

South Wales Trunk Road Agent

Managing and Improving
Motorways and Trunk Roads
through South Wales



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Cymru

A40 Llanegwad Afon Tywi Erosion

Environmental Screening Report

South Wales Trunk Road Agent

November 2020



Yn gweithio ar ran
Llywodraeth Cymru
Working on behalf of the
Welsh Government

A40 Llanegwad Afon Tywi Erosion

Environmental Screening Report

South Wales Trunk Road Agent

November 2020

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1 Introduction

This report has been requested by South Wales Trunk Road Agent (SWTRA) in order to undertake a basic environmental screening and to incorporate LA 115¹ – Habitat Regulations Assessment. The Scheme will also be assessed against relevant targets from the Welsh Government (2018) Green Corridors Initiative (GCI), which aims to improve green corridors along ‘Gateway’ routes to improve landscape, enhance biodiversity and improve connectivity and therefore ecosystem resilience.

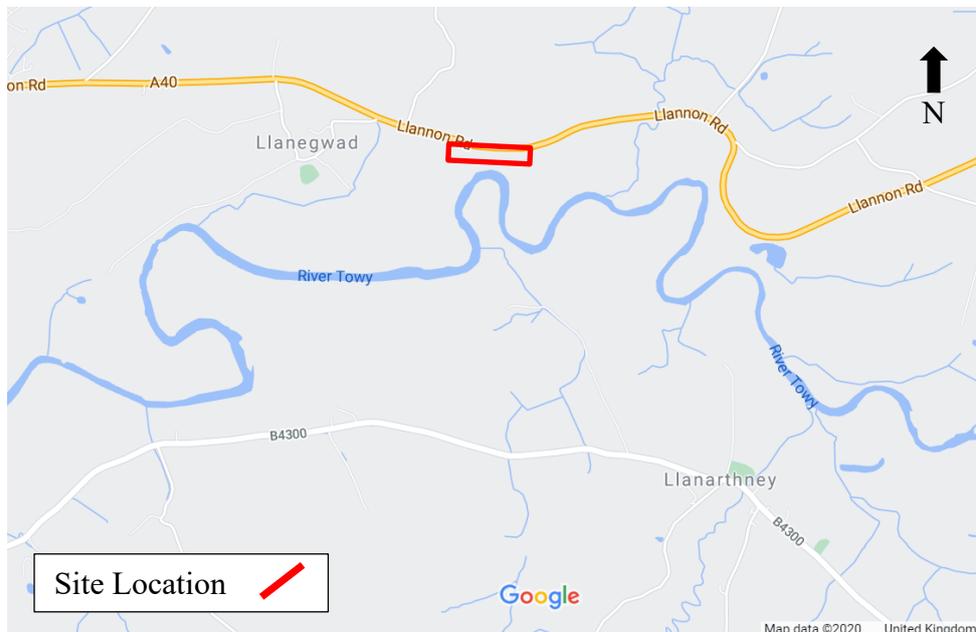
The works outlined below are hereafter referred to as ‘the Scheme’.

2 Site Location and Works

2.1 Site Location

The Scheme location, hereafter referred to as ‘the Site’, is a section of the A40 trunk road, located approximately 1 km to the east of Llanegwad, in Carmarthenshire (at OSNGR SN 525 213). The extent of the Site is shown in Figure 1 below.

Figure 1: Site Location



The Site comprises the A40 trunk road itself, the soft estate and a section of two fields adjacent to the south of the A40.

The surrounding landscape is largely agricultural, comprising open grassland and arable fields. Afon Tywi meanders parallel to the A40 road and is located approximately 24 m south of the section of A40 within the Site.

¹ Design Manual for Roads and Bridges. LA 115. Habitat Regulations Assessment
<http://www.standardsforhighways.co.uk/ha/standards/Ghost/dmr/vol11/section4/LA%20115%20Habitats%20Regulations%20assessment%20-web.pdf>

2.2 Scheme Details

The proposed works comprise the implementation of river defence measures to prevent the Afon Tywi from progressing any further toward the embankment of the A40. The Site area is anticipated to be less than 1 ha.

2.3 Need for the Scheme

The Afon Tywi is rapidly progressing towards the edge of the floodplain and the A40. If the river continues to progress towards the road there is a risk that the A40 embankment will be undercut and the road will be unsafe for traffic.

2.4 Proposed Works

There are currently five options being considered for the Scheme, which are as follows:

- Anchored sheet pile wall;
- Soil nailed slope with shotcrete/ hard facing and a pile wall;
- Piled reinforced concrete retaining wall, with two rows of supporting piles;
- Box trench excavation with rock revetment infill; and
- Box trench excavation with gabion basket/ precast block infill.

All five options will require the excavation of a trench, the depth of which will be dependent on the option brought forward, although this may be up to 10 m in depth. Similarly, the length of trench will be dependent on the option chosen, however, it could be up to 250 m in length.

For all options, there will be an 8 m buffer between the works area and the Afon Tywi, to avoid significant impacts to the watercourse as a result of construction.

Permanent habitat loss will be limited to an area of improved grassland within the two fields south of the A40, and a short section of scrubby hedgerow which bisects the two fields from north to south.

All options will include the translocation of a length of the hedgerow adjacent to the south of the A40, to facilitate widening of the road verge and to allow for safety railings to be installed. The hedgerow will be relocated further south, parallel to its existing position. The length of hedgerow to be translocated will be dependent on which option is brought forward, however, it is likely to be between 200 m and 300 m in length.

