

FINAL

CHAPEL REEN

Ecology Report

Project no. 4021359



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3	Ella Niehorster	Emma Stevens	Andrew Burwood	Ed Thornton	01/03/24	P03

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1 Introduction

1.1 Background

Binnies UK Limited (BUKL) has been commissioned by Natural Resources Wales to undertake an Ecological Appraisal of the works required to repair the Chapel Reen outfall (the Scheme) to the east of Newport on the South Wales coastline.

The main purpose of this assessment is to inform the project of any ecological constraints or risks which may be present, and to set out mitigation required to avoid and/or reduce these risks.

1.2 Site Location and Context

Chapel Reen (upstream of the outfall structure) and Chapel Pill (downstream of the tidal structure) is part of Newport Wetlands National Nature Reserve (NNR) site within the Caldicot Levels, located between the city of Newport and the Severn estuary, in the village of Goldcliff. The site is located in a rural area, at central Ordnance Survey (OS) grid reference ST 36678 83023 and is presented in the Site Location Map (4021359-BUK-ZZ-00-DR-EN-00002).

1.3 Scheme Description

Chapel Reen flows through an outfall structure located in the village of Goldcliff. The outfall structure is located within the Newport Wetlands on the Caldicot and Wentloog Levels. The Scheme covers an area of approximately 0.163 ha and approximately a 35 m length of the reen. The northernmost boundary of the site is off the Goldcliff Road, the reen is located on the east on the site and the south and west boundary are located within Newport Wetlands National Nature Reserve.

The purpose of the Scheme is to restore the outfall which reduces flood risk to Goldcliff by restricting movement of estuarine water from Severn Estuary into the reen system and preserves important inland freshwater habitats from sea water ingress.

Previously temporary works were carried out at the site to address the risk of immediate failure. Those temporary works will now be removed, and a permanent solution implemented. The Scheme comprises:

- Upgrading the existing tidal flap valves and installation of new mechanical lifting equipment.
- Repairs to the upstream face of the outfall structure consisting of de-vegetation of the wall and masonry works.
- Reinstatement of the effluent pipe from the Farmers Arms pub to its original position, which was relocated as part of the emergency works.
- Replacement of a 12.6m plan length of existing and failed retaining walls on both sides of the outfall with steel sheet piled retaining walls, driven to a footing level of approximately -6.0m OD (Newlyn). This is an approximate pile length of 12m. The sheet pile walls will be behind the existing retaining walls, within the area of profiled ground between the head wall and the channel. The temporary works currently located within the channel will be removed, along with the remnants of the failed existing walls and slumped soils. Ground

level will be reinstated around the downstream end of the new structure to tie-in with existing levels.

- Installation of steel/reinforced concrete capping beam to the piles.
- Installation of 7.5m long structural steel universal columns to prop the sheet piles.
- Replacement of a 12.6m plan length of existing masonry channel (invert) bed with a reinforced concrete bed.

Due to the nature of piling works, there is some uncertainty on the embedment depth that can be reached. The drawings submitted as part of the marine licence application show the assumed worst case scenario on site (Drawing References 4021359-BUK-ZZ-00-DR-C-00002, 4021359-BUK-ZZ-00-DR-C-00001, 4021359-BUK-ZZ-00-DR-C-00010 and 4021359-BUK-ZZ-00-DR-C-00009). This comprises a retained height of approximately 3.5m - 4m and the installation of four 7.5m long structural steel universal columns between 6.5 and 7.5mAOD to prop the sheet piles. If possible, during the works, the number of steel universal columns and the retained height will be reduced and the surrounding ground reprofiled and reinstated accordingly. The ground profile behind the piles will not exceed a 1 in 2 slope.

The activities that will need to be carried out to deliver the Scheme will hereafter be referred to as the 'Proposed Works'. The spatial extent within which the Proposed Works will be carried out is hereafter referred to as the 'Scheme Area'.

1.4 Scope of the Report

The scope of the ecology work for this report is as follows:

- A Phase 1 Habitat Survey within 100m of the working areas;
- An otter survey 100m upstream and if there is suitable habitat for holts and resting places, downstream;
- A water vole survey 50m upstream;
- A rare aquatic/riparian plants survey in 50m radius; and,
- An INNS walkover survey.

Some ecological information has been gathered previously by Natural Resources Wales to inform the emergency works, which means the area has been subject to previous disturbance a few years ago. The purpose of this report is to update the desk study and focus surveys on species likely to be present and potentially impacted by the works along the main riparian corridor. The report will also inform applications for environmental consenting including SSSI Assent, Marine Licence and FRAP.

1.5 Legislation

The report has been compiled with reference to relevant nature conservation legislation, planning policy and the UK Biodiversity framework from which the protection of sites, habitats and species is derived in Wales. The context of these and how they have been applied is detailed in relevant sections of this report with additional information presented in Appendix A. The following legislation and policy are highlighted:

-
- The Conservation of Habitats and Species Regulations 2017 (as amended¹) (commonly referred to as the Habitats Regulations);
 - The Environment (Wales) Act 2016;
 - Wildlife and Countryside Act 1981 (as amended);
 - Protection of Badgers Act 1992;
 - Wild Mammals (Protection) Act 1996;
 - Invasive Alien Species (Enforcement and Permitting) Order 2019; and
 - The Environment Act 2021.

¹ As amended by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019

2 Methodology

2.1 Outline

This report is produced with reference to current good practice guidelines by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017a); (CIEEM, 2017b); (CIEEM, 2020)) and Joint Nature Conservation Committee (JNCC, 2010)) and guidelines contained in the British Standards – Code of Practice for Biodiversity and Development BS42020:2013.

The recommendations detailed in this ecological appraisal are based on the following data sources:

- An updated ecological desk study;
- A Phase 1 Habitat Survey within 100m of the working areas;
- An Otter survey 100m upstream and if there is suitable habitat for holts and resting places, downstream;
- A Water Vole survey 50m upstream;
- A rare aquatic/riparian plants survey in 50m radius; and,
- An INNS walkover survey.

2.2 Ecological Desk Study

A desk study was undertaken on 08/09/23 by Alex Bell MZOO, a Binnies Ecologist with Qualifying Level CIEEM membership, who has undertaken numerous desk studies.

A review of existing ecological and environmental baseline information available in the public domain and local records from the North Wales Environmental Information Service (Cofnod) were requested from NRW to obtain information held by the relevant third parties.

For the purpose of this exercise, the Zone of Influence was considered to generally be 2 km for terrestrial data, with the search radius expanded to 10 km for the network of Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, and those with a hydrological connection. Records of protected and notable species were considered recent if they were collected within the last 10 years. This approach is in line with good practice guidelines published by CIEEM (CIEEM, 2017a, b and 2020). The search included:

- Records of legally protected and notable species within 2 km of the Scheme Area from the last 10 years;
- Records of statutory and non-statutory sites designated for nature conservation value within 2 km of the Scheme Area. This was increased to 10 km for statutory sites with a hydrological connection, and sites with bats and/or birds as a designated feature;
- Records of Ancient Woodland, Habitats of Principal Importance (HPI), waterbodies and Water Framework Directive (WFD) waterbodies within 1 km of the Scheme Area.

Freely downloadable datasets (available from DataMapWales) were consulted for information regarding HPIs and for woodland listed on the ancient woodland inventory.

2.3 Field Survey

2.3.1 Phase 1 Habitat survey

An extended Phase 1 Habitat survey was undertaken on 7th August 2023 in bright and dry conditions with a light breeze by Katherine Newbert, an experienced botanical surveyor and ecologist who has completed numerous Phase 1 Habitat Survey and holds a level 4 field identification skill certificate (FISC) and is currently the county recorder for vascular plants in Wiltshire. She was assisted by graduate ecologist; Katie Tamin (Qualifying member of CIEEM).

Habitats were described and mapped following the standard Phase 1 survey methodology (JNCC, 2016). Phase 1 is a standard technique for classifying and mapping British habitats. Plant species were recorded, and habitat classified according to their vegetation type and community assemblage. Where appropriate, consideration was given to whether habitats qualify, or could qualify as an HPI, matched to descriptions as detailed in JNCC, 2016.

Plant species listed in this report are detailed with their relative abundance estimated using the DAFOR scale. The scientific names for plant species follow those in the New Flora of the British Isles, 4th edition (Stace, 2019).

Habitats were marked on a tablet and were subsequently digitised using a Geographical Information System (GIS). A Phase 1 map for the Survey Area was then prepared, mapping protocols followed the Phase 1, JNCC, 2010.

Invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019, and other non-native species which were evident during the survey, were noted.

The following Biosecurity Measures were used for the site visit:

- Footwear and clothes were cleaned before entering and when leaving site using suitable disinfectant (Virkon)
- Vehicles were not used to travel around the site, vehicles used to travel to site were left in a designated parking area for the Nature Reserve or a public car park.

2.3.2 Protected and Notable Species Assessment

The potential for the Proposed Works to impact protected and/or notable species was assessed using a combination of desk study results and field observations during the survey. The assessment of suitability for species was based on professional experience and judgement. This was supplemented by good practice guidelines on habitat suitability for key fauna, including but not limited to; birds (Gilbert *et al.*, 1998 and Bibby *et al.*, 2000), great crested newts (Gent and Gibson, 2003, English Nature, 2001 and Froglife, 1999), badgers (Roper, 2010 and Scottish Natural Heritage, 2002), dormice (Bright and Mitchell-Jones, 2006), otters (Chanin, 2003), water voles (Dean *et al.*, 2016 and Strachan *et al.*, 2011) and bats (Collins, 2016 and Mitchel-Jones, 2004).

A formal Preliminary Bat Roost Assessment PBRA was not carried out during the survey.

2.3.3 Otter and water vole survey

An otter and water vole walkover survey were undertaken on 7th August 2023 by Katherine Newbert, a suitably experienced Binnies Ecologist who has completed numerous otter and water vole surveys. Katherine was assisted by a graduate ecologist; Katie Tamin (Qualifying CIEEM). Weather conditions were dry and bright with light breeze and average temperatures of 16°C. Weather in the days leading up to the survey included periods of light rainfall.

The survey aimed to identify field signs of the two protected species following guidance set out in Dean, et al., (2016), Strachan, et al., (2011) and Chanin (2003). The survey included a search of the following field signs:

Otter

- Spraints
- Footprints
- Potential resting sites (including above ground couches and below ground sheltered areas)
- Holts
- Slides or well-used access to watercourse
- Feeding remains

Water vole

- Burrows
- Latrines/droppings
- Feeding remains and feeding stations
- Footprints
- Runways in vegetation

Target notes were marked on the Phase 1 Habitat Map of where signs were found and subsequently digitised using a Geographical Information System (GIS). A map for the Survey Area was then prepared (see Phase 1 Habitat Map).

2.4 Limitations

Every effort has been made to provide a comprehensive and robust assessment of the Zone of Influence. However, the following limitations remained during the assessment:

- Information obtained during a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a habitat or species does not necessarily mean the absence of habitats or species.
- The protected species appraisal provides a preliminary 'snapshot' view of the likelihood of protected species occurring within the Scheme Area. It should not be taken as providing a full and definitive survey of any protected species group.
- Phase 1 habitat survey was conducted over a single day and therefore only a selection of species which occur within the Survey Area are likely to have been recorded. This

limitation has been supplemented by desk study records to provide a more comprehensive floristic picture.

- The Phase 1 Habitat Map has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of this ecological assessment, the maps are not intended to provide exact locations of key habitats.
- Rainfall and tidal flow prior to the otter and water vole survey may have washed away some field signs of the species in question such as spraints, latrines and feeding remains, although this would not have affected the ability to identify burrows and resting places, and suitable foraging habitat for these species.

However, despite the above limitations, this ecological assessment is still considered to deliver a good initial assessment of the Scheme. The limitations above are not deemed severe enough to significantly affect the outcomes described within this report.

3 Baseline Ecological Conditions

3.1 Designated Sites

3.1.1 Statutory Designated sites

Statutory designated sites highlighted from the desk study are listed in Table 3-1. Two are within the Scheme Area including the Severn Estuary (Wales)- Ramsar, SAC, SPA & SSSI.

Designated Sites in relation to the Scheme Area can be seen in drawing 4021359-BUK-ZZ-00-DR-EN-00005.

Table 3-1 Designated nature conservation sites

Designated Site Name	Distance from Scheme Area (approx.)	Source/receptor pathway where not directly within Scheme Area	Reasons for Notification and Integral Value
Severn Estuary (Wales)- Ramsar, SAC, SPA	Within scheme area and adjacent to south of site		Important for the breeding, feeding, wintering and migration of rare and vulnerable species of birds. One of most important wildlife habitats.
Newport Wetlands- National Nature Reserve and Site of Special Scientific Interest (SSSI)	Covers the scheme area		Created as compensation for loss of habitat caused by the building of the barrage in Cardiff Bay. Important habitats including wet grassland, reedbeds, saltmarsh and saline lagoons. Important site for over-wintering and breeding birds.
Gwent Levels – Nash and Goldcliff SSSI	Adjacent to north of scheme	Mobile species	Reen and ditch habitat holds a wide range of aquatic plants including rare and scarce species. Insects and other invertebrates including water beetles such as great silver beetle <i>Hydrophilus piceus</i> . Important site for the shrill carder bee <i>Bombus sylvarum</i> , rare bumblebee.
Gwent Levels – Whitson SSSI	0.2 km	Mobile species	Reen and ditch habitat holds a wide range of aquatic plants including rare and scarce species. Insects and other invertebrates including water beetles such as great silver beetle <i>Hydrophilus piceus</i> . Important site for the shrill carder bee <i>Bombus sylvarum</i> , rare bumblebee.
Severn Estuary (Wales)- SSSI	Within scheme area and adjacent to south of site		Important for the breeding, feeding, wintering and migration of rare and vulnerable species of birds. One of most important wildlife habitats.

