



Kidwelly Viaduct Repairs, Carmarthenshire Habitats Regulations Assessment

Centregreat Rail Ltd

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1. Introduction

1.1 Background

- 1.1.1 Ecus Limited was commissioned by Centregreat Rail Ltd (Centregreat) in July 2020 to undertake a Habitats Regulations Assessment (HRA) for proposed works at the Kidwelly Viaduct, Carmarthenshire, Wales (National Grid Reference SN 39863 06625) (Appendix 2) (hereafter “the Site”).
- 1.1.2 The viaduct is located on the South Wales Main Line (ELR: SWM2 234m 40.25ch / 886yds).
- 1.1.3 The Extended Phase 1 Habitat Map prepared for the location as part of the Preliminary Ecological Appraisal (PEA) at the Site undertaken by Ecus in August 2020 (Ecus, 2020) has been included as Appendix 1.
- 1.1.4 The proposed works are to take place adjacent to, and partially within the boundary of, the Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd Special Area of Conservation (SAC), designated under European Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”).

1.2 Habitats Regulations Assessment

- 1.2.1 According to the Habitats Directive, transposed into UK legislation through The Conservation of Habitats and Species Regulations (as amended) 2017 (“the Habitats Regulations”), 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 conservation objectives.
- 1.2.2 As a matter of Government policy, Appropriate Assessment is also required for potential Special Protection Areas (SPA), candidate SACs and listed Ramsar Sites for the purpose of considering plans and projects affecting them.
- 1.2.3 The European Commission’s guidance on the Assessment of Plans and Projects Significantly Affecting Natura 2000 sites (2001) identifies a staged process to the assessment of the effects of plans or projects on European sites. These stages are collectively referred to as the HRA. There are potentially up to four stages:
 - i. Screening;
 - ii. Appropriate Assessment;
 - iii. Mitigation and alternatives; and
 - iv. Imperative Reasons of Overriding public Interest (IROPI).
- 1.2.4 This report is a record of both the Screening and Appropriate Assessment (including mitigation) stages.
- 1.2.5 The Screening stage comprises the identification of Likely Significant Effects (LSE) on

the features of any European Site. An LSE is any effect that may be reasonably predicted as a consequence of a project that may affect the conservation objectives of the features of the European site, but excluding trivial or inconsequential effects.

- 1.2.6 A precautionary approach is applied when undertaking HRAs and consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site, which is considered within the AA stage.

2. Project Description

- 2.1.1 Kidwelly Viaduct carries the South Wales Main Line (ELR: SWM2 234m 40.25ch/886yds) over the tidal estuary Gwendraeth Fawr, approximately 1 km west of Kidwelly, Carmarthenshire.
- 2.1.2 A site map of the proposed works is provided in Appendix 2.
- 2.1.3 The original timber structure of 1852 was replaced with a wrought iron structure in 1894. The superstructure was then replaced in 1939, bearing onto the existing substructure. Evidence of the original timber piles remains.
- 2.1.4 The current structure is a simply supported four span structure, with each span being approximately 20.72 m long, totalling 82.9 m. Each span comprises a steel deck with three main longitudinal plate girders, with interconnecting cross beams, and rail bearers, with the ballast fill supported on steel deck plates which are riveted to the rail bearers. The spans are supported on stone abutments and, concrete filled cylindrical wrought iron piers, (each 1.83 m diameter), braced transversely at the top with wrought iron girders.
- 2.1.5 Preparatory works to install scaffolding, minor repairs to the viaduct and a laydown area south east of the viaduct have already been considered as part of a Natural Resources Wales (NRW) Band 1 Marine Licence (CML2050 / CML2038).
- 2.1.6 For the purposes of this HRA, these activities have been included as part of the consideration of potential in-combination effects.
- 2.1.7 There are visual signs of instability to the viaduct abutments. It is proposed that stainless steel soil anchors will be installed to stabilise the abutments. Sectional drawings of the proposed ground anchor works are included in Appendix 3. The soil anchors are drilled at 15 to 20 degrees passing through the existing abutments, made ground, soft tidal flat deposits and founded within the Glacial Till Clay. Proposed activities will include:
- Materials delivered to two laydown areas adjacent to the railway (one existing laydown area south-east of viaduct covered by the previous Band 1 Marine Licence, and one additional laydown area south-west of viaduct for the period of works covered by this HRA, see Appendix 2);
 - Local levelling of ground adjacent to the abutments, requiring scraping to a maximum depth of 20 cm using hand tools – material will be redistributed locally;
 - A temporary bund (plywood and visqueen layer) will be used to protect the ground and capture any spoil;
 - Installation of a steel running rail to each abutment using hand tools, which will be carried from the laydown area by hand. The drill will be fixed to the rail to ensure that the anchors are installed at the correct level and angle.

- One test anchor will be installed to each abutment, which will then be tested using handheld specialist equipment. Once testing has been completed, a further seven anchors will be installed to the east abutment and a six to the west abutment (see Appendix 3) using the following method:
 - Drilling and grouting will take place simultaneously using direct drilling; rotary percussive drilling in conjunction with grout suspension improves the soil in the same way as a displacement pile and eliminates the requirement for Dynamic Pressure Grouting;
 - During the drilling procedure, water will be filtered off from the grout suspension to leave behind a filter cake that will stabilise the hole. This water will be captured within a smaller bund locally, and removed from the works area, and disposed of off-site;
 - The drilling rate will be approximately 1m/minute, this will improve the quality of the grout body by keeping the drilling rate low; cleaning out the hole regularly will also improve the quality. Cleaning will be undertaken by extracting and re-inserting the drilling rod while continue to rotate it and also continuing to flush out the hole; and
 - Upon completion of the drilling and grouting procedure, a 450 mm x 450 mm x 25 mm Stainless Steel Pattress Plate with 10 mm max. grout bed will be installed and top termination of anchor installed to required torque.
 - Repointing of masonry to the existing abutments and retaining walls, by hand. A hopper scaffold (600 mm x 600 mm, 1.8 m height) will be carried to the works area by hand and used as needed to access areas out of reach; and
 - Demobilise from site including reinstatement of landscaped area and pedestrian footpath access to upline side platform.
- 2.1.8 The proposed works are programmed to take place from 21 June 2021 until 20 July 2021, which includes time to work around the tide timetable. All works will be carried out at low tide, all equipment and materials will be removed after each shift to the laydown area. Only the running rail will remain in place until the works are completed.
- 2.1.9 Pollution prevention control measures will be incorporated as standard for all Network Rail works adjacent to a watercourse. These include:
- Use of marine safe grout and concrete;
 - All refuelling to be undertaken away from any watercourse (more than 10 m);
 - Oil and fuel to be stored in accordance with the oil storage regulations (Control of Pollution (Oil Storage) (England) Regulations 2001), with containers to be in good condition with proper fitted lids and secured against vandalism. Storage areas for any fuel, oil or other chemicals to be at least 10 m away from any watercourse;
 - No herbicides will be used within 5 m of a watercourse and herbicide treatment, where required, will be limited to treating stumps and using glyphosate by suitably qualified staff;

- Care to be taken to ensure that material arisings from vegetation clearance and chemicals are not discharged into waterbodies;
- Biodegradable fuels will be used in all handheld machinery;
- Construction plant 'nappy'/spill containment pads to be used for all handheld machinery when idle, and drip trays used when refuelling; and
- Spill kits will be provided to allow any chemical or fuel spillages to be remediated quickly.

2.1.10 These measures are standard and not considered to be added specifically to achieve the purpose of avoiding or reducing harmful effects of the works on the designated site. They therefore are not considered to constitute specific mitigation measures and are included as part of the Screening stage of this HRA.

3. European sites

3.1 Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC

- 3.1.1 The Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd SAC encompasses the coastal plan estuaries of the Rivers Loughor, Tâf and Tywi and the bar-built estuary, the Gwendraeth.
- 3.1.2 Extensive areas of intertidal mudflats and sandflats dominate the area, with bivalves being typical species present in large areas. Carmarthen Bay itself is a large shallow bay, which is predominantly sandy, but also comprises a range of other seabed types, including mud, sand and rock.
- 3.1.3 The SAC includes Helwick Bank, a linear shallow subtidal sandbank that is highly exposed to wave and tidal action. The Burry Inlet and Three Rivers system provides a migratory route for salmonids, lampreys and shad (NRW, 2018a).
- 3.1.4 Table 1 summarises the qualifying species for Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd SAC under Article 4.1 of the Habitats Directive.