Construction is currently proposed to start in September 2021. The duration of works is currently unknown and will be dependent on the option brought forward, however, the works may last somewhere between three and eight months. GI works for the Scheme will be required in January or February 2021, and are anticipated to last for approximately one week.

The five options are described in turn below.

2.4.1 *Anchored sheet pile wall*

This option comprises an embedded retaining wall (likely to be steel sheet piles) with an inclined ground anchor to provide restraint at the top of the wall. The wall would be

embedded close to the toe of the widened embankment and provide retention for the full depth of estimated scour. The anchor will key into the mudstone beneath the existing carriageway.

2.4.2 Soil nailed slope with shotcrete/hard facing and pile wall

This option uses soil nails to construct a steepened reinforced slope, at the base of which a pile wall (likely concrete bored) will be installed to retain the remaining estimated scour depth. A hard facing (e.g. shotcrete) will be implemented on the steeped slope face. Significant temporary excavation will be required which will be backfilled upon completion of the reinforced slope and pile wall.

2.4.3 Piled reinforced concrete retaining wall, with two rows of supporting piles

This option comprises a conventional reinforced concrete retaining wall, with the addition of supporting piles at the toe and heel. At the toe, the piles will be continuous to provide retention for the remainder of the estimated scour depth. Discrete concrete piles may be used at the heel. The temporary excavation required to construct the works will be backfilled upon completion of the piled retaining wall.

2.4.4 Box trench excavation with rock revetment infill

This involves the implementation of an 'excavate and replace' detail, where a trench will be excavated to the full depth of estimated scour and re-filled with rock revetment material. It is anticipated that this material will form a natural slope revetment once breached by erosion. Propping/ shoring will be installed in the temporary case to construct the solution.

2.4.5 Box trench excavation with gabion basket/precast block infill

This involves the implementation of an 'excavate and replace' detail, where a trench will be excavated to the full depth of estimated scour and re-filled with gabion baskets, precast concrete blocks, or a combination of the two. It is anticipated that this material will form a controlled slope revetment once breached by erosion. Propping/ shoring will be installed in the temporary case to construct the solution.

3 Ecological Site Visit and Data Gathering

3.1 Ecological Data Study Methodology

The following ecological data was obtained from the West Wales Biodiversity Information Centre (WWBIC) in October 2020, which has been issued to SWTRA under a service-level agreement:

- Records of non-statutory designated sites within 2 km of the Site; and
- Records of legally protected and priority species (fauna and flora) within 2 km of the Site, including '*Species of Principal Importance in Wales*' listed under Section 7 of the

Environment (Wales) Act 2016². Only recent³ records are considered in this assessment.

The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed for the following information:

- Statutory designated sites of nature conservation importance within 2 km of the Site. This included Special Protection Areas (SPAs), Special Areas of Conservation (SACs), candidate SACs (cSACs), proposed SACs (pSACs), Wetlands of International Importance (Ramsar sites) hereafter referred to as European sites, and Site of Special Scientific Interest (SSSIs). This search was extended to 30 km for SACs for which bats are a qualifying feature; and
- Protected and priority habitats within 500 m of the Site, including '*Habitats of Principal Importance in Wales*' listed under Section 7 of the Environment (Wales) Act 2016³.

In addition, Ordnance Survey (OS) maps, Google aerial imagery and the MAGIC website were used to obtain basic habitat information about the Scheme and its surroundings within 500 m, in order to establish if the land within or adjacent to the Scheme could be used as habitat for protected/ notable species.

In addition, these resources were used to establish the presence of waterbodies within 500 m of the Scheme, in order to establish if the land within and/ or adjacent to the Site could be used by great crested newts. Great crested newts can travel large distances between breeding ponds and terrestrial habitat. Following guidance provided by Natural England⁴, land within 500 m of a great crested newt breeding pond should be treated as potential great crested newt terrestrial habitat and evaluated accordingly. However, if suitable terrestrial habitat is present great crested newts are more likely to stay within 250 m of their breeding pond⁵.

The Welsh Government/Natural Resources Wales Lle geo-portal⁶ was used to check for the presence of ancient woodland located within 500 m of the Scheme in Wales.

The Woodland Trust Veteran Trees inventory⁷ was used to check for veteran trees located within 500 m of the Scheme.

3.2 Ecological Site Visit Methodology

An ecological walkover survey of areas within and adjacent to the Site, including land up to 50 m from the Site boundary where access was allowed (the Survey Area), was undertaken on 6th November 2020 using the extended Phase 1 habitat survey methodology⁸ as guidance. The walkover survey recorded information on the habitats within the Survey Area and also included a search for evidence of the presence of, and

² <https://www.biodiversitywales.org.uk/Environment-Wales-Act>

³ For the purposes of this assessment, a recent record is one that has been recorded in the last 10 years of the date of this assessment (between 2010 and 2020).

⁴ English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

⁵ Cresswell & Whitworth (2004). *An assessment of the efficiency of capture techniques and the value of different habitats for great crested newt *Triturus cristatus**. English Nature Research Report No. 576.

⁶ <http://lle.gov.wales/home>

⁷ <https://ati.woodlandtrust.org.uk/>

⁸ Joint Nature Conservation Committee (2010) Handbook for Phase 1 habitat survey - a technique for environmental audit.

the potential of each habitat to support, protected and priority species as recommended by the Chartered Institute of Ecology and Environmental Management (CIEEM)⁹.