3.1.2 Non-Statutory Designated Sites

The desk study identified no non-statutory sites within 2 km of the Scheme Area.

3.1.3 Other Habitats of Nature Conservation Importance

There are four large lagoons and a river within 0.5 km of the Scheme Area; three lagoons are part of Goldcliff Lagoons located 0.3km to southeast of the Scheme Area and the fourth is Chapel Reen/Pill, the river located within the Scheme Area.

There is a Water Framework Directive (WFD) waterbody; Severn Lower, within the Scheme Area. This waterbody is currently classed as a Heavily Modified waterbody under WFD. The Water Framework Directive (WFD) classifications for these watercourses are provided in Table 3-2 below. A WFD assessment will be undertaken in relation to the proposed works.

Table 3-2 Water Framework Directive Classifications for rivers within the Scheme Area

Waterbody ID	Watercourse	Classification
GB530905415401	Severn Lower	Heavily Modified – Moderate

There are two Habitats of Principal Importance (HPIs) within 1 km of the Scheme Area; maritime cliff and slopes. The southern boundary of the Scheme is comprised of maritime cliff and slopes. There is another maritime cliff and slope located 0.15 km from the Scheme.

There is no ancient woodland within 1 km of the Scheme Area.

There are no ponds within 0.5 km of the Scheme Area.

3.2 Protected Species

The desk study records for protected and notable species present within 2 km of the Scheme are recorded in Appendix A. These records are discussed under individual species accounts below.

3.3 Phase 1 Habitat Survey

The following sections detail the findings of the Phase 1 Habitat Survey and the desk-based study, which included mapping all habitats and an assessment of suitability of habitats to support protected and notable species.

Habitats of Principal Importance (HPI) have also been identified and included within the appraisal. HPIs are those considered to be of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. A national list of HPIs has been prepared under Section 7 of the Environment (Wales) Act 2016.

A Phase 1 map for the Survey Area is presented in the Phase 1 Habitat Map (4021359-BUK-ZZ-00-DR-EN-00001), with target notes provided in Appendix B and photographs in Appendix C. Where appropriate a DAFOR (Dominant (D), Abundant (A), Frequent (F), Occasional (O), Rare (R), Locally a prefix for the abundance (L)) score has been provided to describe the abundance of plant species recorded. It should be noted that Rare in this circumstance refers to the

abundance of the species within the site context and not the national or international status of that species.

3.4 Habitat and Flora

There were seven habitats recorded within the Scheme Area;

- Poor semi- improved grassland – B6
- Swamp – F1
- Running water – eutrophic G2.1
- Running water- brackish- G2.6
- Buildings- J3.6
- Bare ground- J4
- Other habitat - J5

3.4.1 Poor semi-improved grassland (B6)

Dominating the site was poor semi-improved grassland. Three areas of poor semi-improved grassland were noted. Poor semi-improved grassland section one located at the north western part of the scheme was a grassland developed on areas of previous site workings. Species found included meadow buttercup *Ranunculus acris* (O), creeping cinquefoil *Potentilla reptans* (F), spear thistle *Cirsium vulgare* (O), perennial rye grass *Lolium perenne* (F), common daisy *Bellis perennis* (O), Yorkshire fog *Holcus lanatus* (O), prickly sow thistle *Sonchus asper* (O), black medick *Medicago lupulina* (F), white clover *Trifolium repens* (O), hard rush *Juncus inflexus* (F), common dandelion *Taraxacum officinale* (O), common mouse ear *Cerastium fontanum* (R), thyme leaved speedwell *Vernonica serpyllifolia* (R), meadow barley *Hordeum secalinum* (R), common nettle *Urtica dioica* (O), common yarrow *Achillea millefolium* (O), hoary cress *Lepidium draba* (R) and red clover *Trifolium pratense* (O).

Poor semi-improved section two is located on the right bank of the reen. This section had recently been cut prior to the survey (photo 1) with arisings still present obscuring the species. Therefore, a full and detailed species list could not be completed. However, from the species still visible, the following is likely to be an accurate habitat assessment. Species identified included spear thistle (F), perennial rye grass (F), black medick (O), nettle (O), curled dock *Rumex crispus* (O), cock's foot *Dactylis glomerata* (F), bristly oxtongue *Helminthotheca echioides* (O), creeping cinquefoil (LF), white clover (O) and red clover (O).

Poor semi-improved grassland section three is a small patch to the eastern boundary of the site. Present in this small patch of grassland was marsh-mallow *Althaea officinalis* (photo 2 & TN9), which is nationally scarce and listed in the rare plant register for Monmouthshire (Tyler and Wood, 2023).

3.4.2 Swamp (F1)

South of the sea defence embankment on both sides of the watercourse was a swamp habitat of sea club rush *Bolboschoenus maritimus* and stands of common reed *Phragmites australis* (photo 3). This area is frequently inundated with brackish water during high tides. Sea club rush was dominant with a few species growing amongst it. These included sea aster *Tripolium pannonicum* (O), spear-leaved orache *Atriplex prostrata* (O), red fescue *Festuca rubra* (O) and

common cordgrass *Spartina anglica* (O). Further up on the right bank two plants of parsley water-dropwort *Oenanthe lachenalii* (photo 4 & TN2) were observed, which although not currently considered of conservation concern is showing a strong decline nationally due to a loss of habitat.

3.4.3 Running water – brackish (G2.6)

The watercourse below the tidal gate, running between the swamp habitats on the eastern side of the site was brackish in influence. This is due to the tidal flow of estuarine water from the Severn Estuary. Within the channel only algae and sea club rush were observed growing with no other aquatic plants (photo 6).

3.4.4 Running water – eutrophic (G2.1)

The running water north of the sea defence embankment had little to no evidence of brackish influence. The watercourse had a good assemblage of aquatic plants (photo 5 & TN1) including brookweed *Samolus valerandi* (two plants found), rigid hornwort *Ceratophyllum demersum* (O), common reed *Phragmites australis* (A), gypsywort *Lycopus europaeus* (R), hemlock water dropwort *Oenanthe crocata* (O), celery leaved buttercup *Ranunculus sceleratus* (O), redshank *Persicaria maculosa* (O), marsh woundwort *Stachys palustris* (R), water starwort sp. (O), and lesser water parsnip *Berula erecta*. Nuttall's pondweed *Elodea nuttallii* (O), an invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (WCA), was present in this section.

3.4.5 Buildings (J3.6)

Located over the running water to the east of the site was Chapel Reen sea defence embankment with a bridge over the top (photo 7). As this has no ecological value, it is scoped out from further assessment.

3.4.6 Bare ground (J4)

At the entrance to the site on the northern boundary, bare ground (photo 8) was present created from previous works and ground compaction. There was patchy regrowth of vegetation, predominantly perennial rye grass, pineapple weed *Matricaria discoidea* and annual meadow grass *Poa annua*.

Along the western boundary of the site was bare ground. This was observed to be a well-used path with limited vegetation and gravel.

3.4.7 Other habitat (J5)

At the northern part of the site a mound was present, which was covered and surrounded with Heras fencing (photo 9).

3.5 Species and Species Groups

3.5.1 Invasive Non-Native Species

INNS Flora Recorded Within the Scheme Area

Only one INNS species was observed within the Scheme Area, Nuttall's pondweed. This species was recorded north of the sea defence embankment in the eutrophic running water. Nuttall's pond weed was recorded as occasional (as measured against the DAFOR scale); this species will likely be directly affected by the proposed works.

INNS Flora Recorded Within the Wider Catchment Area

The desk study returned the following additional records of INNS plant species from within 2 km of the Scheme Area:

- Water fern
- Least duckweed

These species prefer wetland habitats and are of particular concern because they are known to spread via watercourse.

INNS Fauna Recorded Within the Wider Catchment Area

The desk study returned the ten records of INNS fauna within a 2 km radius of the Scheme Area:

- Bar-headed goose
- Canada goose
- Barnacle goose
- Northern river crangonyctid
- Black swan
- Common bladder snail
- Eastern grey squirrel

All (except the eastern grey squirrel) are species specialising in aquatic and wetland habitats.

Northern river crangonyctid (1.6 km) and common bladder snail (1.6 km) could potentially be present within the Scheme Area. However, all these species are freshwater species and if present within the Scheme Area would only be located to the north of the embankment.

Bar-headed goose, Canada goose, barnacle goose, black swan, and eastern grey squirrel are highly mobile species and will likely utilise the Scheme Area. However, the proposed works are unlikely to have any substantial effect on the distribution of this species and therefore they will not be considered further in this assessment.

3.5.2 Floral Species of Conservation Concern

The desk study did not return any records of floral species of conservation concern. However, this is likely due to under recording rather than species absence. The survey highlights that notable species marsh-mallow is present within the Scheme Area.

Marsh-mallow was recorded in a small poor semi-improved grassland on the eastern side of the scheme area. The habitat it was observed in matches the habitat requirement of growing on banks of ditches that contains brackish water. This species is nationally scarce and listed in the rare plant register for Monmouthshire. As the species was noted to be located next to the sea defence embankment, it is likely to be impacted by the proposed works.

3.5.3 Amphibians

No evidence of amphibians was observed during the survey or found during the desk study. The habitats within the Scheme Area and the surrounding area are highly unlikely to be suitable for amphibians, including great crested newts (GCN), because there is a road above the north border of the scheme which makes it highly unlikely that newts will be travelling through. The estuary is also unsuitable because amphibians especially GCN prefer freshwater habitats and are unlikely to be in saltwater habitats. There is a lack of breeding habitats such as ponds and the closest waterbody is Goldcliff Lagoons to the southeast of the scheme, which is likely unsuitable due to saltwater. Therefore, amphibians including GCN are scoped out of further assessment.

3.5.4 Badgers

No records of badger within a 2 km radius were returned by the desk study. During the survey no features and/or evidence of badger were found. Terrestrial habitats within the Scheme Area provide suitable foraging habitat for badgers. As there are no woodlands nearby and limited shelter in addition to regular tidal inundation within parts of the Scheme Area, there is limited suitability for sett creation.

3.5.5 Bats

The desk study returned 529 records of six confirmed bat species within 2 km of the Scheme Area. Species reported within 2km of the Scheme Area are included in Appendix A.

The nearest record is 0.1 km from the Scheme Area for common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*.

The historic record search returned no roost records within the Scheme Area or within 2 km of the Scheme Area. A pipistrelle species roost record was returned located 2.1 km from the Scheme Area. During the survey, it was observed that the habitat had a lack of trees and buildings within the Scheme Area. The outfall structure itself was considered to be of negligible potential to roosting bats, this is due to the sections of the structure that have cracks are under the high tide level and are consequently subject to frequent tidal inundation making the structure unsuitable to support roosting bats. It is therefore unlikely there is potential for roosting bats within the Scheme Area. Roosting bats will be scoped out of further assessment.

The habitat mosaic within the Scheme Area comprised grassland, swamp and running water flowing through the site. The wider habitat consists of wetland. All offer highly suitable foraging and/or commuting habitat. The Scheme Area has good connectivity via running water corridors.

3.5.6 Birds

The desk study search returned 4,762 records of 51 bird species of conservation concern within a 2 km radius. Appendix A provides a summary of the species assembly for records included in the 2 km record search. Species recorded within 2 km of the Scheme Area included lapwing *Vanellus vanellus*, fieldfare *Turdus pilaris*, little ringed plover *Charadrius dubius*, starling *Sturnus vulgaris*, red kite *Milvus milvus* and curlew *Numenius arquata*.

The Scheme Area lies within and in close proximity to a number of designated sites which are designated for wildfowl populations, particularly for over wintering wildfowl populations. The Proposed Works could potentially impact wintering bird populations.

During the survey swallows were observed over the Scheme Area. No habitats within the Scheme Area were observed to be suitable for breeding birds due to no nesting opportunities, especially around the area of the proposed works. Managed habitats within the site were not suitable for breeding wading bird species. Therefore birds other than associated with designated sites are scoped out of further assessment.

3.5.7 Fish and Eels

The desk study returned two species records:

- Six records of European eel with the latest record found in 2017 within 0.3 km of the Scheme Area.
- One record of Dover sole found in 2013 within 1.2 km of the Scheme Area.

During the survey the Chapel Reen/Pill was noted to provide suitable habitat for foraging and commuting fish and eels. As Chapel Reen/Pill is a relatively small water course it is expected that it would be utilised by eel. Salmonoid species are expected to be traveling inland through larger rivers such as the River Usk, which is linked to the Severn Estuary, to the west of the Scheme Area.

Communication with the Natural Resources Wales Angling Developments & Technical Support Officer Richard Sheppard, confirms that the main species to use Chapel Reen/Pill will be eels, with the main migratory period for elvers running between March and April.

It is highly likely that fish and eels are present within the Scheme Area and that migratory fish and eels are likely to attempt to pass through the river to complete their lifecycle, although due to the tidal embankment this is currently restricted.

3.5.8 Invertebrates (terrestrial and aquatic)

There are a number of records of invertebrates within the Scheme Area, returned by the desk study all within 1 km of the site. A summary of the records is included in Appendix A. The majority of records were moth species, with the range of habitats present in the site it is highly likely a large number of these species will be present.

During the survey, swamps, grassland and the river within the Scheme and wider landscape were considered to provide suitable habitat for foraging and breeding invertebrates, both terrestrial and aquatic.

3.5.9 Otter

The data search did not return any records of otter or holt records within 2 km of the Scheme Area.

