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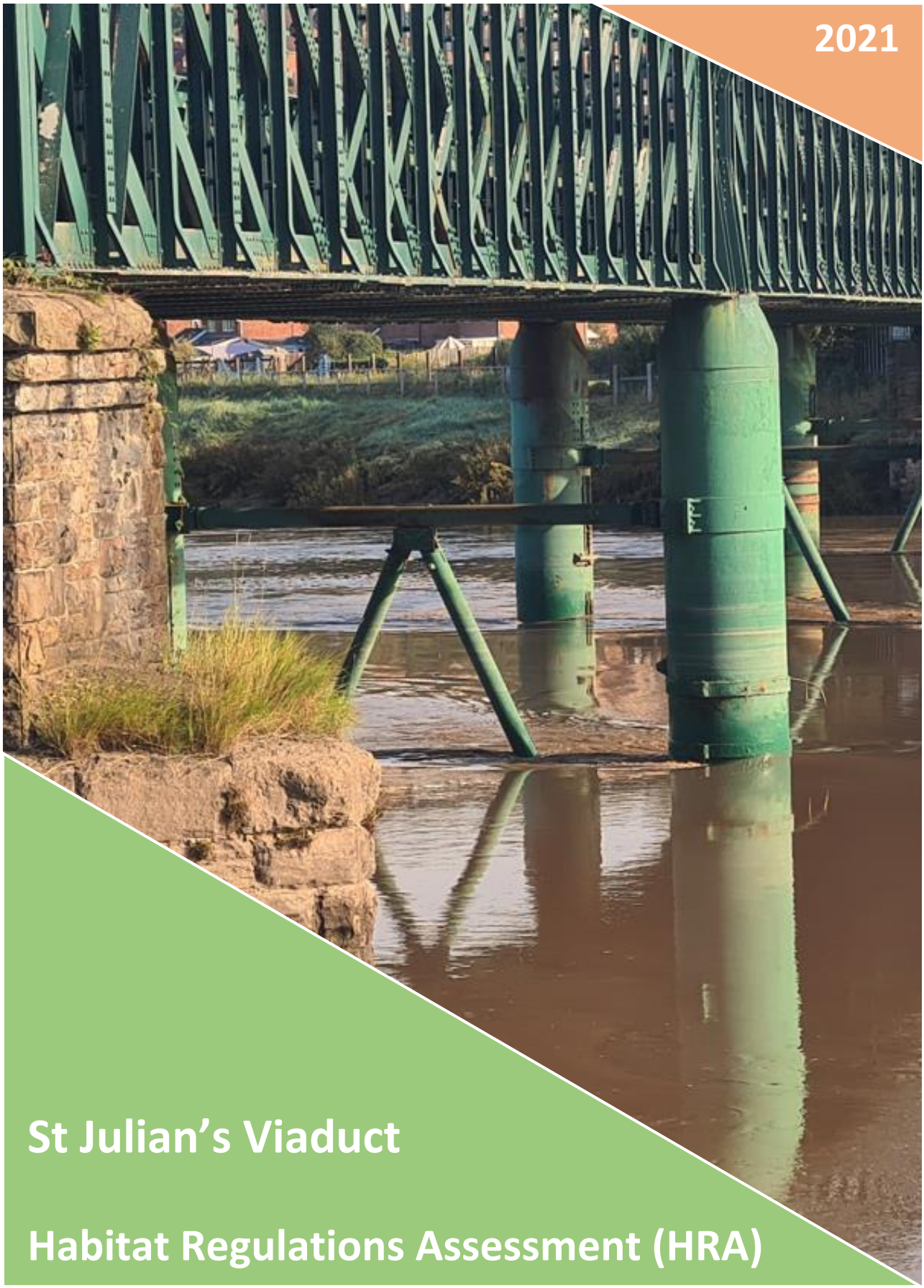

St Julian's Viaduct

Habitat Regulations Assessment (HRA)

EcoVigour
Integrated Environmental Management

NetworkRail

centregreat rail

DOCUMENT INFORMATION			
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1. INTRODUCTION

1.1 ASSESSMENT BACKGROUND

1.1.1 This document provides information to support an Appropriate Assessment under The Conservation of Habitats and Species Regulations 2017 (hereafter referred to as the 'Habitats Regulations') of proposed scour protection measures to be installed at the base of St Julian's Viaduct masonry abutments on both side of the River Usk.

1.1.2 The proposed in channel works will be undertaken between April 2022 to October 2022. Although in channel, the works are to occur during low tide conditions, with no works to occur within flowing portion of the channel. This is to ensure the work to not infringe upon the river embargo period restrictions.

1.1.3 This section of the River Usk is also highly influence by the tides, therefore the requirement of a Marine License.

1.1.4 The main statutory designated site which requires consideration under the Habitats Regulations have been identified as:

- The River Usk - Special Area of Conservation (SAC).

1.1.5 Following review and acceptance, this document will form part of the Marine License Application Band 2, which will be submit prior to the commencement of works along with a separate Water Framework Directive (WFD) Assessment.

1.1.6 In conjunction to the SAC above, this document also provides information to support the determination of a Site of Special Scientific Interest (SSSI) Assent by Natural Resources Wales (NRW).

1.1.7 Therefore, also requiring consideration in relation to seeking SSSI assent for the works from (NRW) is:

- The River Usk (Lower Usk) SSSI

1.1.8 There are further designated sites within proximity to, but not within the footprint of the project, which will be discussed in the sections below.

1.1.9 Under the requirements of the European Council Directive 92/43/EEC 'The Habitats Directive', it is necessary to consider whether projects or plans may have significant effects upon areas of nature conservation importance designated/classified under the Directives. This requirement is translated into UK law through the 'Habitats Regulations'.

1.2 PROJECT BACKGROUND

1.2.1 The site is located north of the M4 Corridor, spanning the river Usk, North to South, with the town of Caerleon further north inland.

1.2.2 St Julian's is an 8-span viaduct carrying two lines of the HNL1 over the River Usk. Four spans (spans 2 to 5) are of metallic construction which are supported by three cast iron piers whilst the remaining spans (spans 1 and 6-8) are of masonry arch construction. The structure is on a slight skew to the watercourse with the overall span being 120m and an average width of 8.5m

Figure 1: St Julian's Viaduct (Southern Shore – receding tide).

1.2.3 It is proposed to install a double layer of 600mm (d50) rock armour to Piers 1, 5, 6 and 7. The proposed rock armour is to be pitched at varying gradients on both banks to limit excavation whilst ensuring that the foundations of the elements are not undermined and extending approximately 5m both upstream and downstream of the structure.

1.2.4 The rock on the high mileage bank will extend a minimum of 1.5 times the width of Pier 5 to the low mileage side of Pier 5, and will extent a minimum of 1.5 times the width of Pier 7 to the high mileage side of Pier 7. The rock armour on the low mileage bank will extend a minimum of 1.5 times the width of Pier 1 to either side of the pier.

1.2.5 A rock armour toe is not required for this structure. Following installation of rock armour, the bed level will be reinstated to suit existing levels, using site won material (original bed material).

2. Legislative Context

2.1 Overview

2.1.1 This document provides information to support an Appropriate Assessment under the Habitats Regulations of the proposed works by (AGC) on behalf of Wrexham County Borough Council.

2.1.2 The Habitats Directive, transposed into UK legislation through the Conservation of Species and Habitat Regulations (2017) (Article 6 of European Council Directive 92/43/EEC), any plan or project not directly connected with, or necessary to, the management of a European designated site but likely to have a significant effect, either alone or in combination with other plans or projects, shall be subject to an appropriate assessment of its implications for the site in view of the site's conversation objectives.

2.1.3 If the Appropriate Assessment concludes that the proposed works may have an adverse effect on the integrity of a European Site, or that such an effect cannot be ruled out (in line with the recognised precautionary principle) avoidance and mitigation measures to avoid such an effect must be considered.

2.1.4 If it cannot be concluded that the proposed works will not have an adverse effect upon the integrity of the site(s), further measures and assessments would be required. Potentially in the form of compensation.

3. Methodology

3.1 Overview

3.1.1 This assessment has been produced in-line with Habitats Regulations guidance published by the JNCC (2010), English Nature (now Natural England) (2001) and the Countryside Council for Wales (now Natural Resources Wales) (2008).

3.1.2 The structure is situated directly above the River Usk SAC & SSSI.

3.1.3 Additionally, there is a further designated sites within <4000m to the project which will be discussed in further detail within the scoping-out section below.

