Amey

Preliminary Ecological Appraisal Report

Prince of Wales Bridge Gwent Concession Area
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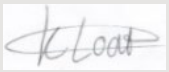
First Issue	Name: Matthew Collins Signature:  Date: 06/11/2023	Name: Kathryn Loat Signature:  Date: 17/11/2023	Name: Andrew Warwick Signature:  Date: 05/12/2023
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Executive Summary

This report presents the findings of a preliminary ecological survey associated with the proposed central barrier replacement and resurfacing works on the M4 Prince of Wales Bridge, undertaken by Amey Consulting on behalf of National Highways.

The proposed development comprises the replacement of the existing central reservation barrier with a rigid concrete safety barrier along the full length of the Prince of Wales Bridge structure. The central barrier replacement works will be combined with the resurfacing of the carriageway. In association with these works, the clearance of overgrown vegetation present along access routes and around culvert portals within the Gwent Concession Area on the west side of the bridge will be required, which is the focus of this report.

This report has been prepared to inform the designer of any ecological constraints associated with the proposed works, inform the design process and outline appropriate mitigation and enhancement measures.

A desk study was undertaken in October 2023 in order to identify any existing information relating to the proposed works area and its surroundings. A Phase 1 Habitat survey of the area on the west side of the bridge was undertaken in October 2023 to map the habitats present and to assess their potential to support protected species of plants and/or animals.

The following statutory/non-statutory designated sites occur within or adjacent to the proposed works area:

- Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar, and Site of Special Scientific Interest (SSSI) located within the proposed works area.
- Gwent Levels - Magor and Undy SSSI located within the proposed works area.
- Pill Farm Wildlife Site / SINC located adjacent north and west of the proposed works area.

The proposed works area comprises a variety of habitats that have the potential to support the following protected or priority species: nesting birds, bats, hazel dormouse, otter, water vole, badger, hedgehog, common reptile and amphibian species and fish.

The following recommendations have been made:

- Habitat Regulations Assessment (HRA) Stage 1 Screening to assess any potential impacts to the Severn Estuary SAC / SPA / Ramsar and its qualifying features which could occur as a result of the proposed works.
- A notice of intent will be submitted to Natural Resources Wales (NRW), with consultation sought to determine whether assent would be required to carry out works within the Severn Estuary SSSI and the Gwent Levels - Magor and Undy SSSI.
- Pollution prevention measures to be included within a Construction and Environmental Management Plan (CEMP) to protect the Severn Estuary and Gwent Levels, as well as the NRW Priority Areas (Coastal Saltmarsh and Lowland Wetland) and Habitats of Principal Importance (Coastal Saltmarsh and Intertidal Mudflats) located within these sites.
- If any clearance of vegetation with the potential to support nesting birds is to be undertaken during the breeding bird season (March-August inclusive) then a suitably qualified/experienced ecologist will be required to carry out a nesting bird check before works can proceed.
- If any trees located within areas which were not fully assessed during the survey (refer to Section 2.3 and Appendix B) are required to be removed, then it is recommended that full access be granted to these areas in advance of the works so that a Ground Level Tree Assessment (GLTA) can be undertaken by an ecologist.
- Vegetation clearance works must follow a precautionary method statement for dormouse under ecological supervision.
- If the works are delayed beyond early 2024 then it is recommended that a pre-construction walkover survey within a 30m radius of the proposed works area be undertaken for badger 6-8 weeks before construction begins.

- General construction safeguards for otter, water vole, badger and other mammals are recommended for inclusion within the CEMP.
- Should any hedgehogs be discovered during the works then they should be moved out of the works area to a safe and suitable location and covered over.
- If the clearance of habitat and refugia piles with potential to support common reptile species is required, then it must be carried out under a precautionary method statement under the supervision of an ecologist.
- If works are required within areas containing Japanese knotweed and/or cotoneaster, then this must be carried out under an invasive species method statement to prevent the spread of these species.
- Recommended enhancements comprise the creation of refugia piles and installation of bat and bird boxes within suitable retained trees. These recommendations are considered proportionate for the proposed works and will maximise opportunities to achieve a net gain in biodiversity.

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Records of species such as badger and bat roosts are sensitive and should be treated as confidential.

1. Introduction and Aims

1.1. Background

Amey Consulting was commissioned by National Highways in September 2023 to undertake a Preliminary Ecological Appraisal (PEA) of the Gwent Concession Area on the west side of the Prince of Wales Bridge (hereafter referred to as 'the proposed works area'), associated with proposed central barrier replacement and resurfacing works along the bridge.

This PEA report provides baseline information on habitats and ecological features at the proposed works area gathered during a desktop study and field survey, in accordance with the CIEEM Guidelines for Preliminary Ecological Appraisal (2017). The objectives of the study are as follows.

- Identify the potential presence of legally protected and/or notable species and habitats and provide an appraisal of any potential effects that the proposed project works may have on these.
- Provide recommendations for further surveys and/or mitigation measures (if required) in relation to identified ecological constraints.
- Provide recommendations for ecological enhancement measures to help inform the detailed design of the project and its contribution to local biodiversity.

1.2. Proposed Works Area Location

The proposed works area is located at the western end of the M4 Prince of Wales Bridge (OS Grid Reference: ST 49107 87347), to the south of the town of Caldicot, Monmouthshire (refer to Appendix B, Designated Sites Map). The northern section comprises the existing Caldicot access road from the Severn Bridge Industrial Estate, bordered by areas of grassland, dense scrub and sections of woodland along the north side of the M4 carriageway. The southern section comprises an existing pathway on the south side of the M4 carriageway, bordering an extensive area of saltmarsh along the coast of the Severn Estuary. Residential and industrial properties are present to the north of the site, with agricultural fields located to the east and west.

1.3. Details of the Proposed Development

As part of the Specialist Bridges Inspection and Maintenance (SBIM) contract, Amey have been appointed by the client, National Highways, to undertake routine maintenance and inspection works on the M4 Prince of Wales Bridge.

The Prince of Wales Bridge is a long span cable stayed bridge which carries the M4 motorway between England and Wales. The M4 motorway has three live lanes and a hard shoulder in both directions. The existing rectangular hollow section (RHS) central reservation barrier on the Prince of Wales Bridge, was installed during construction before the bridge was opened to traffic in 1996. It has exceeded its 20-year design service life.

The existing central reservation barrier, categorised as N2 normal vehicle containment, was designed to contain, and redirect errant vehicles of 1.5 tonnes in weight, impacting the fence or barrier at 110 km/hr at an angle of approach of 20 degrees. However, it was not designed to contain and redirect Heavy Goods Vehicles (HGVs) during this impact. Concerns have been raised about a series of accidents involving HGVs impacting safety barriers in the central median of motorways and trunk roads and either overturning or entering the opposite carriageway. This has prompted National highways to consider replacing these with higher level containment barriers.

National Highways Design Manual for Roads and Bridges; Part 8; TD 19/06 paragraph 3.59 states that "On motorways or roads constructed to motorway standard with two-way Annual Average Daily Traffic (AADT) greater than or equal to 25,000 vehicles/day where a Vehicle Restraint System (VRS) is required in accordance with Chapter 1 Paragraph 1.18(i), the safety barrier must be a rigid concrete safety barrier with an H1 or greater Containment Level." As the two-way AADT on the Prince of Wales Bridge is 64,700 vehicles/day, a rigid concrete safety barrier should be used to replace the existing barrier along the full length of the structure.

The central barrier replacement works will be combined with the resurfacing of the carriageway over the bridge to minimise impact on the public and traffic management requirements. The current surfacing was laid during

construction and has exceeded its 15+ year design life. Local repairs have been completed however it is expected that full resurfacing will be required by 2025. It is anticipated that the resurfacing of the carriageway will take place between April/May 2024 and September/October 2024, with the central barrier replacement works to occur in 2025.

In association with these works, the clearance of overgrown vegetation within the Gwent Concession Area on the west side of the bridge will be required (refer to Appendix B, RI54 Gwent Abutment Proposed De-vegetation). The proposed vegetation clearance works will include:

- Vegetation overhanging and within all hardstanding (access routes) and up to 1m beyond the edge of the hardstanding.
- Vegetation on watercourse embankments, culvert parapets, adjacent verges and culvert wingwalls.

The proposed vegetation clearance will be limited to low growing and dead vegetation, including fallen tree branches. The clearance will exclude established trees with a trunk greater than 100mm in diameter. This is anticipated to be undertaken during daytime shifts, prior to the commencement of the bridge works in early 2024. The potential ecological impacts of the proposed vegetation clearance works within the Gwent Concession Area are the primary focus of this report by instruction of the client.

1.4. Relevant Legislation

The Wildlife and Countryside Act 1981 (WCA) (as amended) is a significant piece of legislation within the UK which consolidates (and amends) existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Birds Directive in the UK. It is complemented by The Conservation of Habitats and Species Regulations 2017 (as amended) which consolidates all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994. These regulations transposed the Habitats Directive listed above into National Law. Under the Regulations, Competent Authorities have a general duty in the exercise of any of their functions to have regard to the EC Habitats Directive. The Habitats Regulations define a "Competent Authority", as a Minister, a government office, a statutory undertaker or public body.

Under the Environment (Wales) Act 2016 public bodies, including Local Authorities are required 'to seek to maintain and enhance biodiversity in Wales' when carrying out their normal functions. Under Section 7 a list of species and habitats of 'Principal Importance to the conservation of biodiversity in Wales' was drawn up which acts as an aid to guide public bodies in implementing their duty.

This report deals with matters of legal significance but does not constitute professional legal advice. The Client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document and summarised in Appendix A.

2. Methodology

2.1. Desk Study

A desk study was undertaken to identify any existing ecological information relating to the proposed works area and its surroundings. The Multi-Agency Geographical Information System (MAGIC) website was used to search for statutory designated sites of nature conservation value within 2km of the proposed works area. The search buffer was extended to 10km for Special Areas of Conservation (SAC) designated for bats.

A biological data request was made to the South East Wales Biodiversity Records Centre (SEWBReC) in October, 2023 to obtain records of designated sites for nature conservation and protected and notable species within a 2km radius of the proposed works area. The search focused on species records made within the last 10 years (2013-2023) as these were most relevant to the study.

Information on priority habitats and ancient woodland sites within the study area was obtained from MAGIC and Data Map Wales (Natural Resources Wales (NRW), 2023)

A review of OS mapping for waterbodies within 0.25km of the survey area was undertaken in accordance with guidance from the Great Crested Newt Conservation Handbook (Langton *et al.*, 2001).

2.2. Field Survey

Extended Phase 1 Habitat Survey

The Extended Phase 1 Habitat survey was undertaken on 24 October 2023 by a suitably qualified and experienced Amey Ecologists Hayley Glanville BSc (Hons) MSc and Matthew Collins MBiol (Hons). The weather conditions at the time of the survey were cloudy and dry with a temperature of 11-14˚C.

This comprised a walkover survey to map Phase 1 habitats present within the proposed works area boundary following the standard survey methodology (JNCC, 2010). Habitats located adjacent to the proposed works area which may be impacted by the works were included within the extended 'survey area'. Dominant plant species were noted, as were any uncommon species or species indicative of particular habitat types, but there was no attempt to compile exhaustive species lists.

The habitats were assessed for their potential to support protected/notable species of plants and/or animals and observation was made of any incidental signs of protected/notable species, including invasive species. The outputs of the surveys included a Phase 1 Habitat map and a set of Target Notes (TNs) which are provided in Appendices B and C respectively.

Daytime Bat Walkover and Ground Level Tree Assessment

In compliance with best practice guidelines (Collins, 2023), a Daytime Bat Walkover (DBW) including a Ground Level Tree Assessment (GLTA)was undertaken within the proposed works area. This survey identifies individual trees and/or groups of trees/woodland that contain or are likely to contain Potential Roost Features (PRFs). It also assesses habitat for potential flight lines and foraging areas both within the proposed works and the surrounding area.

The trees present were categorised as having NONE, FAR or PRF suitability to support roosting bats as per the Bat Conservation Trust (BCT) guidelines (Collins, 2023), described in Table 1 below.

Table 1: BCT Guidelines for Assessing the Suitability of Trees for Roosting Bats

SUITABILITY	DESCRIPTION OF ROOSTING HABITATS
NONE	Either no PRFs in the tree or highly unlikely to be any.
FAR	Further assessment required to establish if PRFs are present in the tree.
PRF	A tree with at least one PRF present.

Where trees were assessed to have PRF suitability to support roosting bats, a GLTA was undertaken. This involved a systematic search of a tree for potential or actual bat access points and/or any evidence of bats. Examples of PRFs within trees include:

- woodpecker holes;
- rot holes;
- hazard beams;
- partially detached bark;
- knot holes arising from naturally shed branches;
- other holes or cavities, including butt rot;
- double leaders forming compression forks;
- gaps between overlapping stems or branches;

- cankers; and
- partially detached ivy with stem diameter in excess of 50mm.

Trees were also inspected for signs of a bat presence; besides the actual presence of bats these include:

- bat droppings;
- odour;
- audible squeaking at dusk or in warm weather; and
- staining.

Using the above, each PRF was then evaluated and categorised as having PRF-I or PRF-M suitability to support roosting bats as per the Bat Conservation Trust (BCT) guidelines (Collins, 2023), as described in Table 2 below. PRFs are not always visible from the ground and it is generally not possible to establish how extensive they are from ground level, so categorisation at this stage is approximate/an estimate of suitability.

Table 2: BCT Guidelines for Categorising the Potential Suitability of PRFs within Trees

SUITABILITY	DESCRIPTION OF ROOSTING HABITATS
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to lack of size or lack of suitable surrounding habitats.
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony.

The surrounding habitat was also evaluated and assessed for suitability to support potential flight lines and foraging areas, as described in Table 3 below.

Table 3: Guidelines for Assessing the Habitat Suitability of Proposed Works Locations for Bats

POTENTIAL SUITABILITY	DESCRIPTION OF FORAGING AND COMMUTING HABITATS
None	No habitat features within the proposed works likely to be used by any commuting or foraging bats at any time of the year.
Negligible	No obvious habitat features within the proposed works likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	Habitat that could be used by small numbers of bats as flight-paths such as gappy hedgerows or unvegetated streams, but isolated.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens.
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge.