The walkover survey identified positive field signs of otter from footprints present in the tidal mud (photo 10, 11 & 12, TN3 & 4) over 100m south of the sea defence embankment. There were no signs of otter north of the sea defence embankment. This provides direct evidence of otter using the watercourse connecting to the coast.

No other signs were observed, which is likely due to tidal influence removing evidence of spraints and feeding signs. No otter resting areas in the form of above ground couches were identified. This is likely due to tidal flooding on the banks, which makes it unsuitable for couch creation.

The site offers excellent connectivity to the wider landscape for otters. The watercourse which runs through the Scheme is connected to the Severn Estuary. Located in a rural area and in the Newport Wetland National Nature Reserve, habitats to the south and west of the scheme area consists of further wetland and swamp habitats. To the north and east, there are small, scattered areas of urban buildings and houses.

The Scheme Area offers a wide variety of prey for otter with watercourses and swamp habitat offering a prey base of crustaceans, fish and amphibians.

3.5.10 Reptiles

The desk study did not return any records of reptiles within 2 km of the Scheme Area. The lack of historic records for reptiles within the 2 km radius is likely as a result of under recording rather than species absence. The habitats within the Scheme Area and its surroundings offer suitability for common reptile species including grass snake, slow worm and common lizard. The grassland and running water offer potential foraging habitats.

3.5.11 Water Vole

The data search undertaken returned 49 records of water vole, with the latest record observed in 2019 located 0.3 km from the Scheme Area. There were no records of burrows. Water voles were re-introduced to the Gwent Wildlife Trust's Magor Marsh Reserve to the east of the Scheme Area in 2012.

The walkover survey identified many positive field signs in the form of footprints (photo 13, 14 & 15, TN5, 6, 7 & 8) along the banks of the watercourse 40m south of the sea defence embankment, which provides direct evidence of water vole using the watercourse. Like otter, evidence of water vole was not observed north of the sea defence embankment. There was no other evidence of water vole such as latrines or feeding signs observed. This is likely due to tidal influence removing these signs. No water vole resting areas in the form of burrows were identified. This is likely due to tidal flooding of the banks, making it unsuitable for burrow creation.

The site offers excellent connectivity to the wider landscape for water vole. The watercourse which runs through the Scheme is connected to the Severn Estuary to the south. Located in a rural area and situated within the Newport Wetland National Nature Reserve, habitats surrounding the Scheme Area consist of further wetland and swamp habitats with a large network of wet ditches which are known to support water vole.

The Scheme Area offers a wide variety of suitable vegetation along the banks of the watercourse and provides suitable habitat for commuting water vole.

Overall, the habitats within the Scheme are likely to be suitable for foraging and commuting water vole but not resting/burrowing.

3.5.12 Other Species of Principal Importance

No other species of principal importance was observed during the survey or returned during the desk study.

The grassland habitats within the Scheme Area are potentially suitable for harvest mouse where the grassland is left long and rank. Nest are built in a range of grass species including cock's foot, common reed, reed canary grass and reed sweet grass. Some of these grass species are present within the site, making it possible that harvest mouse could be present within the Scheme Area. Habitats that are likely subject to tidal inundation are considered unsuitable to support nesting harvest mice.

Habitats within the Scheme Area including swamps, riverbanks, grassland and reedbeds are considered suitable for polecats *Mustela putorius* and stoats *Mustela erminea*.

4 Assessment of Effects and Mitigation Measures

The results of the desk study and field survey have identified the following protected or notable ecological features which may be affected (directly or indirectly) from the Scheme proposals as they are currently known, in the absence of mitigation and reasonable avoidance measures. The potential impacts and required mitigation are discussed for each feature below.

The following measures will be formalised within a single working Construction Environmental Management Plan (CEMP) document or equivalent prior to the commencement of works.

The CEMP will contain best practice methods for construction such as those included below.

- Pollution control measures will be in place, such as spill kits, straw bales, appropriate storage of fuels and chemicals to minimise the risk of accidental spillage in accordance with best practice guidelines: Pollution Prevention Guidelines, CIRIA guidance.
- Best construction practices and environmental management will be followed in accordance with the Environmental Damage (Prevention and Remediation) Regulations 2009.
- Appropriate measures will be in place to control the spread of INNS within the Scheme and wider area; these will include boot and vehicle washes, control waste bins and demarking where invasive species are present with species-specific construction exclusion zones.
- A tidy works area will be maintained during construction and any hazardous substances or areas fenced off to remove access and hazards to animals.
- Where any trenches or other excavations are to be left open overnight, mammal ramps will be fitted or have the sides battered to form a slope to allow animals to escape.
- All materials for the construction will be stored raised off the ground (for example on pallets) to avoid the inadvertent creation of artificial refugia for reptile species.
- Access routes into the working areas will be kept to existing tracks and roadways, these will not be deviated from.
- Working areas including access roads will be re-instated as soon as possible to existing or better condition.
- Temporary compounds will be kept to the minimum area required, built as temporary structures and remediated to the original habitat type as soon as construction is completed.
- To reduce the disturbance to mammals (including bats and otters), works will be restricted to daylight hours, no artificial lighting is to be used within the site and overnight noise and vehicle movements at the site will be avoided.

4.1 Designated sites

The river running through the site, Chapel Reen/Chapel Pill, drains into the Severn Estuary, which is designated as a Ramsar, SAC, SPA and SSSI. Although the works will be undertaken within a short section of Chapel Reen/Pill, which is covered by a range of designations, the Scheme Area is relatively small and located on the boundary line of these designations. These

designations mainly cover wading and wintering bird populations which are covered separately below. Habitats covered in these designations include mudflats and sandflats, atlantic salt meadows and maritime cliff and slopes HPI present within these designated sites, however these habitats are not present within the Scheme Area. Any pollution incidents or silt release events within the Scheme as a result of construction work could have a detrimental effect on the water quality which is hydrologically connected via Chapel Reen/Pill to HPI listed under the designated sites and protected mobile species within these designated sites.

Mitigation of these impacts should include standard construction related practices which will be covered under a CEMP. This will include compounds and storage of materials located as far away from the watercourse as possible and staff trained in the use of spill kits.

The site is located within Newport Wetlands, which was created as compensation for habitat loss and is an important site for birds. A small area (the Scheme Area) will be subject to temporary degradation, due to the restoration of the sea defence embankment, associated temporary access routes for works and any temporary compounds. However, this area is on the edge of this designated sites and does not support any HPI or other habitats that would support wading or wintering birds.

Mitigation of these impacts is for the working area and any temporary compounds to be kept to the minimum area required. Where access routes and temporary compounds are required, these will be constructed as temporary structures and remediated to the original habitat type as soon as construction is completed. Impacts on birds are discussed below.

A CEMP outlining best construction practice and pollution control measures will be in place for the duration of works, as outlined above. A WFD assessment, SSSI Assent and a HRA will need to be undertaken.

4.2 Habitats

4.2.1 Poor semi-improved grassland

The Proposed Works have the potential to cause degradation to this habitat type due to temporary habitat loss from damage through soil compaction from being used as a temporary access point and any potential temporary compounds located on this habitat. On the eastern boundary of the Scheme Area, south of the sea defence embankment is where marsh-mallow is located. The works are likely to impact the marsh-mallow, therefore to mitigate for this impact, the following protective measures will be put in place during the works.

- Marsh-mallow will be included in the Ecological Clerk of Works (ECoW) briefing/toolbox for the awareness of construction workers.
- This species is located within the construction area, therefore, an ECoW will mark out the location of this species ahead of the construction works starting, and where possible this area should be retained and protected.
- Where this isn't feasible to avoid construction related impacts to this area, soil translocation should be undertaken into a suitable area.
- The ECoW will be present to oversee the translocation of this plant population and associated soils into a pre-determined suitable location within the vicinity away from the construction area. The translocation will be undertaken ahead of construction works

commencing in this area to mitigate the impact to this species. Where possible seed collection will also be taken of this plant to spread along the banks of Chapel Reen.

4.2.2 Swamp

The Proposed Works have the potential to cause degradation to this habitat type due to temporary habitat loss from the excavation of the channel, damage through soil compaction and the inadvertent spreading of pollution through construction activities. Parsley water-drop wort was noted on the right side of the bank and will potentially be impacted during the construction works. Therefore, to mitigate for this impact the following protective measures will be put in place during the works:

- Parsley water dropwort will be included in the Ecological Clerk of Works (ECoW) briefing/toolbox talk for the awareness of construction workers.
- This species is located on the southern boundary of the works area, therefore an ECoW will mark out the location of this species ahead of the construction works starting, and where possible this area should be retained and protected.
- Where this isn't feasible to avoid construction related impacts to this area, soil translocation should be undertaken into a suitable area.
- The ECoW will be present to oversee the translocation of this plant population and associated soils into a pre-determined suitable location within the vicinity away from the construction area. This will be undertaken ahead of works commencing in this area to mitigate the impact to this species. Where possible seed collection will also be taken of this plant to spread along the banks of Chapel Reen.
- A CEMP outlining best construction practice will be created and adhered to following the recommendations within this report.

4.2.3 Running water – Brackish and Eutrophic

The restoration of the sea defence embankment has the potential to cause negative construction related impacts through inadvertent spread of INNS and pollution, and damage to retained habitats from the movement of plant machinery. Nuttall's pondweed is located north of the sea defence embankment and has the potential to spread in the absence of mitigation. This will be mitigated for by the creation of a CEMP outlining best construction practice.

4.2.4 Bare ground

This habitat at the entrance of the site was observed to be ground compacted and already disturbed by previous works, this area has limited biodiversity value. It is recommended that the Proposed Works temporary access point be limited to the area of bare ground where possible. It is recommended that following completion of construction this area is re-seeded to enhance this habitat into grassland.

To mitigate further impacts, a CEMP outlining best construction practice will be created and adhered to.

4.2.5 Other habitat

This habitat will not be impacted by the Proposed Works and is therefore scoped out from further assessment.

4.3 Species and Species Groups

4.3.1 Birds

The Scheme area is covered by and in close proximity to a number of designated sites. Mainly the Severn Estuary, which is a SPA, SAC and Ramsar site known for its internationally important populations of migratory bird species, assemblage of nationally important populations of waterfowl and internationally important populations of wintering bird species.

Species listed under the Severn Estuary SPA interest features include;

- Bewick's swan;
- European white fronted goose;
- Dunlin;
- Redshank;
- Shelduck; and
- Gadwall.

Species also included under SPA interest feature 7: Internationally important assemblage of waterfowl; widgeon, teal, pintail, pochard, tufted duck, ringed plover, curlew, whimbrel, spotted redshank, lapwing, mallard and shoveler.

All these birds are over wintering species which require intertidal mudflats and sandflats and saltmarsh habitat communities to support them. Similarly spring and autumn migratory birds also predominantly use these habitats. These supporting habitats are not found within the Scheme Area. These habitats are present approximately 200m south of the Scheme Area around Goldcliff Lagoons and the fields adjacent to the Severn Estuary. However, it is possible that other habitats within or adjacent to the Scheme Area could offer potential high tide roosts.

To minimise potential impacts all construction work will take place outside of November to March (inclusive). Therefore, given the timing of the works there will be no impact on wintering bird species.

The Ramsar designation also refers to passage birds that are not included in the SPA internationally important assemblage of waterfowl: ringed plover, dunlin, whimbrel and redshank.

To mitigate for potential disturbance impacts to the passage bird species during construction the following measures will be implemented if works are required during passage seasons April to mid-May (spring) or September to October (autumn):

- No works for 1.5 hours either side of high tide unless a suitably qualified ecologist has surveyed the watercourse and adjacent wetland habitats at Chapel Pill for assemblages of ringed plover, dunlin, whimbrel and redshank that could be disturbed the works being undertaken, and confirmed that works can proceed.

As the works are within a European designated site a HRA will be required. A shadow HRA has been undertaken and concludes that the mitigation set out above is required (document reference 4021359-BUK-ZZ-00-RP-EN-00004).

Additionally, a nesting bird check must be carried out prior to any vegetation removal (maximum 48 hours prior) by a suitably qualified ecologist.

4.3.2 Invasive Non-Native Species

The Scheme will result in the likely risk of inadvertent spread of plant INNS in the absence of mitigation.

Nuttall's pondweed was located within the Scheme Area north of the sea defence embankment. Although, this INNS is present within the Scheme Area it is considered unlikely the Proposed Works will spread this species via the watercourse due to an intolerance to high salinity habitats further downstream.

Two INNS fauna species are at risk of being within the Scheme Area and therefore affected or spread by the proposed works; Northern river crangonyctid and common bladder snail. Although both species live in freshwater habitats and if present within the Scheme Area are unlikely to spread further downstream as a result of the proposed works due to high salinity habitats. There may be other INNS fauna present that have not been identified through desk study.

To reduce the overall impact on spreading INNS off site, the following mitigation and avoidance measures will be undertaken:

- A site-specific INNS management plan will be produced to prescribe and document management of INNS through construction. It will detail the locations, methods to be used for removal and destruction/safe disposal of the INNS within the construction area. This management plan is to remain in place following construction and be regularly updated following results of monitoring inspections. Table 4-1 below specifies measures that will be included within the site-specific INNS management plan for each INNS observed during the survey.
- For areas where no INNS flora clearance is planned as part of construction, but INNS maybe disturbed (access tracks, walking routes etc.) buffer/construction exclusion zones will be used to identify the areas of risk of spread/impact for INNS.
- Appropriate biosecurity measures will be in place to control the spread of INNS within the Scheme and wider area, these include boot and vehicle washes and controlled waste bins, these are particularly important where buffer zones cannot be observed due to the prevalence of the species.