3.1.4 Non-Statutory sites such as Ancient Semi Natural Woodland (ASNW), Local Nature Reserves (LNR) and National Nature Reserves (NNR) are within proximity to the working area and proposed compound area. However, in relation to the ANSW, no works will occur within or directly adjacent to these sites and will not be discussed further.

3.1.5 Regarding the LNR and NNR, these sites share similar boundary extents as the above statutory sites and therefore will benefit by proxy, from this assessment and control measures. These sites will not be discussed in further detail as they overlap with the above sites.

3.1.6 This Habitat Regulations Assessment (HRA) will focus on the potential likely significant effects (LSE) of the remedial works on the SAC and SSSI.

4. DESCRIPTION OF THE PROPOSED ACTIVITIES

4.1 SITE CONTEXT

4.1.1 The viaduct spans the River Usk Estuary between the western side of Caerleon and the northern side of St Julians, Newport.

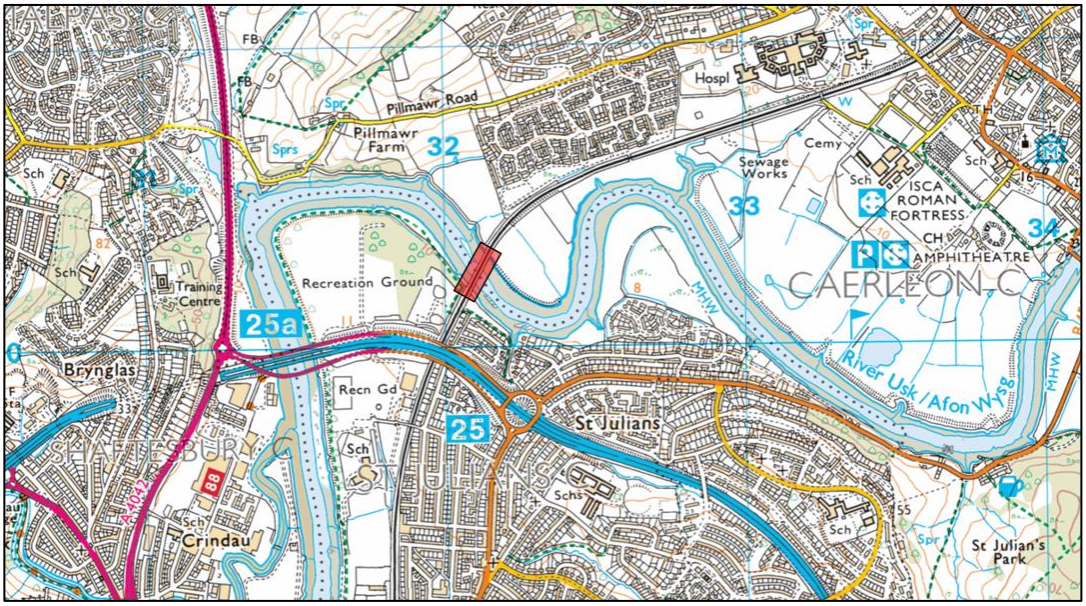

Figure 2: OS Map location of project in relation to wider area.

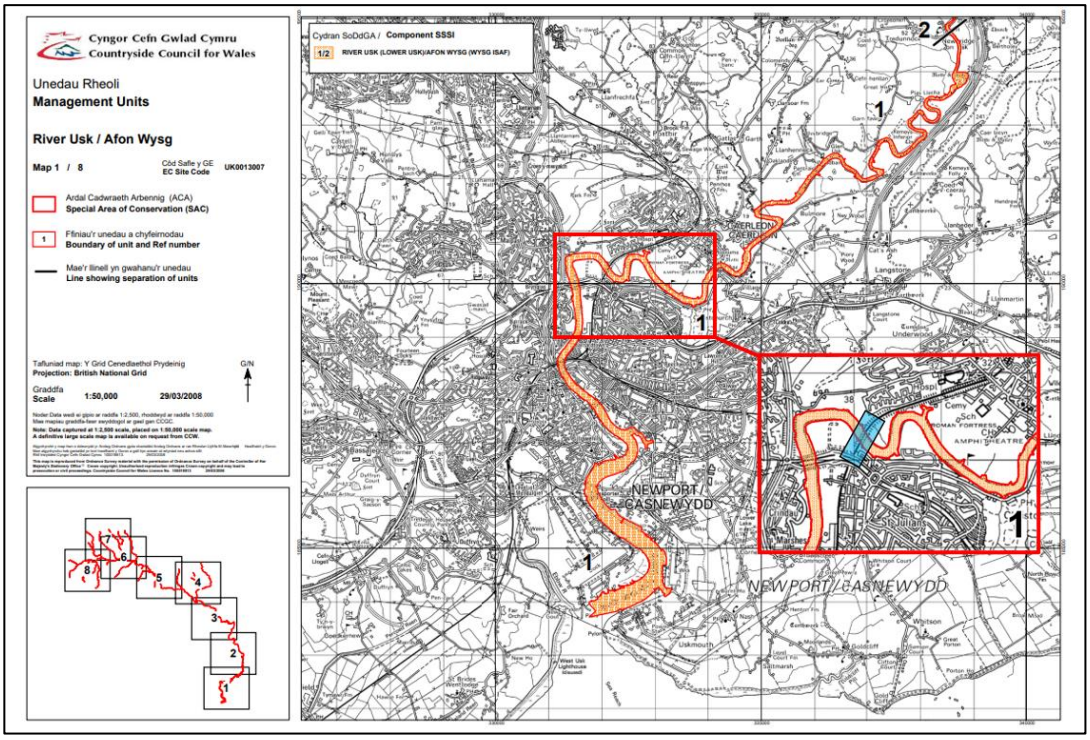

Figure 3: Boundary of SAC in relation to project area. CCW/NRW Map 30 overlay.

4.2 ORIGINAL OVERVIEW

The sub-sections below summarise the sequence of works at St Julians Viaduct Scour Protection Works. The full detailed methodology as available in Appendix B – Construction Phase Plan (169952-CGE-CPP-A01). Modification to the final design have been agreed in principle and are detailed below. The original method statements outlined below, are still valid, however the final construction is modified.

Site Compound Delivery/Setup - North

4.2.1 A satellite compound is required to store material and provide welfare to the scour protection works situated on the northern bank below the structure. The compound itself will be situated adjacent to Caerleon Comprehensive School within one of the sports fields (Please see figure below).

Figure 4: Northern Compound and Access Route.

4.2.2 To access the structure, the route will follow an existing lane, which transitions into a gravel pathway further south of the satellite compound, running parallel with the rail corridor. The haul crosses agricultural fields which during the summer months are baked hard and will make a suitable surface on which to travel delivery vehicles. Where there are low spots which form soft spots, the access will be uprated with a geotextile separation layer covered with compacted clean stone as required.

4.2.3 In terms of vegetation clearance, only limited removal of overgrowth is envisaged with the path of least resistance chosen for the haul road route. Limited temporary removal of bank vegetation will be required for the scour protection and access and egress of plant machines.

4.2.4 Fuels, oils and other COSHH materials will be stored in secure locations within the compound. with secondary containment in place.

Site Compound Delivery/Setup – South

4.2.5 The main compound will be situated north of the M4 corridor within a large playing fields and amenity grassland. The compound will be accessed via an existing road that runs below the M4, attached to the rear of Newport Indoor Bowls Centre. (Please see figure below).