2.3. Limitations

A section in the north-west of the proposed works area could not be accessed during the survey due to the presence of a deep ditch containing flowing water which could not be safely crossed. An existing pathway through this area could not be used as the access gate was locked. As such, the potential of habitats within this area to support protected and priority species could not be accurately determined. However, the only works proposed to take place within this area are the clearance of vegetation at a culvert portal on the north side of the M4 carriageway. Due to the minor nature of these works, the general recommendations provided in Section 7 are considered sufficient for this area, and as such this is not considered to be a significant limitation.

Another section which appeared to be a strip of grassland bordering the M4 eastbound in the north-east of the proposed works area also could not be accessed during the survey. However, this area will not be impacted by the proposed works, and as such this is not considered to be a significant limitation.

Areas of woodland located adjacent to the M4 eastbound and westbound could not be entered due to access issues, however it was possible to assess these habitats from behind fencing and from a distance using binoculars. It was not possible to carry out GLTAs of all trees present within these woodlands. However, the proposed works are not anticipated to impact these areas and as such this is not considered to be a significant limitation. It is also noted that PRFs are not always visible from the ground and it is generally not possible to establish how extensive they are from ground level, so categorisations made during GLTAs at this stage are considered to be approximate/an estimate of suitability.

The survey was undertaken in late October, at a time when the majority of floral species would not be in flower and as such may be more difficult to identify. However, it is acknowledged that the survey does not intend to provide an exhaustive list of species. It is considered that the habitats present within the proposed works area could be appropriately identified and a suitable conservation value assigned at this time of year.

SEWBReC can only provide information based on the biological records that they hold. The absence of records for a species does not necessarily indicate that the species itself is absent, merely that the biological records centres have not received records for it.

The Chartered Institute of Ecology and Environmental Management (CIEEM) issued advice on the lifespan of ecological reports and surveys in 2019. Whilst this will vary on a case-by-case basis, this survey report is likely to be valid for 18 months. After this time, a professional ecologist should be consulted on the validity of this report.

3. Desk Study Results

3.1. Designated Sites

The results of the desk study and field survey are described below, with sites or features of nature conservation interest detailed as appropriate.

Statutory Designated Sites

There are three statutory designated sites within 2km of the proposed works area, as listed in Table 3 below (refer to Appendix B, Designated Sites Map). This includes the Severn Estuary, which is designated as a SAC, Special Protection Area (SPA), Ramsar Site, and Site of Special Scientific Interest (SSSI).

Table 4: Statutory Designated Sites

SITE NAME	DESIGNATION	DISTANCE FROM SCHEME (KM)	REASON FOR DESIGNATION
Severn Estuary	SAC, SPA, Ramsar, SSSI	Within scheme boundary	**SAC** *Link to description of designated site: https://sac.jncc.gov.uk/site/UK0013030* Annex I habitats that are a primary reason for selection of this site: ▪ Estuaries. ▪ Mudflats and sandflats not covered by seawater at low tide. ▪ Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). Annex I habitats present as a qualifying feature but not a primary reason for selection of the site: ▪ Sandbanks which are slightly covered by sea water all the time. ▪ Reefs. Annex II species that are a primary reason for selection of this site: ▪ Sea lamprey (*Petromyzon marinus*). ▪ River lamprey (*Lampreta fluviatilis*). ▪ Twaite shad (*Alosa fallax*).

SITE NAME	DESIGNATION	DISTANCE FROM SCHEME (KM)	REASON FOR DESIGNATION
			SPA *Link to description of designated site:* *http://publications.naturalengland.org.uk/publication/5601088380076032* The Severn Estuary supports nationally and internationally important wintering populations of birds such as Bewick's swan (*Cygnus columbianus bewickii*), shelduck (*Tadorna tadorna*), and dunlin (*Calidris alpina*), and supports breeding populations of migratory species such as lesser black-backed gull (*Larus fuscus*). **Ramsar** *Link to description of designated site:* *https://jncc.gov.uk/jncc-assets/RIS/UK11081.pdf* The Severn Estuary is one of the largest estuaries in Britain and it has the second largest tidal range in the world. The site is particularly important for the run of migratory fish between the sea and rivers via the estuary. Species using the estuary include Atlantic salmon (*Salmo salar*), brown trout (*Salmo trutta*), sea lamprey, river lamprey, allis shad (*Alosa alosa*), twaite shad and European eel (*Anguilla anguilla*). The estuary is also important for migratory birds during spring and autumn migrations, as well as peak counts in winter of species such as Bewick's swan, gadwall (*Anas strepera strepera*), and common redshank (*Tringa totanus*). **SSSI** *Link to description of designated site:* *https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1002284.pdf* The intertidal zone of mudflats, sand banks, rocky platforms and saltmarsh is one of the largest and most important in Britain. The estuarine fauna includes: internationally important populations of waterfowl; invertebrate populations of considerable interest; and large populations of migratory fish, including the nationally rare and endangered allis shad. The SSSI is of international importance for wintering and passage wading birds, with total winter populations averaging about 44,000 birds. The SSSI holds most of the estuary's internationally important curlew (*Numenius arquata*) and redshank populations, and most of its nationally important ringed plover (*Charadrius hiaticula*) and grey plover (*Pluvialis squatarola*) populations. It is also the single most important wintering ground of dunlin in Britain.
Gwent Levels - Magor and Undy	SSSI	Within scheme boundary	*Link to description of designated site:* *https://naturalresources.wales/media/676544/sssi_0307_citation_en001.pdf* The Gwent Levels comprise one of the most extensive areas of reclaimed wet pasture in Great Britain. The Magor and Undy area is the most easterly of the Gwent Levels sites, supporting a total of 43 nationally rare and notable invertebrate species, including the soldier fly (*Stratiomys furcata*), the snail killing fly (*Pherbellia brunnipes*) and the water beetle (*Haliplus mucronatus*). This area also supports several rare and notable aquatic plant species including the pondweeds (*Potamogeton trichoides*) and (*P. berchtoldii*), and the narrow-leaved water plantain (*Alisma lanceolatum*).
Nedern Brook Wetlands, Caldicot	SSSI	1.3km north	*Link to description of designated site:* *https://naturalresources.wales/media/644058/SSSI_0468_Citation_EN001fa3b.pdf* This site comprises the low-lying tract of land on either side of the Nedern Brook, forming a shallow valley of wet meadowland which experiences seasonal flooding. Habitats within the site include improved grassland, unimproved pasture, tall herb communities and small pockets of woodland and scrub. The site is of regional importance for breeding birds, particularly waders, such as redshank. The site is also important for wintering birds and is regularly used by Bewick's swans.

Non-Statutory Designated Sites

There are 12 non-statutory designated sites within 2km of the proposed works area, all designated as Wildlife Sites / Sites of Importance for Nature Conservation (SINCs), as listed in Table 4 below (refer to Appendix B, Designated Sites Map).

Table 5: Non-statutory Designated Sites

SITE NAME	DESIGNATION	DISTANCE FROM SCHEME (KM)	REASON FOR DESIGNATION
Pill Farm	Wildlife Site / SINC	Adjacent north and west	A large area of species-rich grassland on the edge of the Gwent Levels just south of Caldicot which is surrounded by reens (coastal drainage ditches).
Caldicot Pill	Wildlife Site / SINC	0.23km north	A small area designated for its species-rich neutral and calcareous grassland. The site also contains some deciduous scrub.
Sudbrook Paper Mill	Wildlife Site / SINC	0.77km east	This site includes species-rich grassland, tall herb, scrub, coastal grassland, and vegetated slopes. Coastal habitats form the southern fringe of the site and include an ephemeral waterbody. The habitats present are considered to support a variety of invertebrate species.
Portskewett Hill	Wildlife Site / SINC	1.06km north-east	An area of mixed woodland, some of which is designated as an Ancient Semi-Natural Woodland (ASNW) and a Restored Ancient Woodland Site (RAWS).
Farthing Hill	Wildlife Site / SINC	1.22km north-east	This site contains two areas of ancient woodland (RAWS) with adjacent pasture.
Portskewett Hill North	Wildlife Site / SINC	1.46km north-east	This site comprises a small area of ancient woodland (ASNW) which connects to Portskewett Hill to the south.
Rogiet Country Park	Wildlife Site / SINC	1.6km west	An area of post-industrial land which contains a mixture of bare ground, early successional communities, scrub, ruderals, wet grassland and open water (ditches/ponds). These habitats are considered to support a range of bird, reptile, amphibian and invertebrate species. However, the site does also contain invasive plant species such as Japanese knotweed (*Reynoutria japonica*) and water fern (*Azolla filiculoides*).
West of Caldicot	Wildlife Site / SINC	1.65km north-west	This site comprises three species-rich neutral grassland fields, two horse-grazed pastures and one hay meadow. Overgrown hedgerows and mature trees including a veteran ash (*Fraxinus excelsior*) are also present.
Ruffets	Wildlife Site / SINC	1.75km north-east	This site includes an area of ancient woodland (ASNW) and surrounding pasture.
Blackrock Picnic Site (Western Strip)	Wildlife Site / SINC	1.79km north-east	This site contains a strip of species-rich neutral grassland with blackthorn (*Prunus spinosa*) scrub. The area of grassland was considered quite rank, with blackthorn encroaching, although several flower species were present, including narrow-leaved everlasting sweet-pea (*Lathyrus sylvestris*), hedge bedstraw (*Galium album*), lady's bedstraw (*Galium verum*) and various vetches (*Vicia* spp.).
Ballan Wood	Wildlife Site / SINC	1.81km north	This site comprises a stretch of woodland largely surrounded by agricultural land. The northern section of the site is located adjacent to the M48 and A48 carriageways. The southern section of the site is designated as ancient woodland (ASNW).
Withey Bed	Wildlife Site / SINC	1.96km north-east	This site comprises an area of ancient woodland (ASNW) bordered by agricultural land and another section of woodland.

Special Areas of Conservation Designated for Bats

There are two SACs which list bats as a qualifying feature within 10km of the proposed works area, as listed in Table 5 below.

Table 6: SACs Designated for Bats

SITE NAME	DISTANCE FROM SCHEME (KM)	REASON FOR DESIGNATION
Wye Valley and Forest of Dean Bat Sites SAC	6.7km north (nearest site)	Annex II species that are a primary reason for selection of this site: ▪ Lesser horseshoe bat (*Rhinolophus hipposideros*) ▪ Greater horseshoe bat (*Rhinolophus ferrumequinum*)

SITE NAME	DISTANCE FROM SCHEME (KM)	REASON FOR DESIGNATION
		This complex of sites contains around 26% of the national population of lesser horseshoe bats and around 6% of the national population of greater horseshoe bats. The sites include significant maternity and hibernation roosts for both species.
Wye Valley Woodlands SAC	8.3km north-east	Annex I habitats that are a primary reason for selection of this site: ▪ *Asperulo-Fagetum* beech forests. ▪ *Tilio-Acerion* forests of slopes, screes, and ravines. ▪ *Taxus baccata* woods of the British Isles. Annex II species present as a qualifying feature, but not a primary reason for site selection: ▪ Lesser horseshoe bat.

Ancient Woodlands

There are no ancient woodlands within 1km of the proposed works area.

3.2. Habitats and Plants/Flora

NRW Priority Areas

There are two NRW Priority Areas within 1km of the proposed works area. These comprise Lowland Wetland and Coastal Saltmarsh areas located within the proposed works area, which stretch along the coastline of the Severn Estuary.

Waterbodies

A total of five waterbodies were recorded within 0.25km of the proposed works area, comprising the Nedern Brook and a series of connected drainage ditches, as described in Table 7 below.

Table 7: Waterbodies within 0.25km of the Proposed Works Area

WATERBODY NUMBER	GRID REFERENCE	DESCRIPTION	DISTANCE FROM SCHEME (KM)
WB1	ST 49016 87576	The Nedern Brook, which flows underneath the Caldicot access road via a culvert and connects with other drainage ditches. It then continues underneath the M4 carriageway via another culvert before flowing into the Severn Estuary.	Within the scheme
WB2	ST 49090 87365	Drainage ditch which flows into the proposed works area from the east and connects with the Nedern Brook.	Within the scheme
WB3	ST 48862 87394	Drainage ditch which flows in from the north and connects with the Nedern Brook.	0.01km north
WB4	ST 48847 87390	Drainage ditch which flows in from the north and connects with the Nedern Brook.	0.01km north
WB5	ST 49080 87467	Drainage ditch to the east of the Caldicot access road which likely connects with the Nedern Brook.	0.01km east

Protected Plant Species

A total of three records of plant species protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) were returned within 2km of the proposed works area. All records were for bluebell (*Hyacinthoides non-scripta*), with the nearest such record located approximately 1.2km north-west of the proposed works area.

Invasive Plant Species

A total of 14 records of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) or Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019 were returned within 2km of the proposed works area. The species recorded comprise (in order of distance from the proposed works area, nearest to furthest): Japanese knotweed, Himalayan balsam (*Impatiens glandulifera*), wall cotoneaster (*Cotoneaster horizontalis*), montbretia (*Crocosmia x. crocosmiiflora*), variegated yellow archangel (*Lamiastrum galeobdolon* subsp. *argentatum*), unidentified cotoneaster (*Cotoneaster* sp.), and three-cornered garlic (*Allium triquetrum*). The nearest such record was for Japanese knotweed located approximately 0.03km west of the proposed works area.

3.3. Protected Fauna and/or Species of Conservation Concern

Bats

A total of 17 records of bats were returned within 2km of the proposed works area. The species recorded comprise (in order of distance from the proposed works area, nearest to furthest): noctule (*Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus*), unidentified long-eared bat (*Plecotus* sp.), unidentified pipistrelle (*Pipistrellus* sp.), soprano pipistrelle (*Pipistrellus pygmaeus*), lesser horseshoe, serotine (*Eptesicus serotinus*) and brown long-eared (*Plecotus auritus*). The nearest such records were for noctule and common pipistrelle located approximately 0.7km north-west of the proposed works area at the same location.

A total of three records of bat roosts were returned within 2km of the proposed works area. The species recorded comprise (in order of distance from the proposed works area, nearest to furthest): unidentified long-eared bat, common pipistrelle and lesser horseshoe. The nearest such record was for an unidentified long-eared bat roost located approximately 0.97km north-east of the proposed works area.

Hazel Dormouse

A total of seven records of hazel dormouse (*Muscardinus avellanarius*) were returned within 2km of the proposed works area. The nearest such record was located approximately 0.66km west. All seven records were for dormouse footprints identified within ink footprint tunnels in bramble scrub, at a site named Dŵr Cymru Welsh Water - Caldicot East Pump Station, located to the north of the M4 carriageway.