Table 4-1 INNS mitigation

Species	Assessment and recommendations
Nuttall's pondweed	Nuttall's pondweed is most common in calcareous or eutrophic waters, it reproduces rapidly forming dense mats and can lead to localised extinctions of native macrophytes (Newman & Duenas, 2010). Similar reductions in species diversity have also been noted in invertebrate assemblages on sites with the invasive. The species is particularly invasive, often replacing other non-native species once established (Newman & Duenas, 2010).

Species	Assessment and recommendations
	A pre-construction check of all Scheme Area waterbodies will take place during the main growing season (Summer) to identify the presence/absence of Nuttall's water weed. The results of this check will then inform an appropriate plan for species control to be implemented during the works. Where excavation affecting open water within the Scheme Area is required, the soils resulting will be treated as contaminated and disposed of appropriately. Appropriate biosecurity controls will be implemented for any equipment and/or personnel entering the water bodies (cleaning before moving between waterbodies on site or leaving site etc.).
Northern river crangonyctid and common bladder snail	Prior to any works affecting the watercourses, water bodies or their banks an appropriate plan for the control for these species will be in place. This will include: • The presence of a suitably trained Ecological Clerk of Works during the draw down and excavation stages of works. • Appropriate provision for the destruction and appropriate disposal of any individuals found. • The soils from the waterbodies onsite may contain these species and therefore ideally, all soils will where possible be retained on site to avoid inadvertent risk of spreading of INNS. • Any soils to be taken from site will be treated as contaminated and disposed of appropriately or screened for these species prior to transportation.

If the mitigation measures included above are implemented correctly, this will prevent the inadvertent spread of INNS off site. Therefore, the Scheme will result in no significant change to the status of INNS in both the Scheme Area and beyond. No further compensatory measures are therefore required.

4.3.3 Badgers

Although no setts or other field signs have been discovered within the Scheme Area, badgers are a highly mobile species and will readily expand their territories in response to ecological or human factors. Therefore, the proposed works and movement of machinery and materials around the Scheme Area could result in the disturbance/injury of badgers.

To mitigate for this impact, the following protective measures will be put in place during the works.

- During any potential clearance/excavation works, all contractors will be made aware that badgers may be active in the area and that should a badger or a sett be discovered during the works, all works must stop and advice be sought from an Ecological Clerks of Works (ECoW).
- All workers will be instructed that in the unlikely event that a badger is encountered, they must not attempt to capture or corner it, doing so is only likely to result in unnecessary harm to the badger and unnecessary risk of being bitten to the contractors.
- Where any trenches or other excavations are to be left open overnight, mammal ramps will be fitted or have the sides battered to form a slope to allow animals to escape.

If the above mitigation is implemented, there are no negative effects to badgers anticipated as a result of the Proposed Works.

4.3.4 Bats

There are no buildings or trees located around the proposed works, which means bat roosts will not be impacted. However, the habitats within the Scheme Area are potentially suitable for foraging and commuting bats. To mitigate for the impacts, the following protective measures will be put in place during the works:

- The use of any additional construction lighting within the Scheme Area will be avoided where possible.
- Working in dark hours will be avoided wherever possible, and if it is required, lighting will be kept to the minimum level required for safe operations.
- Lighting for security reasons will be avoided where possible and alternative solutions such as night vision camera systems utilised instead. If the need for security lighting cannot be avoided, lighting will be motion activated and designed to minimise light spill onto the surrounding habitats.

4.3.5 Fish

The Scheme area is within and in close proximity to a number of designated sites, notably the Severn Estuary, which is a SPA, SAC and Ramsar site. Fish species listed under the Severn Estuary SAC and Ramsar interest features include:

- River lamprey;
- Sea lamprey;
- Twaite shad; and
- The assemblage of migratory fish species (including the above plus allis shad, salmon, sea trout and eel).

Eels are likely to be present within the watercourse. Other migratory and estuarine species are not likely to be using the watercourse upstream of the existing outfall (Pers. Comm. NRW Angling Developments & Technical Support Officer Richard Sheppard 19/12/2023). The proposed works will need to be carried out in channel which has potential to affect eel populations.

To mitigate for the remaining impact, the following protective measures will be put in place during the works:

- Works within and adjacent to the watercourse will be undertaken outside of the elver migratory period which runs 1st March to 30th April. Works will be undertaken from May onwards to limit impacts to eel populations.
- Measures to avoid direct impacts to individuals during construction works, for example measures during overpumping such as use of screens.
- Pollution and siltation control and biosecurity measures will be in place to ensure no indirect effects on fish and eel populations.
- A fish rescue plan may be required for the Proposed Works, if a dam is required to facilitate the works which may trap fish between the dam and the embankment.

As the works are within a European designated site an HRA will be required. A shadow HRA has been undertaken and concludes that the mitigation measures discussed with the NRW Angling

Developments & Technical Support Officer Richard Sheppard set out above are required (document reference 4021359-BUK-ZZ-00-RP-EN-00004).

4.3.6 Invertebrates

The Scheme will likely have minor negative impacts on invertebrates in the short term. i.e. during the year of construction but not beyond five years as habitats re-establish. No specific mitigation is required beyond that recommended for habitats.

4.3.7 Otter

The ecological walkover survey undertaken as part of this report found no otter resting areas, just footprints outside the Scheme Area boundary. As a result of this, a European Protected Species Derogation Licence is not considered necessary to legitimise the proposed works. Instead, it is considered that the risk to this species can be effectively managed through the implementation of the mitigation measures described below.

Although no resting areas or holts were discovered during the surveys, otters are a highly mobile species and will readily expand their territories in response to ecological or human factors. Therefore, the proposed Scheme and movement of machinery and materials around the site could result in the disturbance/injury of otters and damage to suitable habitat for use by otter such as couches and resting areas.

The proposed works may present a temporary disturbance to foraging and commuting habitat within and surrounding the sea defence embankment. However, the temporary loss of this foraging/commuting habitat is mitigated by the presence of the Severn Estuary and the River Usk, which provides good foraging opportunities as well as connectivity to other suitable areas such as the adjacent Goldcliff lagoons and associated network of ditches. The works are therefore unlikely to have a significant effect on foraging and commuting opportunities for local populations of otters.

To mitigate for the remaining impact, the following protective measures will be put in place during the works.

- Within the week prior to the commencement of the proposed works, an ECoW will conduct an inspection for otter resting areas and field signs. If signs of activity are found the ECoW will provide suitable instruction on a safe working methodology, this may include the need to suspend works until a disturbance licence can be obtained.
- During the proposed works, all contractors will be made aware that otters may be active in the area and should an otter or a resting area be discovered during the works, all works must stop and advice sought from the ECoW.

4.3.8 Reptiles

The habitats within the Scheme Area and its immediate surrounds offer significant suitability for common reptiles including grass snakes, slow worms and common lizard. The Proposed Works (particularly vehicle movements) pose a significant risk of killing and injury to any reptiles present.

To mitigate impacts the following protective measures will be put in place during the construction phase:

- A method statement for the safe management of the Scheme Area for reptiles will be included within the CEMP.
- Prior to the commencement of works, if there are any clearance and excavation works, an ECoW will give a toolbox talk on reptiles for all contractors involved.
- Any potential areas of scrub and grassland and swamp vegetation scheduled for clearance will be cut to a height of 20-25 cm with arisings removed and left for at least two days. Then at least two days in advance of commencement of development works the vegetation will be cut to ground level 5-10cm. Once the vegetation has been cut to ground level, it will be maintained at this height until ground clearance works begin and throughout the period of construction.
- An ECoW will be present to oversee any vegetation clearance works and will conduct preclearance fingertip searches on the day clearance is planned. Any reptiles found will be moved to a safe location away from the clearance areas (but within the Scheme Area) for immediate release.
- The ECoW will also be present for the dismantling of any suitable pre-existing refugia (if the area of other habitat, covered in tyres is to be removed). Where possible, dismantling will be carried out by hand with any reptiles found moved to a safe location away from the clearance areas (but within the Scheme Area) for immediate release.
- To ensure the most effective mitigation, vegetation and refugia clearance will be undertaken during the active season for reptiles, typically February to October inclusive when temperatures are $>5^{\circ}\text{C}$.

There will be an initial negative impact on suitable reptile foraging habitat in the short term due to the Proposed Works. This is anticipated to have a non-significant negative effect on the reptile populations of the Scheme Area in the short term, for a minimum of the year in which construction takes place, but not beyond five years once reinstated and habitats re-establish. The implementation of the above outlined mitigation allows this negative effect to be kept to a minor level due to its limitation to the Scheme Area and maintenance of some suitable breeding and foraging habitat throughout the construction period.

4.3.9 Water Vole

The ecological walkover survey undertaken as part of this report found no water vole resting areas, but there was evidence of water vole within 100m of the Scheme Area. It is considered likely water vole are using Chapel Pill for foraging and commuting but due to the tidal influence it is considered unlikely that water vole burrows are present within the Scheme Area. As a result of this, a European Protected Species Derogation Licence is not considered necessary to legitimise the proposed works. Instead, it is considered that the risk to this species can be effectively managed through the implementation of a suitable Precautionary Method Statement during the works.

The proposed works may present a temporary disturbance to foraging and commuting habitat within and surrounding the sea defence embankment. However, the temporary loss of this foraging/commuting habitat is mitigated by the presence suitable foraging, commuting and breeding habitat adjacent to the Site part of the wider Newport Wetlands and Gwent Levels – Nash and Goldcliff designated sites which have a large network of wet ditches with good marginal aquatic plant communities which provides good foraging opportunities as well as connectivity to the wider landscape. The works are therefore unlikely to have a significant effect on foraging and commuting opportunities for local populations of water vole.

To mitigate for the remaining impact, the following protective measures will be put in place during the works.

- A Precautionary Method Statement for the safe management of the Scheme Area for water vole (and other mammals) will be included within the CEMP. This will also include construction good practice guidelines.
- Within the week prior to the commencement of the proposed works, an ECoW will conduct an inspection for water vole resting areas and field signs. If burrows are found within the Scheme Area, the ECoW will provide suitable instruction on a safe working methodology, this may include the need to suspend works until a disturbance licence can be obtained.
- During the proposed works, all contractors will be made aware that water vole may be active in the area and should a water vole or a resting area be discovered during the works, all works must stop and advice sought from an ECoW.
- Vegetation clearance of swamp and reedbed habitats will be carried out in a phased approach under guidance from an ECoW.

Due to the nature of the works and the localised area of it, as long as the mitigation measures are adhered to, it is not anticipated that there will be significant negative impacts on the water vole population in the area.

4.3.10 Other Species Of Principal Importance

Habitats, present are suitable for use by harvest mouse, polecat and stoats. Presence/absence surveys for these species are not required, although a pre-works check by an ECoW will be required in suitable habitats affected by ground works. Mitigation for other species such as water vole, bats and badger will also benefit these species e.g. the CEMP will include measures such as tidy and safe working areas, protection of mammals, daylight working only and minimum compound footprints.

4.3.11 Post Construction

The purpose of the Scheme is to restore the outfall which reduces flood risk to Goldcliff by restricting movement of estuarine water from Severn Estuary into the reen system and preserves important inland freshwater habitats from sea water ingress. As an enhancement a tidal flap will be installed which will allow for easier movement of fish and eel species.

It is recommended that areas of bare ground and any areas of grassland impacted by temporary compounds and trackways should be reseeded with a grassland seed mix to enhance the areas of previously bare ground with patchy vegetation and reinstate any areas of grassland that might have been impacted.

5 Conclusion

The purpose of the Scheme is to restore the outfall which reduces flood risk to Goldcliff by restricting movement of estuarine water from Severn Estuary into the reen system and preserves important inland freshwater habitats from sea water ingress. As an enhancement a tidal flap will be installed which will allow for easier movement of fish and eel species.

Water voles have been identified within 100m of the Scheme Area and their commuting and foraging habitat could be affected by the works. As a result, mitigation measures will be followed including pre-works checks and vegetation clearance supervision from an ECoW.

Otters have also been identified within 100m of the Scheme Area, however, it is considered this species is using the site only for foraging and commuting as there was no evidence of otter resting places within the Scheme Area.

There are several designated sites for birds in proximity but given the location, timing and nature of works a significant impact is not envisaged.

Nuttall's pond weed, an INNS plant found within the Scheme Area, is considered unlikely to be spread downstream as a result of the proposed works; this is due to the brackish water conditions being unsuitable to support this species. This also applies to the aquatic fauna INNS highlighted within the data search. Additional INNS measures will be put in place to stop the spread of INNS offsite.

Works will avoid the main migratory period for eels to avoid negative effects on this species. Pollution and siltation control and biosecurity measures along with a fish rescue plan will be put in place ahead of construction works starting.

The Scheme will result in a short-term negative effect on all the ecological receptors present within Scheme Area as a result of habitat loss, degradation and disturbance impacts. This is anticipated within the year of construction and up to five years while habitat re-establishes. Mitigation measures to reduce this impact are included in this report including timing of works May to September to minimise impacts on ecological receptors. However, as there is the potential for the scheme to effect European designated sites then a HRA will be required. SSSI Assent will also be required.