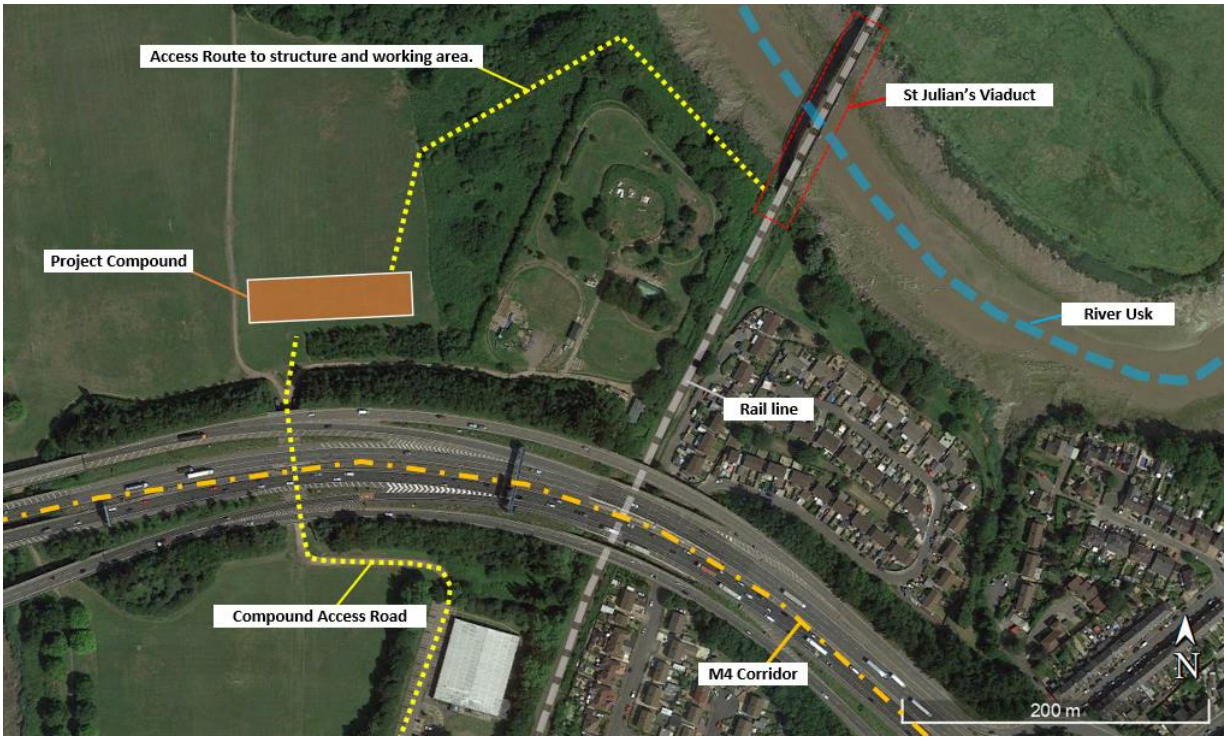

Figure 5: Southern Compound and Site Access Drawing.

4.2.6 Access to the structure, will require the construction of a haul road. There is no existing access route to the structure from the south and consequently a new route will be constructed. As with the north a geotextile separation layer covered with compacted clean stone will be used to provide a viable surface for vehicle and plant movement. Vegetation clearance is required through mixed scrub habitat.

4.2.7 Vegetation clearance will be required within the woodland and scrub area between the playing fields and the viaduct. This will be routed to avoid large trees and areas of good habitat. There are some large areas of Japanese knotweed and Himalayan balsam within this area and an Invasive Non-Native Plant (INNS) Control Plan will be developed to prevent these plants being spread and to reduce their vigour across the site.

4.2.8 As with the satellite compound, all fuels, oils and other COSHH materials will be stored in secure locations within the compound. with secondary containment in place.

Vegetation Removal

4.2.9 Vegetation removal is required for both access routes to reach the structure. I mixture of pollarding, felling, cutting to ground and topsoil striping will be necessary to enable haul road construction.

4.2.10 All vegetation clearance works will be supervised by the Ecological Clerk of Works (ECOW). Prior to works commencing relevant Toolbox Talks and Ecological Briefings will be delivered by the ECOW.

Excavation and Scour Protection Install

4.2.11 Once the overland access routes to the structure have been completed, a single access and egress route into the estuary on either shore will be formalised. On the southern side of the viaduct / river, this will be constructed on the downstream side of the structure and on the northern side of the viaduct / estuary, this will be constructed on the upstream side of the structure. Localised temporary grading of the in-channel slope will be required, followed by the placement of clean stone on top of a geotextile separation layer to allow for safe access and manoeuvring for the excavator to the masonry piers during low tide.

4.2.12 Excavators to be used with the channel will be between 13t-20t in size.

4.2.13 A plan view of the approximate position of the scour protections to be installed and buried is shown below (please refer to Appendix B – Drawings - HNL1 40 48 - Scour Protection Design Section) for full size document

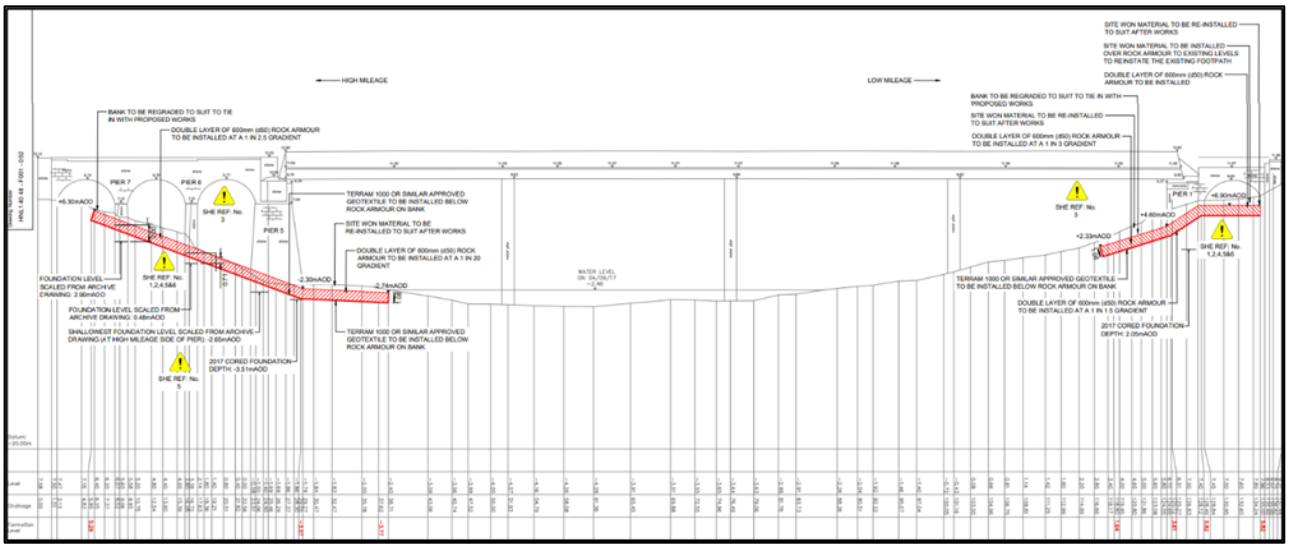

Figure 6: Cross section of Scour Protection Design.

4.2.14 Silt will be excavated from the footprint of the scour protection footprint, in layers, to a depth of between 1.08m and 1.7m on the southern side of the viaduct and 1.7m and 2.1m on the northern side of the viaduct (Centregreat are currently consulting with JBA the scheme designers regarding, reducing the depth of excavations on the northern side) It is believed that at these depths, the rock armour will be founded on competent ground.

4.2.15 The rock armour will be placed a section at a time to avoid excavation over the entire area.

4.2.16 Excavated material will be loaded onto tracked 10t Hydrema Dumpers and transported to secure storage locations. Material from the north and south will be temporarily located outside of areas subject to the high potential flood risk from the sea. Excavated materials will be stored in the layers in which it was removed, with stakes place in the stockpiles recording the areas from which the materials were stripped. This will allow for the identification of test samples.

4.2.17 The lower face of the exposed excavation will be battered back to tie into the river channel so that it does not create an isolated pool which could result in the entrapment of fish or otters and to allow any shallow ground water seeping from the riverbank to flow into the river channel and not become trapped in the excavation.

Installation of D50 Rock Armour

4.2.18 Blockstone used within D50 rock armour measures approximately 600mm in all directions. This will be bought onto the worksite using the tracked dumpers and tipped into the excavation, from where it will be placed onto a geotextile separation layer by the excavator and lightly compacted using the bucket. This process will be completed a section at a time with the aim of placing the lower layer of blockstone into each excavated section, between each tide, so that excavated areas are not submerged between tides. The second layer will be placed so that blockstone within each layer interlocks to form a stable layer, once a large enough area of the first layer has been completed.

Dewartering & Silt Water Management

4.2.19 Although the works will occur during low-tide, it is envisaged that ground water will still need to be controlled during open excavations. Consequently, to maintain a dry excavation, a sump pump will be utilised. The main pump unit will be located on the shore outside of the river channel.

4.2.20 Any removed ground water will be passed through a filter sump or silt sock on third party land prior to being allowed to discharge back into the watercourse.

4.2.21 In the unlikely event the volume of silty water becoming unmanageable using low complexity measures, a Silt Buster lamella clarifier will be utilised. The specifics of it's design will be discussed with NRW.

4.2.22 Stored riverbed material will be demarcated and lined with silt fence and if possible, once a bund is completed. It will be covered with a temporary visqueen cover to prevent precipitation causing further seepage or pollution.