Otter

A total of four records of otter (*Lutra lutra*) were returned within 2km of the proposed works area. The nearest such record was for an otter road mortality on the M4, located approximately 0.2km east.

Water Vole

There were no records of water vole (*Arvicola amphibius*) returned within 2km of the proposed works area.

Badger

A total of five records of badger (*Meles meles*) were returned within 2km of the proposed works area. The nearest such record was for badger latrines located approximately 1.1km north-east.

Other Mammals

A total of 199 records of hedgehog (*Erinaceus europaeus*) were returned within 2km of the proposed works area. The nearest such record was located approximately 0.07km north-west.

Birds

Records of 23 bird species listed on Schedule 1 of the Wildlife and Countryside Act (1981) as amended, were returned within 2km of the proposed works area. These comprised (in order of distance from the proposed works area, nearest to furthest): barn owl (*Tyto alba*), common scoter (*Melanitta nigra*), avocet (*Recurvirostra avosetta*), black-tailed godwit (*Limosa limosa*), merlin (*Falco columbarius*), red kite (*Milvus milvus*), redwing (*Turdus iliacus*), kingfisher (*Alcedo atthis*), Bewick's swan, marsh harrier (*Circus aeruginosus*), black redstart (*Phoenicurus ochruros*), Cetti's warbler (*Cettia cetti*), firecrest (*Regulus ignicapilla*), peregrine (*Falco peregrinus*), osprey (*Pandion haliaetus*), greenshank (*Tringa nebularia*), fieldfare (*Turdus pilaris*), whimbrel

(*Numenius phaeopus*), hoopoe (*Upupa epops*), whooper swan (*Cygnus cygnus*), Mediterranean gull (*Ichthyaetus melanocephalus*), goshawk (*Accipiter gentilis*) and hobby (*Falco subbuteo*). The nearest such record was for barn owl located approximately 0.17km south of the proposed works area.

Records of a further 25 bird species listed as Section 7 Species of Principal Importance under the Environment (Wales) Act 2016 were returned within 2km of the proposed works area. These comprised (in order of distance from the proposed works area, nearest to furthest): bar-tailed godwit (*Limosa lapponica*), lapwing (*Vanellus vanellus*), common scoter, starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), ringed plover, dark-bellied brent goose (*Branta bernicla*), linnet (*Linaria cannabina*), curlew, reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*), kestrel (*Falco tinnunculus*), herring gull (*Larus argentatus*), lesser redpoll (*Acanthis cabaret*), Bewick's swan, song thrush (*Turdus philomelos*), golden plover (*Pluvialis apricaria*), hawfinch (*Coccothraustes coccothraustes*), dunnock (*Prunella modularis*), black-headed gull (*Chroicocephalus ridibundus*), bullfinch (*Pyrrhula pyrrhula*), yellow wagtail (*Motacilla flava*), pied flycatcher (*Ficedula hypoleuca*), willow tit (*Poecile montanus*) and white-fronted goose (*Anser albifrons*). The nearest such record was for bar-tailed godwit located approximately 0.17km south of the proposed works area.

Reptiles

One record of reptile species was returned within 2km of the proposed works area, comprising a record of grass snake (*Natrix helvetica*) located approximately 1.52km north.

Amphibians

A total of four records of amphibian species were returned within 2km of the proposed works area, comprising two records of common frog (*Rana temporaria*) and two records of common toad (*Bufo bufo*). The nearest such record was for common frog located approximately 1.23km north-west.

Fish

One record of fish species listed as a Section 7 Species of Principal Importance under the Environment (Wales) Act 2016 was returned within 2km of the proposed works area. This record was for thornback ray (*Raja clavata*) located approximately 1.7km north-east.

Terrestrial Invertebrates

Records of 39 terrestrial invertebrate species listed as Section 7 Species of Principal Importance under the Environment (Wales) Act 2016 were returned within 2km of the proposed works area. The species recorded comprised (in order of distance from the proposed works area, nearest to furthest): small phoenix (*Ecliptopera silaceata*), cinnabar (*Tyria jacobaeae*), brown-banded carder bee (*Bombus humilis*), lackey (*Malacosoma neustria*), buff ermine (*Spilosoma lutea*), shoulder-striped wainscot (*Leucania comma*), brindled beauty (*Lycia hirtaria*), ghost moth (*Hepialus humuli*), dusky thorn (*Ennomos fuscantaria*), white ermine (*Spilosoma lubricipeda*), powdered quaker (*Orthosia gracilis*), centre-barred sallow (*Atethmia centrago*), knot grass (*Acronicta rumicis*), oak hook-tip (*Watsonalla binaria*), small square-spot (*Diarsia rubi*), beaded chestnut (*Agrochola lychnidis*), sallow (*Cirrhia icteritia*), blood-vein (*Timandra comae*), grey dagger (*Acronicta psi*), rosy rustic (*Hydraecia micacea*), mouse moth (*Amphipyra tragopoginis*), dot moth (*Melanchra persicariae*), brown-spot pinion (*Anchoscelis litura*), shaded broad-bar (*Scotopteryx chenopodiata*), August thorn (*Ennomos quercinaria*), pretty chalk carpet (*Melanthia procellata*), September thorn (*Ennomos erosaria*), oblique carpet (*Orthonama vittata*), feathered gothic (*Tholera decimalis*), green-brindled crescent (*Allophyes oxyacanthae*), figure of eight (*Diloba caeruleocephala*), mottled rustic (*Caradrina morpheus*), small emerald (*Hemistola chrysoprasaria*), grass rivulet (*Perizoma albulata*), latticed heath (*Chiasmia clathrata*), rustic (*Hoplodrina blanda*), sprawler (*Asteroscopus sphinx*), small heath (*Coenonympha pamphilus*) and long-horned bee (*Eucera longicornis*). The nearest such record was for small phoenix located 0.24km west of the proposed works area.

Aquatic Invertebrates

There were no records of protected or priority aquatic invertebrate species, including white-clawed crayfish (*Austropotamobius pallipes*), returned within 2km of the proposed works area.

4. Field Study Results

4.1. Habitats and Plants/Flora

Habitats

The habitats recorded within the proposed works area are described below, and the distribution of these habitats is shown on the Phase 1 Habitat Map (refer to Appendix B). This map includes a red indicative site boundary and a blue extended survey area boundary, which shows the habitats adjacent to the proposed works area that may be impacted and were therefore included in the survey. Target notes are available in Appendix C, with species lists and photographs of each habitat provided in Appendices D and E respectively.

A1.1.2 Broadleaved Plantation Woodland

Two areas of broadleaved plantation woodland were recorded on the north side of the M4 carriageway, separated by an access road (Photograph 1). The canopy of these woodlands was comprised primarily of ash, elder (*Sambucus nigra*) and field maple (*Acer campestre*), with hazel (*Corylus avellana*) also present. Bramble (*Rubus fruticosus*) was abundant within the understory, while dog rose (*Rosa canina*), and saplings of sweet chestnut (*Castanea sativa*) and ash were frequently recorded. Saplings of hazel and horse chestnut (*Aesculus hippocastanum*) were also occasionally noted. The ground flora was primarily comprised of common ivy (*Hedera helix*), although common nettle (*Urtica dioica*) and hart's-tongue fern (*Asplenium scolopendrium*) were also noted.

Another area of broadleaved plantation woodland was recorded on the south side of the M4 carriageway, although it could not be assessed in depth during the survey due to lack of access. This woodland was comprised of ash, willow (*Salix* sp.), and oak (*Quercus* sp.), with an understorey of dense bramble.

A2.1 Dense/Continuous Scrub

Several areas of dense scrub were recorded across the proposed works area, particularly along the Caldicot access road from the Severn Bridge Industrial Estate leading south towards the M4 carriageway and the Prince of Wales Bridge (Photographs 2 and 3). Along this access road, patches of dense scrub were primarily comprised of abundant bramble, willow saplings, and buddleia (*Buddleja davidii*), with other frequently recorded species including common nettle, traveller's joy (*Clematis vitalba*), common mugwort (*Artemisia vulgaris*), blackthorn (*Prunus spinosa*) and hawthorn (*Crataegus monogyna*). Other species which were noted as either locally frequent or occasional included elder, bedstraw species (*Galium* sp.), vetchling species (Lathyrus sp.), vetch species (*Vicia* sp.), dog rose, common hogweed (*Heracleum sphondylium*) and Himalayan firethorn (*Pyracantha crenulata*). A stand of Japanese knotweed (TN1) and a few cotoneaster (*Cotoneaster* sp.) shrubs (TN2) were also recorded in this area. Species occasionally recorded on the fringes of this dense scrub habitat included herb-robert (*Geranium robertianum*), creeping cinquefoil (*Potentilla reptans*), dandelion (*Taraxacum* sp.), ribwort plantain (*Plantago lanceolata*), greater plantain (*Plantago major*), hemp agrimony (*Eupatorium cannabinum*), cow parsley (*Anthriscus sylvestris*), common comfrey (*Symphytum officinale*) and wild radish (*Raphanus raphanistrum*). Grass species such as Yorkshire fog (*Holcus lanatus*), cock's-foot (*Dactylis glomerata*) and false oat-grass (*Arrhenatherum elatius*) were also present.

Further areas of dense scrub were recorded adjacent to the woodland and access road on the north side of the M4 carriageway. Bramble was also abundant within this habitat, with blackthorn, nettle, cleavers (*Galium aparine*) and common dogwood (*Cornus sanguinea*) frequently noted. Common reed (*Phragmites australis*) was also present on the edge of scrub habitat near to a wet ditch. Other species which were occasionally recorded in these areas include traveller's joy, hemp agrimony, wild radish, common hogweed, hawthorn, smooth sow-thistle (*Sonchus oleraceus*) and hedge bindweed (*Calystegia sepium*). Areas of dense scrub with a similar species composition were also recorded on the embankment on the south side of the M4 carriageway.

A3.1 Scattered Broadleaved Trees

Scattered willow and elder trees were recorded along the access road on the north side of the M4 carriageway (Photograph 3). Young common osier (*Salix viminalis*) was also recorded on the edge of the saltmarsh habitat south of the M4 carriageway.

B2.2 Neutral Semi-improved Grassland

Areas of neutral semi-improved grassland were recorded along the embankment south of the M4 carriageway (Photograph 4). False oat-grass was the most abundant grass species in these areas, with common couch (*Elytrigia repens*) also present. Canadian fleabane (*Erigeron canadensis*) and wild teasel (*Dipsacus fullonum*) were frequently recorded in this habitat, with other species including bramble, dog rose, ribwort plantain, red valerian (*Centranthus ruber*), common ragwort (*Senecio jacobaea*), mallow species (*Malva* sp.), round-leaved cranesbill (*Geranium rotundifolium*) and wild carrot (*Daucus carota*) occasionally noted. Spear thistle (*Cirsium vulgare*), hoary mustard (*Hirschfeldia incana*) and scentless mayweed (*Tripleurospermum inodorum*) were also recorded, although more rarely.

B6 Poor Semi-improved Grassland

Several areas of poor semi-improved grassland were recorded along the verges of the access roads on the north side of the M4 carriageway which were broken up by areas of dense scrub and tall ruderal vegetation (Photograph 5). These areas were typically dominated by short swards of either Yorkshire fog or cock's-foot, although false oat-grass and common couch were also occasionally present. Herbaceous species which were frequently recorded in this habitat included creeping buttercup (*Ranunculus repens*), creeping cinquefoil, common mugwort, ribwort plantain, common nettle and white clover (*Trifolium repens*). Other species which were occasionally noted included round-leaved cranesbill, cow parsley, dandelion, common hogweed, wild radish, greater plantain, and broadleaved dock (*Rumex obtusifolius*). Common reed was also present within an area of grassland adjacent to a wet ditch.

B2.2/C3.1 Neutral Semi-improved Grassland and Tall Ruderal Mosaic

An area of neutral semi-improved grassland and tall ruderal vegetation was recorded at the western edge of the proposed works area, south of the M4 carriageway. This habitat was primarily comprised of cock's-foot grass, along with wild teasel and an unidentified umbellifer species (*Apiaceae* sp.). Other species which were occasionally noted within this area included false oat-grass, white clover, common mugwort, bramble, common comfrey, oxeye daisy (*Leucanthemum vulgare*) and common vetch (*Vicia sativa*).

C3.1 Tall Ruderal

An area of tall ruderal vegetation was recorded adjacent to an access pathway on the north side of the M4 carriageway (Photograph 6). This area was primarily comprised of common nettle and unidentified willowherb species (*Onagraceae* sp.), along with occasional hemp agrimony and bramble. Tufted vetch (*Vicia cracca*) and field maple saplings were also noted in this area.

C3.1/J1.3 Tall Ruderal and Ephemeral/Short Perennial Mosaic

Areas of tall ruderal and ephemeral/short perennial mosaic vegetation were recorded along the verges of the Caldicot access road from the Severn Bridge Industrial Estate leading south towards the M4 carriageway and the Prince of Wales Bridge (Photograph 7). The most frequently recorded species within these areas comprised broadleaved dock, common nettle, cow parsley, creeping cinquefoil, common mugwort, white clover, knapweed species (*Centaurea* sp.), cock's-foot and false oat-grass. Species which were also occasionally recorded include bramble, vetch, ribwort plantain, hoary mustard, common hogweed, round-leaved cranesbill, creeping buttercup, Yorkshire fog, common field speedwell (*Veronica persica*) and prickly sow-thistle (*Sonchus asper*).

G1 Standing Water

An area of standing water was recorded at the eastern end of the proposed works area (Photograph 8). This pool was located along the bottom access road, between the boulders and the saltmarsh habitat, running beneath the Prince of Wales Bridge.

G2 Running Water

The Nedern Brook flows underneath the Caldicot access road via a culvert, before meandering south-west through fields outside of the proposed works area (Photograph 9). A review of aerial imagery indicates that the brook then splits into two watercourses which run south along ditches underneath the M4 carriageway and embankments via culverts, before flowing into the Severn Estuary. Another ditch was recorded north of the M4

which connects to the brook. This ditch appeared dry at the time of the survey but is considered likely to contain water at other times of the year due to the presence of common reed.

H1.1 Intertidal Mud

An area of intertidal mud was recorded along the banks of a watercourse flowing south into the Severn Estuary, bordered by saltmarsh habitat on either side (Photograph 10).