Table 1 Qualifying features of the Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC (JNCC, 2015)

Code	Title
Annex I habitats that are a primary reason for selection of this site	
1110	Sandbanks which are slightly covered by sea water all the time
1130	Estuaries
1140	Mudflats and sandflats not covered by seawater at low tide
1160	Large shallow inlets and bays
1310	Salicornia and other annuals colonizing mud and sand
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)
Annex II Species that are a primary reason for selection of this site	
1103	Twaite shad <i>Alosa fallax</i>
Annex II Species present as a qualifying feature, but not a primary reason for site selection	
1095	Sea lamprey <i>Petromyzon marinus</i>
1099	River lamprey <i>Lampetra fluviatilis</i>
1102	Allis shad <i>Alosa alosa</i>
1355	Otter <i>Lutra lutra</i>

- 3.1.5 A map of the Annex I habitats within the vicinity of the site is provided in Appendix 5.
- 3.1.6 The Conservation Objectives for this site are to achieve favourable conservation status of the features, subject to natural processes, and for this to be maintained in the long-

term. The overarching objectives are detailed below as taken from NRW (2018b). Some features also have additional, specific objectives. These are considered, as appropriate, in the assessment of LSEs section.

- Its natural range and areas it covers within that range are stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is favourable.

3.1.7 The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- Population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

4. Consultation

- 4.1.1 This report has been prepared to progress the consultation with the statutory nature conservation body, Natural Resources Wales (NRW), as part of the Marine Licensing process. Table 2 provides a summary of the consultation undertaken to date. Full details of the correspondence is provided in Appendix 4. This report will be updated with any comments and amendments as the consultation progresses.

Table 2 Summary of consultation with NRW

Consultation details	Response
Emails with NRW case officer requesting guidance on some key issues – in particular the laydown area within the SAC (November 2020)	Specific details on the proposed activities provided. Suggested pre-application telephone call to discuss key issues
Telephone call with NRW case officer (17 December 2020)	Discussed project phases and next steps
Email with NRW confirming topics discussed in call (17 December 2020)	Confirmation of understanding that works on Kidwelly Viaduct split into two phases, with 1 st phase covered by Band 1 Marine Licence and phase 2 covered by a Band 2 Marine licence supported by this HRA. Confirmation of understanding that Ecus has considered EIA requirement for the project and are currently satisfied that the development does not fall within Schedule 1 or Schedule 2 of The Marine Works (Environmental Impact Assessment) Regulations 2007.

5. Screening for Likely Significant Effects

5.1 Methodology

- 5.1.1 Screening comprises the identification of LSEs on the features of any European Site. An LSE is any effect that may be reasonably predicted as a consequence of a project that may affect the conservation objectives of the features of the European site, but excluding trivial or inconsequential effects.
- 5.1.2 When considering LSEs, the proposed works must be assessed alone and in combination with other plans and projects. The assessment must be made based on the best available data.
- 5.1.3 A 'significant effect' is not defined, however, it is taken to mean an effect upon the integrity of a site, or its ability to achieve or maintain a favourable conservation status. Similarly, likelihood is not defined; however, in line with the precautionary principle, it is not necessary to determine that a significant effect is certain.
- 5.1.4 In accordance with the European Court of Justice ruling on the 'People over Wind and Sweetman' case in 2018, mitigation at the Screening stage cannot be considered.
- 5.1.5 Therefore, where LSEs are anticipated in the absence of mitigation, an AA will be required.

5.2 Other Plans and Projects

- 5.2.1 The site is located within Carmarthenshire. A search of the planning portal (Carmarthenshire County Council, 2021) and the Carmarthenshire Local Development Plan (2018-2033) has identified no planning applications or site allocations that may have potential for effects in-combination with the proposed works.

5.3 Likely Significant Effects Assessment

Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC

- 5.3.1 Consideration of the potential for effects has referred to the Advice on Operations, provided by NRW in relation to the SAC (NRW, 2018). This advice provides an initial assessment of whether the proposed works may have an impact on a qualifying feature of the site, through sensitivity to the identified pressures from the activities proposed. Information on qualifying features and habitat suitability for qualifying features, has been taken from the PEA to inform the assessment (Ecus, 2020).
- 5.3.2 The proposed works will take place adjacent to, and partially within the boundary of the SAC. Therefore, there is potential for direct effects on the features of the SAC. Effects that need to be considered are: habitat loss or changes as a result of disturbance to the habitat adjacent to the viaduct.
- 5.3.3 Qualifying habitats could also be indirectly affected downstream of the proposed works. Habitats could be affected indirectly due to temporary construction works taking place

on the banks adjacent to the viaduct, and the nature of the works, including the installation of the ground anchors. Such effects that should be considered are: habitat loss or changes, due to the temporary alteration of water flow; and changes in turbidity and water quality, as a result of disturbance of the banks and seabed.

- 5.3.4 There is potential for direct effects on the qualifying species and the habitats on which they rely, if it is found that they utilise the area around the proposed works. For example, they may use this part of the SAC to forage or breed and could be disturbed by the proposed works. Effects that need to be considered are: habitat loss or changes; disturbance and barrier effects (e.g. to fish migration) on qualifying species.
- 5.3.5 An assessment of the LSE of the proposed works, on the conservation objectives of the features of the SAC identified as vulnerable to potential effect, is provided within Table 3.

Table 3 Summary of the potential effects on Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC

Conservation Objective	Interest feature	LSE alone or in-combination?
Annex I habitat		
Overall distribution and extent of the habitat features within the site, and each of their main component parts is stable or increasing	Sandbanks which are slightly covered by sea water all the time	No – This feature is not present at or adjacent to the viaduct. The main component of this feature is Helwick Bank, a linear shallow subtidal sandbank that is unusual in being highly exposed to wave and tidal action, located in open water to the south of Worm’s Head off the Gower Peninsula (NRW, 2018b), plus other smaller sandbanks within the wider Carmarthen Bay. Therefore, no likely significant effects are anticipated on the distribution and extent of this feature. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	Estuaries	No – estuarine habitats are present within the area of the proposed works, specifically the access route to the south west side of the viaduct. All materials and equipment will be moved by hand between the laydown area and work site, with no requirements for vehicles to be used. Given this and that any disturbance to the habitat will be temporary, it is not anticipated to be any likely significant effect on the distribution and extent of this feature. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	Mudflats and sandflats not covered by seawater at low tide	No – mudflats and sandflats are present within the area of the proposed works, specifically the access route to the south west side of the viaduct. All materials and equipment will be moved by hand between the laydown area and work site, with no requirements for vehicles to be used. Given this and that any disturbance to the habitat will be temporary, it is not anticipated to be any likely significant effect on the distribution and extent of this feature. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	Large shallow inlets and bays	No – This feature is not present at or adjacent to the viaduct. Therefore, no likely significant effects are anticipated on the distribution and extent of this feature. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	Salicornia and other annuals	No – This feature is not present at or adjacent to the viaduct. Therefore, no likely significant effects are anticipated

Conservation Objective	Interest feature	LSE alone or in-combination?
	colonizing mud and sand	<p>on the distribution and extent of this feature.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated</p>
	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	<p>Yes – Atlantic salt meadows is the predominant habitat at the site of the proposed laydown area to the south west of the viaduct. In the absence of mitigation, there is potential for likely significant effects on this feature, due to temporary smothering and damage as a result of the construction of the laydown area.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated</p>
The physical, biological and chemical structure and functions necessary for the long-term maintenance and quality of the habitat are not degraded	Sandbanks which are slightly covered by sea water all the time	<p>No – This feature is not present at or adjacent to the viaduct. The main component of this feature is Helwick Bank, a linear shallow subtidal sandbank that is unusual in being highly exposed to wave and tidal action, located in open water to the south of Worm’s Head off the Gower Peninsula (NRW, 2018b), plus other smaller sandbanks within the wider Carmarthen Bay. Due to the distance between the proposed works and this feature, no likely significant effects are anticipated on its structure and function.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Estuaries	<p>No - estuarine habitats are present within the area of the proposed works, specifically the access route to the south west side of the viaduct. All materials and equipment will be moved by hand between the laydown area and work site, with no requirements for vehicles to be used. The works could temporarily change the structure and function of these areas of habitat, however, the short term nature of the works and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Mudflats and sandflats not covered by seawater at low tide	<p>No - at the location of the proposed works, this feature comprises sands and muds not covered by sea water at low tide, specifically the access route to the south west side of the viaduct. All materials and equipment will be moved by hand between the laydown area and work site, with no requirements for vehicles to be used. The works could temporarily change the structure and function of these areas of habitat, however, the short term nature of the works</p>