Reinstatement

4.2.23 Following the installation of the D50 type rock armour. Excavated silt which has been tested and proved to be free of contamination will be returned to site and lightly compacted around the outside of the rock armour using the 13t excavator.

4.2.24 The exposed armour will be buried below the previously excavated bed material, which will be placed in the sequence in which it was removed and graded to match the wider river channel profile with any excess material used to fill existing scour failure locations. If further excess material is present in such volumes as to cause a change to the previous river profile. They this excess material will be removed from site via a licensed waste carrier.

4.2.25 All haul roads and temporary trackway will be removed and ground reinstated. The temporary access ramps into the watercourse channel will be removed and graded back to the original profile.

4.2.26 Reseeding and replanting measures will be undertaken along the access routes to replace and locally enhance the biodiversity to comply with Network Rail Biodiversity Offset initiatives.

Method Summary

4.2.27 Below is a broad bullet point summary of the project actions.

- Create temporary compounds to be situated at Caerleon Comprehensive School (North of Structure) and Amenity Grassland near Newport Indoor Bowls Centre (South of Structure).
- Haul roads to be a mixture of clean stone laid on terram or aluminium trackway panels.
- All channel works to occur during low-tide conditions.
- Excavated material to be stored outside high rick locations and lined with silt fence as a minimum.
- No excavations to be left open overnight.
- De-watering to be passed through a silt management system prior to discharge.
- Temporary regrading of channel slope to allow machines to access and egress safely.
- Once scour D50 protection stone is installed, bed level will be returned to previous levels using stored bed material.

Emergency Plans

4.2.28 The contractor will ensure that emergency pollution control plans above standardised spill control plans are prepared prior to the commencement of the project. The contractor will ensure a plan on vehicle extraction from the in-channel environment is available with plant machines or equipment on site capable of retrieving a stranded machine.

Emergency Plan Fundamentals:

- Any disabled machine within the channel environment will be immediately checked for any potential release of hydrocarbons, and if discovered, spill kits and trays will be used immediately.
- The on-call emergency plant engineer provider will be requested to attend site in the event that the fault cannot be resolved by the operator.
- Should the on-call engineer be unable to repair the machine, then it should be attempted to extract the machine using a similar powered machine, using task specific chains or tethers to tow the vehicle to a safe position.
- Should this fail, then the contractor must drain the machine of all fuel and hydraulic fluid before the tidal waters encroach on the machine. NRW and the on-call Environmental Clerk of Works will be contacted immediately and made aware of the emergency and risk of a pollution event.

5. HRA Methodology Objectives

5.1.1 Habitats Regulation Assessment is an assessment of the potential effects of a proposed project / maintenance activity on a European site(s) (alone and/or in combination with other plans and projects). The Habitats Regulations promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the project should aim to avoid significant adverse effects by identifying potential measures to avoid these effects.

5.1.2 Where adverse effects remain, mitigation measures should be applied to a point where these effects are no longer significant. If sufficient mitigation measures cannot be applied, the project should not be taken forward in its current form. In such a scenario, the project will require an assessment to identify alternative solutions that deliver the project in a form that avoids any significant adverse effects.

5.1.3 Where significant adverse effects remain, compensatory measures will be required if the project is to proceed. However, the application of such measures will only be permitted if no alternative solutions exist and the project is required for imperative reasons of overriding public interest (the 'IROPI' test).

6. Designated Sites within Proximity to Site

6.1.1 There are several statutory designated sites within proximity to the project.

6.1.2 Site of Special Scientific Interest:

- The River Usk (Lower Usk) - SSSI

6.1.3 Special Area of Conservation:

- The River Usk - SAC

6.1.4 St Julian's Park Local Nature Reserve,

6.1.5 Gwent Levels - Nash and Goldcliff, As the features of the SSSI are largely in-situ or the species that are reliant on in-situ features, that will not be impacted by the proposed project, as they are a significant distance away. remainder of this assessment.

6.1.6 The remaining SAC and SSSI will be discussed in further detail in the following sections below.

7. River Usk (SAC)

7.1 Overview

7.1.1 The River Usk rises in the Black Mountain range in the west of the Brecon Beacons National Park and flows east, then south and then enters the Severn Estuary at Newport.

7.1.2 The Annex features that are the reason for the Rivers classification are summarised below.

Table 1: Annex I & II features of the SAC.

EU Code	Feature
Annex I habitats that are a primary reason for selection of this site	
	Not Applicable
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site	
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
Annex II species that are a primary reason for selection of this site	
1095	Sea lamprey Petromyzon marinus
1096	Brook lamprey Lampetra planeri
1099	River lamprey Lampetra fluviatilis
1103	Twaite shad Alosa fallax
1106	Atlantic salmon Salmo salar
1163	Bullhead Cottus gobio
1355	Otter Lutra lutra
Annex II species present as a qualifying feature, but not a primary reason for site selection	
1102	Allis shad Alosa alosa

7.2 CORE MANAGEMENT PLANS (CMP) BY NRW

7.2.1 One of the roles of the Competent Authority charged with overseeing the development of a SAC is to produce and implement a Core Management Plan (CMP). CCW now NRW produced the initial CMP in 2008.

7.2.2 The documents set out the vision for the River Usk to be maintained and where necessary, restored to a high ecological status, with features 1 to 5 and 6 at favourable conservation status (FCS) as part of a dedicated long-term vision.

7.2.3 The Viaduct structure falls within NRW Management Unit 1 (Tidal reach) of the CMP, illustrated below.

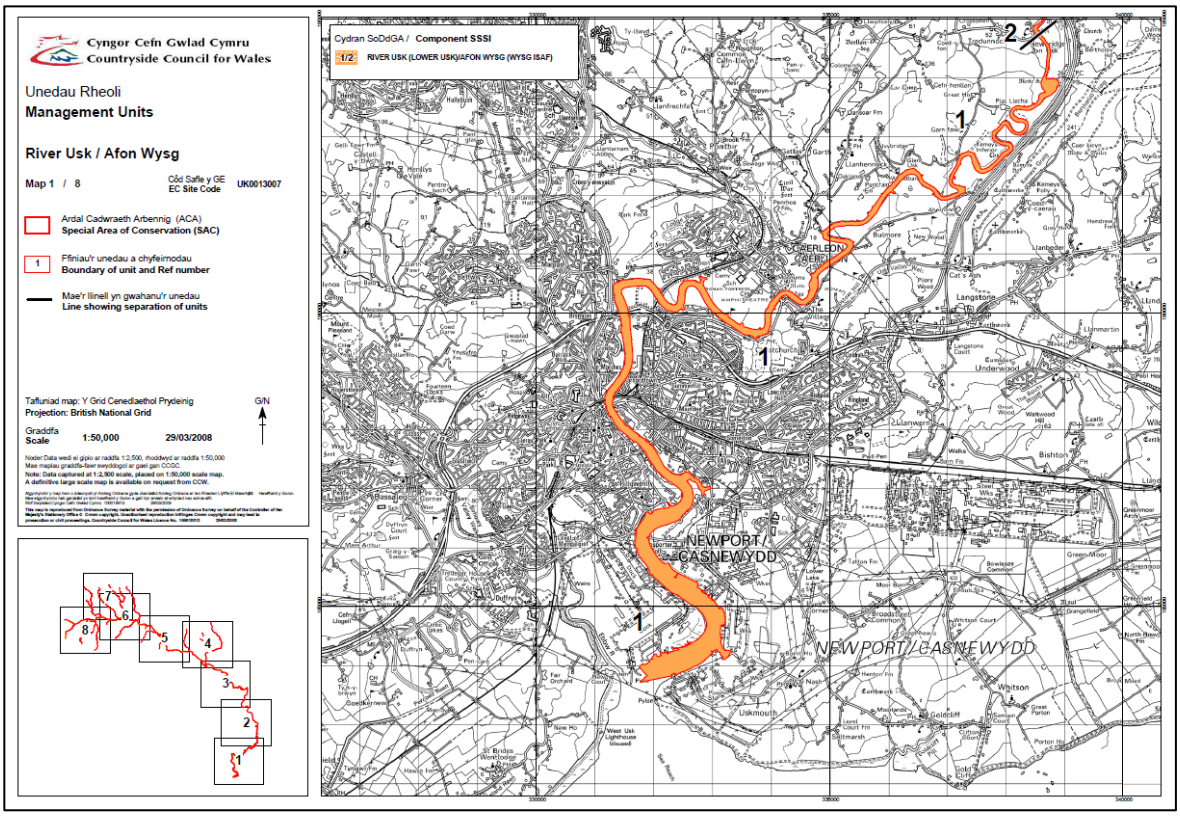

Figure 7 - CMP Management Unit Map

7.2.4 The table below features extracts from the 2008 CMP describing the management unit in which the project is situated.