H2.6 Dense Continuous Saltmarsh

A large expanse of saltmarsh was recorded south of the M4 carriageway, along the edge of the Severn Estuary (Photograph 11). The section within the survey area was dominated by sea couch (*Elytrigia atherica*), with common reed, wild teasel and clustered dock (*Rumex conglomeratus*) occasionally recorded. Other species which were rarely noted on the northern fringe of this habitat included wild radish, dog rose, osier, perennial rye-grass (*Lolium perenne*) and creeping thistle (*Cirsium arvense*).

H4 Boulders Above High Tide Mark

Rows of boulders forming a sea defence were recorded across the southern section of the proposed works area, along the northern edge of the saltmarsh and intertidal mud habitat (Photograph 12). Scrub vegetation including bramble and willow saplings was noted to be growing over many of the boulders.

J2.4 Fence

Metal palisade fencing was recorded along the east of the Caldicot access road, adjacent to the Severn Bridge Industrial Estate. Wooden post and wire fencing was also recorded along this access road further south, and along the woodland on the north side of the M4 carriageway. Additionally, a metal post and barbed wire fence ran along the bottom of the embankment on the south side of the M4 carriageway. Metal and wooden gates were noted at the entrance/exit points of the access roads around the M4 carriageway (Photographs 13 and 14).

J3.6 Buildings

A small, single-storey building constructed of brick was recorded within the proposed works area, located to the east of the Caldicot access road, within an area of poor semi-improved grassland surrounded by dense scrub (Photograph 15). The building appeared to be an electrical substation; an electrical unit was present directly outside the building, surrounded by metal palisade fencing. This area was fenced and could not be fully accessed.

Hardstanding

Hardstanding was present around the proposed works area in the form of access roads and pathways on the north and south sides of the M4 carriageway and beneath the Prince of Wales Bridge (Photograph 12).

Invasive Plant Species

A single stand of Japanese knotweed (TN1) was recorded within an area of dense scrub on the west side of the Caldicot access road, near to the Severn Bridge Industrial Estate and the Nedern Brook. Unidentified cotoneaster shrubs (TN2) were also recorded on both sides of this access road.

Japanese knotweed and five species of cotoneaster are listed as invasive non-native species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

4.2. Protected Fauna and/or Species of Conservation Concern

Incidental species recorded at the time of the Extended Phase 1 Habitat survey comprised collared dove (*Streptopelia decaocto*), woodpigeon (*Columba palumbus*), robin (*Erithacus rubecula*), seagull species (*Laridae* sp.) and long-tailed tit (*Aegithalos caudatus*).

Rabbit (*Oryctolagus cuniculus*) droppings (TN4) were also recorded within the proposed works area, along the access road south of the M4 carriageway.

Ground Level Tree Assessment

No trees with the potential to support roosting bats were recorded within the survey area. However, sections of the proposed works area, particularly the woodlands on either side of the M4 carriageway, could not be fully accessed during the survey (refer to Section 2.3 and Appendix B), and therefore may contain trees which are suitable for roosting bats.

5. Evaluation of Ecological Features and Potential Impacts

The desk study and field survey revealed the following ecological features of some value to nature conservation.

5.1. Designated Sites

Statutory Designated Sites

The Severn Estuary SAC / SPA / Ramsar / SSSI and the Gwent Levels - Magor and Undy SSSI are located within the boundary of the proposed works area. The Severn Estuary SAC / SPA / Ramsar are European sites and are therefore protected by the Conservation of Habitats and Species Regulations 2017 (as amended). The Severn Estuary SSSI and the Gwent Levels - Magor and Undy SSSI are nationally designated sites and are therefore protected under the Wildlife and Countryside Act 1981 (as amended). The proposed works will involve the clearance of overgrown vegetation on access routes, watercourse embankments, and culvert portals. In the absence of mitigation, there is potential for chemical, silt or dust pollution to be created during the proposed vegetation clearance works, which could enter sensitive habitats within the designated sites. It is also possible that noise and visual disturbance created during the works could adversely impact on wintering and migratory bird species which are the qualifying features of the Severn Estuary SPA and Ramsar and are a reason for the designation of the Severn Estuary SSSI.

The Nedern Brook Wetlands SSSI is located 1.3km north of the proposed works area. Although the Nedern Brook flows through the proposed works area, the SSSI itself is located over 1km upstream and as such is considered sufficiently separated such that no negative direct or indirect impacts on its reasons for designation are expected as a result of the proposed works. Recommendations in relation to the Nedern Brook and other waterbodies in proximity to the proposed works area are provided in Section 5.2 below.

All other statutory designated sites identified within 2km are considered sufficiently separated from the proposed works area that no negative direct or indirect impacts on their reasons for designation are expected, due to the minor and localised nature of the proposed works.

Non-Statutory Designated Sites

The Pill Farm Wildlife Site / SINC is located adjacent to the west of the Caldicot access road, outside of the proposed works area, and is bordered to the north and west by the Nedern Brook. Vegetation clearance is proposed to take place along the access road, and therefore may impact this designated site in the absence of mitigation.

All other non-statutory designated sites identified within 1km are considered sufficiently separated from the proposed works area that no negative direct or indirect impacts on their reasons for designation are expected, due to the minor and localised nature of the proposed works.

5.2. Habitats and Plants/Flora

NRW Priority Areas

The proposed works area contains two NRW Priority Areas; Lowland Wetland and Coastal Saltmarsh. No vegetation clearance is anticipated to take place within these habitats; however, vegetation clearance is proposed to take place along the access road north of the saltmarsh habitat. Any chemical or silt pollution which may be created during the proposed vegetation clearance works could potentially impact on these priority areas in the absence of mitigation.

Habitats of Principal Importance

The Coastal Saltmarsh and Intertidal Mudflat habitats recorded at the southern edge of the proposed works are qualify as Habitats of Principal Importance under the Environment (Wales) Act 2016. No vegetation clearance is anticipated to take place within these habitats; however, vegetation clearance is proposed to take place along the access road north of the saltmarsh habitat. Any chemical or silt pollution which may be created during these works could potentially impact on these priority habitats in the absence of mitigation.

Broadleaved Plantation Woodland

Areas of broadleaved plantation woodland were recorded within the survey area. These woodlands are not considered to qualify as a Habitat of Principal Importance under the Environment (Wales) Act 2016, although they are still considered to be of ecological importance due to the species of flora and fauna which they may support. However, these areas of woodland are not located within the proposed works area and are considered unlikely to be impacted by the proposed vegetation clearance works. As such, broadleaved plantation woodland will not be considered further in this report.

Waterbodies

The Nedern Brook and connected drainage ditches run through and adjacent to the proposed works area. The brook may qualify as a Section 7 Habitat of Principal Importance under the rivers and streams category and is considered to be of ecological importance as a habitat which will enhance local biodiversity. Furthermore, these watercourses are hydrologically connected to the Severn Estuary. Any chemical or silt pollution which may be created during the proposed vegetation clearance works could impact on these watercourses in the absence of mitigation.

Invasive Plant Species

Japanese knotweed and cotoneaster were recorded within the proposed works area, along the Caldicot access road north of the M4 carriageway. Japanese knotweed is listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), making it an offence to cause or allow the plant to spread in the wild. The cotoneaster species recorded could not be identified to species level; there are over 100 species present within the UK, including five species which are also listed under Schedule 9. Therefore, it is possible that the cotoneaster species recorded is one of these invasive species. Japanese knotweed, invasive species of cotoneaster and materials containing these species are classed as 'controlled waste' under the Environmental Protection Act (1990) and must be disposed of at a suitably licensed or permitted waste site. In the absence of mitigation, any works within the areas containing Japanese knotweed and cotoneaster, including vegetation clearance and machine tracking, risks spreading these species within or outside of the site which would constitute an offence under the legislation.

5.3. Protected Fauna and/or Species of Conservation Concern

Bats

The woodland, scattered broad-leaved tree and dense scrub habitats recorded within the proposed works area all provide suitable foraging and commuting habitat for bats. There is also connectivity from the proposed works area to suitable habitats within the wider landscape, such as hedgerows and larger areas of scrub and woodland. No trees with the potential to support roosting bats were recorded within the proposed works area. However, sections of the proposed works area, particularly the woodlands on either side of the M4 carriageway, could not be fully accessed during the survey (refer to Section 2.3 and Appendix B), and therefore may contain trees which are suitable for roosting bats. The proposed works will involve the clearance of overgrown vegetation and fallen tree branches on access routes, watercourse embankments, and culvert portals. The works will take place during daytime hours and are not anticipated to result in the disruption of potential bat commuting routes. Established trees with a trunk greater than 100mm in diameter will be excluded from the clearance. Should the design change and the felling of any trees, which have not been assessed is required, this could impact on roosting bats should they be present.

A small electrical substation building was recorded within the proposed works area, located to the east of the Caldicot access road. This area could not be fully accessed during the survey, and the building could not be fully inspected for potential roost features. However, this building is not anticipated to be impacted by the proposed works and as such will not be considered further in this report.

All UK bat species are protected under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to deliberately capture, injure or kill a bat or to intentionally or recklessly disturb bats. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by a bat.

Any activity that would result in a contravention of the above legislation would likely require a European Protected Species Licence (EPSL) from NRW. Works and/or mitigation activities involving disturbance to bats or bat roosts must be carried out by a licensed bat worker or accredited agent.

Hazel Dormouse

No evidence of hazel dormouse was recorded within the proposed works area, however this species is known to be present within the county of Monmouthshire (PTES, 2018). Furthermore, a total of seven records of hazel dormouse were returned within 2km of the proposed works area, with the nearest such record located approximately 0.66km west, within dense scrub north of the M4 carriageway. The dense scrub and broadleaved plantation woodland recorded within the proposed works area provide suitable habitat for dormouse, with scrub species such as bramble, dog rose, blackthorn and hawthorn providing an important foraging resource for this species. There is also some vegetative connectivity from the proposed works area to hedgerows, larger areas of scrub, and parcels of woodland within the surrounding landscape which are likely suitable for dormouse. However, these habitats are primarily located to the north of the M4 carriageway, while the majority of the proposed vegetation clearance will take place south of the M4 carriageway, within more isolated areas of dense scrub. Nevertheless, it is considered possible that dormouse are present within the proposed works area and could be adversely impacted by any vegetation clearance in the absence of mitigation.

The hazel dormouse is protected under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to deliberately capture, injure or kill a dormouse or to intentionally or recklessly disturb a dormouse. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by a dormouse.

Any activity that would result in a contravention of the above legislation would likely require an EPSL from NRW. Works and/or mitigation activities involving disturbance to dormouse or dormouse nests must be carried out by a dormouse survey licence holder or accredited agent.

Otter

No evidence of otter was recorded within the proposed works area. However, the section of the Nedern Brook which runs through and adjacent to the proposed works area is considered suitable to support foraging and commuting otter. There were also four records of otter returned within 2km of the proposed works area, with the nearest located approximately 0.2km east. The dense scrub and woodland recorded within the proposed works area may also provide suitable terrestrial habitat for this species. The Nedern Brook and connected drainage ditches are considered unlikely to be suitable for holt creation within the proposed works area, as their channels are narrow and shallow, and are unlikely to provide a sufficient source of food for otter. However, it is considered possible that otter may commute through the proposed works area opportunistically utilising the watercourses, and could be adversely impacted by vegetation clearance works through disturbance in the absence of mitigation.

The otter is protected under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to intentionally or recklessly capture, injure or kill an otter or to intentionally or recklessly disturb an otter. It is also illegal to intentionally damage, destroy or obstruct access to a breeding or resting place used by an otter. Any activity that would result in a contravention of the above legislation would likely require an EPSL from NRW.

Water Vole

No evidence of water vole was recorded within the proposed works area and no records of this species were returned within 2km of the proposed works area. The section of the Nedern Brook which runs through and adjacent to the proposed works area is considered suitable to support foraging and commuting water vole and may also be suitable for burrow creation. Therefore, it is considered possible that water vole may be present

within the proposed works area and could be impacted by the proposed vegetation clearance works around the culvert portals in the absence of mitigation.

The water vole is fully 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 a live or dead water vole; intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection, or disturb water voles using such a place. Any activity that would result in a contravention of the above legislation would likely require a development licence from NRW.

Badger

No badger setts or evidence of badger was recorded within the proposed works area. A total of five records of badger were returned within 2km of the proposed works area, with the nearest such record located approximately 1.1km north-east. The grassland, dense scrub, tall ruderal and ephemeral/short perennial vegetation recorded within the proposed works area are considered suitable for badger foraging and commuting, and it is possible that badger may pass through the area opportunistically. The broadleaved plantation woodland and dense scrub may also provide suitable habitat for badger sett creation. Although the woodland will not be impacted by the proposed works (refer to Section 5.2), vegetation clearance will be taking place within areas of dense scrub. Therefore, it is considered possible that badger may pass through the proposed works area opportunistically and could use the area to construct setts in future. As such, badger and their setts may be adversely impacted by disturbance created during the proposed vegetation clearance works in the absence of mitigation.

Badgers are protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully capture, injure, kill or ill-treat a badger, or possess a dead badger or any part of a badger. It is also illegal to damage, destroy or obstruct access to their setts or disturb a badger whilst it is occupying a sett. Any activity that would result in a contravention of the above legislation would likely require a development licence from NRW.

Other Mammals

There were 199 records of hedgehog returned within 2km of the proposed works area, with the nearest record located approximately 0.07km north-west. The grassland, tall ruderal and ephemeral/short perennial vegetation recorded within the proposed works area offer suitable habitat for foraging and commuting hedgehogs, while the dense scrub and woodland also offer suitable refugia and nesting habitat. The proposed works area is also connected to the wider area through the adjacent fields, scrub and woodland. As such, it is considered likely that hedgehog are present within the proposed works area. In the absence of mitigation, vegetation clearance works may negatively impact this species should they be present.

Hedgehog is listed as a Section 7 Species of Principal Importance under the Environment (Wales) Act 2016. This species is listed for the purpose of conservation of biodiversity in Wales.

Birds

The dense scrub, scattered broadleaved trees and broadleaved plantation woodland habitats recorded within the proposed works area provide suitable habitat for common species of nesting birds. Therefore, the works may have a negative impact on any birds that are nesting if any vegetation clearance is required during the nesting bird season (March to August inclusive).