Conservation Objective	Interest feature	LSE alone or in-combination?
		<p>and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Large shallow inlets and bays	<p>No – This feature is not present at or adjacent to the viaduct. Due to the distance between the proposed works and this feature, no likely significant effects are anticipated on its structure and function.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Salicornia and other annuals colonizing mud and sand	<p>No – This feature is not present at or adjacent to the viaduct. Due to the distance between the proposed works and this feature, no likely significant effects are anticipated on its structure and function.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	<p>Yes – Atlantic salt meadows is the predominant habitat at the site of the proposed laydown area to the south west of the viaduct. In the absence of mitigation, there is potential for likely significant effects on this feature, due to temporary smothering and damage as a result of the construction of the laydown area.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated</p>
The presence, abundance, condition and diversity of typical species is such that habitat quality is not degraded	Sandbanks which are slightly covered by sea water all the time	<p>No – This feature is not present at or adjacent to the viaduct. The main component of this feature is Helwick Bank, a linear shallow subtidal sandbank that is unusual in being highly exposed to wave and tidal action, located in open water to the south of Worm’s Head off the Gower Peninsula (NRW, 2018b), plus other smaller sandbanks within the wider Carmarthen Bay. Due to the distance between the proposed works and this feature, no likely significant effects are anticipated on its typical species.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Estuaries	<p>No - estuarine habitats are present within the area of the proposed works, specifically the access route to the south west side of the viaduct. All materials and equipment will be moved by hand between the laydown area and work site, with no requirements for vehicles to be used. The works could temporarily change the structure and function of</p>

Conservation Objective	Interest feature	LSE alone or in-combination?
		<p>these areas of habitat, however, the short term nature of the works and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Mudflats and sandflats not covered by seawater at low tide	<p>No - at the location of the proposed works, this feature comprises sands and muds not covered by sea water at low tide, specifically the access route to the south west side of the viaduct. All materials and equipment will be moved by hand between the laydown area and work site, with no requirements for vehicles to be used. The works could temporarily change the structure and function of these areas of habitat, however, the short term nature of the works and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>
	Large shallow inlets and bays	<p>No – This feature is not present at or adjacent to the viaduct. Due to the distance between the proposed works and this feature, no likely significant effects are anticipated on its typical species.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated</p>
	Salicornia and other annuals colonizing mud and sand	<p>No – This feature is not present at or adjacent to the viaduct. Due to the distance between the proposed works and this feature, no likely significant effects are anticipated on its typical species.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated</p>
	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	<p>Yes – Atlantic salt meadows is the predominant habitat at the site of the proposed laydown area to the south west of the viaduct. In the absence of mitigation, there is potential for likely significant effects on this feature, due to temporary smothering and damage as a result of the construction of the laydown area.</p>

Conservation Objective	Interest feature	LSE alone or in-combination?
		No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated
Annex II species		
The population is maintaining itself on a long-term basis as a viable component of its natural habitat.	Twaite shad	No – All works will be carried out at low tide. Drilling works will be by direct rotary method, and for a relatively short period of time (approx. 1 hour per anchor). Therefore, likely significant effects on the population of this species are not anticipated. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	Sea lamprey	No – All works will be carried out at low tide. Drilling works will be by direct rotary method, and for a relatively short period of time (approx. 1 hour per anchor). Therefore, likely significant effects on the population of this species are not anticipated. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	River lamprey	No – All works will be carried out at low tide. Drilling works will be by direct rotary method, and for a relatively short period of time (approx. 1 hour per anchor). Therefore, likely significant effects on the population of this species are not anticipated. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	Allis shad	No – All works will be carried out at low tide. Drilling works will be by direct rotary method, and for a relatively short period of time (approx. 1 hour per anchor). Therefore, likely significant effects on the population of this species are not anticipated. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
	Otter	No – although the occasional presence of otters cannot be discounted, due to the temporary nature of the proposed works, it is not anticipated that the population would be effected as a consequence. No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.
The presence, abundance,	Twaite shad	No - suitable habitats are present adjacent to the proposed works. All works will be done by hand between, with no requirements for vehicles to be used. The works could temporarily change the structure and function of these areas

Conservation Objective	Interest feature	LSE alone or in-combination?
<p>condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing.</p>		<p>of habitat, however, the short term nature of the works and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated..</p>
	Sea lamprey	<p>No - suitable habitats are present adjacent to the proposed works. All works will be done by hand between, with no requirements for vehicles to be used. The works could temporarily change the structure and function of these areas of habitat, however, the short term nature of the works and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated..</p>
	River lamprey	<p>No - suitable habitats are present adjacent to the proposed works. All works will be done by hand between, with no requirements for vehicles to be used. The works could temporarily change the structure and function of these areas of habitat, however, the short term nature of the works and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated..</p>
	Allis shad	<p>No - suitable habitats are present adjacent to the proposed works. All works will be done by hand between, with no requirements for vehicles to be used. The works could temporarily change the structure and function of these areas of habitat, however, the short term nature of the works and the recoverability of this habitat type means that any likely effects are not anticipated to be significant. Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to this feature is very</p>

Conservation Objective	Interest feature	LSE alone or in-combination?
		<p>low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated..</p>
	Otter	<p>Yes – the presence of otter cannot be discounted. The proposed works involve refurbishment of the bridge structure and construction of a laydown area. The works could result in disturbance impacts to this species.</p> <p>Procedures which are integral to the project (such as capturing spoil and standard pollution prevention measures) means that the risk of any indirect impacts to the prey species of otter is very low and likely significant effects are not anticipated.</p> <p>No other current or proposed plans or projects identified, therefore, no in-combination LSEs anticipated.</p>

5.4 Screening Outcome

5.4.1 In the absence of mitigation, and taking into account the need to take a precautionary approach for HRA, the screening exercise has concluded that the proposed works have the potential to have LSEs on the following qualifying features of the Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC:

- Atlantic salt meadows; and
- Otter

5.4.2 Therefore, an AA is required in relation to the LSEs on the qualifying features, as identified. This is taken forward in Section 6 and includes consideration of embedded mitigation measures.

6. Appropriate Assessment

6.1 Appropriate Assessment Methodology

- 6.1.1 Guidance in undertaking this Appropriate Assessment has been taken from EC (2001), through gathering specific information about the SAC site and its features; the proposed works and potential impact pathways.
- 6.1.2 The integrity of a site is defined as the coherence of the site's main ecological structure and function across the whole of its area, which enables it to sustain the habitat, complex of habitats and / or populations of species for which the site has been designated (EC, 2001).
- 6.1.3 An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status as it did at the time of designation.

6.2 Assessment of Adverse Effect on Integrity

Damage to Atlantic salt meadows

Potential effects

- 6.2.1 Atlantic salt meadows is the predominant habitat at the site of the proposed laydown area to the south west of the viaduct (see Appendices 2 & 5). The laydown area will be immediately adjacent to the viaduct and expected to cover approximately 40 m² in total and will require levelling. Materials and equipment required for the works will be transported along the railway via Road Rail Vehicle (RRV) and positioned onto the laydown area that is adjacent to the railway.
- 6.2.2 All works will be carried out at low tide and all equipment and materials will be removed from the work site and re-positioned in the laydown area before the tide comes back in.
- 6.2.3 The location of the new laydown area has been discussed at length but the proposed area to the south west of the viaduct is the only available option due to access restrictions and the proximity of the proposed location to the ground anchor works.
- 6.2.4 The installation of all the ground anchors will be within the footprint of the viaduct and not extend within the boundary of the SAC. All arisings from the works will be captured within a temporary bund, removed from the work site to a small skip within the laydown area and disposed of off-site.
- 6.2.5 Access between the works site and the laydown area (approx. 25 m apart) will be through habitat that is predominantly Atlantic salt meadows. Abrasion and disturbance to the habitat will be temporary as the works will last for a maximum of 1 month and limited as the personnel on this site will be restricted to a five man team.
- 6.2.6 In the absence of mitigation, there is potential for likely significant effects on this feature, due to temporary smothering and damage as a result of the construction of

the laydown area, and temporary disturbance and abrasion due to access through the feature.