Table 2: Management Unit Description.

Management Unit	Title	Description
1	Tidal reach	This section encompasses the estuarine transition from the Mouth of the Severn to the narrowing freshwater river habitat of the Usk, no longer significantly influence by the tidal reach, north east of Caerleon.

7.3 KEY SPECIES AND HABITATS

7.3.1 Within each management unit, Key Habitats (KH), Key Species (KS) or Sym (features that are of importance in a unit but are not the main focus of management or monitoring) features are identified. Features that are not present in the management unit are marked (x).

7.3.2 This allows for the scope of the required mitigation at River Usk Viaduct to be narrowed to the specific features that can be found in the locality of the structure and therefore target mitigative measures with greater effectiveness.

Table 3: Management Unit Key Feature Index.

River Usk	**Management Unit**
	1
SAC	YES
SSSI	YES
SAC Features	
1. Sea lamprey	KS
2. River lamprey	Sym
3. Brook lamprey	x
4. Twaite shad	KS
5. Allis shad	Sym
6. Atlantic salmon	Sym
7. Bullhead	x
8. European otter	KS
9. Rivers with floating vegetation often dominated by water-crowfoot.	x

7.3.3 The KS & KH of Management Unit 3 within the CM are Sea Lamprey, Twaite shad, European Otter and River with floating vegetation often dominated by water-crowfoot. Theses KS & KH will be concentrated on in terms of proposed mitigation, while the Sym features will benefit from the measures indirectly.

7.4 CURRENT CONDITION OF KEY MEASURED UNITS WITHIN NRW CMP

7.4.1 From the 2008 assessment, the known status of the Key Features in Management Unit 1 above was:

- Twaite shad - Current Status: Unfavourable – Unclassified
- Sea Lamprey - Current Status: Unfavourable – Unclassified
- European Otter - Current Status: Favourable
- Brook lamprey - Current Status: Favourable
- River lamprey - Current Status: Favourable
- Allis shad - Current Status: Unfavourable – Unclassified
- Bullhead - Current Status: Unfavourable – Unclassified
- Atlantic salmon - Current Status: Unfavourable – Unclassified

7.4.2 Note, these statuses are based on the designated site as a whole and does not indicate weather specific areas are failing or succeeding in the necessary criteria.

7.5 SPECIFIC KEY FEATURES WITHIN MANAGEMENT UNIT INFORMATIN

7.5.1 CMP outlined the Key Species or Key Species within a certain management unit.

7.5.2 Within the table below, all special features are allocated to one of seven classes in each management unit. The relevant classes to the specific management unit are outlined below:

- KS – a 'Key Species' in the management unit, often driving both the selection and management of a Key Habitat.
- Sym - habitats, species and earth science features that are of importance in a unit but are not the main focus of management or monitoring. These features will benefit from management for the key feature(s) identified in the unit. These may be classed as 'Sym' features because:
  a) they are present in the unit but are of less conservation importance than the key feature; and/or
  b) they are present in the unit but in small areas/numbers, with the bulk of the feature in other units of the site; and/or
  c) their requirements are broader than and compatible with the management needs of the key feature(s).
- x – Features not present in the management unit.

Table 4: Key Features within Management Unit 1.

River Usk (Lower Usk) SSSI	**Management Unit 1**
SAC	Yes
SSSI	Yes
SAC Features	
1. Sea lamprey – 1095	KS
2. River lamprey – 1096	Sym
3. Brook lamprey – 1099	X
4. Twaite shad – 110.	KS
5. Allis shad – 1102	Sym
6. Atlantic salmon – 1106	Sym
7. Bullhead – 1363	X
8. European Otter – 1155	KS
9. Rivers with floating vegetation often dominated by water-crowfoot - 3260	x

7.5.3 Within the management plan, it is indicated that Twaite shad and Sea lamprey spawn within Units 2 & 3 and migrate through Unit 1, where they may be subject to disturbance impacts, so are selected as key features in all units. This potential disturbance vector will be discussed further within the subsequent mitigation table in section 10 below.

7.5.4 Consequently, it is stated that the management for twaite shad and sea lamprey should also be sympathetic for Atlantic salmon, river/brook lamprey (spawning habitat) and bullhead. Therefore, mitigation measures proposed to ensure limited disturbance for Twaite and Sea Lamprey, will in turn benefit the other species not specifical within the management unit, but ultimately still reliant on it's continued good function.

7.5.5 The specific management measures for otter relating to adjacent habitats and disturbance requires its selection as a key feature in all management units, including the Tidal Reach.

7.5.6 Concerning feature 3260, floating vegetation often dominated by water-crowfoot' occurs in Units 2, 3 & 10. All these management units are upstream of Unit 1 – Tidal Reach.

7.5.7 The table below details the Annex II which are the highlighted Key Species (KS) of the specific management unit in question.

Table 5: Key Annex II Features Targeted in Unit 1.

Feature	Information
Sea Lamprey 	The sea lamprey (Petromyzon marinus) is a parasitic lamprey native to the Northern Hemisphere. Sea lampreys are anadromous; from their lake or sea habitats, they migrate up rivers to spawn. It is the largest of the three British lamprey species, reaching approximately 1m in length. After spending 18 to 24 months feeding at sea, adult sea lamprey migrate up rivers in the spring and early summer. They spawn from May to July in areas of pebble and cobble substrate. The Usk is a medium-sized catchment in south Wales, important for its population of sea lamprey Petromyzon marinus. Survey of juveniles and observation of spawning adults indicates that this species is mainly restricted to the lower reaches of the catchment.
Twaite shad 	Twaite shad are very similar to Allis shad. They are members of the herring family and enter freshwater only to spawn. Both species spawn on rocky river substrates, and the eggs require good quality, well-oxygenated water to survive. The Usk is one of only four sites in the UK where a known breeding population of twaite shad occurs (the Rivers Wye and Tywi are other SAC sites). Water quality and quantity are considered favourable for this species. The main channel is largely unmodified and a variety of aquatic habitats are present, including good quality spawning gravels and deep pools used for cover by adults and fry.
European otter 	The Otter “Lutra lutra” is a semi-aquatic mammal, which occurs in a wide range of ecological conditions, including inland freshwater and coastal areas. The majority of the otter population in Great Britain occurs in Scotland, with a significant proportion of this number being found in the north and west of the country. Other strong populations survive in Wales and Ireland. The River Usk is an important site for otters Lutra lutra in Wales. They are believed to be using most parts of the main river, from Newport upstream, and in recent years signs of otters have increased. In 1991 an expansion upstream of known otter ranges was recorded on several tributaries, including the Honddu, Senni and Crai. The upper Usk may have acted as a ‘refuge’ during the decline of the 1950s, and had subsequently acted as a ‘source’ population for recolonisation of south-east Wales.

8. River Usk (Lower Usk) SSSI

8.1 OVERVIEW

8.1.1 The River Usk (Lower Usk) SSSI is a rare example of a large mesotrophic lowland river which has not been subject to significant modification by man. Of particular significance to the river's morphology and biology are the extensive deposits of fluvio-glacial and alluvial material in the Usk valley between Abergavenny and Newport.

