebrate species which may be present.	The landscaping scheme for the Site may provide enhancements for terrestrial invertebrates through the use of UK native flowering species to provide a range of food sources for invertebrates.	Where possible habitats of high value for invertebrates such as the grassland, woodland and scrub within the Site should be retained.
Fish	The Carmarthen Bay and Estuaries SAC is designated for multiple fish species.	None identified at this stage.	Best practice environmental measures should be implemented and detailed within a CEMP to minimise the risk of adverse effects on water quality through pollution events or sediment runoff.
Plants	Bluebells and a flower rich area on the sunny northern banks was identified on Site.	Enhancement of retained habitats may provide the opportunity to improve species diversity.	Where bluebells were identified the plants should be avoided, where this is not possible the topsoil should be retained and reinstated post-construction. The topsoil from the flower rich area should also be retained and reinstated.
INNS	INNS have been identified within the Site including three-cornered garlic and Japanese knotweed.	Where possible it is recommended that INNS are removed in order to improve the condition of retained or created habitats.	An INNS mapping survey is required during the summer months to map the extent of the spread of INNS on Site. During construction, INNS should be avoided with appropriate exclusion zones clearly demarcated to prevent the spread of INNS. Where INNS are to be removed, this should be carried out under a PWMS and under advice from an invasive species specialist.

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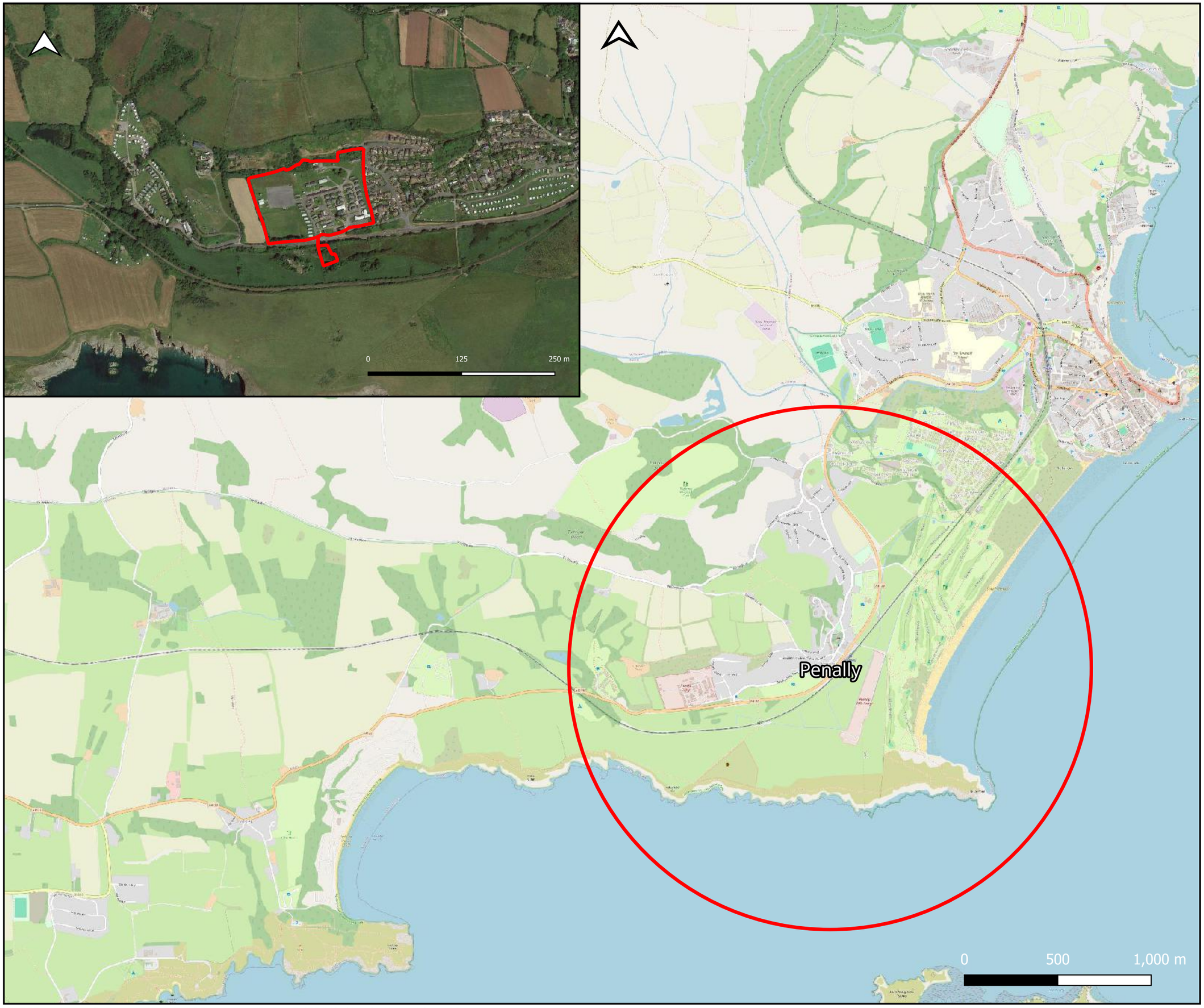
FIGURE 1 – SITE LOCATION PLAN