The survey was carried out with reference to CIEEM guidance. Vascular plant names recorded during this survey follows Stace¹⁰. This survey method comprised recording habitats present according to the Joint Nature Conservation Committee (JNCC) Phase 1 habitat descriptions¹⁰ with information recorded regarding the plant species composition of the habitats, current management and quality. In addition, the survey comprised assessing the suitability of the habitats present for, and recording any activity of the following species (in line with current guidance):

- Amphibians (terrestrial and aquatic habitats), including an assessment of aquatic habitat for its suitability to support great crested newts using the Habitat Suitability Index (HSI) assessment¹¹
- Bats¹²;
- Badger;
- Breeding and wintering birds;
- Hazel dormouse¹³;
- Reptiles¹⁴;
- Priority invertebrates¹⁵;
- Water vole¹⁶, otter and white-clawed crayfish¹⁷

Evidence of the presence of the following invasive species was recorded where seen:

- Evidence of animal species as listed on the Invasive Alien Species (Enforcement and Permitting) Order 2019; Chinese mitten crab, red swamp crayfish, signal crayfish, spiny cheek crayfish, muntjac deer, ruddy duck, Egyptian goose and grey squirrel;
- Evidence of the presence of the following invasive species: Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, Himalayan balsam, rhododendron, New Zealand pigmy weed, Virginia creeper, variegated yellow archangel, and cotoneaster. These are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and subject to strict legal control; and
- In addition to those listed above, evidence of plant species as listed on the Invasive Alien Species (Enforcement and Permitting) Order 2019: Nuttall's waterweed, Chilean rhubarb, floating pennywort, curly waterweed and parrot's feather, fanwort, water hyacinth and floating water primrose.

⁹ CIEEM (2017) Guidelines for preliminary ecological appraisal. 2nd Edition.

¹⁰ Stace (2019) New Flora of the British Isles 4th edition

¹¹ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000) Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*) Herpetological Journal 10 (4), 143-155 (2000).

¹² Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London

¹³ English Nature (2006). The Dormouse Conservation Handbook (2nd edition).

¹⁴ Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife advice sheet 10

¹⁵ As relevant to the location, identified through the desk study

¹⁶ Dean, M. et al The Water Vole Mitigation Handbook (2016). Mammal Society.

¹⁷ Peay S. (2003) Monitoring the White-clawed Crayfish *Austropotamobius pallipes* Conserving Nature 2000 Rivers Monitoring Series No. 1. English Nature, Peterborough.

3.3 Study Limitations

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. Therefore, the survey of this site has not produced a complete list of plants and animals and the absence of evidence of any species should not be taken as conclusive proof that the species is not present or that it will not be present in the future.

The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The extended Phase 1 habitat survey checked for the presence of invasive species as detailed in Section 3.2 above. There may be other invasive plant species present within or adjacent to the scheme area which were not recorded. However, it is considered that this survey is sufficient to identify any significant constraints posed by invasive plants.

The search for waterbodies within 500 m of the Scheme was undertaken using OS plans and aerial photographs only. These sources may not show all waterbodies within 500 m of the Scheme boundary and therefore some waterbodies may not have been identified.

The desk study reviewed the Woodland Trust Trusts Veteran Trees inventory. This provides records of veteran trees but is not an exhaustive list and other veteran trees may be present in the area. The walkover survey aimed to identify such features and as such this is not considered a constraint.

The results of this ecological assessment have allowed an evaluation of the likely ecological constraints to the proposed options for the Scheme and are considered sufficient to inform the recommendations for further ecological survey and mitigation measures, and to inform the environmental screening in line with LA 115¹⁸.

4 Ecological Results

4.1 Designated Sites

4.1.1 *Statutory Designated Sites*

The data search conducted from the MAGIC website identified two statutory designated sites of nature conservation importance within 2 km of the Scheme, which are detailed in Table 1 below:

Table 1: Statutory designated sites within 2 km

Designated Site Name	Designation	Approximate Distance from Site (approximate)	Reasons for Designation/Qualifying Features
Afon Tywi	SAC	20 m south	Annex II species that are a primary reason for selection of this site:

¹⁸<http://www.standardsforhighways.co.uk/ha/standards/Ghost/dmrb/vol11/section4/LA%20115%20Habitats%20Regulations%20assessment%20-web.pdf>

Designated Site Name	Designation	Approximate Distance from Site (approximate)	Reasons for Designation/ Qualifying Features
			<ul style="list-style-type: none"> • 1103 Twaite shad (<i>Alosa fallax</i>); • 1355 Otter (<i>Lutra lutra</i>). <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • 1095 Sea lamprey (<i>Petromyzon marinus</i>); • 1096 Brook lamprey (<i>Lampetra planeri</i>); • 1099 River lamprey (<i>Lampetra fluviatilis</i>); • 1102 Allis shad (<i>Alosa alosa</i>); • 1163 Bullhead (<i>Cottus gobio</i>).
	SSSI	20 m south	<p>Afon Tywi Site of Special Scientific Interest extends downstream from Llandovery to the confluence with the Afon Taf and Pembrey Coast SSSI in Carmarthen Bay. It is an actively eroding river meandering across a wide flood plain which is composed of alluvium, glacial sands and gravels. This has resulted in extensive shingle banks being formed. These are important for birds and invertebrates, and the river is also of special interest for its fish species and otters, and in its lower reaches for its saltmarsh vegetation.</p>

The Afon Tywi SAC and SSSI is located in proximity to the Site. Although the SAC falls outside the Site and therefore will not be directly impacted, there is potential for indirect adverse impacts on the designation as a result of the proposed works, for example through pollution events. There is also potential for the Scheme to adversely impact the designating features of the SAC; otter and twaite shad, through disturbance and/ or physical injury. This is discussed further in the relevant species sections below.