Proposed mitigation

- 6.2.7 No vehicles will be used within the Atlantic salt meadows. All materials and equipment required for the works will be transported via Road Rail Vehicle (RRV) to the laydown area. All materials and equipment will be moved by hand between the laydown area and work site.
- 6.2.8 To minimise any damage to the habitat within the laydown area, the layer of stone required to level the area will be placed on a membrane to protect the ground below. All material will be removed after the one month period.
- 6.2.9 Refuelling of equipment will occur in designated refuelling areas outside of the Atlantic salt meadows habitat with drips trays, spill kits and training of staff.
- 6.2.10 With these measures fully implemented, impact to the Atlantic salt meadows will be reduced as far as possible, however it remains likely there will be a residual ground pressure impact from these works. Therefore we propose a pre-works survey of the area of Atlantic salt meadows within the footprint of the works, a post-works survey and the implementation of reinstatement measures following completion of the works, and the implementation of restoration measures as necessary following a second post-works survey one year after completion. This is in order to reduce any long term impact to the habitat and promote recovery of the vegetation of the Atlantic salt meadows.

Pre-works survey

- 6.2.11 The pre-works survey will be of the entire area of Atlantic salt meadows within the footprint of the works, principally the laydown area and the access routes to and from the laydown area and work site. The purpose of the survey will be to inform any potential reinstatement and restoration measures required after the completion of the works to return the habitat to its original state.
- 6.2.12 The pre-works survey will be undertaken by an appropriately qualified ecologist and will include a biotope survey in accordance with industry guidelines (Parry, 2019) and detailed species information on the vegetation composition of the habitat.

Reinstatement

- 6.2.13 Following completion of the works a post-works survey should be conducted by an appropriately qualified ecologist. Information gathered should be used in conjunction with the pre-works survey data to inform any measures required to reinstate the habitat to its previous condition.
- 6.2.14 Hand tools should be used when possible to remove any raised berms that develop as a result of the works. Sediment removed from a berm should be used to backfill other areas of compaction or depression. Redistributing sediment in this manner is effective at reinstating topographical levels without increasing physical disturbance to the wider area. In the event that insufficient sediment is available to backfill significant

depressions, priority should be given to areas of localised compaction where permanent pools of water are forming. The artificial addition of supplementary (imported) material to raise low lying areas is considered detrimental. If there are signs of pooling water within areas of compaction, small drainage routes to nearby creeks or channels should be carefully excavated to allow water to drain away. Any such excavations should be discrete and use hand tools. They should follow the line of historical channels if possible. Bare areas of soil should largely be left to recolonise naturally from adjacent areas of vegetation.

Restoration

- 6.2.15 A second post-works survey of the area should be undertaken one year after the completion of the works by an appropriately qualified ecologist. The purpose of this survey is to monitor the recolonisation of vegetation within any affected areas.
- 6.2.16 Additional advice should be sought from NRW if any significant areas of vegetation require replacement. If there are suitable options which can be undertaken to restore the area directly impacted, this would be preferable to ensure there is no overall net loss of the Atlantic salt meadows habitat. On-going monitoring on a yearly basis will be undertaken until there is either full recovery (with or without restoration) and/or actions have been taken to offset any habitat loss.

Conclusion

- 6.2.17 A suite of mitigation measures have been proposed and the implementation of reinstatement and restoration of any areas of habitat if necessary. In consideration of this alongside the standard Network Rail pollution prevention control measures (see Section 2.1.8) and the limited duration of the works and number of personnel on the site, *adverse effects on the conservation objectives (see Section 3.1.3), or on the integrity of the site in relation to this feature, are not considered likely.*

Disturbance to otters

Potential effects

- 6.2.18 Two records of otter from the last ten years within 1 km of the site were returned by West Wales Biodiversity Information Centre (Ecus, 2020). The closest of these was further upstream on the Gwendraeth Fach, 680 m north-east of the site.
- 6.2.19 During the PEA survey (Ecus, 2020), no otter holts or otter field signs were identified within the site. No potential locations for holt creation were identified within the site due to the exposed nature of the site and lack of sheltered locations.
- 6.2.20 The stretch of the river within the site was assessed as suitable habitat for foraging and commuting otter. The species can inhabit river estuaries and saltmarshes.
- 6.2.21 The works could result in direct disturbance to foraging and commuting individuals. Noise and vibration from the drilling and grouting procedures could cause disturbance to otter. However, no night work is required and therefore impacts on this nocturnal species will be limited. No deep excavations are necessary, the levelling of ground

adjacent to the abutments will require scraping to a maximum depth of 20 cm using hand tools.

Proposed mitigation

- 6.2.22 A Toolbox Talk will be delivered to site personnel on otter and the potential for disturbance, prior to works commencing. The content of the Toolbox Talk is to be prepared by an appropriately experienced ecologist, and will cover the identification of the species, risk from the works to otter, and the mitigation measures incorporated to minimise risk.
- 6.2.23 Should an otter be encountered during works, personnel will temporarily stand down until the animal has vacated the immediate area under its own accord.
- 6.2.24 No night works are necessary but if lighting is required during the day to facilitate the works, lighting will be limited to hand-held task lighting, with light spill onto the river minimised.

Conclusion

- 6.2.25 In consideration of the proposed mitigation measures alongside the standard Network Rail pollution prevention control measures (see Section 2.1.8) and the limited duration of the works, *adverse effects on the conservation objectives (see Section 3.1.3), or on the integrity of the site in relation to this feature, are not considered likely.*

7. Conclusions

7.1.1 This Appropriate Assessment has concluded that, following the implementation of the proposed mitigation measures and the embedded mitigation in the form of pollution prevention measures, and in consideration of the limited duration of the works, there would be no adverse effects on integrity predicted for the Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd SAC in relation to the following features:

- Atlantic salt meadows; and
- Otters.

7.1.2 A review undertaken at the screening stage identified no other plans and projects offering the potential for in-combination effects.

7.1.3 A search of the planning portal (Carmarthenshire County Council, 2021) and the Carmarthenshire Local Development Plan (2018-2033) has identified no planning applications or site allocations that may have potential for effects in-combination with the proposed works