No evidence of Schedule 1 bird species was recorded on the day of the survey. Although records of 23 Schedule 1 bird species were returned within 2km, the majority of these species are considered unlikely to be breeding within the proposed works area due to the lack of suitable habitat or because these species do not typically breed in Wales. The proposed works area is partially located within the Severn Estuary SPA/Ramsar/SSSI, which is designated in part for supporting internationally significant populations of wintering and migratory birds, particularly wading birds. The proposed vegetation clearance works may create some visual and noise disturbance for wading birds. However, the works are anticipated to be restricted to the bottom access road at the northern edge of the saltmarsh habitat. Furthermore, this area is already subject to disturbance from the nearby M4 carriageway, and as such the works are considered unlikely to create significant additional disturbance that could impact qualifying bird species for these designated sites.

All wild birds, their nests, eggs and dependent young are afforded protection under the Wildlife and Countryside Act 1981 (as amended). Bird species listed on Schedule 1 of this legislation are afforded additional protection which makes it an offence to intentionally or recklessly cause disturbance at, on or near an 'active' nest.

Reptiles

The grassland, dense scrub, tall ruderal and ephemeral/short perennial vegetation recorded within the proposed works area provide suitable habitat for common reptile species during the active season, while the woodland may also provide suitable refugia for reptiles during the hibernation season. Additionally, the Nedern Brook and wet ditches may offer suitable foraging and commuting habitat for grass snake. Piles of bricks (TN3) recorded within the neutral semi-improved grassland habitat on the embankment south of the M4 carriageway may also provide shelter and hibernacula for reptile species. Therefore, common species of reptile are likely to be present within the site boundary. In the absence of mitigation, any clearance of these habitats and/or removal of potential refugia piles may negatively impact on this species group.

All UK reptile species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to kill or injure any wild reptile listed on this Schedule including the common reptile species slow-worm, common lizard (*Zootoca vivipara*), grass snake, and adder (*Vipera berus*).

Smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) receive additional legal protection under the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to deliberately capture, injure or kill either of these species or to disturb, damage, obstruct access to or destroy any place used for shelter or protection. Smooth snake and sand lizard do not occur in this part of Wales and are not considered further in this report.

Amphibians

There were no records of great crested newt (*Triturus cristatus*) returned within 2km of the proposed works area. The only waterbodies recorded within 0.25km of the proposed works area from OS mapping are the Nedern Brook, connected drainage ditches and the Severn Estuary. The brook and the drainage ditches contained fast flowing water, and as such these waterbodies are considered unsuitable for breeding great crested newt. A pool of standing water was recorded along the bottom access road beneath the Prince of Wales Bridge, although this is likely to contain tidal water from the estuary and is therefore unsuitable for breeding amphibians which are generally intolerant to saline conditions. These waterbodies and the M4 carriageway are also considered to represent significant barriers to the dispersal of this species. As such, great crested newt are considered likely absent from the proposed works area and will not be considered further in this report.

Common amphibian species such as common toad may be present within the grassland, dense scrub, tall ruderal and ephemeral/short perennial vegetation recorded within the proposed works area and could be impacted by the proposed vegetation clearance works in the absence of mitigation.

The great crested newt is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to intentionally or recklessly capture, injure or kill a great crested newt or to intentionally or recklessly disturb a great crested newt. It is also illegal to intentionally damage, destroy or obstruct access to a breeding or resting place used by a great crested newt. Any activity that would result in a contravention of the above legislation would likely require an EPSL from NRW. Works and/or mitigation activities involving disturbance to great crested newt or its habitat must be carried out by a great crested newt survey licence holder or accredited agent.

Common toad is listed as a Section 7 Species of Principal Importance under the Environment (Wales) Act 2016. This species is listed for the purpose of conservation of biodiversity in Wales.

Fish

No fish were observed within the Nedern Brook or the connected drainage ditches during the survey, however these watercourses are hydrologically connected to the Severn Estuary which is known to support significant populations of protected fish species (refer to Section 3.1). Furthermore, one record of thornback ray, a Section 7 Species of Principal Importance under the Environment (Wales) Act 2016, was returned during the desk study, located approximately 1.7km north-east of the proposed works area. Therefore, any works which may cause chemical or silt pollution run-off into the watercourses could impact on fish populations in the absence of mitigation.

Terrestrial Invertebrates

Records of 39 terrestrial invertebrate species listed as Section 7 Species of Principal Importance under the Environment (Wales) Act 2016 were returned within 2km of the proposed works area, with the nearest records located approximately 0.24km west. The grassland, tall ruderal and ephemeral/short perennial vegetation, dense scrub and woodland present within the proposed works area provide habitats which may support a range of invertebrate species. However, it is anticipated that the proposed works will only involve the low-level clearance of overgrown vegetation and will be relatively minor. Furthermore, there are a number of other suitable habitats present adjacent to the site which can support these species, including larger areas of scrub, grassland, and woodland. Therefore, terrestrial invertebrates listed under Section 7 of the Environment (Wales) Act 2016 are unlikely to be negatively impacted by the proposed works at a population level and as such will not be considered further in this report.

Aquatic Invertebrates

No records of protected or priority aquatic invertebrate species, including white-clawed crayfish, were returned within 2km of the proposed works area. The Nedern Brook which runs through the proposed works area may be suitable for white-clawed crayfish as it appeared to be slow-flowing and shallow, and contained emergent vegetation which may offer some refugia. However, the watercourse appeared to lack any large rocks or submerged logs which could offer more substantial protection from waterfowl, although its entire length could not be assessed during the survey. The proposed works will involve the clearance of overgrown vegetation on watercourse embankments and culvert portals, however it is not anticipated that any in-channel works will be required. Therefore, it is considered unlikely that white-clawed crayfish would be impacted by the proposed works should they be present. As such, this species will not be considered further in this report.

White-clawed crayfish is listed under annexes II and V of the EU Habitats Directive and Appendix III of the Bern Convention. It is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of taking from the wild and sale, and also listed as a Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016.

6. Conclusions

The desktop study and field surveys have confirmed the presence or potential presence of the following ecological features within the proposed works area or associated buffer:

- Severn Estuary SAC / SPA / Ramsar / SSSI;
- Gwent Levels – Magor and Undy SSSI;
- Pill Farm Wildlife Site / SINC;
- NRW Priority Areas – Lowland Wetland and Coastal Saltmarsh;
- Habitats of Principal Importance – Coastal Saltmarsh and Intertidal Mudflats;
- Watercourses – Nedern Brook and connected drainage ditches which feed into the Severn Estuary;
- Potential for roosting, foraging and commuting bats;
- Nesting birds;
- Hazel dormouse;
- Otter;
- Water vole;
- Badger;
- Hedgehog;
- Common reptile and amphibian species;
- Fish species; and

- Invasive plant species.

7. Recommendations

7.1. Designated Sites

It is recommended that a Habitat Regulations Assessment (HRA) Stage 1 Screening is undertaken to assess in detail the likely effects of the proposed works to the Severn Estuary SAC / SPA / Ramsar. Furthermore, it is recommended that this HRA Stage 1 Screening also consider the potential impacts of the proposed central barrier replacement and carriageway resurfacing works on the Prince of Wales Bridge to these European sites.

It is also recommended that a notice of intent be submitted to NRW, with consultation sought to determine whether assent would be required to carry out works within the Severn Estuary SSSI and the Gwent Levels - Magor and Undy SSSI, as per Section 28H of the Wildlife and Countryside Act 1981 (as amended).

Additionally, it is recommended that vegetation clearance works do not stray into the Pill Farm Wildlife Site / SINC, located adjacent west of the Caldicot access road.

Though the risk of pollution from the proposed works area to these designated sites is considered to be low, pollution prevention measures are recommended for inclusion within a Construction Environmental Management Plan (CEMP) to prevent any impacts to these sites.

7.2. Habitats and Plants/Flora

NRW Priority Areas

Lowland Wetland and Coastal Saltmarsh NRW Priority Areas are present within and adjacent to the proposed works area. As discussed in Section 7.1, pollution prevention measures are recommended for inclusion within a CEMP in order to avoid any chemical, silt or dust pollution created by the works negatively impacting these priority areas.

Habitats of Principal Importance

Coastal Saltmarsh and Intertidal Mudflat Habitats of Principal Importance are present within and adjacent to the proposed works area. As discussed in Section 7.1, pollution prevention measures are recommended for inclusion within a CEMP in order to avoid any chemical, silt or dust pollution created by the works negatively impacting these priority habitats.

Waterbodies

The Nedern Brook and connected drainage ditches run through and adjacent to the proposed works area, before feeding into the Severn Estuary. As discussed in Section 7.1, pollution prevention measures are recommended for inclusion within a CEMP in order to avoid any chemical, silt or dust pollution created by the works negatively impacting these habitats.

Invasive Plant Species

If any works are to take place in areas where Japanese knotweed is present, or within 7m of this species, then the works must be carried out under an invasive species method statement.

If any works are to take place in areas where cotoneaster is present, or within 1m of this species, then the works must be carried out under an invasive species method statement.

This is necessary to avoid spreading these species within and beyond the site which would constitute an offence under the relevant legislation.

7.3. Protected Fauna and/or Species of Conservation Concern

Bats

If any trees located within areas which were not fully assessed during the survey (refer to Section 2.3 and Appendix B) are required to be removed, then it is recommended that full access be granted to these areas so that a GLTA can be undertaken on them by a suitably qualified ecologist. Based on the results of this GLTA assessment, further surveys may be recommended in order to fully inspect any PRFs recorded and to determine the presence / likely absence of roosting bats. These surveys may be seasonally constrained depending on the outcome of PRF assessments.

Hazel Dormouse

There is potential for hazel dormouse to be present within the proposed works area, due to the presence of suitable habitat with connectivity to the wider landscape and recent records of this species within 1km. The works are anticipated to take place in early 2024, within the dormouse hibernation season (typically October to April). Therefore, any low-level vegetation clearance, including the clearance of dead vegetation and fallen tree branches, could disturb or harm hibernating dormice should they be present. However, the proposed works are not anticipated to require the clearance of large sections of suitable dormouse habitat or result in habitat fragmentation, and are therefore classified as low risk. As such, it is recommended that the works proceed under a precautionary method statement for dormouse.

This will involve a two-phased cutting of suitable habitat using hand tools under the supervision of an Ecological Clerk of Works (ECoW). The vegetation to be cleared will be searched by hand by the supervising ecologist. If works occur during the winter months, the supervising ecologist will undertake a fingertip search of the ground, under leaf litter/moss and within tree roots for dormouse nests. The clearance of log piles and other potential hibernacula will be undertaken by hand. If works occur during the summer months, the supervising ecologist will search within trees and scrub for summer nests. If trees are to be felled, the area surrounding the tree will be searched first and directional felling will be undertaken.

In the unlikely event that dormice are found during vegetation clearance, all works will cease and an EPSL will be applied for through consultation with NRW.

Should the requirements for this site change and the clearance of large sections of suitable dormouse habitat (e.g. woodland and dense scrub) is required, then it is recommended that nest tube surveys be carried out to establish the presence / likely absence of dormice within the proposed works area. This will involve installation of nest tubes in March and monthly visits to the site between April and September to check the tubes for evidence of use by dormouse.

Otter

It is considered possible that otter may pass through the proposed works area opportunistically and could be impacted by the vegetation clearance works. Therefore, the following general construction safeguards should be implemented to protect otter and other mammals which could be using the proposed works area. These general construction safeguards are to be included within the CEMP and shall include as a minimum:

- Consideration should be given to where cut or chipped vegetation is stored, otter proof fencing should be considered if this is to be stored on site for long periods of time;
- Where lighting is required, hoods should be used, and lights directed at works and away from the surrounding environment including the watercourses and woodland; and
- No equipment should be stored within suitable otter habitat.

Water Vole

The watercourses which pass through and adjacent to the site may be suitable for water vole foraging, commuting and burrow creation. However, due to the minor nature of the vegetation clearance works and the lack of species records within 2km of the proposed works area, further surveys for water vole are not considered necessary. Nevertheless, it is considered possible that water vole may pass through the proposed works area opportunistically and could be impacted by the vegetation clearance works. General construction safeguards for otter, detailed above, will also be relevant for water vole. If any water voles or evidence of water

vole burrows are discovered during the vegetation clearance, all works should cease and an ecologist should be contacted for advice.

Badger

There is potential for badger to pass through the proposed works area opportunistically and to use the woodland and dense scrub habitat to create setts in the future. As such, badger and their setts may be adversely impacted by disturbance created during the works, should they be present. If the works are delayed beyond early 2024, then it is recommended that a pre-construction walkover survey of suitable habitat within 30m radius of the proposed works area be undertaken 6-8 weeks before construction begins. This survey will record any evidence of badger and their setts and will establish if this species is likely to be impacted by the proposed works. General construction safeguards for otter, detailed above, will also be relevant for badger.

Hedgehog

There is potential for hedgehog to be present within the proposed works area and so it is recommended that caution should be exercised in areas of suitable habitat. Should any hedgehogs be discovered during the works then they should be moved out of the works area to a safe and suitable location and covered over. If hoglets are discovered, where possible they should be left *in-situ* with their mother to avoid abandonment.

Birds

If any clearance of suitable habitat (e.g. dense scrub and trees) is to take place during the breeding bird season (March - August inclusive) then a suitably qualified/experienced ecologist will be required to carry out a nesting bird check before works can proceed. Nesting bird checks must be undertaken ideally on the day of, and no more than 48 hours prior, to any clearance works taking place. If works are delayed such that more than 48 hours has passed since the nesting bird check took place, then an update nesting bird check will be required. If any active nests are identified, then a 5m buffer (or as defined by the site ecologist, depending on the species present and site conditions) should be set around the nest and clearance works stopped within this buffer until an ecologist has determined that the nest has become inactive (which may take up to six weeks depending on the species).

If Schedule 1 species are found to be nesting within the proposed works area, a buffer (to be determined by an ornithologist) would be required around active nests to avoid potential disturbance. This is to be agreed with a suitably qualified ecologist.

Reptiles and Amphibians

The grassland, dense scrub, tall ruderal and ephemeral/short perennial vegetation present within the proposed works area provide suitable habitat for common reptile species, while piles of bricks (TN3) may also provide suitable refugia for reptiles. Any vegetation clearance or removal of potential refugia piles must be carried out following a precautionary method statement under ecological supervision to avoid the killing and/or injury of this species group.

This will involve a two-phased cutting of suitable reptile habitat using hand tools, careful dismantling of refugia piles and careful stripping of topsoil using a toothed bucket excavator under the supervision of an ecologist. Works shall be undertaken within the reptile active period (March to early October). If this is not possible due to construction timescales, an ecologist on site will dismantle any hibernation features by hand. Any reptiles discovered during this period will be moved to suitable habitat outside of the works area, with hibernacula used to shelter them.