In accordance with the DMRB LA 115¹⁹, the search was extended to 30 km for SACs where bats are a reason for designation; no such sites were identified.

Given the proximity of the Site to Afon Tywi SAC and SSSI, consultation with Natural Resources Wales (NRW) in relation to designated sites will be necessary (see Section 6 below).

No ancient woodlands are present within the Site. The nearest area of ancient woodland is approximately 1.1 km north west of the Site. Due to the small-scale and localised nature of the works, and spatial distance between the Site and the nearest area of ancient woodland, no impacts to ancient woodlands are anticipated.

4.1.2 Non-Statutory Designated Sites

There are no records of non-statutory designated sites of nature conservation importance within 2 km of the Site.

4.2 Habitats

The Site comprises a section of the A40, and the road verge and fields adjacent to the south. At the location of the Site, the road verge comprises poor semi-improved grassland and an intact managed species-poor hedgerow which runs parallel to the proposed defence. The hedgerow measures approximately 3 m tall by 2 m wide and is dominated by hazel with rose and bramble also present. The two fields in which the works will be undertaken, located to the south of the A40, have been used for grazing livestock and growing crops at different points in time, and at the time of survey comprised improved grassland dominated by perennial rye grass. A second hedgerow separates the two fields, running north to south. This hedgerow comprises mostly bramble with hazel also present. Photographs of the Site are provided in [Appendix B](#).

Adjacent on all sides of the Site are improved grassland fields bounded by species-poor hedgerows. The wider soft estate along the A40 comprises of hedgerows, trees and areas of scrub with grassland verge. The surrounding landscape to the north and south of the A40 is largely agricultural, comprising open grassland and arable fields bounded with hedgerows and areas of woodland.

No veteran trees have been recorded within 500 m of the Scheme. No veteran trees were recorded during the ecological site visit.

No ponds were identified within 500 m of the Scheme following a review of aerial imagery.

A length of hedgerow which runs along the south of the A40 will be translocated further south, parallel to its existing position. Permanent loss of habitat will be limited to a small area of improved grassland and a short section of hedgerow which separates the two fields south of the A40 and which comprises mainly bramble scrub. This loss of habitat is not considered to be significant when considering its low ecological value and the amount of similar habitat in the wider landscape. Recommendations in relation to

¹⁹<http://www.standardsforhighways.co.uk/ha/standards/Ghost/dmrb/vol11/section4/LA%20115%20Habitats%20Regulations%20assessment%20-web.pdf>

protected species which may be present within these habitats are provided in Section 8 below.

The Scheme will adhere to best practice guidance to minimise possible pollution incidents and impacts on adjacent habitats including the Afon Tywi (see Section 8 below).

5 **Species**

5.1 **Amphibians**

The desk study data provided no recent records of amphibians within 2 km of the Site.

No ponds were identified within a 500 m radius of the Site. The hedgerows and grassland road verges within the Site provide suitable terrestrial habitat to support amphibian species.

Permanent habitat loss is limited to a small area of improved grassland habitat, and a short section of hedgerow. Therefore, there will be no significant impact on amphibians as a result of habitat loss due to the proposed Scheme. The works are over 500 m from the nearest pond, therefore, the likelihood of great crested newt being present within the Site is considered reasonably unlikely. No ponds will be directly impacted by the proposed works, however, there is the potential for the Scheme to impact individual common species of amphibian which could be present within the working area during the construction phase (such as via the movement of materials and machinery within the Site).

Protection measures are not usually required for common species of amphibian; however, the Precautionary Method of Working (PMW) described below for reptiles will inadvertently benefit any individual amphibians which may be present at the time of works.

5.2 **Birds**

The desk study data provided 46 recent records of protected and notable bird species within 2 km of the Site, totalling 34 species including 12 red list species²⁰ and nine amber list species. Species pertinent to habitats present within and adjacent to the Site include curlew, Bewick's swan, linnet, bullfinch, reed bunting, green sandpiper, lapwing, little ringed plover, kingfisher and song thrush.

The hedgerows and trees within and adjacent to the Site have potential to support nesting birds. In addition, the riverbanks of the Afon Tywi have potential to support nesting kingfisher and sand martin. The Site also has potential to support overwintering birds, and approximately 20 green sandpiper were recorded adjacent to the Site along the banks of the river during the Phase 1 survey.

Permanent habitat loss will be limited to a small area of improved grassland habitat, and a short section of hedgerow. Therefore, there will be no significant impact on breeding

²⁰ Eaton, M.A., Aebischer, N.J., Brown, A., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A., & Gregory, R.D. (2015). Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds*, 108: 708-746

or wintering birds as a result of habitat loss due to the proposed Scheme. However, hedgerow removal and translocation have potential to injure or kill individuals present, including damaging any nests which may be present. Additionally, vegetation clearance and construction works have potential to disturb any birds which may be nesting adjacent to the Site.

It is anticipated that vegetation clearance works (including the removal of a short section of hedgerow and cutting of 200 m – 300 m of hedgerow parallel to the A40 to be translocated) will be undertaken in September, outside the core breeding season for birds (taken to be between 1st March and 31st August, although it should be noted that variation in dates is possible, for example from geographical variations in climate, or due to a particularly mild winter).