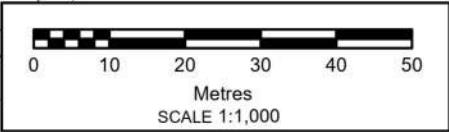
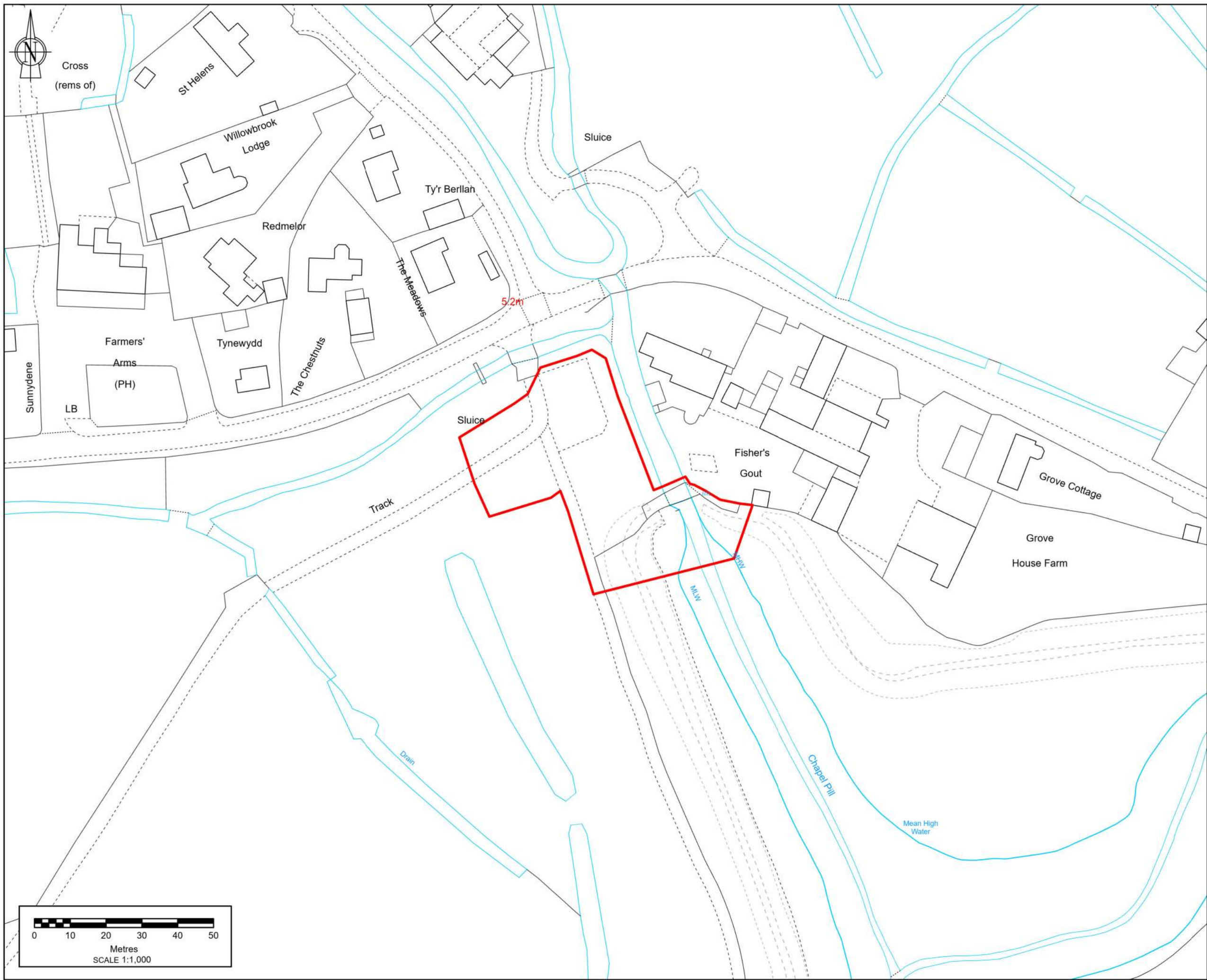
If mitigation measures are implemented correctly there will be no significant negative effect of the proposed works on habitats and species noted within this report and there will be a permanent benefit to eels through improved passage.

6 References

- Bibby, C. B. N. H. D. a. M. S., 2000. *Bird Census Techniques*, s.l.: RSPB.
- Bright, P. M. P. a. M.-J. T., 2006. *The Dormouse Conservation Handbook. 2nd Edition*, Peterborough: Natural England.
- British Standards Institution, 2013. *Biodiversity. Code of practice for planning and development: BSI 42020*, London: BSI.
- Chanin, P., 2003. *Monitoring the Otter Lutra Lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10*, Peterborough: English Nature.
- CIEEM, 2017a. *Guidelines for Preliminary Ecological Appraisal, 2nd edition*, Winchester: Chartered Institute of Ecology and Environmental Management.
- CIEEM, 2017b. *Guidelines for Ecological Report Writing, 2nd Edition*, Winchester: Chartered Institute of Ecology and Environmental Management.
- CIEEM, 2020. *Guidelines for Accessing and using biodiversity data in the UK*, Winchester: Chartered Institute of Ecology and Environmental Management.
- CIEEM, 2021. *Bat Mitigation Guidelines. A guide to impact assessment, mitigation, and compensation for developments affecting bats (Beta version)*. s.l.:CIEEM.
- Collins, J., 2023. *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 4th ed. London: The Bat Conservation Trust.
- Dean, M., Strachan, R., Gow, D. & Andrews, R., 2016. *The Water Vole Mitigation Handbook*, London: The Mammal Society.
- English Nature, 2001. *Great Crested Newt Mitigation Guidelines*, Peterborough: English Nature.
- Froglife, 1999. *Froglife Advice Sheet 10: reptile survey*, London: Froglife.
- Gent, T. a. G. S., 2003. *Herpetofauna Workers Manual*, Peterborough: JNCC.
- Gilbert, G. G. D. a. E. J., 1998. *Birds Monitoring Methods*, s.l.: RSPB.
- GOV.UK, 2016. *The Environment (Wales) Act 2016*. [Online]
Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents/enacted>
- GOV.UK, 2017. *The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017) (as amended)*. [Online]
Available at: <https://www.legislation.gov.uk/ukxi/2017/407/contents/made>
- JNCC, 2010. *Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit*, Peterborough: England Field Unit, Nature Conservancy Council. Reprinted by Joint Nature Conservation Committee.
- Mitchell-Jones, A. J. & McLeish, A. P., 2004. *Bat Workers Manual (3rd Edition)*. Peterborough: Joint Nature Conservation Committee..
- Newman, J. R. & Duenas, M. A., 2010. *Information Sheet 25: Elodea nuttallii, Nuttall's pondweed*, s.l.: Centre for Ecology and Hydrology.
- Roper, T., 2010. *Badger*, London: Harper Collins.
- Scottish Natural Heritage, 2002. *Best Practice Badger Survey Guidance Note*. [Online]
Available at: <http://www.snh.gov.uk/docs/B957619.pdf>
- Stace, C. A., 2019. *New Flora of the British Isles (4th Edition)*, Cambridge: Cambridge University Press.
- Strachan, R., Moorhouse, T. & Gellin, M., 2011. *Water Vole Conservation Handbook. 3rd Edition*, Oxford: Wildcru.
- The Vincent Wildlife Trust, 2003. *The Water Vole and Mink Survey of Britain 1996-1998 with a History of the Long-Term Changes in the Status of Both Species and their Causes*, s.l.: The Vincent Wildlife Trust.
- Tyler, S. and Wood, E., 2023. *Rare plant register for V.C.35 - Monmouthshire*, s.l.: s.n.

7 FIGURES

Figure title	ProjectWise Link
Chapel Reen Site Location Map	4021359-BUK-ZZ-00-DR-EN-00006
Phase 1 Habitat Map	4021359-BUK-ZZ-00-DR-EN-00001
Designated Sites Map	4021359-BUK-ZZ-00-DR-EN-00005



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LEGEND

— BOUNDARIES OF THE SITE



SAFETY HEALTH AND ENVIRONMENT INFORMATION

IN ADDITION TO THE HAZARDS OR RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, THE FOLLOWING SIGNIFICANT RESIDUAL RISKS SHOULD BE NOTED. FURTHER DETAILS ARE INCLUDED IN THE CDM DESIGN RISK MANAGEMENT REGISTER.

CONSTRUCTION
NOT APPLICABLE
MAINTENANCE / CLEARING / OPERATION
NOT APPLICABLE
DECOMMISSIONING / DEMOLITION
NOT APPLICABLE

Rev	Drawn	Chkd	Revd	Approved	Date	Description
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P01	TW	KT	KN	ES	19/01/2024	FOR INFORMATION

Designed by: TW Date: JAN 2024

Client:



Client Drawing No. Revision



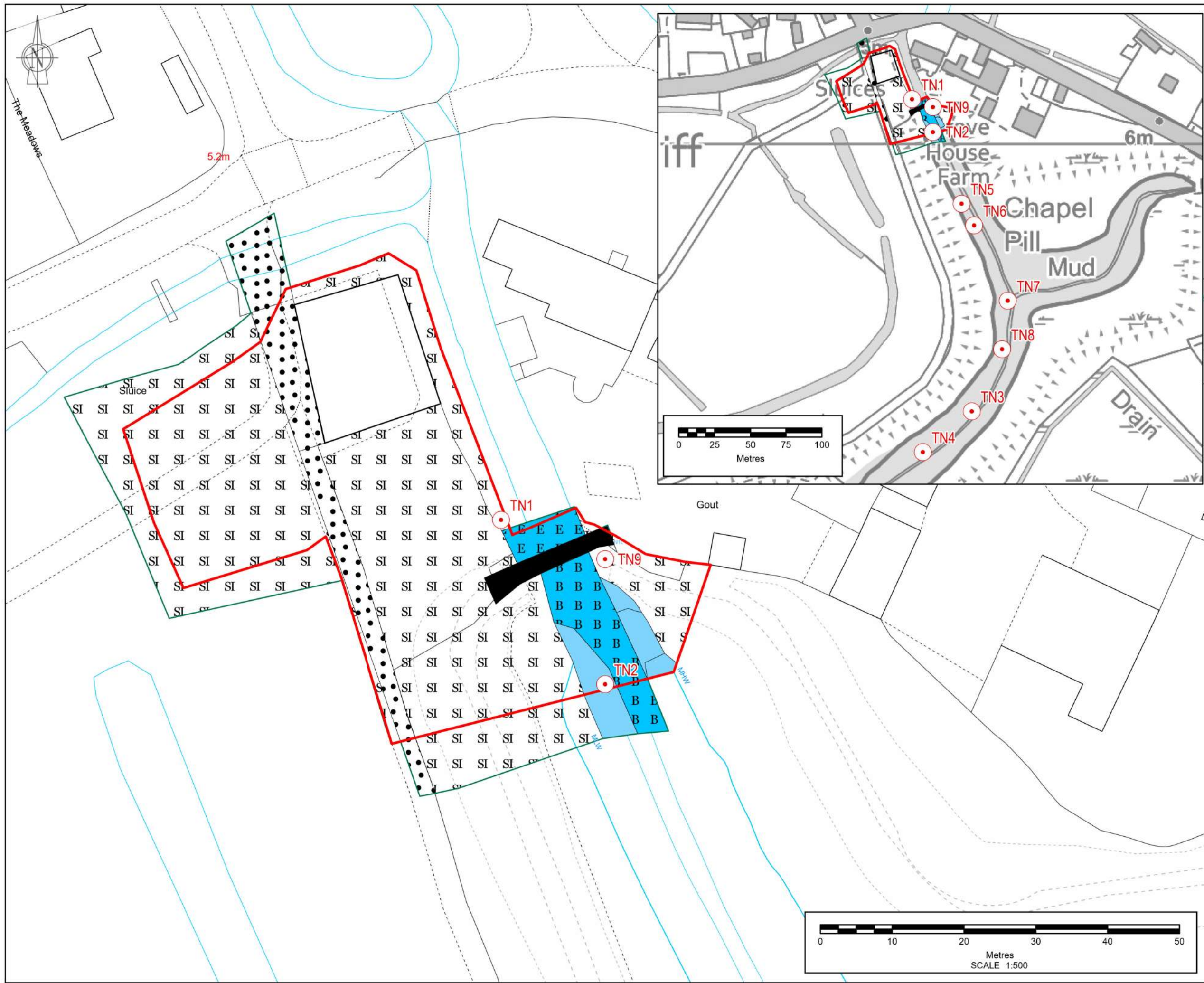
Project: CHAPEL REEN

Drawing title:

SITE LOCATION MAP

Drawing scale: 1:1,000 Sheet size: A3

Drawing no: 4021359-BUK-ZZ-00-DR-EN-00006 Revision: P02



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- LEGEND**
- SCHEME AREA
 - PHASE ONE HABITAT SURVEY BOUNDARY
 - PHASE ONE HABITAT SURVEY
 - SI B6 POOR SEMI-IMPROVED GRASSLAND
 - F1 SWAMP
 - E G2.1 RUNNING WATER - EUTROPHIC
 - B G2.6 RUNNING WATER - BRACKISH
 - J3.6 BUILDINGS
 - J4 BARE GROUND
 - J5 OTHER HABITAT
 - TARGET NOTE



SAFETY HEALTH AND ENVIRONMENT INFORMATION

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CONSTRUCTION
N/A
MAINTENANCE / CLEARING / OPERATION
N/A
DECOMMISSIONING / DEMOLITION
N/A

Rev	Drawn	Chkd	Rev'd	Approved	Date	Description
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P01	TW	KT	KN	ES	04/01/2024	FOR INFORMATION

Designed by: TW Date: JAN 2024

Client:

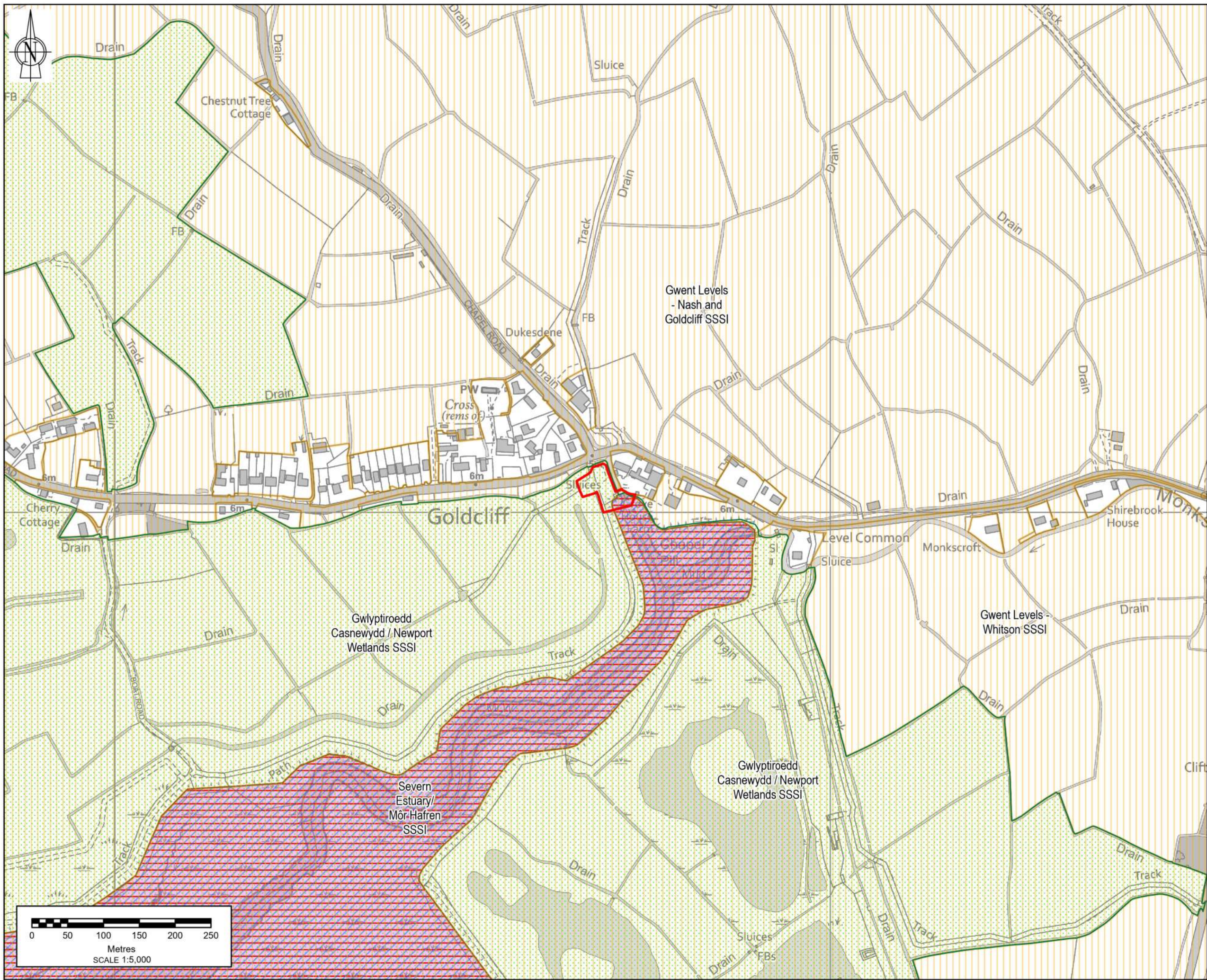


Project: CHAPEL REEN

Drawing title: PHASE 1 HABITAT SURVEY

Drawing scale: 1:500 Sheet size: A3

Drawing no: 4021359-BUK-ZZ-00-DR-EN-00001 Revision: P02



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- LEGEND**
- SCHEME AREA
 - SEVERN ESTUARY - SPECIAL PROTECTION AREA (SPA)
 - SEVERN ESTUARY - RAMSAR SITE
 - SEVERN ESTUARY, GWENT LEVELS NASH AND GOLDCLIFF, NEWPORT WETLANDS, WHITSON - SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)
 - SEVERN ESTUARY - SPECIAL AREA OF CONSERVATION (SAC)
 - NEWPORT WETLANDS - NATIONAL NATURE RESERVE



SAFETY HEALTH AND ENVIRONMENT INFORMATION

IN ADDITION TO THE HAZARDS OR RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, THE FOLLOWING SIGNIFICANT RESIDUAL RISKS SHOULD BE NOTED. FURTHER DETAILS ARE INCLUDED IN THE CDM DESIGN RISK MANAGEMENT REGISTER

CONSTRUCTION
NOT APPLICABLE
MAINTENANCE / CLEARING / OPERATION
NOT APPLICABLE
DECOMMISSIONING / DEMOLITION
NOT APPLICABLE

P02	TW	KT	KN	ES	07/02/2024	FOR INFORMATION
P01	TW	KT	KN	ES	10/01/2024	FOR INFORMATION
Rev	Drawn	Chkd	Rev'd	Approved	Date	Description

Designed by: TW Date: JAN 2024

Client:



Client Drawing No. Revision



Project:

CHAPEL REEN

Drawing title:

DESIGNATED SITE MAP

Drawing scale: 1:5,000 Sheet size: A3

Drawing no: 4021359-BUK-ZZ-00-DR-EN-00005 Revision: P02

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APPENDICES

Appendix A Protected and Notable Species Records within 2 km of the Scheme

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
Bats					
<i>Myotis daubentonii</i>	Daubenton's Bat	30/07/2016	17	1.3km	EPS, HDir, WCA5, Bern, RDB2 (UK), LBAP (ANG, CLY, CON, DEN, FLI, GWY, POW, SNP, TRA, TRF)
<i>Myotis mystacinus/brandtii</i>	Whiskered/Brandt's Bat	22/08/2019	8	0.9km	EPS, HDir, WCA5, Bern, LBAP (ANG, BRG, CDF, CLY, CON, DEN, FLI, NPT, RCT, SNP, TRA, TRF)
<i>Nyctalus noctula</i>	Noctule Bat	13/07/2021	69	0.7km	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, CLY, CON, DEN, FLI, GWY, POW, SNP, TRA, TRF, VOG)
<i>Pipistrellus</i>	Pipistrelle	24/04/2021	65	2km	EPS, WCA5, LBAP (ANG, DEN, FLI, SNP, TRA, TRF)
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	13/07/2021	297	0.1km	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRA, TRF, VOG)
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	13/07/2021	73	0.1km	EPS, HDir, WCA5, S7, Bern, RDB2 (UK), LBAP (ANG, BBNP, CLY, DEN, FLI, GWY, PEM, POW, SNP, TRA, TRF, VOG)
Birds					
<i>Acanthis cabaret</i>	Lesser redpoll	26/04/2016	14	1km	S7, LBAP (CON), LBAP (DEN, POW, VOG), WBAm(RSPB), UKBR(RSPB)
<i>Alauda arvensis</i>	Eurasian Skylark	24/04/2021	73	0.3km	BDir22, S7, LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRF, VOG), WBAm(RSPB), UKBR(RSPB)
<i>Alcedo atthis</i>	Kingfisher	27/07/2021	60	0.3km	BDir1, WCA1.1, Bern, LBAP (CLY, CON, DEN, FLI, GWY, POW, TRA), WBAm(RSPB), UKBAm(RSPB)

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
<i>Anas acuta</i>	Pintail	13/02/2019	146	0.3km	BDir21, WCA1.2, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Anser albifrons</i>	White-fronted Goose	10/01/2019	2	0.8km	BDir22, S7, Bern, WBR(RSPB), LBAP (BBNP), UKBR(RSPB)
<i>Anthus trivialis</i>	Tree Pipit	28/04/2012	21	0.3km	S7, Bern, LBAP (CON, DEN, FLI, GWY, POW, VOG), WBAm(RSPB), UKBR(RSPB)
<i>Aythya marila</i>	Scaup	02/12/2018	5	0.5km	BDir22, WCA1.1, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
<i>Bucephala clangula</i>	Goldeneye	20/01/2020	71	0.5km	BDir22, WCA1.2, LBAP (CON, POW), UKBAm(RSPB)
<i>Calidris pugnax</i>	Ruff	15/09/2019	89	0.3km	BDir1, BDir22, WCA1.1, LBAP (CON), WBAm(RSPB), UKBR(RSPB)
<i>Cettia cetti</i>	Cetti's Warbler	04/06/2021	276	0.3km	WCA1.1, LBAP (ANG, PEM, VOG)
<i>Charadrius dubius</i>	Little Ringed Plover	10/06/2019	92	0.3km	WCA1.1, Bern, LBAP (CON, POW, VOG), LI(VC43)
<i>Charadrius hiaticula</i>	Common Ringed Plover	15/09/2019	144	0.3km	S7, Bern, WBR(RSPB), LBAP (BBNP, CON, CRM, GWY, VOG), UKBR(RSPB)
<i>Chlidonias niger</i>	Black Tern	21/08/2016	3	0.3km	BDir1, WCA1.1, Bern
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	28/07/2021	242	0.3km	BDir22, S7, WBR(RSPB), LBAP (GWY, VOG), UKBAm(RSPB)
<i>Circus aeruginosus</i>	Western Marsh Harrier	21/03/2020	76	0.3km	BDir1, WCA1.1, CITES, LBAP (CON), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)
<i>Circus cyaneus</i>	Hen Harrier	02/01/2016	9	0.3km	BDir1, WCA1.1, S7, CITES, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, SNP, VOG), LBAP (BBNP, DEN, FLI, POW, SNP, VOG), LI(VC43)
<i>Cuculus canorus</i>	Cuckoo	29/05/2021	91	0.3km	S7, WBR(RSPB), LBAP (CON, DEN, FLI, GWY, VOG), UKBR(RSPB)

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
<i>Emberiza schoeniclus</i>	Common Reed Bunting	19/05/2021	199	0.2km	S7, Bern, LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), WBAm(RSPB), UKBAm(RSPB)
<i>Falco columbarius</i>	Merlin	28/12/2015	33	0.2km	BDir1, WCA1.1, Bern, CITES, WBR(RSPB), LBAP (CON, DEN, FLI, GWY, POW), LI(VC43), UKBR(RSPB)
<i>Falco peregrinus</i>	Peregrine	04/06/2021	91	0.3km	BDir1, WCA1.1, Bern, CITES, LBAP (ANG, CLY, CON, GWY, PEM, POW, TRF, VOG), LI(VC43)
<i>Falco subbuteo</i>	Hobby	22/09/2018	42	0.3km	WCA1.1, Bern, CITES, LBAP (CON, GWY, POW, VOG), LI(VC43)
<i>Falco tinnunculus</i>	Kestrel	11/12/2019	162	0.3km	S7, Bern, CITES, WBR(RSPB), LBAP (ANG, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), LI(VC43), UKBAm(RSPB)
<i>Himantopus himantopus</i>	Black-winged Stilt	26/04/2013	1	0.3km	BDir1, WCA1.1, Bern
<i>Hydrocoloeus minutus</i>	Little Gull	21/03/2014	1	0.7km	BDir1, WCA1.1, Bern, LBAP (CON), WBAm(RSPB)
<i>Ichthyaetus melanocephalus</i>	Mediterranean Gull	14/02/2016	28	0.5km	BDir1, WCA1.1, Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
<i>Larus argentatus</i>	European Herring Gull	06/07/2020	146	0.3km	BDir22, S7, WBR(RSPB), LBAP (CON, GWY, POW, VOG), UKBR(RSPB)
<i>Limosa lapponica</i>	Bar-tailed Godwit	23/05/2019	69	0.3km	BDir1, BDir22, S7, WBR(RSPB), LBAP (BBNP, CON, GWY, VOG), UKBAm(RSPB)
<i>Limosa limosa</i>	Black-tailed Godwit	08/05/2021	237	0.3km	BDir22, WCA1.1, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
<i>Linaria cannabina</i>	Linnet	04/06/2021	83	0.3km	S7, Bern, WBR(RSPB), LBAP (ANG, BBNP, CER, CLY, DEN, FLI, PEM, VOG), LBAP (CON, GWY), UKBR(RSPB)

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
<i>Locustella naevia</i>	Grasshopper Warbler	19/04/2018	30	0.7km	S7, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, VOG), UKBR(RSPB)
<i>Melanitta nigra</i>	Common Scoter	16/08/2015	8	0.9km	BDir22, WCA1.1, S7, LBAP (ANG, BBNP, CER, CON, CRM, DEN, FLI, GWY, PEM, VOG), WBAm(RSPB), UKBR(RSPB)
<i>Milvus milvus</i>	Red Kite	06/06/2019	9	0.5km	BDir1, WCA1.1, WCA9, CITES, LBAP (CON, CRM, GWY, POW), WBAm(RSPB)
<i>Motacilla flava</i>	Western Yellow Wagtail	15/09/2019	84	0.3km	S7, Bern, WBR(RSPB), LBAP (CON, DEN, FLI, POW, TRA, VOG), LI(VC43), UKBR(RSPB)
<i>Numenius arquata</i>	Curlew	28/07/2021	358	0.3km	BDir22, S7, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, VOG), LI(VC43), UKBR(RSPB)
<i>Numenius phaeopus</i>	Eurasian Whimbrel	23/05/2019	148	0.3km	BDir22, WCA1.1, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)
<i>Passer domesticus</i>	House Sparrow	03/08/2021	111	0.3km	S7, LBAP (CLY, CON, FLI, GWY, VOG), WBAm(RSPB), UKBR(RSPB)
<i>Phalaropus lobatus</i>	Red-necked Phalarope	24/04/2019	1	0.3km	BDir1, WCA1.1, Bern, UKBR(RSPB)
<i>Platalea leucorodia</i>	Spoonbill	29/09/2019	27	0.3km	BDir1, WCA1.1, Bern, CITES, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
<i>Podiceps nigricollis</i>	Black-necked Grebe	20/01/2020	2	0.6km	WCA1.1, Bern, WBAm(RSPB), UKBAm(RSPB)
<i>Prunella modularis</i>	Dunnock	28/03/2021	99	0.3km	S7, Bern, LBAP (CON, POW, VOG), UKBAm(RSPB)
<i>Pyrrhula pyrrhula</i>	Eurasian Bullfinch	20/08/2020	70	0.3km	S7, WBR(RSPB), LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, TRF, VOG), UKBAm(RSPB)