Following a precautionary method statement for reptiles will also aid in the prevention of killing or injury of common amphibian species, including common toad.

Fish

Any chemical, silt or dust pollution run-off created during the works could enter the watercourses and negatively impact fish populations within the Severn Estuary. As discussed in Section 7.1, pollution prevention measures are recommended for inclusion within a CEMP.

7.4. Possible Enhancements

The following recommendations are made for enhancing the biodiversity of the site:

- Creation of refugia piles for hedgehogs, reptiles, common amphibians and small mammals by using un-chipped material from vegetation clearance works; and
- Provision of bat and bird boxes in suitable retained habitat.

8. References

All UK (and individual UK countries) legislation can be viewed at: http://www.legislation.gov.uk/browse

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Appendix A: Wildlife Legislation

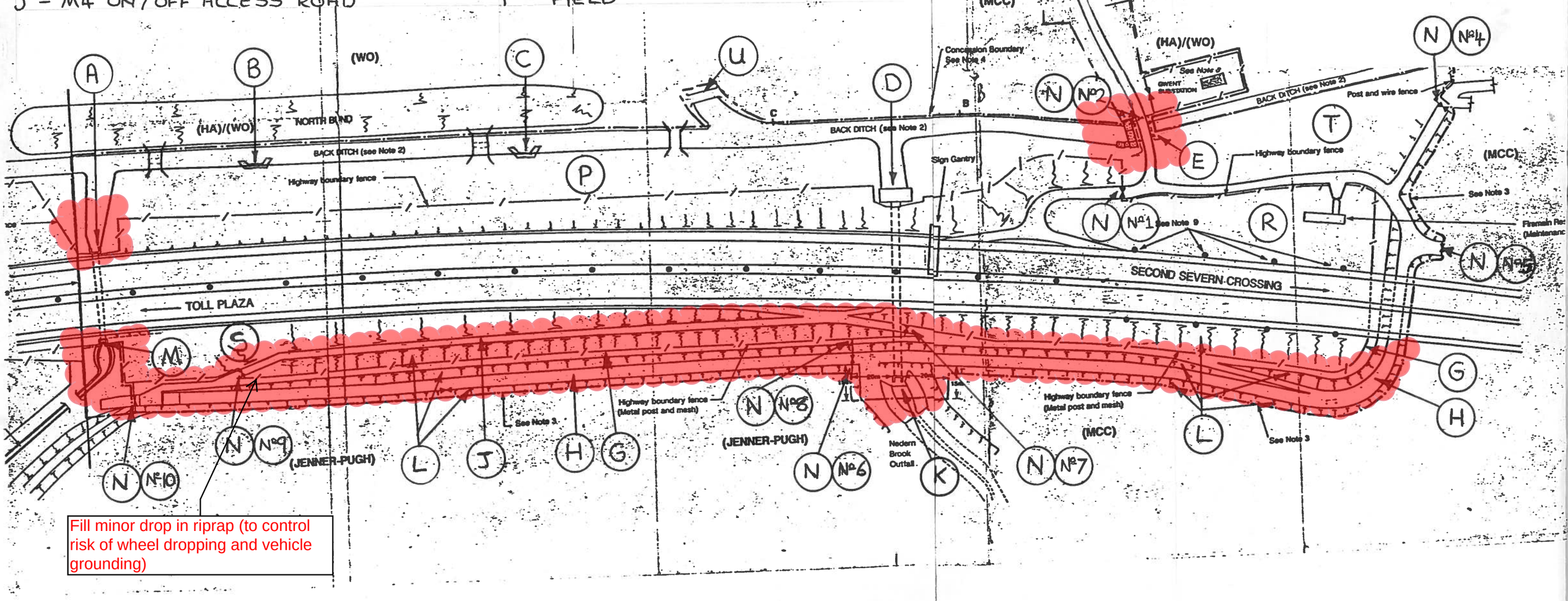
ECOLOGICAL FEATURE	SUMMARY OF LEGISLATION
National Site Network (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar Sites)	Under the Conservation of Habitats and Species Regulations 2017 (as amended), an assessment is required where a plan or project may give rise to significant effects upon sites within the 'National Site Network' (previously 'European Sites') including SACs, SPAs, and Ramsar sites. The process of assessing the implications of development on these Sites is known as Habitats Regulations Assessment (HRA). The initial stage of the HRA is Screening. This process initially identifies the likely impacts upon a Site of a project or plan, either alone or in combination with other projects or plans and considers whether these impacts may be significant. Natural Resources Wales must be consulted in relation to the outcome of Screening. Unless the likelihood of a significant effect can be ruled out on the basis of objective information, then an Appropriate Assessment must be undertaken (this is the next stage of the HRA).
Nationally Designated Sites (Sites of Special Scientific Interest)	It is a legal requirement to apply for 'assent' from Natural Resources Wales for any works which could potentially damage the flora, fauna or features for which a SSSI is designated (under the Wildlife and Countryside Act (1981) (as amended)).
Habitats or Species of Principal Importance for Nature Conservation ('Priority Habitats' or 'Priority Species')	In Wales, many of our rarest habitats and most threatened species are listed under Section 7 of the Environment (Wales) Act (2016). These are referred to as Priority Habitats or Priority Species in this report.
Biodiversity and Ecosystems	The Environment (Wales) Act (2016) requires all public authorities when carrying out their functions in Wales to seek to 'maintain and enhance biodiversity' where it is within the proper exercise of their functions. In doing so, public authorities must also seek to 'promote the resilience of ecosystems'.
Invasive Plants (Rhododendron, Giant Hogweed, Japanese Knotweed, certain species of Cotoneaster, Variegated Yellow Archangel, Canadian Waterweed, Japanese Rose, Monbretia, New Zealand Pigmyweed, Virginia Creeper, Water-fern etc.)	It is an offence under Section 14 of Wildlife and Countryside Act 1981 (as amended) to cause plants listed in Schedule 9 of this Act to grow in the wild. Material contaminated with these species is classified as controlled waste under the Environmental Protection Act (1990) and should therefore be disposed of in an appropriately licensed landfill site.
European protected species (for example great crested newts, natterjack toad, sand lizard, smooth snake, bats, dormice, otters, sturgeon)	It is an offence under the Conservation of Habitats and Species Regulations 2017 (as amended) to deliberately kill or injure a European protected species, to destroy breeding/ resting sites, or to deliberately disturb these species and affect their ability to survive, rear young, breed or hibernate. A development licence from Natural Resources Wales may be required for works to proceed.
Nationally protected species- those listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (for example great crested newt, natterjack toad, bats, dormice, otter, water vole, allis shad and twaite shad, vendace, basking shark and powan)	It is an offence under the Wildlife and Countryside Act 1981 (as amended) to intentionally or recklessly disturb a species listed on Schedule 5 whilst it is in a place of shelter, or to obstruct access to a place of shelter. Allis shad and twaite shad receive partial protection under Schedule 5, which regulates how they can be killed or taken. For water voles, a conservation licence from Natural Resources Wales may be required for works to proceed. Other species would be covered by a development licence as above.
Reptiles	It is an offence under the Wildlife and Countryside Act 1981 (as amended) to kill or injure common species of reptiles.
Nationally protected bird species- those listed under Schedule 1 of the Wildlife of the Wildlife and Countryside Act 1981 (as amended) (for example barn owl, peregrine falcon, red kite, kingfisher, firecrest etc.)	It is an offence under the Wildlife and Countryside Act 1981 (as amended) to damage or destroy a bird's nest whilst it is in use, and to kill or injure a bird or destroy an egg. Schedule 1 species are additionally protected from disturbance during breeding.

Nesting birds	It is an offence under the Wildlife and Countryside Act 1981 (as amended) to damage or destroy a bird's nest whilst it is in use, and to kill or injure a bird or destroy an egg.
White-clawed crayfish	It is an offence under the Wildlife and Countryside Act 1981 (as amended) to take a white clawed crayfish from the wild. A conservation licence from Natural Resources Wales may be required for works to proceed.
Badgers	It is an offence under the Protection of Badgers Act (1992) to damage or destroy a badger sett; obstruct any entrance of a badger sett; and disturb a badger whilst it is occupying a badger sett.

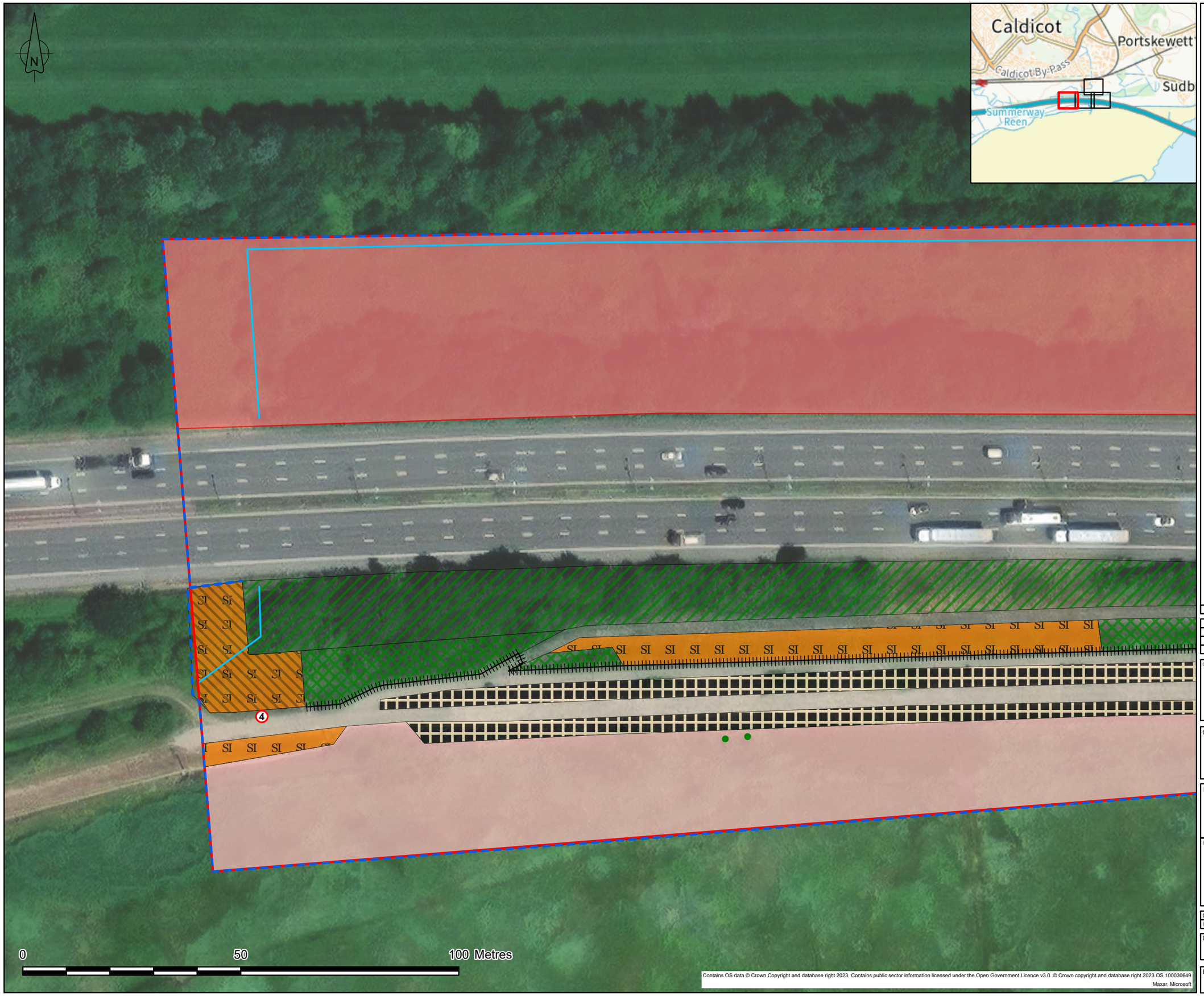
Appendix B: Figures

R154 GWENT EMBANKMENTS, DITCHES, NEDERN BROOK, ACCESS ROADS & SEA DEFENCES

A - BACK DITCH CULVERT
B - OUTFALL WITH HEADWALL AND FLAP
C - OUTFALL WITH HEADWALL (OPEN)
D - NEDERN BROOK CULVERT NORTHERN END
E - BRIDGE AND WALKWAY
F - CALDICOT ACCESS ROAD
G - TOP ACCESS ROAD
H - BOTTOM ACCESS ROAD
J - M4 ON/OFF ACCESS ROAD
K - NEDERN BROOK CULVERT SOUTHERN END
L - SEA DEFENCE
M - BACK DITCH CULVERT
N - SECURITY GATES
P - NORTH EMBANKMENT AND FIELD
R - NORTH EAST EMBANKMENT
S - SOUTH EMBANKMENT
T - FIELD
U - CONCRETE PIPE BRIDGE CULVERT
V - SECURITY BARRIER
W - BRIDGE AND CULVERT



Propose clearance of low growing vegetation including dead vegetation/trees, excluding established trees with with a trunk greater than 100mm diameter
2023-08-11 - M.Dragojlovic



Legend

- Indicative Site Boundary
- Survey Area

Phase 1 Habitats

- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/ continuous
- B2.2 - Neutral grassland - semi-improved
- C3.1 - Other tall herb and fern - ruderal
- H2.6 - Saltmarsh - dense/ continuous
- H4 - Boulders above high tide mark
- No Access
- G2 - Running water
- J2.4 - Fence
- A3.1 - Scattered broadleaved trees
- Target Note

Rev	Revision details	Drwn	Chkd	Appd	Date

Drawn:	AC	Date: 06/11/2023
Checked:	PK	Date: 06/11/2023
Reviewed:	MC	Date: 06/11/2023
Approved:	KF	Date: 06/11/2023

Amey

www.amey.co.uk

Client : national highways

Project Name :