However, if timescales change and works are required to be carried out in the core breeding season for birds, it is recommended that the works are undertaken following a PMW regarding nesting birds. The PMW should include the attendance of an ecologist to carry out a search for nesting birds within the working area immediately prior to the start of works.

If any nesting birds are identified during the survey, they will be left *in situ* for their entire nesting period and alternative approaches to the work proposed. This may include leaving an exclusion zone around the nests to avoid disturbance at the discretion of the ecologist on site, usually a buffer of approximately 5 m is required.

5.3 Bats

The desk study data provided 10 recent records of bats within 2 km of the Site, nine of which are from the same location and relate to a known roosting site. Species recorded include common pipistrelle, a long-eared bat species, noctule, soprano pipistrelle and an unidentified bat species. All records are from the village of Llanegwad located 400 m west of the Site. The records include details of a confirmed long-eared species roost, with a maximum count of two individuals.

No habitat suitable for roosting bats is present within the Site or immediately adjacent to the Site. A single ash tree present within the hedgerow which divides the two fields was assessed as having negligible potential to support roosting bats owing to the lack of any potential roosting features.

The hedgerows within the Site are considered suitable to support foraging and commuting bats, although the improved grassland is of low-quality foraging habitat. Due to the localised nature of the proposed works and limited and temporary nature of vegetation removal, the Scheme will not result in the long-term loss or severance of suitable habitat for foraging and commuting bats. In addition, there will be no night-time working required during the bat active season, with only 4 or 5 nights work required for the initial ground investigation (GI) works during January or February when bats are likely to be hibernating, and therefore it is not anticipated that the Scheme will result disturbance to foraging or commuting bats that may be present within or adjacent to the Site (such as via the use of artificial lighting). No further surveys or recommendations in relation to bats are considered necessary.

5.4 Badger

The desk study data provided one recent record of a badger within 2 km of the Site. Only a four-figure grid reference was provided, and so the exact location of this record in relation to the Site could not be determined. The record related to field observations of badger, including tracks and a latrine.

No badger setts or evidence of badger was recorded within the Site during the Phase 1 survey. The hedgerows provide opportunity for sett building, although this is limited owing to the banks being relatively shallow. The grassland within the site provides some foraging opportunity for badger, and there is connectivity to more suitable habitat in the wider landscape.

There will be no significant impacts on badger as a result of habitat loss within the Site owing to the small area of grassland habitat which is to be permanently lost.

It is recommended that a pre-works check for badger setts within the Site is carried out no longer than 24 hours prior to works commencing. If any active badger setts are identified, a licence will be required from Natural Resources Wales in order to close the sett.

In addition to the above, measures should be employed to maintain to site free from hazards for wildlife individuals which may commute through the Site (see Section 8 below).

5.5 Hazel Dormouse

The desk study data provided no recent records of hazel dormouse within 2 km of the Site.

The hedgerows within the Site are considered suitable to support foraging and nesting dormice and are connected to areas of woodland in the wider landscape. The hedgerow which runs alongside the A40 is dominated by hazel, which is a primary food source for this species.

The Scheme requires the permanent removal of a short section (approximately 20 m) of hedgerow to facilitate the works, and the translocation of a length (approximately 200 m – 300 m) of hedgerow parallel to the A40. The Scheme will therefore result in the loss of a small amount of habitat for dormouse, and the temporary severance of suitable habitat while the translocated hedgerow re-grows. There is also potential for individual dormice which may be present to be harmed during the vegetation clearance works.

It is recommended that a presence/ absence survey for hazel dormice is carried out ahead of works commencing on Site. If dormice are recorded during the surveys, a European Protected Species (EPS) mitigation licence from Natural Resources Wales (NRW) will be required for the Scheme to proceed lawfully.

If no evidence of dormice is recorded during the survey, it is recommended that the proposed works should be carried out following a PMW, as the absence of evidence during surveys does not conclusively mean that dormice are not present. The PMW should include the attendance of an ecologist to carry out a search for dormice and nests

within the working area immediately prior to the start of works.

It is recommended that clearance and translocation of hedgerows is carried out between 15th September and 15th October, so that the works are carried out during the dormouse active season, while avoiding the breeding and hibernation seasons, as well as avoiding the breeding bird season. However, if this is not practicable due to the timescales of the Scheme, a fingertip search of the hedgerows will be undertaken by the ecologist prior to removal of hedgerow, the hedgerow may be cleared in sections to allow for periodical checking by the ecologist.

In the instance that dormice are not found during the survey works and works proceed without a mitigation licence from NRW, should a dormouse or dormouse nest be discovered during works, works must cease, and additional advice sought from the ecologist. A licence from NRW will likely be required for the Scheme to recommence.

5.6 Otter

The desk study data provided two recent records of otter within 2 km of the Site. The nearest record was located 900 m south east of the Site and related to spraint identified along a stretch of the Afon Tywi. The second record was located 1.7 km north west from the Site along the Afon Cothi, with spraint and tracks recorded.

The Afon Tywi located to the south of the Site is known to support populations of otter, and otter are a primary reason for designation of the Afon Tywi SAC. No evidence of otter was recorded during the Phase 1 Survey, nor were any potential holts identified along the stretch of the Afon Tywi within 50 m of the Site. Terrestrial habitats within the Site are considered suboptimal for otter as they are heavily managed and provide no features suitable for use as a resting site. However, there is a low chance that otters may travel into the Site from the Afon Tywi.