Key

- Site Location
- Site and Water Treatment Area Boundary

Rev	Drwn	Chk'd	Appr'd	Description	Date
P01	NP	TF	JB	First Issue.	15/07/2024

Purpose of issue
S2 - Issued for Information

Classification
Public

Client
Defence Infrustructure Organisation (DIO)

Project
Penally DIO - The Camp

Title
Figure 1
Site Location Plan

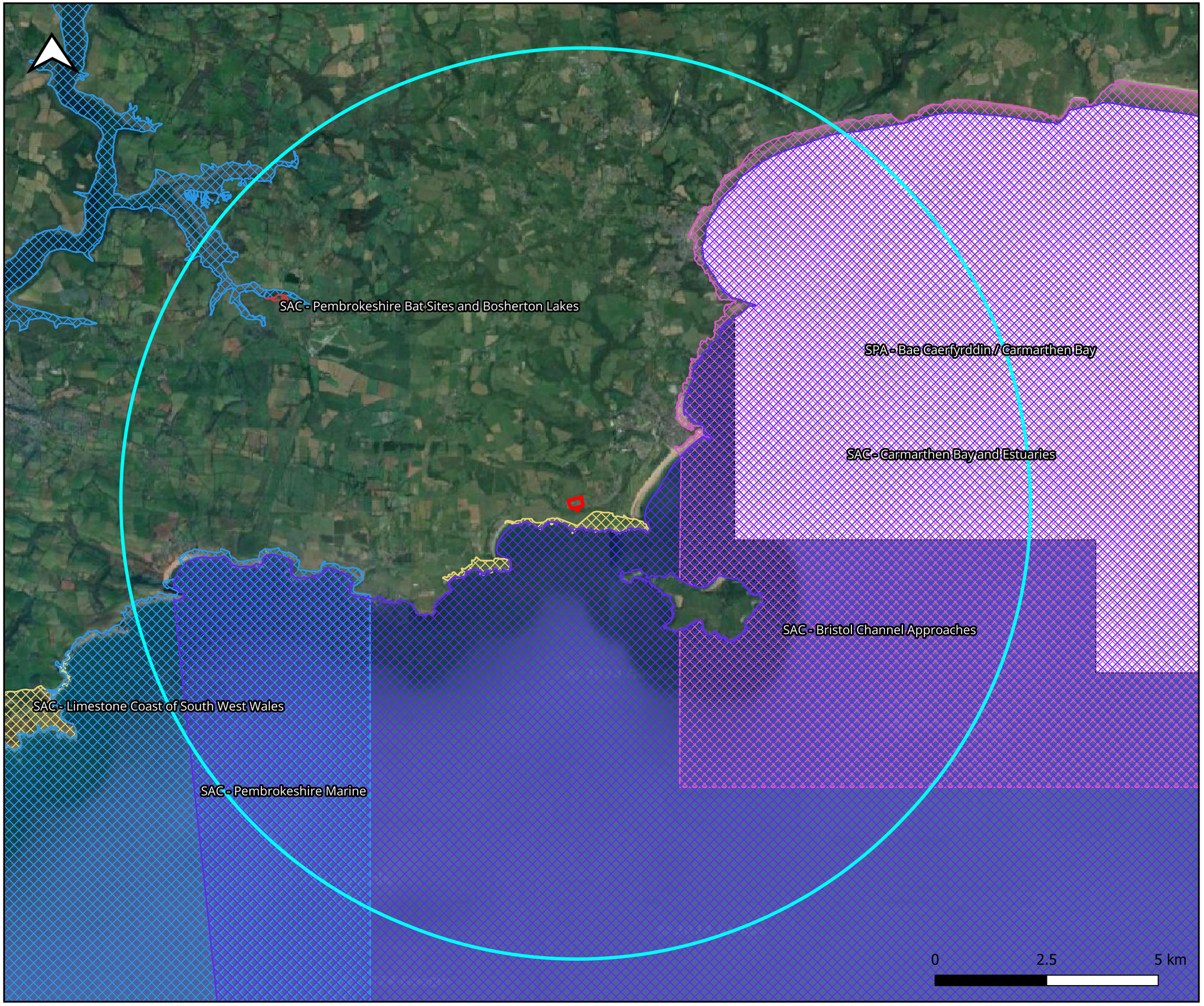
Drawn NP Checked EC Approved GP

Project No	Date	Scale	Size
70122627	March 2024	VP1 - 1:15,000 VP2 - 1:30,000	A3

Drawing identifier Revision: P01
70122627-WSP-74-XX-M2-L-3016

Quest House, St Mellons Business Park, Fortran Rd, St. Mellons, Cardiff, CF3 0EY

FIGURE 2 - INTERNATIONAL DESIGNATED SITES WITHIN 10KM OF THE SITE



Key

- Site and Water Treatment Area Boundary
- 10km Radius
- SPA - Carmarthen Bay
- SAC - Bristol Channel Approaches
- SAC - Carmarthen Bay and Estuaries
- SAC - Limestone Coast of South West Wales
- SAC - Pembrokeshire Bat Sites and Bosherton Lakes
- SAC - Pembrokeshire Marine

Rev	Drwn	Chk'd	Appr'd	Description	Date
P01	NP	TF	GP	First Issue.	02/07/2024

Purpose of issue
S2 - Issued for Information

Classification
Public

Client
Defence Infrastructure Organisation (DIO)