Prince of Wales Bridge
Gwent Concession Area

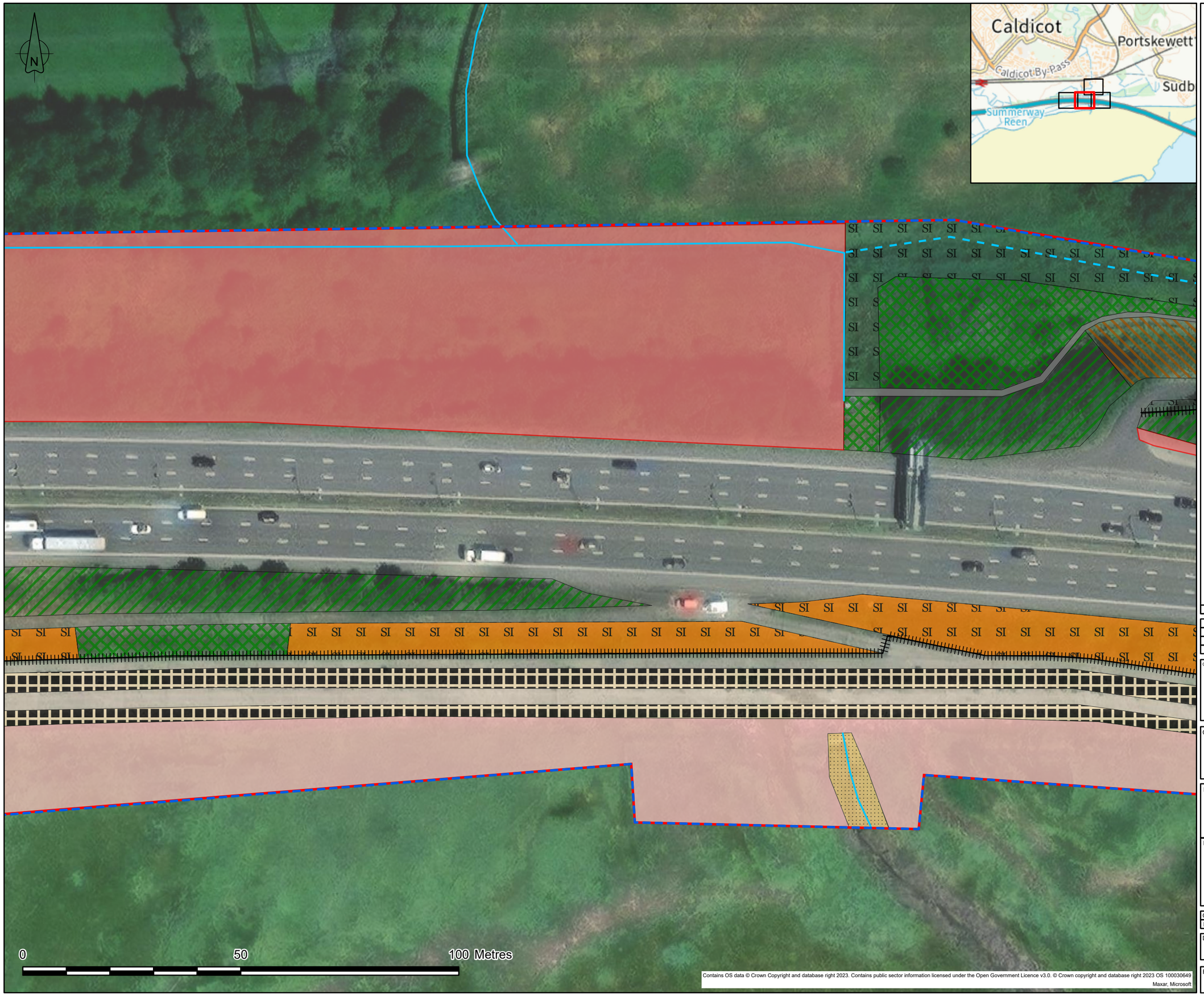
Drawing Title :

Phase 1 Habitat Map

Original Drawing Size : A3	Scale: 1:800
Dimensions : -	Page 1 of 4

Drawing Status	Suitability
Issued for Construction	CR

Figure No	Rev
Figure 1	P01



Legend

- Indicative Site Boundary
- Survey Area

Phase 1 Habitats

- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/ continuous
- B2.2 - Neutral grassland - semi-improved
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- H1.1 - Intertidal - mud/sand
- H2.6 - Saltmarsh - dense/ continuous
- H4 - Boulders above high tide mark
- J5 - Hardstanding
- No Access
- G2 - Running water
- J2.4 - Fence
- J2.6 - Dry ditch

Rev	Revision details	Drwn	Chkd	Appd	Date

Drawn:	AC	Date: 06/11/2023
Checked:	PK	Date: 06/11/2023
Reviewed:	MC	Date: 06/11/2023
Approved:	KF	Date: 06/11/2023

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Prince of Wales Bridge
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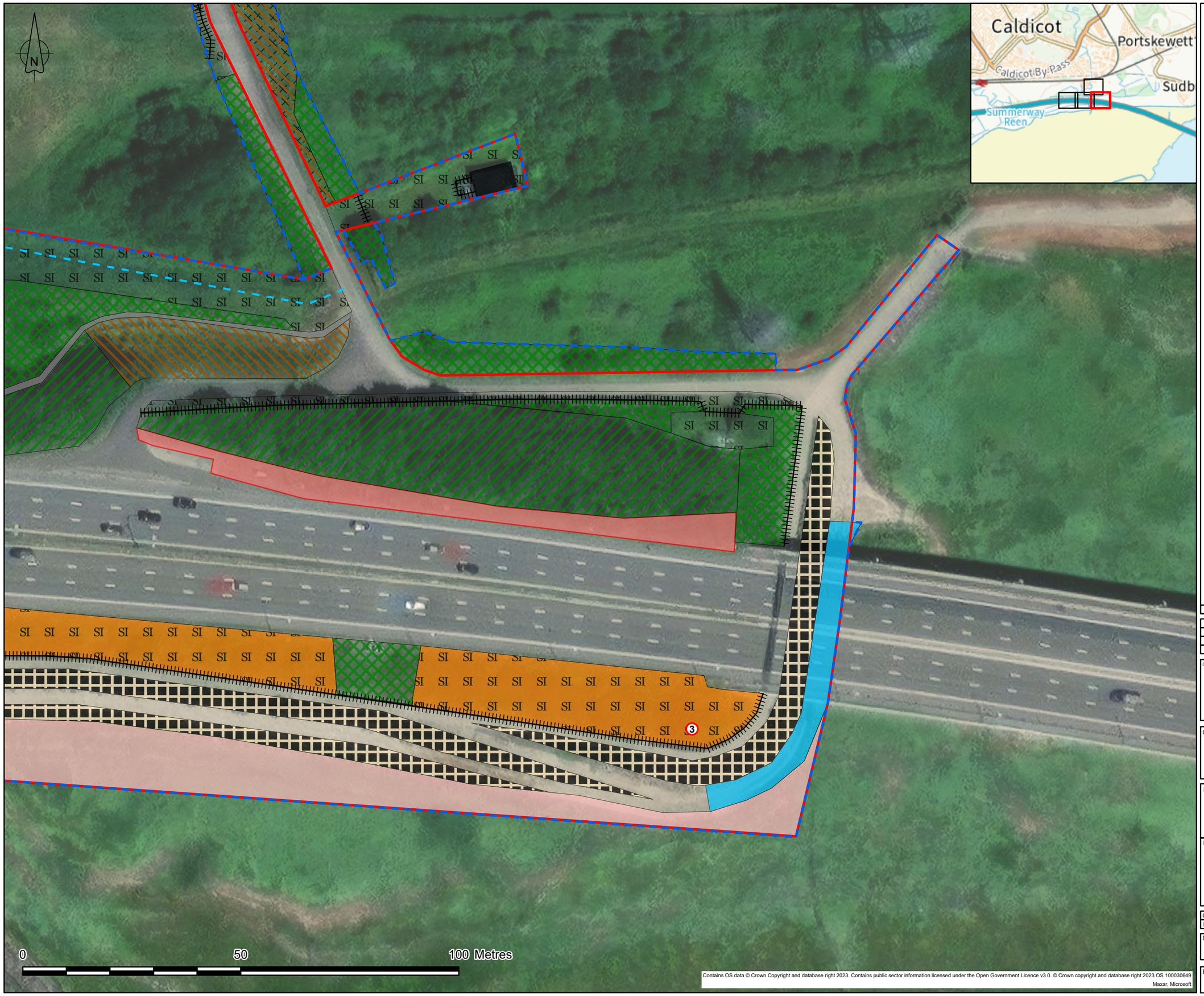
Phase 1 Habitat Map

Original Drawing Size : A3	Scale: 1:800
Dimensions : -	Page 2 of 4

Drawing Status	Suitability
Issued for Construction	CR

Figure No	Rev
Figure 1	P01



Legend

- Indicative Site Boundary
- Survey Area

Phase 1 Habitats

- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/ continuous
- B2.2 - Neutral grassland - semi-improved
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- G1 - Standing water
- H2.6 - Saltmarsh - dense/ continuous
- H4 - Boulders above high tide mark
- J1.3 - Cultivated/disturbed land - ephemeral/short perennial
- J3.6 - Buildings
- J5 - Hardstanding
- No Access
- J2.4 - Fence
- J2.6 - Dry ditch
- Target Note

Rev	Revision details	Drwn	Chkd	Appd	Date

Drawn:	AC	Date: 06/11/2023
Checked:	PK	Date: 06/11/2023
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Approved:	KF	Date: 06/11/2023

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Client : national highways

Project Name :
Prince of Wales Bridge
Gwent Concession Area

Drawing Title :
Phase 1 Habitat Map

Original Drawing Size : A3	Scale: 1:800
Dimensions : -	Page 3 of 4

Drawing Status	Suitability
Issued for Construction	CR

Figure No	Rev
Figure 1	P01

Legend

- Indicative Site Boundary
- Survey Area

Phase 1 Habitats

- A2.1 - Scrub - dense/ continuous
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- J1.3 - Cultivated/disturbed land - ephemeral/short perennial
- G2 - Running water
- J2.4 - Fence
- Target Note

Rev	Revision details	Drwn	Chkd	Appd	Date

Drawn:	AC	Date: 06/11/2023
Checked:	PK	Date: 06/11/2023
Reviewed:	MC	Date: 06/11/2023
Approved:	KF	Date: 06/11/2023

Amey
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Client : national highways

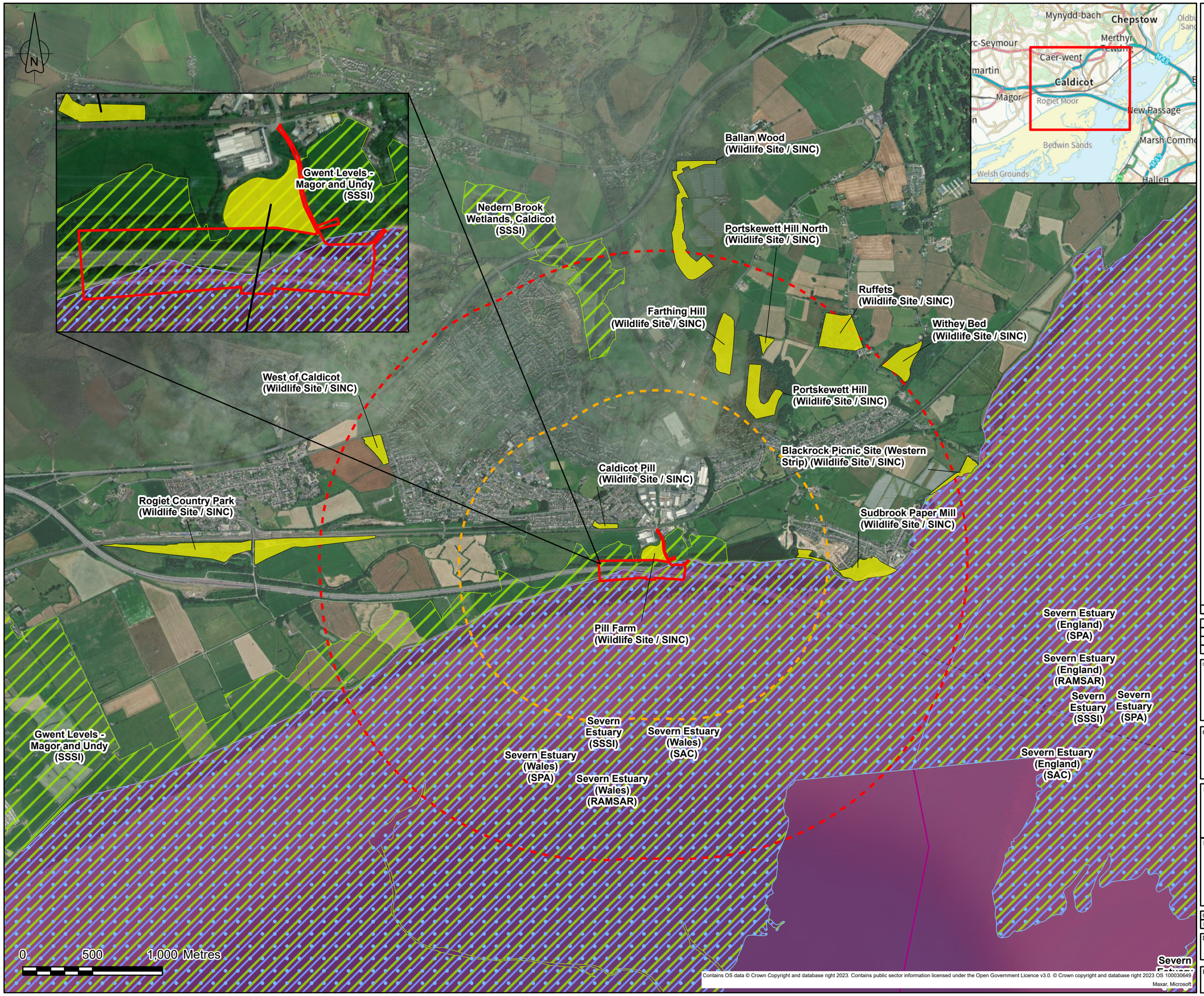
Project Name :
Prince of Wales Bridge
Gwent Concession Area

Drawing Title :
Phase 1 Habitat Map

Original Drawing Size : A3	Scale: 1:800
Dimensions : -	Page 4 of 4

Drawing Status	Suitability
Issued for Construction	CR

Figure No	Rev
Figure 1	P01



Legend

- Indicative Site Boundary
- 1000m Buffer
- 2000m Buffer
- Sites of Special Scientific Interest (SSSI)
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Ramsar
- Wildlife Site / SINC (Adopted)

Rev	Revision details	Drwn	Chkd	Appd	Date

Drawn:	AC	Date: 29/11/2023
Checked:	PK	Date: 29/11/2023
Reviewed:	MC	Date: 29/11/2023
Approved:	KF	Date: 29/11/2023

Amey

www.amey.co.uk

Client : national highways

Project Name :
Prince of Wales Bridge
Gwent Concession Area

Drawing Title :
Designated Sites Map

Original Drawing Size : A3	Scale: 1:25,000
Dimensions : -	Page 1 of 1

Drawing Status	Suitability
Issued for Construction	CR

Figure No	Rev
Figure 2	P01

Appendix C: Target Notes

Phase 1 Target Notes

NUMBER	DESCRIPTION	GRID REFERENCE	PHOTOGRAPH
TN1	Japanese knotweed	ST 49049 87529	
TN2	Cotoneaster sp.	ST 49033 87555 ST 49053 87540	
TN3	Pile of bricks providing potential refugia	ST 49180 87263	
TN4	Rabbit droppings	ST 48617 87264	No image available.