8. References

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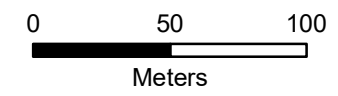
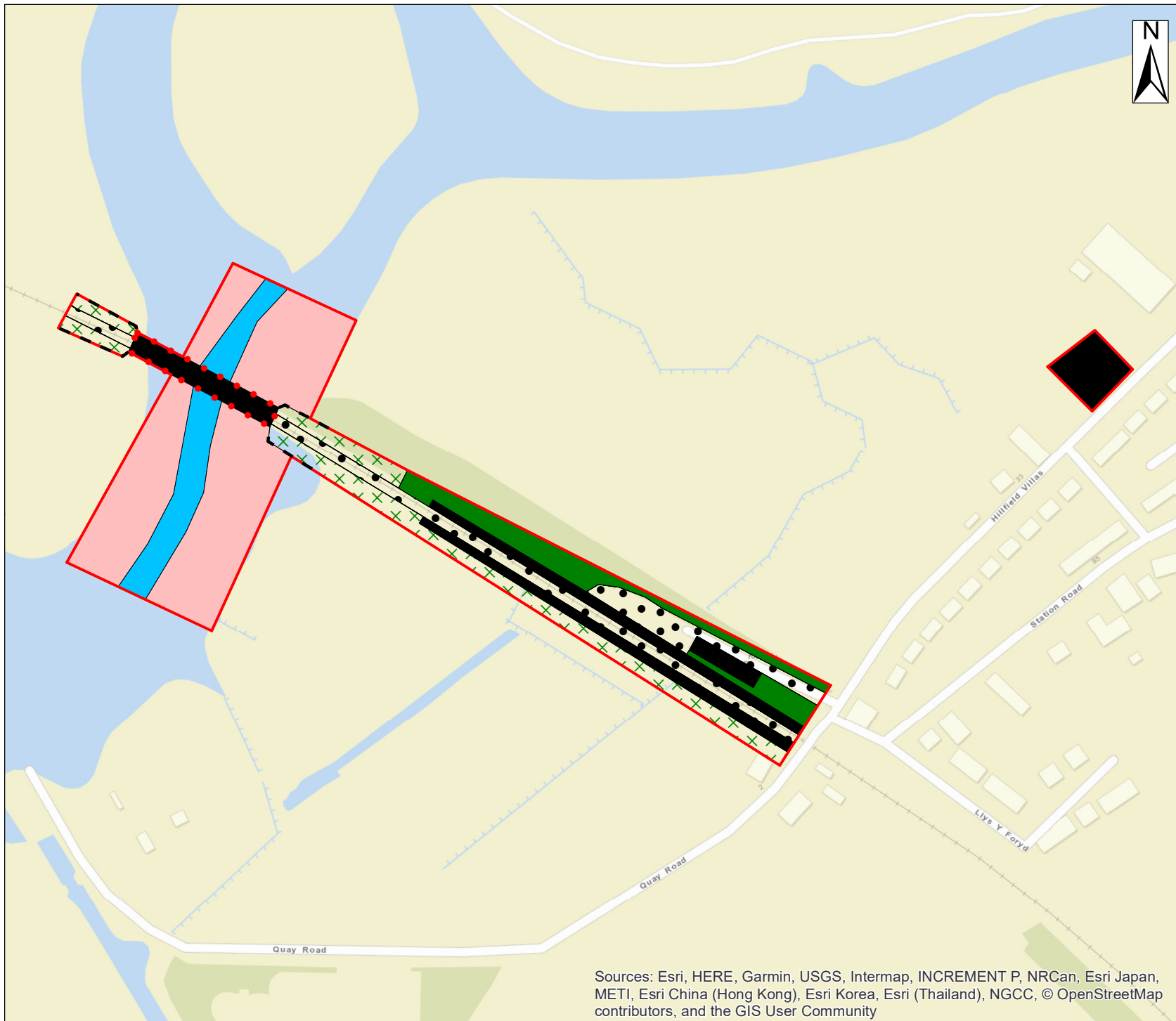
Natural Resources Wales, 2018b. Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd European Marine Site Advice provided by Natural Resources Wales in fulfilment of Regulation 37 of the Conservation of Habitats and Species Regulations 2017. March 2018. <https://cdn.cyfoethnaturiol.cymru/media/687995/eng-carmarthen-bay-and-estuaries-reg-37-report-2018.pdf> Accessed 11th November 2020

Parry, M.E.V., 2019. Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland (Revised 2019), JNCC Report No. 546, JNCC, Peterborough, ISSN 0963-8091.

Appendix 1: Extended Phase 1 Habitat Map

Legend

- Site boundary
-  Viaduct
-  Saltmarsh and mud/sand mosaic
-  Running water (Gwendraeth Fach)
-  Semi-natural broadleaved woodland
-  Woodland and scrub mosaic
-  Bare ground / ballast
-  Hardstanding / building
-  Retaining wall



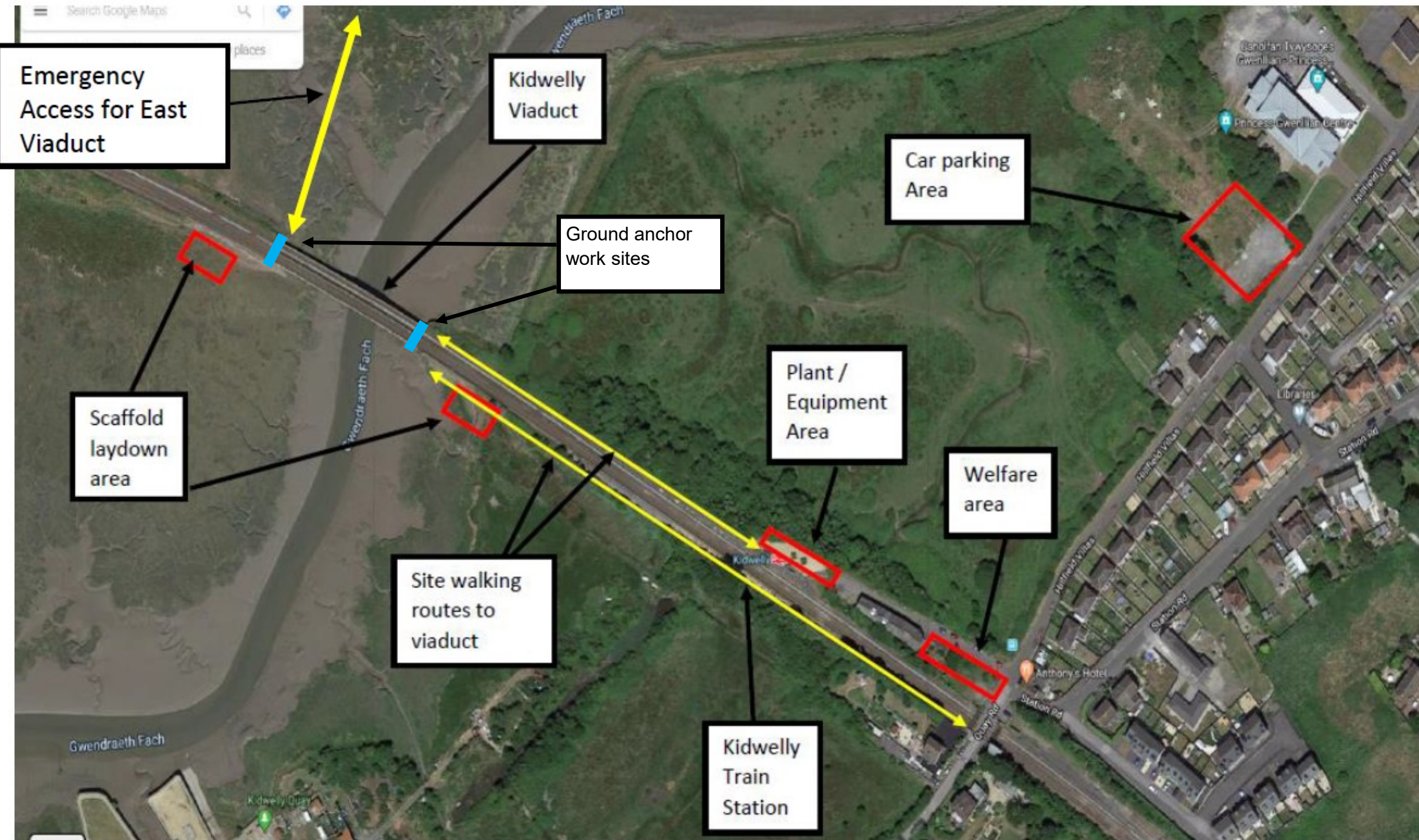
Centregreat
 Kidwelly Viaduct
 Preliminary Ecological Appraisal

Figure 1
 Phase 1 Habitat Map

Brook Holt 3 Blackburn Road Sheffield S61 2DW
 T: 0114 2669292 www.ecusltd.co.uk

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

Appendix 2: Site Map of Proposed Works



Emergency Access for East Viaduct

Kidwelly Viaduct

Car parking Area

Ground anchor work sites

Scaffold laydown area

Plant / Equipment Area

Welfare area

Site walking routes to viaduct

Kidwelly Train Station

Appendix 3: Sectional Drawings of Proposed Works

- Legend/Notes
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES AOD UNLESS NOTED OTHERWISE.
 - DO NOT SCALE OFF THIS DRAWING, USE FIGURED DIMENSIONS ONLY.
 - THIS DRAWING HAS BEEN PREPARED BASED ON TOPOGRAPHICAL SURVEY UNDERTAKEN BY JOHN VINCENT SURVEYS LTD. ON 11TH AND 13TH NOVEMBER 2018 ON BEHALF OF ARCADIS CONSULTING (UK) LTD.
 - FOR AS-BUILT INFORMATION REFER TO NETWORK RAIL ARCHIVE DRAWINGS: 19380719 001 TO 005 AND 19610000 001.
 - WATER LEVEL SHOWN IS REPRESENTATIVE OF THE PREDICTED MEAN HIGH WATER SPRINGS TIDE BETWEEN 2006 AND 2026, AT 9.54m CHART DATUM (4.54m OS) BASED ON THE DATA AT MUMBLES, SWANSEA.
 - TRACK MONITORING AND CRT MANAGEMENT RECOMMENDED FOR THE WORKS.
 - ALL ANCHORS TO BE CONSTRUCTED IN ACCORDANCE WITH BS EN 1537.
 - CHARACTERISTIC ULTIMATE GROUND / GROUT INTERFACE RESISTANCE OF ANCHOR SHALL BE PROVEN BY A SUITABILITY TEST IN ACCORDANCE WITH BS8081:2015 OR BS EN ISO22477-5.
 - ALL ANCHORS SHALL ALSO BE SUBJECT TO AN ACCEPTANCE TEST. ALL TESTING TO BE IN ACCORDANCE WITH BS EN 1537 USING TESTING METHOD 1.
 - ALL ANCHOR ASSEMBLY ITEMS TO BE IN ACCORDANCE WITH THE RELEVANT MANUFACTURERS SPECIFICATIONS / RECOMMENDATIONS.