8.1.2 River Usk (Lower Usk) is split into 10 subsections within the figure below found in Map 75 (see figure below).

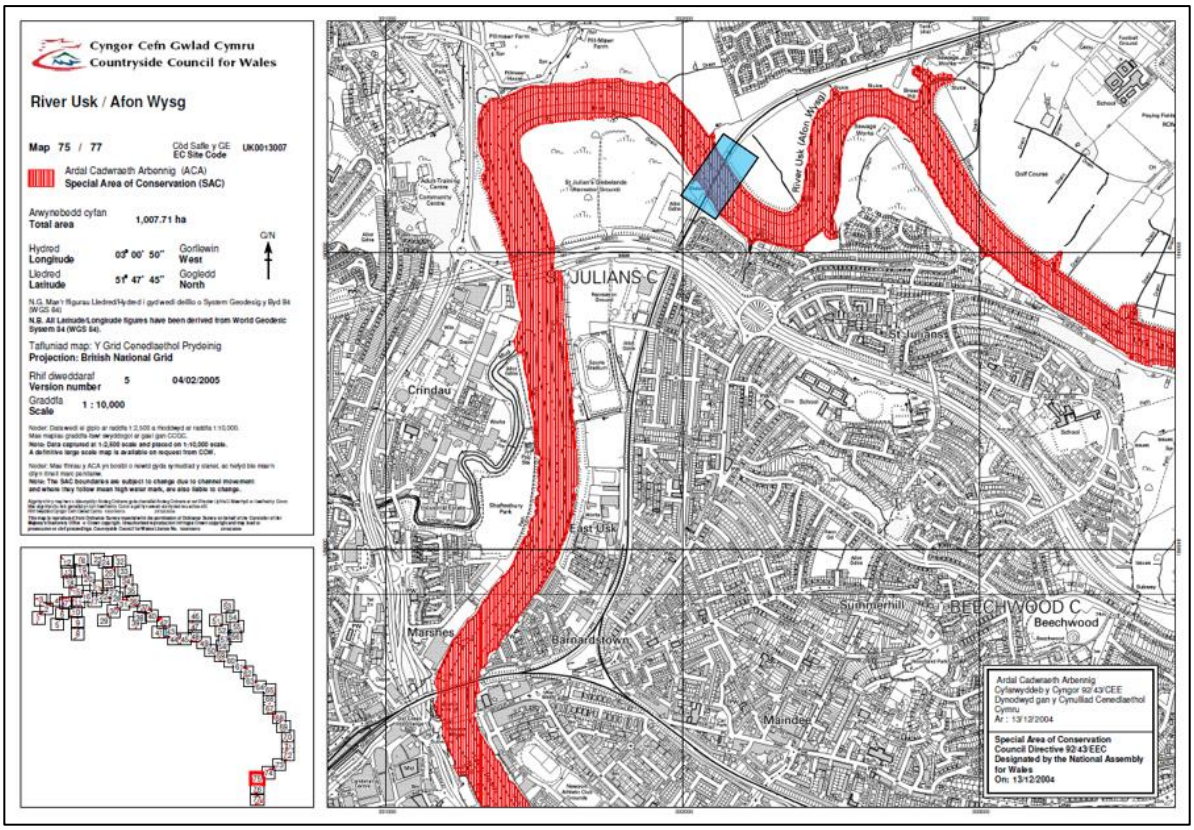

Figure 8: Lowe Usk SSSI Map location.

8.2 SITE MANAGEMENT STATEMENT

8.2.1 The competent authority, NRW in this regarded, produce Site Management Statement's (SMS's), which outline the features that inform the overall status of a designated site.

8.2.2 The site supports the following habitats and species covered by the EC Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna:

- Common otter Lutra lutra - Annex II and IV
- Allis shad Alosa alosa - Annex II and V
- Twaite shad Alosa fallax - Annex II and V
- Brook lamprey Lampetra planeri - Annex II
- River lamprey Lampetra fluviatilis
- Bullhead Cottus gobio - Annex II
- Atlantic salmon Salmo salar - Annex II and V
- Atlantic stream crayfish Austropotamobius pallipes - Annex II and V

8.2.3 Additionally, Common Otter and Atlantic stream crayfish are also listed in schedule 5 of the Wildlife and Countryside Act 1981, as amended.

8.2.4 In addition to the highlighted features of importance. The SMS also outlines potential damaging vectors to a designated site features, summarised as Potentially Damaging Operations (PDO) lists. Below are the activities considered relevant to the proposed project (Table 2 below).

Table 6: PDO list from NRW Designated Site Finder Tool.

SMS Ref No:	Type of operation
07.	Dumping, spreading, discharging or storage of any materials.
23.	Erection of permanent or temporary structures or the undertaking of engineering works, including drilling or the laying, maintenance or removal of pipelines and cables, above or below ground.

8.2.5 Features of the SSSI designation overlap with the SAC features and will be discussed while discussing SAC mitigation. The mitigation discussed will be aimed that the SAC features, however the SAC mitigation will benefit SSSI features in tandem.

9. PHYSICAL PROCESSES

9.1 RELEVANT POLICIES WITHIN THE SHORE MANAGEMENT PLANT 2 (SMP2)

9.1.1 As part of the Appropriate Assessment, it is necessary to compare the proposed works against the long-term policies outlined within the Shore Management Plan 2 (SMP2). Within the SMP2 there are several policy units relevant to this section of coastline and estuary.

9.1.2 The structure is contained within Policy Unit NEW3 (Newport & USK).

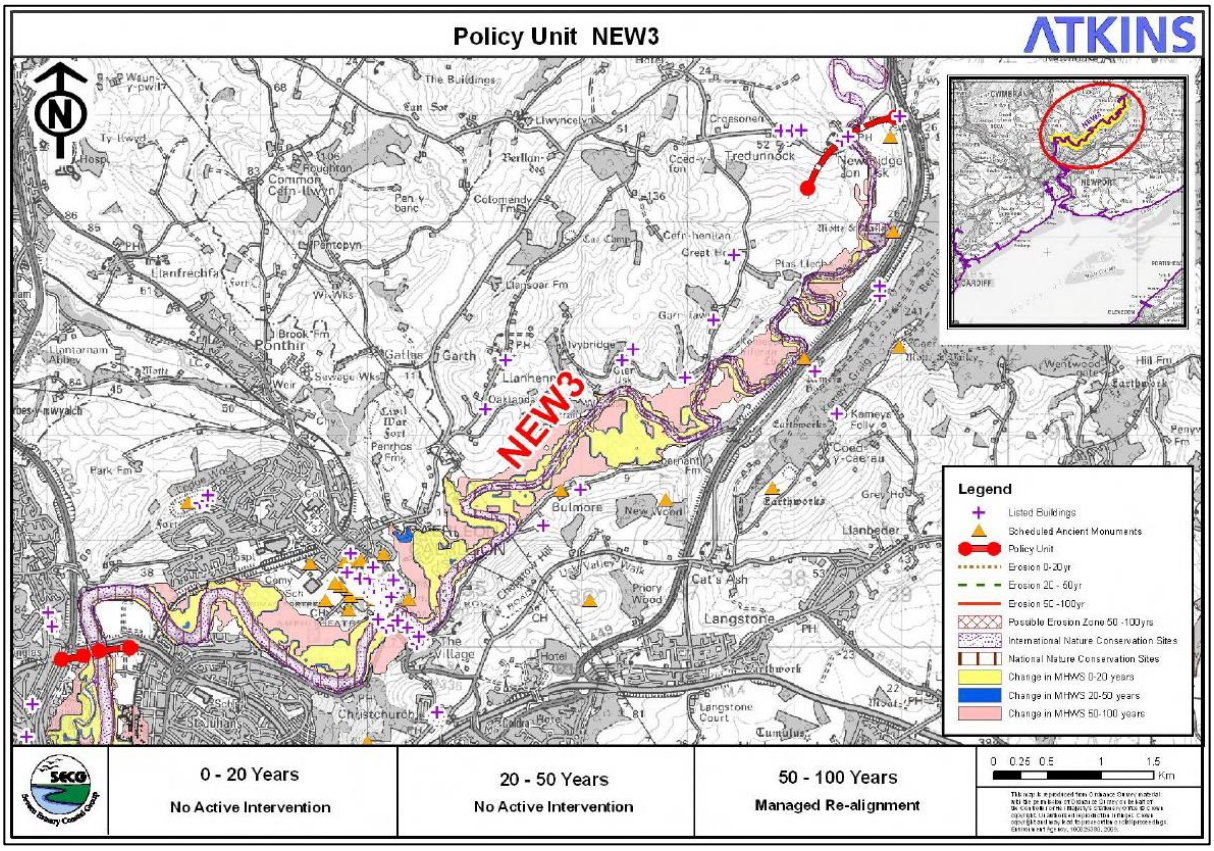

Figure 9: SMP2 - Policy Units

9.1.3 Management units are defined within epochs, with epoch 1 referring to periods from present to 2025, epoch 2 referring to years between 2025-2055 and epoch 3, 2055-2105. As part of the SMP2, the chosen policies are measured against the potential economic impacts and environmental impacts projected over the course of time.

9.1.4 Table 12 below, described the project habitat loss as a consequence of the long-term preferred policy.

Table 7: Relevant Policy Unit description.

Policy Unit		**Policy Plan**			
		2025	**2055**	**2105**	**Comment**
NAW3	Newport & Monmouth	NAI	NAI	MR	NA
Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

9.1.5 As part of the Strategic Assessment, Policy Unit NEW 3 - River Usk (on both Banks) at M4 crossing to Newbridge on Usk. It is projected that no properties, critical infrastructure or designated sites are at risk of flooding within the policy unit either now or in the future.