Project
Penally DIO - The Camp

Title
Figure 2
International Designated Sites within 10km of the Site

Drawn NP Checked EC Approved GP

Project No	Date	Scale	Size
70122627	March 2024	1:5,000	A3

Drawing identifier Revision: P01
70122627-WSP-74-XX-M2-L-3017

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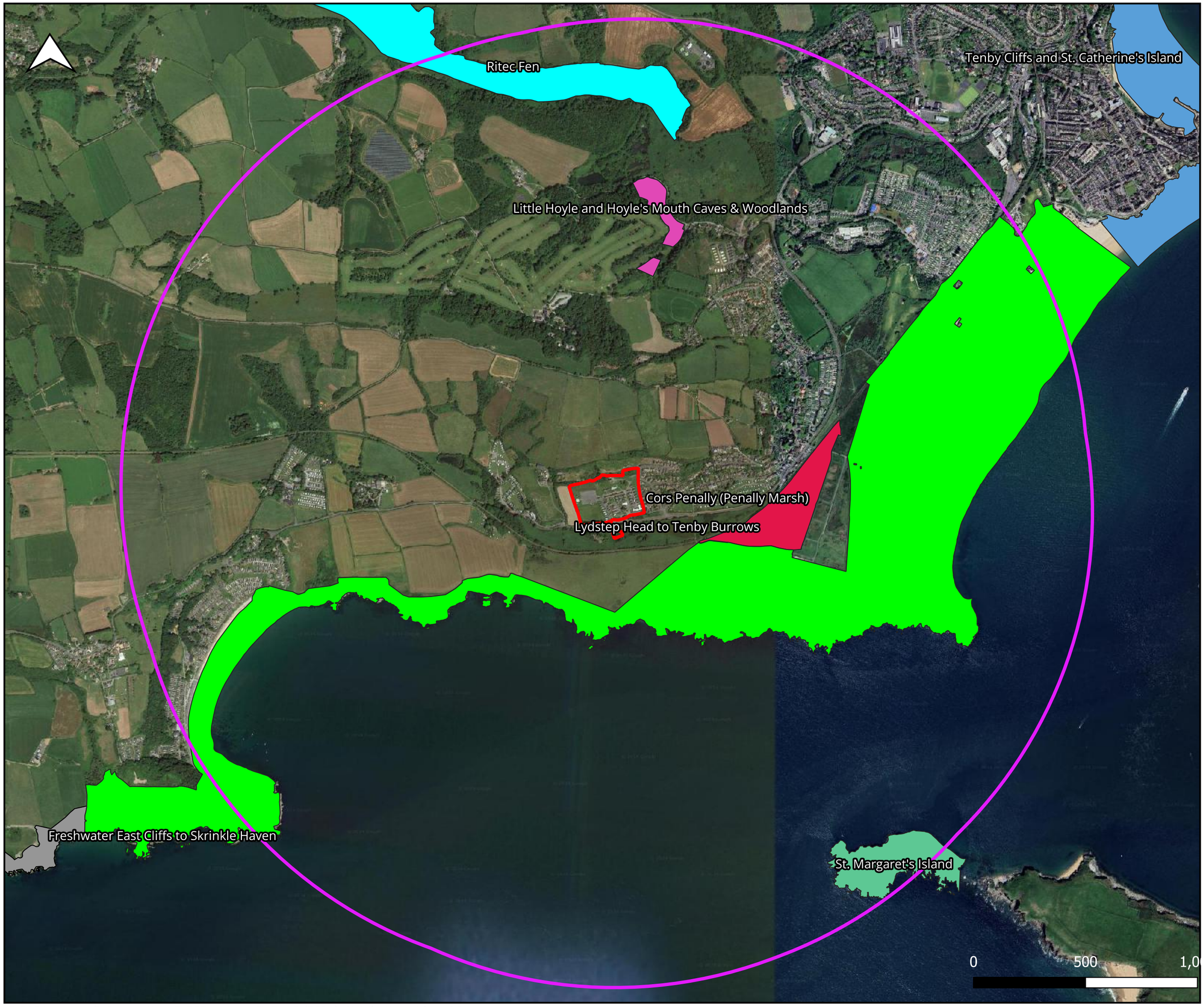
FIGURE 3 - NATIONAL DESIGNATED SITES WITHIN 2KM OF THE SITE



Key:

- Site and Water treatment Area Boundary
- 2km Radius

Sites of Special Scientific Interest:

- Cors Penally (Penally Marsh)
- Little Hoyle & Hoyle's Mouth Caves & Woodlands
- Lydstep Head to Tenby Burrows
- Ritec Fen
- St. Margaret's Island

Rev	Drwn	Chk'd	Appr'd	Description	Date
P01	NP	TF	JB	First Issue.	15/07/2024

Purpose of issue
S2 - Issued for Information

Classification
Public

Client
Defence Infrastructure Organisation (DIO)

Project
Penally DIO - The Camp

Title
Figure 3
National Designated Sites within 2km of the Site

Drawn NP Checked EC Approved GP

Project No	Date	Scale	Size
70122627	March 2024	1:25,000	A3

Drawing identifier Revision: P01
70122627-WSP-74-XX-M2-L-3018

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FIGURE 4 – NON-STATUTORY DESIGNATED SITES WITHIN 2KM OF THE SITE

Rev	Drwn	Chk'd	Appr'd	Description	Date
P01	NP	TF	JB	First Issue.	15/07/2024

Purpose of issue
S2 - Issued for Information

Classification
Public

Client
Defence Infrastructure Organisation

Project
Penally DIO - The Camp

Title
Figure 4
Non Statutory Designated Sites within 2km of the Site

Drawn NP Checked EC Approved GP

Project No	Date	Scale	Size
70122627	March 2024	1:25,000	A3

Drawing identifier Revision: P01
70122627-WSP-74-XX-M2-L-3019

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FIGURE 5 – PRIORITY HABITATS AND ANCIENT WOODLANDS WITHIN 2KM OF THE SITE