Safety, Health and Environmental Information
Notes below are additional to hazards risks normally associated with this type of work

Construction

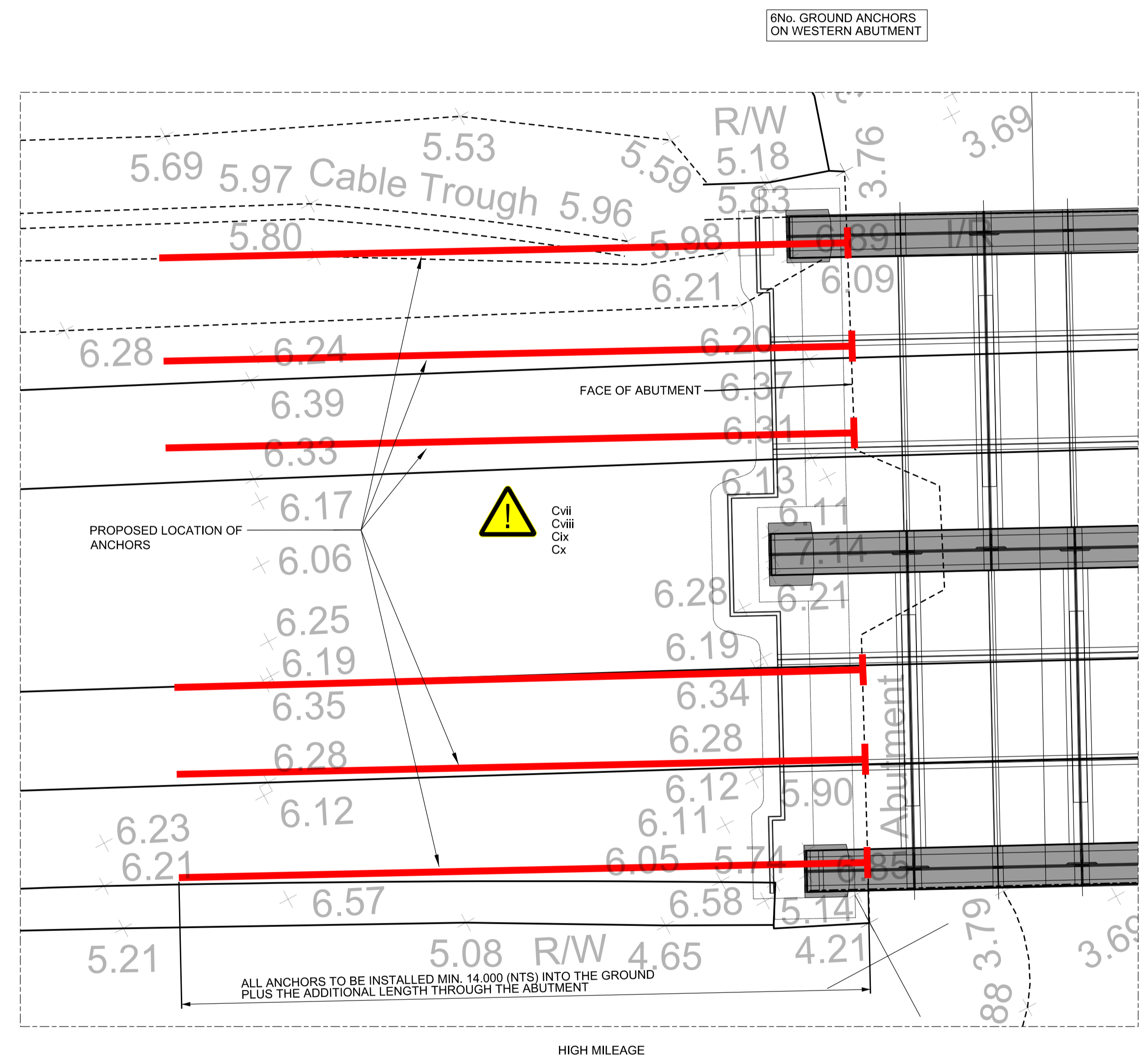
- Ci. Lifting steel plates during demolition and construction works
- Cii. Uncontrolled bridge collapse during strengthening works
- Ciii. Bridge fall due to poor condition of the structure
- Civ. Significant corrosion/degradation arising from mechanical cleaning/grit blasting
- Cv. Bridge collapse due to overloading of underlugging scaffold
- Cvi. Abutment instability due to refurbishment works on the abutment/wing walls
- Cvii. Abutment instability due to ground anchor installation
- Cviii. Ground anchor under designed capacity

Operations

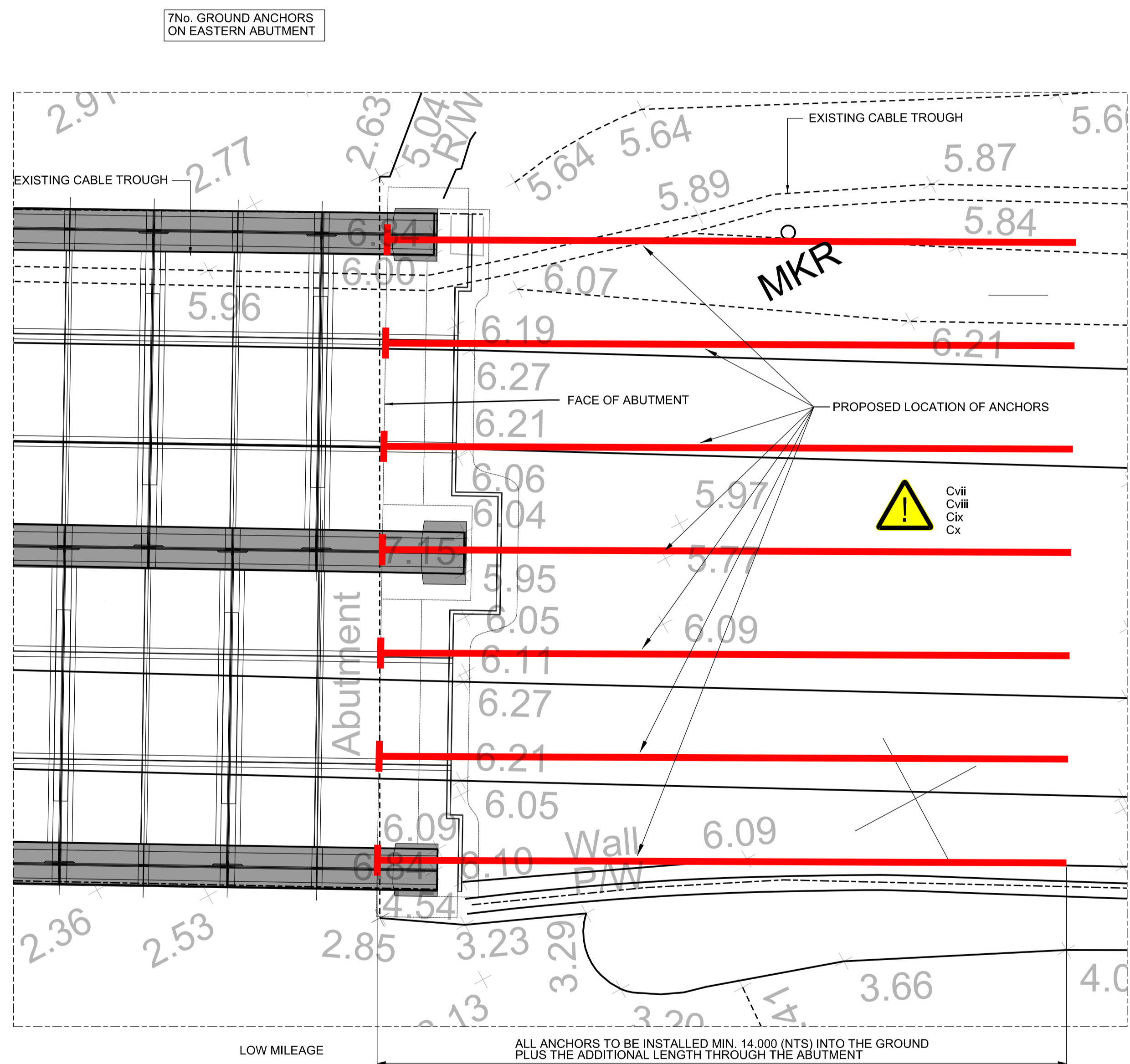
- Oi. Disturbing the track during works
- Oii. Working at height, risk of personnel falling
- Oiii. Personal injury to workers due to contact with trains
- Oiv. Slip/trip/falls due to uneven or steep ground
- Ov. Disturbance to local area and environment
- Ovi. Contamination to environment and species
- Ovii. Injury or infection due to contact to hazardous material
- Oviii. Injury due to drilling into steel plates
- Oix. Damage to service cables laid along the ballast
- Ox. Personal injury due to mechanical cleaning / Grit blasting
- Oxi. Personal injury by drowning due to working near/above water
- Oxii. Bridge/scaffold impacted by large object during flooding events
- Oxiii. Limited signal sighting on the bridge approaches
- Oxiv. Abutment instability during anchor installation