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
<i>Recurvirostra avosetta</i>	Avocet	08/05/2021	145	0.3km	BDir1, WCA1.1, Bern, WBAm(RSPB), UKBAm(RSPB)
<i>Spatula querquedula</i>	Garganey	08/05/2016	26	0.3km	BDir21, WCA1.1, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Sturnus vulgaris</i>	Starling	24/01/2021	119	0.3km	BDir22, S7, Bern, WBR(RSPB), LBAP (BBNP, CON, FLI, GWY, VOG), UKBR(RSPB)
<i>Tringa glareola</i>	Wood Sandpiper	31/07/2019	6	0.3km	BDir1, WCA1.1, Bern, LBAP (CON), UKBAm(RSPB)
<i>Tringa nebularia</i>	Greenshank	29/09/2019	149	0.3km	BDir22, WCA1.1, LBAP (CON, POW), UKBAm(RSPB)
<i>Tringa ochropus</i>	Green Sandpiper	31/07/2019	104	0.3km	WCA1.1, Bern, LBAP (CON, VOG), WBAm(RSPB), UKBAm(RSPB)
<i>Turdus iliacus</i>	Redwing	01/01/2020	66	0.3km	BDir22, WCA1.1, LBAP (CON, POW), WBAm(RSPB), UKBR(RSPB)
<i>Turdus philomelos</i>	Song Thrush	25/03/2021	93	0.3km	BDir22, S7, Bern, LBAP (ANG, BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, SNP, TRF, VOG, WRE), WBAm(RSPB), UKBR(RSPB)
<i>Turdus pilaris</i>	Fieldfare	04/02/2020	79	0.3km	BDir22, WCA1.1, LBAP (CON, POW), WBAm(RSPB), UKBR(RSPB)
<i>Vanellus vanellus</i>	Lapwing	03/08/2021	522	0.3km	BDir22, S7, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, MON, PEM, POW, SNP, TRF, VOG), LI(VC43), UKBR(RSPB)
Fish and Eels					
<i>Anguilla anguilla</i>	European Eel	19/05/2017	6	0.3km	S7, RDB1 (UK) - CR, LBAP (CLY, CON, GWY, VOG)
<i>Solea solea</i>	Dover Sole	15/10/2013	1	1.2km	S7, LBAP (CON, GWY, VOG)
Non-native Invasive Species					

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
<i>Anser indicus</i>	Bar-headed Goose	17/05/2015	12	0.4km	WCA9, INNS
<i>Azolla filiculoides</i>	Water Fern	23/06/2020	2	1.7km	WCA9, INNS
<i>Branta canadensis</i>	Canada Goose	08/05/2021	265	0.3km	BDir21, WCA9, INNS
<i>Branta leucopsis</i>	Barnacle Goose	20/11/2019	27	0.3km	BDir1, WCA9, Bern, UKBAm(RSPB), INNS
<i>Crangonyx pseudogracilis</i>	Northern river crangonyctid	30/07/2018 - 31/07/2018	1	1.6km	INNS
<i>Cygnus atratus</i>	Black Swan	29/09/2019	6	0.5km	WCA9, INNS
<i>Lemna minuta</i>	Least Duckweed	23/06/2020	4	0.6m	INNS
<i>Physella acuta</i>	Common bladder snail	30/07/2018 - 31/07/2018	1	1.6km	INNS
<i>Sciurus carolinensis</i>	Eastern Grey Squirrel	21/05/2020	5	0.6km	WCA9, INNS
Invertebrates					
<i>Acronicta psi</i>	Grey Dagger	21/07/2014	23	0.3km	S7, LBAP (GWY, VOG)
<i>Acronicta rumicis</i>	Knot Grass	10/08/2016	26	0.3km	S7, LBAP (GWY, VOG)
<i>Agrochola lychnidis</i>	Beaded Chestnut	26/10/2016	56	0.2km	S7, LBAP (GWY, VOG)
<i>Allophyes oxyacanthae</i>	Green-brindled Crescent	19/10/2015	13	0.2km	S7, LBAP (GWY, VOG)
<i>Amphipoea oculea</i>	Ear Moth	29/08/2013	3	0.2km	S7, LBAP (GWY, VOG)
<i>Apamea remissa</i>	Dusky Brocade	21/07/2015	10	0.3km	S7, LBAP (GWY, VOG)
<i>Arctia caja</i>	Garden Tiger	21/07/2015	21	0.3km	S7, LBAP (GWY, VOG)
<i>Atethmia centrargo</i>	Centre-barred Sallow	07/09/2016	15	0.3km	S7, LBAP (GWY, VOG)
<i>Bombus humilis</i>	Brown-banded Carder-bee	05/09/2019	19	0.1km	S7, LBAP (CER, CON, FLI, GWY, PEM, POW, VOG)
<i>Bombus sylvarum</i>	Knapweed Carder Bee	23/07/2020	60	0.2km	S7, RDB2 (UK) - NB, LBAP (CER, FLI, PEM, VOG)
<i>Caradrina morpheus</i>	Mottled Rustic	20/07/2018	31	0.3km	S7, LBAP (GWY, VOG)
<i>Chiasmia clathrata</i>	Latticed Heath	20/07/2018	12	0.5km	S7, LBAP (GWY, VOG)

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
<i>Cirrhia icteritia</i>	Sallow	20/09/2016	22	0.3km	S7, LBAP (GWY, VOG)
<i>Diarsia rubi</i>	Small Square-spot	22/09/2016	90	0.1km	S7, LBAP (GWY, VOG)
<i>Diloba caeruleocephala</i>	Figure of Eight	26/10/2016	12	0.3km	S7, LBAP (VOG)
<i>Ecliptopera silaceata</i>	Small Phoenix	04/08/2014	10	0.3km	S7, LBAP (GWY, VOG)
<i>Ennomos fuscantaria</i>	Dusky Thorn	15/09/2016	42	0.3km	S7, LBAP (GWY, VOG)
<i>Eucera longicornis</i>	Long-horned Bee	16/05/2019	1	0.6km	S7, RDB2 (UK) - NA, LBAP (VOG)
<i>Helotropha leucostigma</i>	Crescent	08/08/2015	8	0.3km	S7, LI(BIS)
<i>Hepialus humuli</i>	Ghost Moth	18/07/2016	11	0.1km	S7, LBAP (GWY, VOG)
<i>Hoplodrina blanda</i>	Rustic	20/07/2018	61	0.3km	S7, LBAP (GWY, VOG)
<i>Hydraecia micacea</i>	Rosy Rustic	20/09/2016	50	0.2km	S7, LBAP (GWY, VOG)
<i>Lycia hirtaria</i>	Brindled Beauty	23/04/2015	7	1km	S7, LBAP (GWY, VOG)
<i>Malacosoma neustria</i>	Lackey	29/05/2019	44	0.3km	S7, LBAP (GWY, VOG)
<i>Melanchra persicariae</i>	Dot Moth	24/07/2014	6	1km	S7, LBAP (GWY, VOG)
<i>Melanthia procellata</i>	Pretty Chalk Carpet	06/08/2013	2	1km	S7, LBAP (GWY, VOG), LI(BIS)
<i>Orthonama vittata</i>	Oblique Carpet	04/08/2014	15	1km	S7, LBAP (BRG), LI(BIS)
<i>Orthosia gracilis</i>	Powdered Quaker	14/04/2016	12	0.3km	S7, LBAP (GWY, VOG)
<i>Rhizedra lutosa</i>	Large Wainscot	26/10/2016	29	0.5km	S7, LBAP (BRG, GWY)
<i>Scotopteryx chenopodiata</i>	Shaded Broad-bar	20/07/2016	19	0.3km	S7, LBAP (GWY, VOG)
<i>Spilosoma lubricipeda</i>	White Ermine	02/06/2016	28	0.2km	S7, LBAP (GWY, VOG)
<i>Spilosoma lutea</i>	Buff Ermine	10/08/2016	48	0.2km	S7, LBAP (GWY, VOG)
<i>Tholera decimalis</i>	Feathered Gothic	07/09/2016	14	1km	S7
<i>Timandra comae</i>	Blood-vein	20/07/2018	56	0.2km	S7, LBAP (VOG)

Species	Common Name	Most recent record	Number of records	Closest record (distance from Scheme)	Legislation
<i>Tyria jacobaeae</i>	Cinnabar	30/05/2014	9	0.2km	S7, LBAP (GWY, VOG)
<i>Watsonalla binaria</i>	Oak Hook-tip	03/09/2014	5	1km	S7, LBAP (GWY, VOG)
<i>Xanthorhoe ferrugata</i>	Dark-barred Twin-spot Carpet	19/05/2014	9	1km	S7, LBAP (GWY, VOG)
Mammals					
<i>Arvicola amphibius</i>	European water vole	22/05/2019	49	0.3km	WCA5, S7, LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRA, TRF, VoG)

Table Key

BDir = EC Birds Directive

Bern = Bern Convention on the Conservation of European Wildlife and Natural Habitats

CITES = The Convention on International Trade in Endangered Species of Wild Fauna and Flora

EPS = European Protected Species

HDir = EU Habitats Directive Species

LBAP = Local Biodiversity Action Plan

RDB1 (UK) – NT = IUCN Red Data Book (Volume 1) – Near Threatened

RDB1 (UK) – VU = IUCN Red Data Book (Volume 1) – Vulnerable

RDB2 (UK) = IUCN Red Data Book (Volume 2)

S7 = Environment Act: Section 7 Species (Priority Species in Wales)

WCA1.1 = Wildlife and Countryside Act Schedule 1 Species

WCA5 = Wildlife and Countryside Act Schedule 5 Species

WCA9 = Wildlife and Countryside Act Schedule 9 Species

INNS = Invasive Non-Native Species

Appendix B Target Notes

Target Note Number	Description
TN1	Marginal aquatic plant assemblage
TN2	Two plants of parsley water-dropwort at the top of the sea club rush swamp.
TN3	Otter footprints in mud on bank
TN4	Otter footprints in mud on bank
TN5	Water vole footprints
TN6	Water vole footprints
TN7	Water vole footprints
TN8	Water vole footprints
TN9	Large stand of marsh-mallow, a national scarce plant and listed in rare plant register for Monmouthshire, 2023.

Appendix C Photographs

Photo no.	Photograph
1: Poor semi-improved grassland cut previous to survey	
2: Marsh-mallow	

Photo no.	Photograph
3: Swamp habitat; common reed on far side and sea club rush in foreground.	
4: Parsley water-dropwort	

Photo no.	Photograph
5: Assemblage of marginal aquatic plants north of sea defence embankment	
6: Running water south of sea defence embankment	

Photo no.	Photograph
7: Sea defence embankment where proposed works is taking place	
8: Bare ground located at the north of the scheme area	

Photo no.	Photograph
9: Mound – other habitat	
10: Otter footprint	

Photo no.	Photograph
11: Otter footprints	 A close-up photograph showing several distinct otter footprints in a muddy, brownish soil. The footprints are arranged in a line, with some showing clear claw marks. The soil is surrounded by low-lying, silvery-green plants with small, narrow leaves. The lighting is bright, casting shadows from the plants onto the mud.
12: Otter footprints	 A photograph showing a series of otter footprints along the edge of a body of water. The footprints are visible in the light-colored, sandy or silty soil. The water is calm and reflects the sky. Some vegetation is visible on the left side of the frame, near the water's edge.

Photo no.	Photograph
13: Water vole footprints	 A close-up photograph of water vole footprints in a muddy bank. A white magnifying glass with 'opticon 15x30mm' printed on it is held over the prints to provide a sense of scale. The prints are dark, oval-shaped depressions in the light-colored, wet mud.
14: Water vole footprints	 A photograph showing several water vole footprints on a large, flat, light-colored rock. The prints are small, dark, and arranged in a line, suggesting a path. The rock is surrounded by green moss and some dry grass.

Photo no.	Photograph
15: Water vole footprints	 A photograph showing water vole footprints in a muddy, shallow area. The mud is light brown and has several small, dark, oval-shaped footprints. There are patches of green algae or moss on the mud. Reeds and other aquatic plants are visible in the background and foreground.

Appendix D Legislation

Note that the details provided in this appendix are for general guidance only and should not be relied upon as a definitive statement of the law. The legislation is applicable in Wales only. Only legislation applicable to this scheme is provided here.

Legislation Afforded to Protected Sites and Habitats

Statutory Designations: International

Special Protection Areas (SPAs) were originally classified under the EC Birds Directive. SPAs are designated for their important habitat for rare (listed on Annex I of the Directive) and migratory birds within the United Kingdom.

Special Areas of Conservation (SACs) were originally classified under the EC Habitats Directive. SACs are designated for best representing the range and variety of habitats and (non-bird) species listed on Annexes I and II to the Directive within the United Kingdom.

Since the United Kingdom left the European Union, SPAs and SACs remain protected under The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019). These are commonly referred to as the Habitats Regulations.

SPAs and SACs together form a national network of **European Sites** in the United Kingdom.