9.1.6 Consequently, No Active intervention is therefore the environmentally preferred policy option, as well as the selected SMP2 policy for this unit; however, this will potentially result in an increased risk of flooding of agricultural land along the River Usk east of Caerleon.

9.1.7 Regarding whether the proposed scour works are an infringement of the No Active Intervention Policy, this assessment deems the project as not challenging the Policy objectives to allow the natural progression of tidal and fluvial process. The rational, is that as the works are focusing on the free-standing bridge structure, itself not a flood defence structure presenting a hard boundary.

9.1.8 Combined with the fact that the scour protection works, focus on below bed level remedial measures and will return the riverbed profile to previous levels, suggests that there will be no impact to the current rate of water flow or on the wider fluvial/tidal processes. The bridge itself will not prevent the natural loss of land through increased sea levels and therefore would not represent an example of coastal squeeze.

9.1.9 It is conceivable that St Julians Viaduct's current structural tolerances will need to be reviewed in the light of future increased occurrences of high energy weather events, combined with naturally higher tidal limits. However, such engineering and long-term infrastructure considerations are beyond the scope of these scour works and this Appropriate Assessment.

10. Assessment of Potential Impacts Resulting from Specific Activities and Proposed Mitigation Measures – St Julians Viaduct

This section outlines the receptors of potential damaging vectors as a result of the proposed works and proposes appropriate mitigative measures to ensure that there is not a significant likelihood of impacts.

10.1 Annex I Habitats – Impacts & Mitigation

Receptor	Affected Site	Potential Hazard	Mitigation Measures	Likelihood of Impact
River - Key Habitat Features	SAC/SSSI	Broad loss of habitat from project activities.	The necessity of the buried hard engineered solution requires physical works and access within the designated site boundary, in this instance the further bed itself, when exposed at low-tide. The design will require the excavation of silt, mud and potentially underlying soils/rock, from around the stone abutments/piers of the viaduct over an area of approximately 20m upstream and 10m downstream of the viaduct on the northern side of the estuary and 10m upstream and 20m downstream of the viaduct on the southern side of the estuary. Access to the watercourse will be situated tightly as possible, to the existing rail structure with no deviation from agreed access and egress points on both sides of the structure. As the structure is located within the Tidal Reach, Annex I Habitat feature 3260 is not known to be present in this specific location below or adjacent to the structure and is currently not listed as present within Management Unit 1 – Tidal Reach. In relation to the exposed mud bed during low tide, the habitat will be reinstated following completion of the scour works, ensuring the habitat and profile of the watercourse is returned to its previous characteristics. Management of the material and appropriate checks will be outlined within Water Framework Directive in relation to potential contaminants and the required control measures. During the project, all welfare, storage, parking and general works will occur within hard standings being created a significant distance away from the designated environment.	Negligible Likelihood of significant for Impacts with revised design.

Receptor	Affected Site	Potential Hazard	Mitigation Measures	Likelihood of Impact
			Only minor vegetation clearance will be required on either side of the rail abutments for access and portions of the southern tall scrub habitat for the creation of a haul road to move material and plant machines to the structure. Replanting or re-seeding will be undertaken in areas whether significant clearance is required to form the access road. This is likely to be in the southern section of the works as a portion of scrub and scattered woodland will be temporarily impacted as a result of the required haul road route. A pre-works survey will be undertaken by an ecologist, prior to vegetation clearance and access route use. Vegetation clearance will be a two-stage methodology, with the first stage cut been undertaken during winter 2022 (Jan/Feb) to reduce the potential impact to nesting birds during the coming breeding season.	

Receptor	Affected Site	Potential Hazard	Mitigation Measures	Likelihood of Impact
Broad Habitat Features	SAC/SSSI	Contamination of the river from spillage of hydrocarbons during refuelling of plant and equipment or due to equipment failure.	Prior to works commencing. RAMS and methodology will be reviewed by Centregreat & EcoVigour Ltd to ensure they reflect the commitments outlined in this HRA and any additional obligations highlighted by Natural Resources Wales. A full team toolbox talk will be undertaken by the project leader prior to the commencement of track laying and compound creation. All items of static plant will be placed within a plant nappy when not in use or being stored. Plant machinery will be checked for defects and leaks prior to the start of each shift. Within the compound, a refuelling procedure will be implemented, whereby plant nappies will be placed beneath fuelling apertures during fuelling and refuelling will only be undertaken by designated, trained individuals using equipment specifically designed for that purpose.	Negligible likelihood of impacts with mitigation in place.

Receptor	Affected Site	Potential Hazard	Mitigation Measures	Likelihood of Impact
			The project CPP will reference this document, the Water Framework Directive. relevant copies of GPP's and ensure they are understood the principal and all sub-contractors. Referencing these in works specific task briefs. The Contractor will develop and implement an Emergency Awareness and Response Plan. This will describe how spills will be contained and cleaned up. The emergency plan will appoint an Incident Coordinator, define roles and responsibilities during an incident, detail response procedures and contain an inventory of response equipment to be maintained on site. All plant machinery entering the area undergo regular checks and only use approved biodegradable oils. Please see emergency machine protocol within the CPP (Appendix B). The contractor will adhere to the Bio-Security Method Statement and Risk Assessment (Appendix A).	

Receptor	Affected Site	Potential Hazard	Mitigation Measures	Likelihood of Impact
Broad Habitat Features	SAC/SSSI	Contamination of the river from imported material.	The d50 block stone to be used for the scour protection will not be a recycled product to limit the possibility of introducing cross contamination into the environment.	Negligible likelihood of impacts with mitigation in place.
Broad Habitat Features	SAC/SSSI	Contamination of the river from earth movement.	Any mud and riverbed material removed during excavation around the abutments for scour protection install, will be stored in a secure location away from the river and outside of high-risk locations susceptible to flooding from the sea during high tides. These temporary stores will be lined with silt fence and where practical, covered with an impermeable membrane (e.g. visqueen). To prevent saturation from precipitation events.	Negligible likelihood of impacts with mitigation in place.

Receptor	Affected Site	Potential Hazard	Mitigation Measures	Likelihood of Impact
Broad Habitat Features	SAC/SSSI	Release or spread of INNS into the watercourse.	All machines and equipment used above, in or near the watercourse will undergo biosecurity control measures before entering the area – Check, Clean Dry. Machines will be cleaned at the contractor's main yard or supplies yard before being delivered to site. Himalayan Balsam and Japanese Knotweed has been identified along the edges of the watercourse upstream of the structure. An avoidance strategy is to be implemented as these stands are not directly within the working area. The environmental clerk of work will ensure that the contractor is aware of the exact location of INNS stands. Appendix A, outlines the biosecurity risk assessment and method.	Negligible likelihood of impacts with mitigation in place.

ANNEX II SPECIES – IMPACTS & MITIGATION				
Receptor	**Affected Site**	**Potential Hazard**	**Mitigation Measures**	**Likelihood of Impact**
Key Fish Species Assemblage	SAC/SSSI	Noise disturbance / Visual Disturbance / Habitat Destruction.	The location of the works occurs within the Tidal Reach. As described in the previous sections. Unit 1 does not appear to support spawning itself but is however fundamental for migration of fish species further upstream. Consequently, the mitigative measures focus on allowing this section of Unit 1 to continue its vital function, as a conduit of the larger SAC. Working times will be limited to Day time working hours only, within low tide conditions. This will ensure there are periods between shifts of no noise or visual disturbance vectors, other than those that currently exist (e.g., an active rail network, small vessels traversing the Usk and local walkers moving along the riverbanks. In combination with the daylight hours, scour installation works will only occur during low-tide conditions. No works will occur within the flowing portion of the river and no support vessels are envisaged, allowing for an area of the watercourse not to be directly impacted by the works.	Negligible likelihood of impacts with mitigation in place.