Maintenance

- Mi. Vegetation to be cleared
- Mii. Dismantling/Demolition (Future)
- Miii. Abutment stability during future works



PLAN OF WESTERN ABUTMENT
SCALE 1:50



PLAN OF EASTERN ABUTMENT
SCALE 1:50

FOR LOCATION OF THE SITE REFER TO DRAWINGS 152092-WLS-SWM2-DRG-ECV-000101 AND 102.

IDEALISED POSITION AND SPACING OF ANCHORS SHOWN ABOVE BUT THESE CAN BE MOVED UP TO 500mm LEFT OR RIGHT TO AVOID CLASHES BETWEEN RIG AND BEAMS DURING INSTALLATION.

MAXIMUM SPACING BETWEEN ANCHORS TO BE 1500mm

NOTE:
VERTICAL TOLERANCE FOR THE INSTALLATION OF ANCHORS TO BE PLUS/MINUS 150mm

NOTE:
MINIMUM POSITION OF ANCHORS FROM THE EDGE OF ABUTMENT TO BE 750mm ALTHOUGH IT MAY BE INCREASE TO 950mm



FOR DRA REFER TO DOC. REF. 152092-CGE-RSA-ECV-000002.
SEE ALSO CONSTRUCTION IN DRAWING 152092-CGE-RSA-ECV-000121.

B01	19/01/21	FOR APPROVAL	KL	TV	
P01	04/12/20	FIT FOR INFORMATION	MM	TV	
Rev	Date	Description of Revisions	Drawn	Chkd	Appr
Status					Suitability
					S1



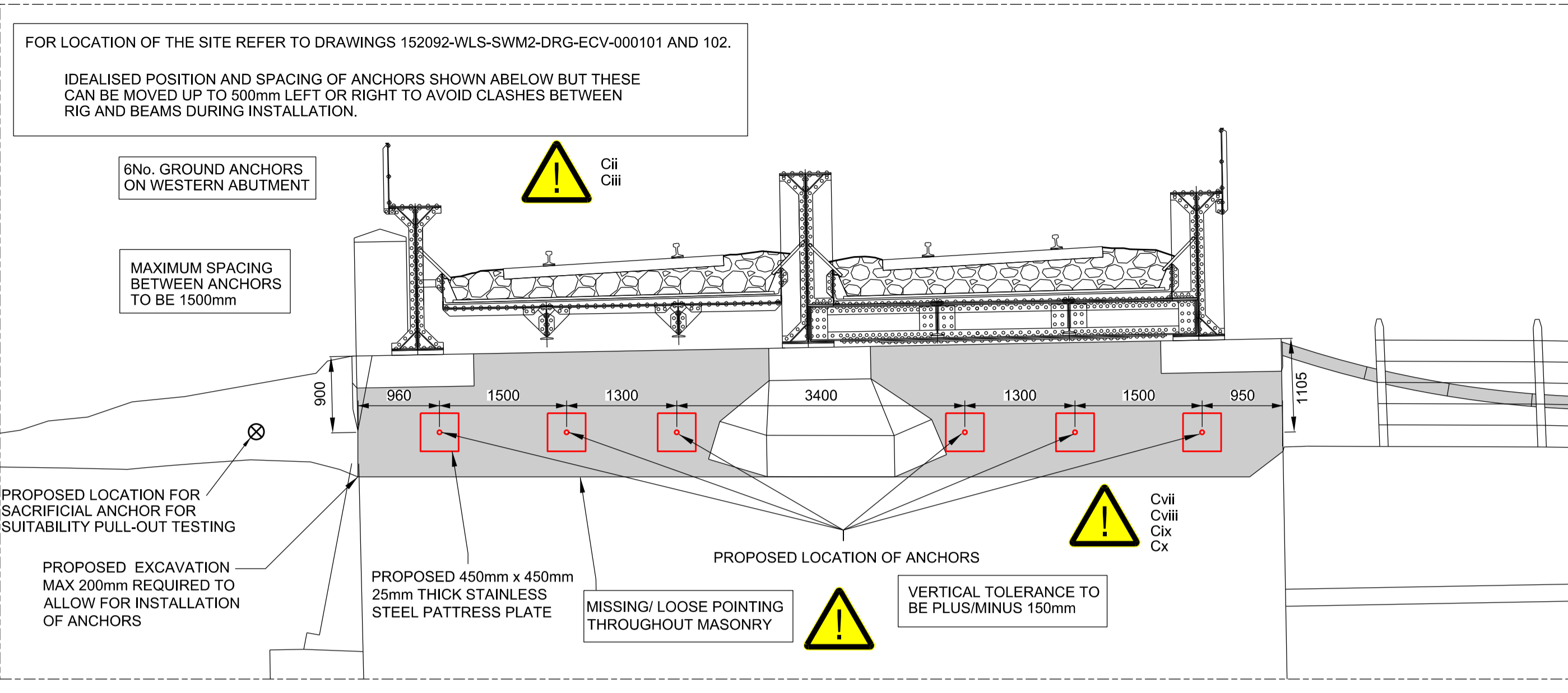
Authorised	Signed	Date
Contractor(s) Centregreat Rail		
Location SOUTH WALES MAIN LINE (GLOUCESTER YD JN - NEYLAND)		
Type	Sub-type	Plan
CAD Drawing		
Role	Sub-Role	Structures and Buildings
Civil Engineer		
Zone	Wales Region	
Phasing	Grip Stage	5
Region Western and Wales		