Appendix D: Species Lists

A1.1.2 Broadleaved Plantation Woodland – north of M4 and west of access road

LATIN NAME	COMMON NAME	DAFOR
Hedera helix	Common ivy	A
Urtica dioica	Common nettle	F
Fraxinus excelsior	Ash	F
Sambucus nigra	Elder	F
Castanea sativa	Sweet chestnut	F
Corylus avellana	Hazel	O
Acer campestre	Field maple	R
Aesculus hippocastanum	Horse chestnut	R

A1.1.2 Broadleaved Plantation Woodland – north of M4 and east of access road

LATIN NAME	COMMON NAME	DAFOR
Hedera helix	Common ivy	A
Rubus fruticosus	Bramble	A
Acer campestre	Field maple	A
Sambucus nigra	Elder	O
Corlyus avellana	Hazel	O
Rosa canina	Dog rose	O
Asplenium scolopendrium	Hart's-tongue fern	O

A1.1.2 Broadleaved Plantation Woodland – south of M4

LATIN NAME	COMMON NAME	DAFOR
Rubus fruticosus	Bramble	A
Fraxinus excelsior	Ash	F
Salix sp.	Willow sp.	F
Quercus sp.	Oak sp.	O

A2.1 Dense/Continuous Scrub – patches along north of Caldicot access road

LATIN NAME	COMMON NAME	DAFOR
Rubus fruticosus	Bramble	A
Salix sp.	Willow sp.	A
Buddleja davidii	Buddleia	A
Urtica dioica	Common nettle	F

Holcus lanatus	Yorkshire fog	F
Arrhenatherum elatius	False oat-grass	F
Clematis vitalba	Traveller's joy	F
Ranunculus repens	Creeping buttercup	F
Cotoneaster sp.	Cotoneaster sp.	F
Reynoutria japonica	Japanese knotweed	LF
Galium sp.	Bedstraw sp.	LF
Lathyrus sp.	Vetchling sp.	LF
Dactylis glomerata	Cock's-foot	O
Geranium robertianum	Herb-robert	O
Trifolium repens	White clover	O
Taraxacum sp.	Dandelion sp.	O
Raphanus raphanistrum	Wild radish	O
Senecio squalidus	Oxford ragwort	O
Potentilla reptans	Creeping cinquefoil	O
Hedera halix	Common ivy	O
Sambuca nigra	Elder	O
Artemisia vulgaris	Common mugwort	O
Plantago lanceolata	Ribwort plantain	O
Plantago major	Greater plantain	O
Pyracantha crenulata	Himalayan firethorn	R
Anthriscus sylvestris	Cow parsley	R
Achillea millefolium	Yarrow	R
Elytrigia repens	Common couch	R
Geranium rotundifolium	Round-leaved cranesbill	R
Fumaria muralis	Common ramping fumitory	R
Chamerion angustifolium	Rosebay willowherb	R
Hirschfeldia incana	Hoary mustard	R
Sonchus oleraceus	Smooth sow-thistle	R
Sonchus asper	Prickly sow-thistle	R
Rumex obtusifolius	Broadleaved dock	R
Eupatorium cannabinum	Hemp agrimony	R
Rosa canina	Dog rose	R
Crataegus monogyna	Hawthorn	R

A2.1 Dense/Continuous Scrub – patches along south of Caldicot access road

LATIN NAME	COMMON NAME	DAFOR
Rubus fruticosus	Bramble	A
Prunus spinosa	Blackthorn	A
Crataegus monogyna	Hawthorn	F
Artemisia vulgaris	Common mugwort	F
Rosa canina	Dog rose	F
Plantago lanceolata	Ribwort plantain	F
Eupatorium cannabinum	Hemp agrimony	F
Symphytum officinale	Common comfrey	F
Rumex obtusifolius	Broadleaved dock	O
Clematis vitalba	Traveller's joy	O
Dactylis glomerata	Cock's-foot	O
Arrhenatherum elatius	False oat-grass	O
Heracleum sphondylium	Common hogweed	O
Trifolium repens	White clover	O
Achillea millefolium	Yarrow	R
Geranium rotundifolium	Round-leaved cranesbill	R
Salix sp.	Willow sp.	R
Dipsacus fullonum	Wild teasel	R

A2.1 Dense/Continuous Scrub – adjacent to drainage ditch north of M4

LATIN NAME	COMMON NAME	DAFOR
Rubus fruticosus	Bramble	A
Urtica dioica	Common nettle	A
Phragmites australis	Common reed	F
Eupatorium cannabinum	Hemp agrimony	O
Onagraceae sp.	Willowherb sp.	O
Dactylis glomerata	Cock's-foot	O
Raphanus raphanistrum	Wild radish	O
Rumex sp.	Dock sp.	O
Galium aparine	Cleavers	O
Sambucus nigra	Elder	R

A2.1 Dense/Continuous Scrub – along access road adjacent to woodland north of M4

LATIN NAME	COMMON NAME	DAFOR
Rubus fruticosus	Bramble	A
Prunus spinosa	Blackthorn	A
Cornus sanguinea	Dogwood	F
Hedera helix	Common ivy	F
Urtica dioica	Common nettle	F
Galium aparine	Cleavers	F
Potentilla reptans	Creeping cinquefoil	F
Dactylis glomerata	Cock's-foot	F
Holcus lanatus	Yorkshire fog	O
Sonchus oleraceus	Smooth sow-thistle	O
Heracleum sphondylium	Common hogweed	O
Crataegus monogyna	Hawthorn	O
Calystegia sepium	Hedge bindweed	O
Clematis vitalba	Traveller's joy	O
Anthriscus sylvestris	Cow parsley	O
Sambucus nigra	Elder	O
Geranium rotundifolium	Round-leaved cranesbill	R

A2.1 Dense/Continuous Scrub – south side of M4

LATIN NAME	COMMON NAME	DAFOR
Rubus fruticosus	Bramble	A
Cornus sanguinea	Dogwood	F
Salix sp.	Willow sp.	O
Prunus spinosa	Blackthorn	O
Crataegus monogyna	Hawthorn	O
Rosa canina	Dog rose	O

B2.2 Neutral Semi-improved Grassland – on embankment south of M4

LATIN NAME	COMMON NAME	DAFOR
Arrhenatherum elatius	False oat-grass	A
Erigeron canadensis	Canadian fleabane	F
Dipsacus fullonum	Wild teasel	F
Senecio jacobaea	Common ragwort	O

Rubus fruticosus	Bramble	O
Plantago lanceolata	Ribwort plantain	O
Rosa canina	Dog rose	O
Daucus carota	Wild carrot	O
Geranium rotundifolium	Round-leaved cranesbill	O
Centranthus ruber	Red valerian	O
Malva sp.	Mallow sp.	O
Cirsium vulgare	Spear thistle	R
Hirschfeldia incana	Hoary mustard	R
Elytrigia repens	Common couch	R
Crepis sp.	Hawksbeard sp.	R
Tripleurospermum inodorum	Scentless mayweed	R
Fraxinus excelsior	Ash	R

B6 Poor Semi-improved Grassland – patches along north of Caldicot access road

LATIN NAME	COMMON NAME	DAFOR
Holcus lanatus	Yorkshire fog	A
Dactylis glomerata	Cock's-foot	A
Ranunculus repens	Creeping buttercup	F
Potentilla reptans	Creeping cinquefoil	F
Plantago lanceolata	Ribwort plantain	F
Urtica dioica	Common nettle	F
Artemisia vulgaris	Common mugwort	LF
Taraxacum sp.	Dandelion sp.	O
Arrhenatherum elatius	False oat-grass	O
Trifolium repens	White clover	O
Senecio jacobaea	Common ragwort	O
Symphytum officinale	Common comfrey	R
Plantago major	Greater plantain	R
Heracleum sphondylium	Common hogweed	R
Hirschfeldia incana	Hoary mustard	R
Rubus fruticosus	Bramble	R
Geranium rotundifolium	Round-leaved cranesbill	R
Reynoutria japonica	Japanese knotweed	R

B6 Poor Semi-improved Grassland – patches along south of Caldicot access road

LATIN NAME	COMMON NAME	DAFOR
Dactylis glomerata	Cock's-foot	A
Holcus lanatus	Yorkshire fog	A
Urtica dioica	Common nettle	F
Anthriscus sylvestris	Cow parsley	F
Trifolium repens	White clover	F
Plantago lanceolata	Ribwort plantain	O
Elytrigia repens	Common couch	O
Rumex obtusifolius	Broadleaved dock	O
Taraxacum sp.	Dandelion sp.	O
Potentilla reptans	Creeping cinquefoil	O
Sonchus asper	Prickly sow-thistle	R
Geranium rotundifolium	Round-leaved cranesbill	R
Hirschfeldia incana	Hoary mustard	R
Senecio jacobaea	Common ragwort	R
Symphytum officinale	Common comfrey	R

B6 Poor Semi-improved Grassland – adjacent to drainage ditch north of M4

LATIN NAME	COMMON NAME	DAFOR
Holcus lanatus	Yorkshire fog	A
Phragmites australis	Common reed	F
Heracleum sphondylium	Common hogweed	F
Ranunculus repens	Creeping buttercup	F
Urtica dioica	Common nettle	O
Taraxacum sp.	Dandelion sp.	O
Plantago lanceolata	Ribwort plantain	O
Raphanus raphanistrum	Wild radish	O

B6 Poor Semi-improved Grassland – along access road adjacent to woodland north of M4

LATIN NAME	COMMON NAME	DAFOR
Holcus lanatus	Yorkshire fog	D
Trifolium repens	White clover	A
Urtica dioica	Common nettle	O
Plantago lanceolata	Ribwort plantain	O

Taraxacum sp.	Dandelion sp.	O
Hedera helix	Common ivy	O
Geranium rotundifolium	Round-leaved cranesbill	O
Senecio jacobaea	Common ragwort	R

B2.2/C3.1 Neutral Semi-improved Grassland and Tall Ruderal Vegetation – in south-west of proposed works area

LATIN NAME	COMMON NAME	DAFOR
Dipsacus fullonum	Wild teasel	A
Dactylis glomerata	Cock's-foot	F
Apiaceae sp.	Umbellifer sp.	F
Trifolium repens	White clover	O
Arrhenatherum elatius	False oat-grass	O
Rubus fruticosus	Bramble	O
Artemisia vulgaris	Common mugwort	O
Vicia sativa	Common vetch	O
Symphytum officinale	Common comfrey	O
Leucanthemum vulgare	Oxeye daisy	O
Rosa canina	Dog rose	R

C3.1 Tall Ruderal Vegetation – adjacent to access road north of M4

LATIN NAME	COMMON NAME	DAFOR
Urtica dioica	Common nettle	A
Onagraceae sp.	Willowherb sp.	F
Eupatorium cannabinum	Hemp agrimony	O
Rubus fruticosus	Bramble	O
Vicia cracca	Tufted vetch	R
Acer campestre	Field maple	R

C3.1/J1.3 Tall Ruderal and Ephemeral/Short Perennial Mosaic – along Caldicot access road

LATIN NAME	COMMON NAME	DAFOR
Urtica dioica	Common nettle	A
Rumex obtusifolius	Broadleaved dock	F
Anthriscus sylvestris	Cow parsley	F
Dactylis glomerata	Cock's-foot	F
Arrhenatherum elatius	False oat-grass	F

Senecio jacobaea	Common mugwort	F
Trifolium repens	White clover	F
Potentilla reptans	Creeping cinquefoil	F
Centaurea sp.	Knapweed sp.	LF
Heracleum sphondylium	Common hogweed	O
Plantago lanceolata	Ribwort plantain	O
Rubus fruticosus	Bramble	O
Hirschfeldia incana	Hoary mustard	O
Holcus lanatus	Yorkshire fog	O
Sonchus asper	Prickly sow-thistle	O
Vicia sp.	Vetch sp.	O
Geranium rotundifolium	Round-leaved cranesbill	O
Veronica persica	Common field speedwell	R
Chamerion angustifolium	Rosebay willowherb	R
Hedera helix	Common ivy	R

H2.6 Dense Continuous Saltmarsh – across south of proposed works area

LATIN NAME	COMMON NAME	DAFOR
Elytrigia atherica	Sea couch	D
Phragmites australis	Common reed	O
Rumex conglomeratus	Clustered dock	O
Dipsacus fullonum	Wild teasel	O
Raphanus raphanistrum	Wild radish	R
Lolium perenne	Perennial rye-grass	R
Sonchus oleraceus	Smooth sow-thistle	R
Cirsium arvense	Creeping thistle	R
Rosa canina	Dog rose	R
Salix viminalis	Common osier	R

Appendix E: Photographs

Photograph 1: Broadleaved plantation woodland and wooden fencing on the north side of the M4 carriageway.

Photograph 2: Dense/continuous scrub along the Caldicot access road.

Photograph 3: Dense scrub and scattered broadleaved trees along the Caldicot access road.

Photograph 4: Neutral semi-improved grassland along an embankment on the south side of the M4 carriageway.

Photograph 5: Poor semi-improved grassland along the Caldicot access road.

Photograph 6: Tall ruderal vegetation along an access road on the north side of the M4 carriageway.

Photograph 7: Tall ruderal and ephemeral/short perennial vegetation along the Caldicot access road.

Photograph 8: Standing water underneath the Prince of Wales Bridge.

Photograph 9: The Nedern Brook flowing south, adjacent to the Caldicot access road.

Photograph 10: Intertidal mud along a watercourse flowing into the Severn Estuary.

Photograph 11: Dense continuous saltmarsh habitat to the south of the proposed works area.

Photograph 12: Boulders and hardstanding along the bottom access road, south of the M4 carriageway.

Photograph 13: Access gate south of the M4 carriageway with overgrown vegetation along the access road.

Photograph 14: Access gate north of the M4 carriageway.


Photograph 15: Small electrical substation building.