ANNEX II SPECIES – IMPACTS & MITIGATION				
Receptor	**Affected Site**	**Potential Hazard**	**Mitigation Measures**	**Likelihood of Impact**
			The project is split into two phases, south and north works. This will serve to alleviate the potential of combined visual and noise pollution vectors. Excavation of material will not be left in such a manner as to entrap fish species within an isolated pool. Once a section of the scour works are completed, the original bed material will be laid above to bury the protection and return the section of river back to its original profile. As these works will also occur during low-tide, the likelihood of entrapment of fish is unlikely.	
Potential Bat species	SAC/SSSI	Noise disturbance / Visual Disturbance / Habitat Destruction.	Trees requiring removal are of negligible bat potential. Compound lighting will be limited to lighting of safety critical areas and task. Night working is not envisaged at the works area. This will limit impact to flight lines and foraging sites along this section of the Usk. Follow up inspection of some of the bridge masonry is to be undertaken by a licensed bat ecologist. Any additional recommendations will be incorporated into the CPP.	Negligible likelihood of impacts with mitigation in place.
Otters	SAC/SSSI/SPA/RAMSAR	Noise disturbance / Visual Disturbance / Habitat Destruction.	Toolbox Talks will inform site personnel on identifying the Annex II Species. The project does not represent a hard boundary preventing access to the wider up and downstream habitats by this species. Additionally, no equipment or excavation will be left in such a manner that an animal could become snared and trapped within the working area. Should an Otter be encountered during works, personnel will temporarily stand down until the animal has vacated the immediate area under its own volition. The location of the compounds where lighting will be maintained for security purposes are a significant distance away from the Usk, as to not cause an impact to otters moving up and down stream during the night.	Impact Not Likely to be Significant, with appropriate mitigation

ANNEX II SPECIES – IMPACTS & MITIGATION				
Receptor	**Affected Site**	**Potential Hazard**	**Mitigation Measures**	**Likelihood of Impact**
			No Otter holts have been confirmed to date, however follow up ecological walkover will occur several weeks prior to the start of the project to ensure if there are new features, they are appropriately surveyed and accounted for. Should a feature be found to be in use by otters, then an EPS license will be applied for if necessary. With appropriate controls on vehicle speed, excess lighting and noise, it is unlikely that otters will be deterred from continuing to use this section of the River Usk, during the works. Follow up surveys recommended in the PEA (Appendix D), will be undertaken in relation to Otters. Should a feature pertaining to Otters be found within an impacted radius of the works. Then a separate EPS license application to NRW, may be required to support the scour works.	
Fish Assemblage	SAC	Contamination of the river from spillage or material import.	See comments under river habitat and reference to project EMP.	Impact Not Likely to be Significant, with appropriate mitigation
Otters	SAC	Contamination of the river from spillage or material import.	See comments under river habitat and reference to project EMP.	Impact Not Likely to be Significant, with appropriate mitigation
Fish Assemblage & Aquatic Species	SAC/SSSI	Impediment of movement or migration along watercourse.	No works will occur within the flowing portion of the river itself and any point in the project. There will also be no supporting vessels which may cause a direct form of visual and noise disturbance to migrating fish species. The limitation of working during low-tide and during the daytime will provide a substantial period of no potential disturbances as a product of the works.	Impact Not Likely to be Significant, with appropriate mitigation

11. Potential In-Combination Effects

11.1 Overview

11.1.1 It is necessary to consider the potential for significant effects from this project in-combination with other plans or projects.

11.1.2 In addition, the plan or project must have been subject to a HRA, which has confirmed that the plan or project is not likely to have a significant effect or demonstrates that the effects have been sufficiently assessed so as to be reasonably understood.

11.1.3 The assessment of in-combination effects must also focus on other projects that have the potential to cause the same types of effects as the proposed maintenance (so that these effects may occur in-combination) and where similar potential impact pathways may exist.

11.1.4 Therefore, this assessment has focused on other projects that could give rise to noise, visual or physical impacts on the SAC species and does not consider projects that could cause different effects.

12. Known Projects Within The Wider Area

12.1.1 There is no known other medium-scale project within proximity to the project. NRW will highlight whether other FRAP applications have been made within this area of the Usk which may have in-combination impacts. This documents assessment will be adjusted accordingly.

13. HRA Conclusion

13.1.1 This section will combine the key feature objectives highlighted in the CMP, against the proposed mitigation measures, to ascertain whether likely significant impacts to the River Usk SSSI & SAC could occur.

13.1.2 The overall project duration is approximately 7-8 months in total. The initial setup stage is likely to consist of 1-2 weeks for compound setup in the south. Scour works will begin on the southern section of the structure first and once completed, the team undertaking the works will move all materials to the northern compound to begin the final portion of the works along the northern sections of the structure.

13.1.3 The in-river/channel works are currently programmed to occur between 4th April 2022 and the end of July 2022. Therefore, the scour protection works are scheduled to begin during the latter weeks of the river embargo period.

13.1.4 However, all works within the river/channel boundary will only occur during low-tide.

13.1.5 During the project there will be a temporary increase in localised noise and visual disturbances near the bank of the Usk during daytime hours. No night work is envisaged.

13.1.6 An Environmental Clerk of Works will attend site to supervise the initial project set up, including follow up audits. As the project is split into two phases, overlapping works and therefore combined vectors for disturbance is curtailed.

13.1.7 Vegetation removal will be localised to enable access and where possible, trees will be cut back / pollarded as opposed to being removed. This will allow for faster habitat regeneration. Where this is not possible, then localised reseeding and replanting will be implemented to compensate.

13.1.8 Toolbox talks will be given to site personnel to ensure individuals understand the context of the works in relation to the River Usk, including its local and regional importance. Implementation of clear communication measures will ensure a frictionless understanding of the mitigation measures outlined in the HRA, which the CPP will reference to.

13.1.9 The control of any biosecurity threats to Salmon or invasive species is essential and is ensured using the Bio-Security Risk Assessment Plan and Management Plan. Engineers will be made aware of any INNS locations and will highlight the stands on design drawings for operatives to reference to.

13.1.10 Biosecurity measures in place at the compound will make sure that all equipment and vehicles delivered to site have been checked, cleaned, dried and disinfected prior to deployment into or near the SAC/SSSI environment.

13.1.11 All hand tools, equipment and machinery will arrive cleaned and free of contaminants from any previous projects. The CPP will make reference to the Biosecurity Management Plan to ensure biological controls are adhered to in this sensitive area (Check, Clean, Dry Protocol). Checks on Biosecurity will form part of Clerk of works auditing.

13.1.12 GPP compliant pollution control measures will be implemented, including, supply of spill kits and dissemination of spill kit training will significantly reduce the risk of any hydrocarbons entering the water course during scour instillation.

13.1.13 Any COSHH materials will be stored in an approved COSHH storage unit with Material Safety Data Sheets (MSDS) presented to all personnel who will be using COSHH materials. This will ensure the upmost control over any hazardous substances. No unauthorised personnel will be permitted to handle COSHH materials. The COSHH store will be situated within the compounds only and a separate store near the watercourse is not permitted.

13.1.14 The location of the works in relation to otters in unlikely to impact overall habitat availability. At no point will there be any loose equipment or excavations within the watercourse in which an otter could be trapped, ensnared or otherwise harmed. The Preliminary Ecological Appraisal has not identified any otter holts to date, however, follow up surveys will be undertaken in the interim period, prior to works beginning to ensure no potential otter features are impacted by the proposed works.

13.1.15 The extraction of any silty ground water from excavations will be sent via a silt sock or pumped into a separate geotextile sump before being allowed to drain into ground water. Stockpiled material will be tested in line with the Water Framework Directives assessment to ensure that material being placed by into the environment does not contain historical contaminant that may become mobilised if returned to the channel/river environment.

13.1.16 Regarding the works locations in relation to fish spawning and the embargo. The location of works is within the tidal reach. Within this management unit (Unit 1), the Tidal Reach is not described for its high suitability for spawning. Sea Lampreys, which are known to spawn in the lower river sections, spawn in similar habitats to salmonids and thus are likely to be found in higher management units, upstream of Unit 1.

13.1.17 The key role that the unit and habitat play in the specific location of St Julians Viaduct is as a continuity between the River Usk and the wider estuary/Bristol channel. The works at no point, will be permitted to create a physical barrier within the free-flowing portions of the river during low-tide. Ensuring a continuous and un-interrupted path for fish species along the River Usk. Works will only occur during daylight hours to ensure further reduced pressures as a result of visual or auditory disturbances.

13.1.18 The exposed mudflats during high tide, are likely of foraging interest to bird populations, however the highly localised nature of the works, suggests a negligible impact to overall availability of foraging locations.

13.1.19 Should the project run into program difficulties, then a request and HRA modification will be sent to NRW highlighted proposed measures to extend the working period (an extended working period would likely be 1-2 weeks).

13.1.20 Consequently, this assessment concluded that the overall project scope and method of implementation will not have a significant impact on the Annex I & II features that inform the sites designation or negatively impact the longer-term management objectives of the Usk SAC or SSSI.

14. Appendix A - Biosecurity Management Plan & Risk Assessment

15. Appendix B- Project EMP

16. Appendix C – Technical Drawings

17. Appendix D – Preliminary Ecological Appraisal