As permanent habitat loss will be limited to improved grassland and a short section of hedgerow, it is not anticipated that the Scheme will result in the removal of suitable habitat which may be used by otter. Night work will be limited to four or five nights in January or February when GI works are undertaken, with no night-time working (defined as 30 minutes before sunset to 30 minutes after sunrise) required for the duration of the main construction works. Any external lighting required for the GI works will be limited to the works area and will avoid illumination of the river. Therefore, the works are not anticipated to result in significant disturbance impacts to otter which may be present within the Afon Tywi or commuting through the Site. However, measures should be employed to maintain to site free from hazards for wildlife individuals which may commute through the Site (see Section 8 below).

In addition, the Scheme will adhere to best practice guidance to minimise possible pollution incidents and impacts to aquatic and terrestrial habitats within and adjacent to the Site (see Section 8 below). No further surveys in relation to otter are considered necessary, however, further information is provided later in this report in relation to HRA screening of the Afon Tywi SAC for which otter are a primary designating feature.

5.7 Water Vole

The desk study data provided no recent records of water vole within 2 km of the Site.

The section of the Afon Tywi located adjacent to the Site is not considered suitable to support water vole owing to the fast-flowing water and lack of any substantial bankside vegetation. Habitats within the Site are not considered suitable for water vole, and therefore no impacts to water vole are anticipated as a result of the Scheme. No further surveys or recommendations in relation to water vole are considered necessary.

5.8 Reptiles

The desk study data provided no recent records of reptiles within 2 km of the Site.

The majority of habitat within the Site comprises improved grassland of limited suitability for reptile. However, the hedgerow and semi-improved grassland road verge are considered to provide suitable commuting, sheltering and foraging habitat for common species of reptile, albeit limited in extent.

Permanent habitat loss is limited to a small area of improved grassland and a short section of hedgerow. Therefore, if reptiles are present, it is not anticipated that there will be a significant impact on reptiles as a result of habitat loss due to the Scheme. However, there is the potential for the Scheme to impact individual reptiles which may be present within the working area during the construction phase, particularly during the translocation of the hedgerow parallel to the A40 (such as via the movement of materials and machinery within the Site).

Due to the small area of habitat to be impacted, any populations of reptile potentially present are likely to be present in low numbers. Therefore, it is recommended that the proposed works are undertaken following a Precautionary Method of Working (PMW) regarding common species of reptile. The PMW should include the attendance of an ecologist to carry out a search for reptiles within the working area immediately prior to the start of works.

5.9 Invertebrates

The desk study data provided 18 recent records of priority invertebrates within 2 km of the Site relating to six species, with the nearest records located 650 m east of the Site. Pertinent to the Site includes brown hairstreak for which there is suitable egg-laying habitat in the form of the hedgerows.

The hedgerow within the Site is considered suitable to support a wide assemblage of invertebrates, including priority species.

Permanent habitat loss is limited to a small area of improved grassland habitat, and a short section of hedgerow. Due to the small area of habitat to be permanently lost, it is not anticipated that the Scheme will result in any significant long-term impacts to priority invertebrate species, given the presence of ample similar habitat in the wider landscape. No further surveys or recommendations in relation to invertebrates are considered necessary.

5.10 Fish Species

The desk study returned records of bullhead, brook lamprey and eel from within 2 km of the Site, located 1.9 km west, 1.3 km south east and 1.9 km west of the Site respectively, all from within tributaries of the Afon Tywi. Bullhead and brook lamprey are designating features of the Afon Tywi SAC, which also supports notable populations of sea lamprey, river lamprey and allis shad.

No aquatic habitats are present within the Site itself, however, the Afon Tywi is located close to the south of the Site, and there is potential for the Scheme to adversely impact these species, including species which are designated features of the SAC. Impacts are expected to be limited to the construction phase of the scheme and include disturbance as a result of noise and vibrations, with potential for exposure to pollutants.

It is recommended that works are undertaken at a time of year which avoids the most sensitive life-stage periods. However, due to the range of fish species supported by the Afon Tywi, and their variable life-histories, it should be noted that it may not be possible to avoid all sensitive periods. It is recommended that works are undertaken outside of the main spawning/ migratory season for Twaite shad (primary reason for designation) and Allis shad (typically May – June inclusive). Works would then also be outside of the main spawning season for the other fish interest features, except Bullhead. Since Bullhead are a commonly occurring species in SW Wales, any disturbance is unlikely to affect their conservation status in the watercourse.

Further measures to prevent disturbance to wildlife, and which will benefit fish species within the Afon Tywi, are detailed within Section 8 below. In addition, the Scheme will adhere to best practice guidance to minimise possible pollution incidents and impacts to aquatic and terrestrial habitats within and adjacent to the Site (see Section 8 below). No further surveys in relation to fish are considered necessary, however, further information is provided later in this report in relation to HRA screening of the Afon Tywi SAC for which twaite shad are a primary designating feature.

5.11 Plant Species

The desk study data provided three records of bluebell within a 2 km radius of the Site, the nearest of which is located 580 m west. No other recent records of notable plant species within 2 km of the Site were provided.

No notable plant species were recorded within the Site during the Phase 1 Habitat Survey.