Ramsar sites are designated under the Convention on Wetlands of International Importance 1971. Ramsar sites protect and recognise wetlands as ecosystems that are globally important for biodiversity conservation. Ramsar sites are also underpinned through prior notification as Sites of Special Scientific Interest (SSSIs) and as such, receive statutory protection under the Wildlife and Countryside Act 1981 (as amended). It is Government Policy to treat Ramsar sites as if they were European Sites.

Statutory Designations: National

Countryside agencies (e.g. Natural Resources Wales) can designate **Sites of Special Scientific Interest (SSSIs)** under the National Sites and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). SSSIs are designated for their flora, fauna or geological or physiographical features. As well as underpinning other national designations (such as **National Nature Reserves (NNRs)**, which are declared by the countryside agencies under the same legislation), the system also provides statutory protection for terrestrial and coastal sites which are important within a European context (European sites) and globally (such as Wetlands of International Importance).

Statutory Designations: Local

Local authorities in consultation with the relevant nature conservation agency can declare **Local Nature Reserves (LNRs)** under the National Sites and Access to the Countryside Act 1949. LNRs are designated for flora, fauna or geological interest and are managed locally to retain these features and provide research, education and recreational opportunities.

Non-Statutory Designations

Non-statutory designated sites can be designated by the local authority for supporting local conservation interest. The titles of these sites are not standardised across the UK and can vary

from county to county. A selection of titles used to denote non-statutory sites includes **Local Wildlife Sites (LWS)**, **County Wildlife Sites (CWS)**, **Sites of Interest for Nature Conservation (SINC)** or **Sites of Nature Conservation Interest (SNCI)**, to name a few.

Combined with statutory designation, these sites are considered within Local Development Frameworks under the Town and Country Planning system and are a material consideration during the determination of planning applications. The protection afforded to these sites varies depending on the local authority involved.

Habitats of Principal Importance (HPI)

Habitats of Principal Importance (HPIs) are those considered to be of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. A national list of HPIs has been prepared under Section 7 of the Environment (Wales) Act 2016. Section 7 habitats do not receive statutory protection (unless protected under other legislation) but Welsh Ministers must take all reasonable steps to maintain and enhance the types of habitat included in the published list and encourage others to take such steps. Section 6 of the Environment (Wales) Act 2016 requires public authorities to seek to maintain and enhance biodiversity in the exercise of their functions in relation to Wales, and in so doing promote the resilience of ecosystems. Assessment of effects on HPIs are therefore likely to be a key factor when preparing consent applications.

Ancient woodland and individual ancient, veteran and heritage trees

These are classed under Wales' Natural Resources Policy and by Planning Policy Wales (Ed. 11, 2021) as natural irreplaceable resources that provide a wide range of ecosystem services. Planning Policy Wales states that such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits. In the case of a site recorded on the Ancient Woodland Inventory, Planning Policy Wales states authorities should consider the advice of Natural Resources Wales and that planning authorities should also have regard to the Ancient Tree Inventory.

Legislation Afforded to Species

Legislation Overview

The EC Habitats Directive requires Member States to take measures to maintain or restore wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those species of European importance. The Directive was transposed into English and Welsh law (up to the seaward limits of territorial seas) by The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations).

When the United Kingdom left the European Union, the Habitats Regulations were amended by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019. These amendment regulations transferred functions from the European Commission to English and Welsh government, but retained the levels of protection to the identified species of European importance.

The following notes are relevant for all species protected under the Habitats Regulations 2017 (as amended):

- The term 'deliberate' is interpreted as being somewhat wider than 'intentional' and may be thought of as including an element of recklessness. The Habitats Regulations do not

define the act of 'migration' and, therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered.

- In order to obtain a European Protected Species Mitigation licence, the application must demonstrate that it meets all of the following three 'tests':
 - the action(s) are necessary for the purpose of preserving public health or safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment;
 - there is no satisfactory alternative; and
 - the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

The Wildlife and Countryside Act 1981 (as amended) is the principle mechanism for the legislative protection of wildlife in Great Britain. It does not extend to Northern Ireland, the Channel Islands or the Isle of Man. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') is enacted in Great Britain, and was also how the provisions of the European Union Directive on the Conservation of Wild Birds (79/409/EEC) were originally enacted in Great Britain.

The Wildlife and Countryside Act 1981 (as amended) has been subject to a number of amendments, the most important of which are through the Natural Environment & Rural Communities (NERC) Act 2006 and the Countryside and Rights of Way (CROW) Act (2000).

Other legislative Acts affording protection to wildlife and their habitats include:

- The Environment (Wales) Act 2016
- Wild Mammals (Protection) Act 1996;
- Protection of Badgers Act 1992; and
- Deer Act 1991.

Bats

All species are fully protected under the Habitats Regulations 2017 (as amended) as they are listed on Schedule 2 which prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats);
- Deliberate disturbance of bat species as:
 - to impair their ability:
 - to survive, breed, or reproduce, or to rear or nurture young; or
 - to hibernate or migrate.
 - to affect significantly the local distribution or abundance of the species.
- Damage or destruction of a breeding site or resting place; or
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are afforded the following additional protection through the Wildlife Countryside Act 1981 (as amended) as they are included on Schedule 5:

- Intentional or reckless disturbance (at any level);
- Intentional or reckless obstruction of access to any place of shelter or protection; or
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Effects of legislation on the Proposed Scheme

A European Protected Species Mitigation (EPSM) Licence issued by Natural Resources Wales will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, and rear young). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Birds

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act 1981 (as amended). Among other things, this makes it an offence to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- Intentionally take or destroy an egg of any wild bird; or
- Sell, offer or expose for sale, have in their possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

Certain species of bird, for example the barn owl, bittern and kingfisher receive additional protection under Schedule 1 of the Wildlife and Countryside Act and are commonly referred to as "Schedule 1" birds. This affords them protection against:

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young; or
- Intentional or reckless disturbance of dependent young of such a bird.

Effects of legislation on the Proposed Scheme

Works should be planned to avoid the possibility of killing or injuring any wild bird, or of damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August. Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests immediately prior to vegetation clearance.

Schedule 1 birds are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

As a last resort, the relevant countryside agency (e.g. Natural Resources Wales) can grant a licence in certain circumstances or for certain problems. Licences are available for disturbing or harming birds for a limited number of reasons that include:

- Preserve public health and safety;

- Preserve air safety;
- Do work for science, education or research;
- Prevent damage to crops or animal feed;
- Conserve plants and animals (including other wild birds);
- Prevent damage to fisheries; and
- Take part in photography, falconry, keeping or breeding birds.

Otters

Otters *Lutra lutra* are fully protected under the Habitats Regulations 2017 (as amended) as they are listed on Schedule 2 which prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species;
- Damage or destruction of a breeding site or resting place;
- To affect significantly the local distribution or abundance of the species; or
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Otters are afforded additional protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this Act, they are additionally protected from:

- Intentional or reckless disturbance while in their place of shelter (at any level);
- Intentional or reckless obstruction of access to any place of shelter or protection; or
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Effects of legislation on the Proposed Scheme

An EPSM Licence issued by Natural Resources Wales will be required for works liable to affect otter breeding or resting places (often referred to as holts, couches or dens) or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, and rear young). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Badger

Badger *Meles meles* are fully protected under the Protection of Badgers Act 1992 which makes it an offence to:

- Wilfully kill, injure or take a badger (or attempt to do so);
- Cruelly ill-treat a badger;
- Bait or dig for a badger;
- Intentionally or recklessly damage or destroy a badger sett, or obstruct access to it;
- Cause a dog to enter a badger sett;
- Disturb a badger when it is occupying a sett;
- Have or sell a badger, or offer a live badger for sale;
- Have or possess a dead badger or parts of a badger (if you obtained it illegally); or
- Mark or attach a marking device to a badger.

Effects of legislation on the Proposed Scheme

A Licence issued by the Natural Resources Wales will be required for works liable to affect badger if it is not possible to avoid disturbing badgers or damaging or blocking access to a sett. The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Great crested newt

Great crested newt *Triturus cristatus* are fully protected under the Habitats Regulations 2017 (as amended) as they are listed on Schedule 2 which makes it an offence to:

- Intentionally capture, kill or injure a great crested newt;
- Deliberate disturbance of any species as:
 - to impair their ability:
 - to survive, breed, or reproduce, or to rear or nurture young; or
 - in the case of animals of a hibernating or migratory species, to hibernate or migrate.
 - to affect significantly the local distribution or abundance of the species;
- Deliberate taking or destroying of the eggs of great crested newts;
- Damage or destruction of a breeding site or resting place; or
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Great crested newts are afforded additional legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to:

- Intentional or reckless disturbance (at any level);
- Intentional or reckless obstruction of access to any place of shelter or protection; or
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Effects of legislation on the Proposed Scheme

An EPSM Licence issued by Natural Resources Wales will be required for works liable to affect great crested newts, their breeding site or resting places, or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, and rear young). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Reptiles

Sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca* are fully protected under the Habitats Regulations 2017 (as amended) as they are listed on Schedule 2 which makes it an offence to:

- Intentionally capture, kill or injure a Schedule 2 species;
- Deliberate disturbance of any species as:
 - to impair their ability:
 - to survive, breed, or reproduce, or to rear or nurture young; or

- in the case of animals of a hibernating or migratory species, to hibernate or migrate.
- to affect significantly the local distribution or abundance of the species;
- Deliberate taking or destroying of the eggs;
- Damage or destruction of a breeding site or resting place; or
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Other native reptile species are afforded legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This includes the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis*. The Wildlife and Countryside Act makes it an offence to:

- Intentionally kill or injure these species; or
- Sell, offer or expose for sale, possess or transport for purpose of sale these species, or any part thereof.

Effects of legislation on the Proposed Scheme

Although not licensable, appropriate mitigation measures may also be required to prevent the intentional killing or injury of adder, grass snake, common lizard and slow-worm, thus avoiding contravention of the Wildlife and Countryside Act 1981 (as amended).

Water voles

Water voles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to:

- Intentionally kill, injure or take a water vole;
- Possess or control any live or dead water vole, or any part or derivative;
- Intentionally or recklessly damage or destroy a water vole's place of shelter or protection;
- Intentionally or recklessly disturb a water vole whilst it is occupying a structure or place which it uses for shelter or protection;
- Intentionally or recklessly obstruct access to a water vole's place of shelter or protection;
- Sell, offer or expose for sale, possess or transport for the purpose of sale, any live or dead water vole, or any part or derivative, or advertise any of these for buying or selling.
- Continue with any planned work after discovery of water voles and or their burrows on site.

Effects of legislation on the Proposed Scheme

A wildlife licence issued by Natural Resources Wales will be required for works liable to affect water vole breeding, places of shelter or protection (network of active burrows and/or nests that have been constructed within the burrow system or above ground amongst dense vegetation) or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, and rear young). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

The trapping and displacement of water voles needs to be carried out under a licence issued by Natural Resources Wales. In Wales there is no provision for licensing development or other

construction activities under the Wildlife and Countryside Act. Such works should therefore be carried out under a conservation licence (CL31), which requires the applicant to demonstrate a conservation benefit for water voles.

Wild Mammals (Protection Act) 1996

All wild mammals are protected against intentional acts of cruelty under the above legislation. This makes it an offence to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

To avoid possible contravention, due care and attention should be taken when carrying out works (for example operations near burrows or nests) with the potential to affect any wild mammal in this way, regardless of whether they are legally protected through other conservation legislation or not.

Legislation Afforded to Plants

With certain exceptions, all wild plants are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence for an 'unauthorised' person to intentionally (or recklessly in Scotland) uproot wild plants. An authorised person can be the owner of the land on which the action is taken, or anybody authorised by them.

Certain rare species of plant, for example some species of orchid, are also fully protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).

In addition to the UK legislation outlined above, several plant species are fully protected under Schedule 5 of the Habitats Regulations 2017 (as amended). These are species of European importance.

Species of Principal Importance (SPI)

Species of Principal Importance (SPIs) are those considered to be of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. A national list of these (sometimes referred to as 'priority species') has been prepared under Section 7 of the Environment (Wales) Act 2016. As per SPIs, Section 7 species do not receive statutory protection (unless protected under other legislation) but may be a material consideration when determining applications for consents.

Invasive non-native species

Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), and Part 2 of Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019, list invasive non-native plant species for which it is a criminal offence in England and Wales to plant or cause to grow in the wild due to their impact on native wildlife. Species listed under the Wildlife and Countryside Act 1981 (as amended) include Japanese knotweed *Fallopia japonica* and various cotoneaster species including *Cotoneaster horizontalis*. Species listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019 include Himalayan balsam *Impatiens glandulifera*, giant hogweed *Heracleum mantegazzianum*, floating pennywort *Hydrocotyle ranunculoides*.

Part I of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), and Part 1 of Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019, list invasive non-native species of animal for which it is a criminal offence in England and Wales to release or allow to escape into the wild due to their impact on native wildlife.

Species that have previously been listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), but that which are now listed under Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019, have been removed from the WCA 1981 Schedule 9.

Effects of legislation on the Proposed Scheme

It is not an offence for plants listed in Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) or Part 2 of Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019, to be present on the development site; however, it is an offence to cause them to spread. Therefore, if any of the species are present on site and construction activities may result in further spread (e.g. earthworks, vehicle movements) then it will be necessary to design and implement appropriate mitigation prior to construction commencing.

Injurious weeds

Under the Weeds Act 1959 any land owner or occupier may be required prevent the spread of certain 'injurious weeds' such as spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius* and common ragwort *Senecio jacobaea*. It is a criminal offence to fail to comply with a notice requiring such action to be taken. The Ragwort Control Act 2003 establishes a ragwort control code of practice as common ragwort is poisonous to horses and other livestock. This code provides best practice guidelines and is not legally binding.