Permanent habitat loss is limited to a small area of improved grassland habitat, and potentially a short section of hedgerow. As no notable plant species were recorded within the Site during the Phase 1 Survey, no significant impacts are anticipated on plant species as a result of the scheme. No further surveys or recommendations in relation to plants are considered necessary.

5.12 Non-Native Invasive Species

The desk study data provided recent records of non-native invasive species within 2 km of the Scheme, including Japanese knotweed (*Falopia japonica*), Himalayan balsam

(*Impatiens glandulifera*) and Canada goose (*Branta canadensis*), the nearest records of which are located 1.8 km west, 900 m south east and 1.8 km south east of the Site, respectively.

No non-native invasive plant species were recorded within the Site during the survey visit. If any invasive plant species are encountered on site, the works should cease, and further advice sought from a specialist who deals with the management of non-native invasive plant species.

5.13 Other Priority Species

Two records of hedgehog, one record of a pole cat and one record of a hare were also returned from within within 2 km of the Scheme, located 1.3 km west, 1.4 km north east and 1.5 km north east of the Site respectively.

Habitats within the Site (comprising the hedgerow and unmanaged road verge) may support these priority species.

Due to the localised nature of the Scheme and the small amount of habitat to be permanently lost, there are not anticipated to be any long-term impacts on any other Priority Species as a result of the proposed Scheme. However, there is potential for individual hedgehogs, polecats or hare to be harmed if present at the time of works. Measures should be employed to maintain to site free from hazards for wildlife individuals which may commute through the Site (see Section 8 below).

6 LA 115 - Habitat Regulations Assessment (Screening)

Habitat Regulations Assessment (HRA) is required by the Conservation of Habitats and Species Regulations 2017 (as amended), Part 6, Regulation 63. This (HRA) Stage 1 Screening exercise aims to ensure that the implications of maintenance and/ or improvement projects are considered in respect of European sites which are designated for nature conservation. These regulations originate from Article 6 of the council directive 92/43/EEC of 21st May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora, also known as the Habitats Directive. The Habitats Regulations Assessment screening process is explained in [Appendix A](#).

An initial search was undertaken for European sites potentially affected by the Scheme. The search for European sites including SACs, Special Protection Areas (SPA), Ramsar sites and candidate designated sites was restricted to 2 km, following DMRB guidance. In accordance with LA 115²¹, the search was extended to 30 km for SACs where bats are a reason for designation.

No SACs with bats as a qualifying feature are present within 30 km of the Scheme. One European designated site was found to be located within the 2 km desk study search, namely Afon Tywi SAC located approximately 20 m to the south of the Site.

The proposed works are to be confined to the area within the Site and the SAC will not be directly impacted by the works. However, given the proximity of the Site to the SAC,

²¹<http://www.standardsforhighways.co.uk/ha/standards/Ghost/dmr/vol11/section4/LA%20115%20Habitats%20Regulations%20assessment%20-web.pdf>

there is potential for the SAC to be impacted during construction for example through pollution events. There is also potential for the construction phase to result in the disturbance of the primary and secondary designating features, namely otter and several fish species as a result of increased noise, vibration and lighting.

Following completion of the works, it is not anticipated that there will be increased road usage and related potential impacts to ecological features as a result of the Scheme. The proposed flood defence itself is not anticipated to have any adverse impacts on the SAC or its designating features and will not affect the favourable conservation status of these features.

No impacts to this SAC or the features of the designation are anticipated as a result of the operational phase of the Scheme. However, there is potential for the SAC to be impacted during the construction phase. Therefore, the Afon Tywi SAC has been put forward for formal screening. This is in accordance with page 18 of the DMRB LA 115²², which states:

“The screening stage of HRA shall be completed for all European sites where a route corridor or project meets any of the following screening criteria:

- 1) *Is within 2km of a European site or functionally linked land;*
- 2) *Is within 30km of a SACs, where bats are noted as one of the qualifying interests;*
- 3) *Crosses or lies adjacent to, upstream of, or downstream of, a watercourse which is designated in part of wholly as a European site;*
- 4) *Has a potential hydrological or hydrogeological linkage to a European site containing groundwater dependent terrestrial ecosystem (GWDTE) which triggers the assessment of European sites in accordance with LA 113;*
- 5) *Has an affected road network (ARN) which triggers the criteria for assessment of European sites LA 105.”*

HRA screening was undertaken for the SAC previously in relation to the ground investigation works carried out for the Scheme in 2018. It is proposed that the screening report is updated to take in to account the new scope of works, to determine whether significant impacts are likely.

7 Summary of Ecological Recommendations

Green Corridor Initiative

The Scheme likely requires the removal of a short section of hedgerow, which comprises predominantly bramble. Therefore, it is recommended that an area of scrub habitat is planted following completion of the works.

The proposed works are limited in extent and providing the scrub habitat is compensated, works will not result in the permanent loss or severance of habitats located within or adjacent to the Site, except for an area of improved grassland which is of negligible intrinsic ecological value. The Scheme requires the removal of the

²²<http://www.standardsforhighways.co.uk/ha/standards/Ghost/dmr/vol11/section4/LA%20115%20Habitats%20Regulations%20assessment%20-web.pdf>

hedgerow parallel to the A40 to facilitate widening of the road verge; however, this hedgerow will be translocated further south and therefore there will be no overall loss of linear habitat. Therefore, no further measures are proposed to be implemented as part of the Scheme.

Further surveys and Precautionary Method of Working

It is recommended that a presence/ absence survey for hazel dormouse is undertaken. Due to the proposed timings of the Scheme starting in September 2021, there will not be sufficient time to obtain a full season of survey data using artificial nest tubes. Therefore, it is proposed that a nut search is undertaken during the winter months. This can be supplemented with a nest tube and/ or footprint tunnel survey commencing in April 2021 if no conclusive evidence of dormice is recorded during the nut search. Should evidence of dormouse be recorded during the survey, an EPS mitigation licence from NRW will be required in order to undertake the vegetation clearance and hedgerow translocation works.

It is recommended that the proposed works are carried out following a PMW with regard to nesting birds, hazel dormouse and reptiles. This will require an ecologist to provide a toolbox talk to the site contractors before the commencement of the works to outline the signs and identification of the above listed species. An ecologist will also carry out a pre-works check of the works area for the presence of these species immediately prior to the works commencing. If one of these species is found during the checks, the ecologist will provide further advice on how to proceed.

Protection measures for otter and badger should also be implemented on Site during construction, to avoid harm to any individuals which may traverse the Site, as detailed below.

Further ecological recommendations concerning the proposed works are detailed below:

- It is anticipated that the works will be completed during day-time hours. If any night-time working²³ or artificial lighting is required (for example around the site compound), an ecologist should be contacted to provide further advice. It is recommended that artificial lighting should be directed away from habitat features such as hedgerows and the river that may be used by commuting and foraging otters, badger, bats and dormice;
- The works should follow PPGs/ GPPs²⁴ and the CIRIA C715 Environmental good practice on site handbook²⁵;and,
- The contractor should dispose of any waste material from excavations utilising the Waste Acceptance Criteria. If contaminated material onsite is suspected during excavations, soil testing should be conducted prior to disposal to inform disposal options in accordance with a licensed waste carrier.

²³ Taken to be from 30 minutes prior to sunset to 30 minutes after sunrise.

²⁴ Pollution Prevention Guidelines (PPGs) are out of date and a review process is currently underway to replace them with Guidance for Pollution Prevention (GPPs). These documents are available at <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>. GPPs provide environmental good practice guidance for the whole UK, and environmental regulatory guidance directly to Northern Ireland, Scotland and Wales only. For businesses in England, regulatory guidance is available from GOV.UK instead.

²⁵ Environmental Good Practice on Site Guide, CIRIA, Jan 2015, Edition 4.

- Any excavations should be filled or covered overnight. If this is not possible, one side of the excavation should be graded or partially graded so that it provides an escape ramp to prevent any animals becoming trapped. All excavations should be checked for animals the following morning before proceeding with works; and
- The site compound and any storage areas should be adequately screened to prevent access by otter and badger.

Summary

Potential temporary and permanent effects on the environment during construction and operation of the Scheme have been considered. It is considered that potential impacts on habitats and protected species potentially located within the development footprint can be adequately mitigated for through the implementation of precautionary measures of working. However, due to the nature of the proposed works and the proximity of the Site to Afon Tywi SAC, there is potential for the Scheme to significantly impact Afon Tywi SAC and its designating features. Therefore, the Afon Tywi SAC has been put forward for formal screening.

Appendix A: Assessment of Implications on European Designated Sites Methodology

The Habitats Regulations 1994 as amended by the Conservation of Habitats and Species Regulation 2017 (as amended) require a project to be screened where the project:

- “Is likely to have a significant effect on a European Site in Great Britain (either alone or in combination with other plans or projects)”, and
- “Is not directly managed with or necessary to the management of the site”.

A ‘European Designated Site’ include the following:

- Sites of Community Importance (SCIs);
- Special Protection Areas (SPAs) and potential SPAs (pSPA);
- Special Areas of Conservation (SACs) and potential/candidate SACs (pSACs or cSACs); and
- Wetlands of international importance (Ramsar Sites).

This screening process will look at the following stages²⁶:

- Determination as to whether the project is directly concerned with or necessary to the management of the European Designated Site;
- Examination of the nature of the work;
- Description of the project and other projects or plans that may have the potential to have a combined effect on the European Designated Site;
- Identifying the potential effects on the European Designated Site; and
- Assessing the significance of any effects on the European Designated Site.

The screening will look at any European Designated Site within the following geographical boundaries:

- Within any SAC, cSAC or pSAC or Ramsar site;
- ≤ 2km of any SAC, cSAC, pSAC or Ramsar site;
- ≤30 km of any SAC, cSAC, or pSAC where bats are one of the qualifying interests; and
- Crossing/adjacent to upstream of, or downstream of watercourses designated in part of wholly as SACs, cSACs, pSACs or Ramsar sites.

²⁶<http://www.standardsforhighways.co.uk/ha/standards/Ghost/dmr/vol11/section4/LA%20115%20Habitats%20Regulations%20assessment%20web.pdf>

Appendix B: Site Photographs

Number	Description	Photograph
1	Western of the two fields where the proposed defence will be installed. Taken looking west. Photograph shows the improved grassland habitat, and the intact hedgerow adjacent to the south of the A40 which will be translocated	
2	Western of the two fields. Taken looking east. Photograph shows the hedgerow which divides the two fields, which will be removed as part of the scheme.	
2	The Site in relation to the Afon Tywi SAC, taken looking west. Eastern most field is shown on the right of the photograph.	
4	Road verge and section of the A40 trunk road which falls within the Site. Taken looking east. Photograph shows the poor semi-improved grass road verge and intact hazel hedgerow.	

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