Contract No.
152092

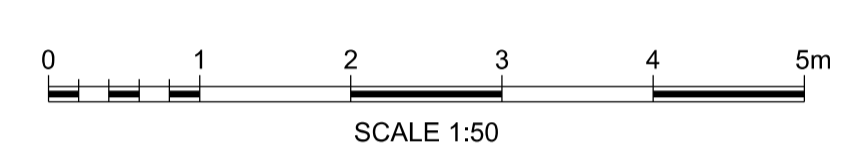
Contract Title
Kidwelly Viaduct

Drawing Title
**Proposed Abutment Repairs
Ground Anchors
(Sheet 2 of 3)**

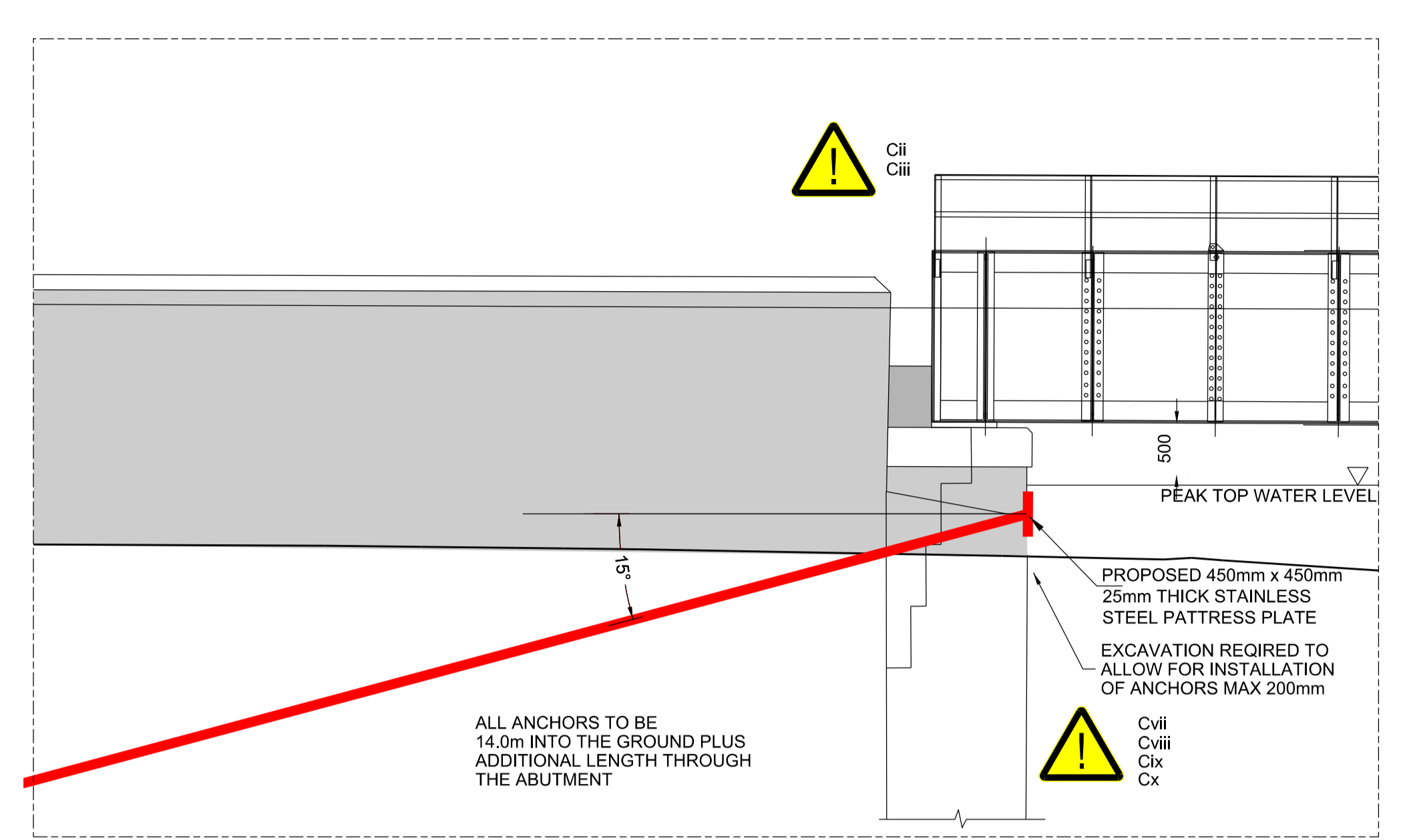
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Drawn	M. MITCHELL	Signed	Electronically Signed	Date	04/12/20
Checked	T. VINCENT	Signed	Electronically Signed	Date	04/12/20
Approved		Signed		Date	
Scale(s) As Shown		ELR & Mileage 113.0164 to 285.0572			
Alternative Reference 152092-CGE-DRG-ECV-000122					Sheet 2 of 3
Drawing Number 152092-CGE-WLS-SWM2-DRG-ECV-000122					Revision B01



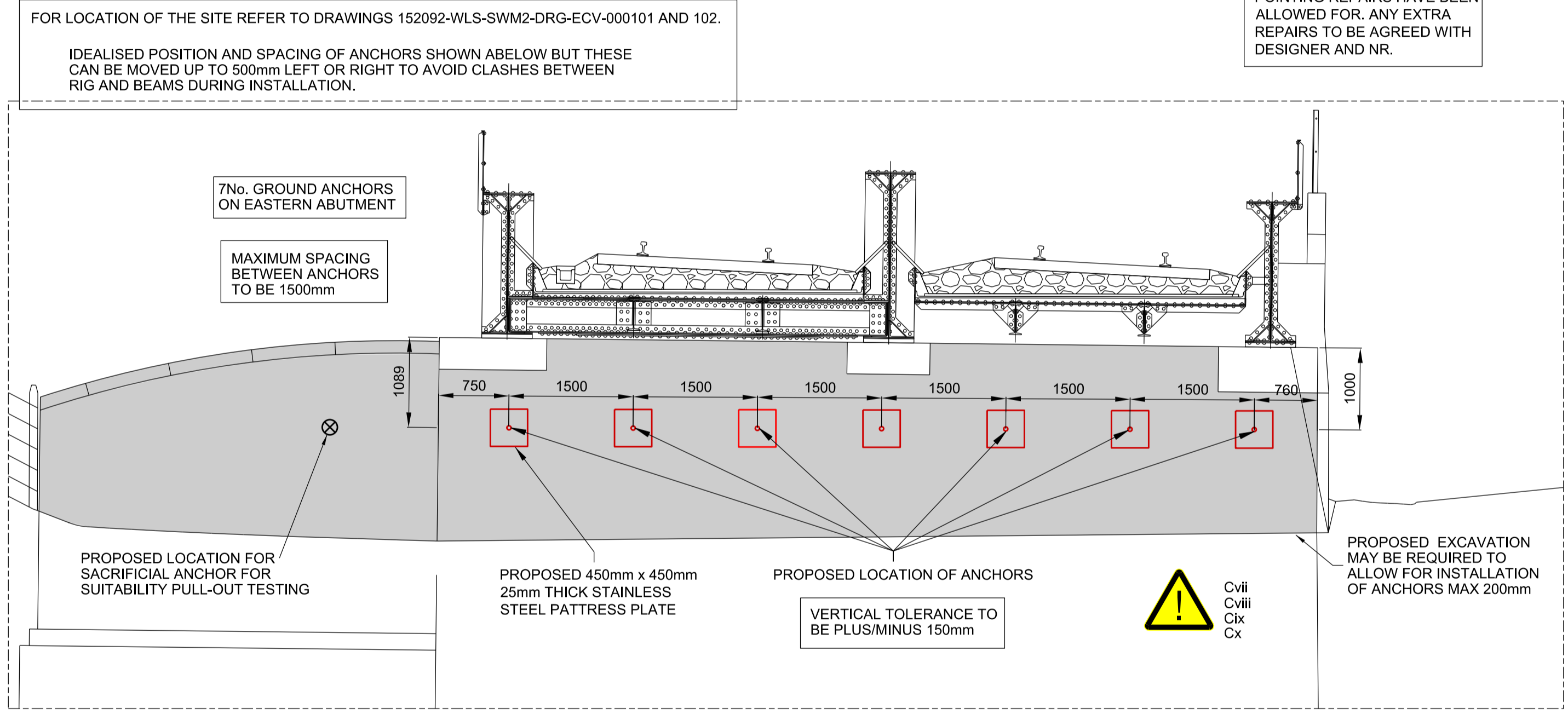
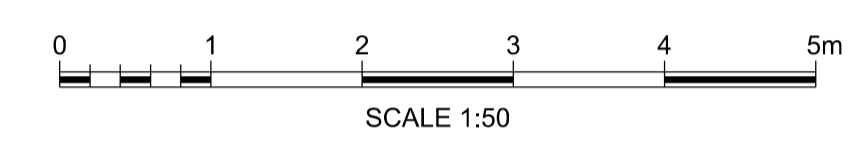
B REPAIR M - CROSS SECTION OF WESTERN ABUTMENT
000015 SCALE: 1:50



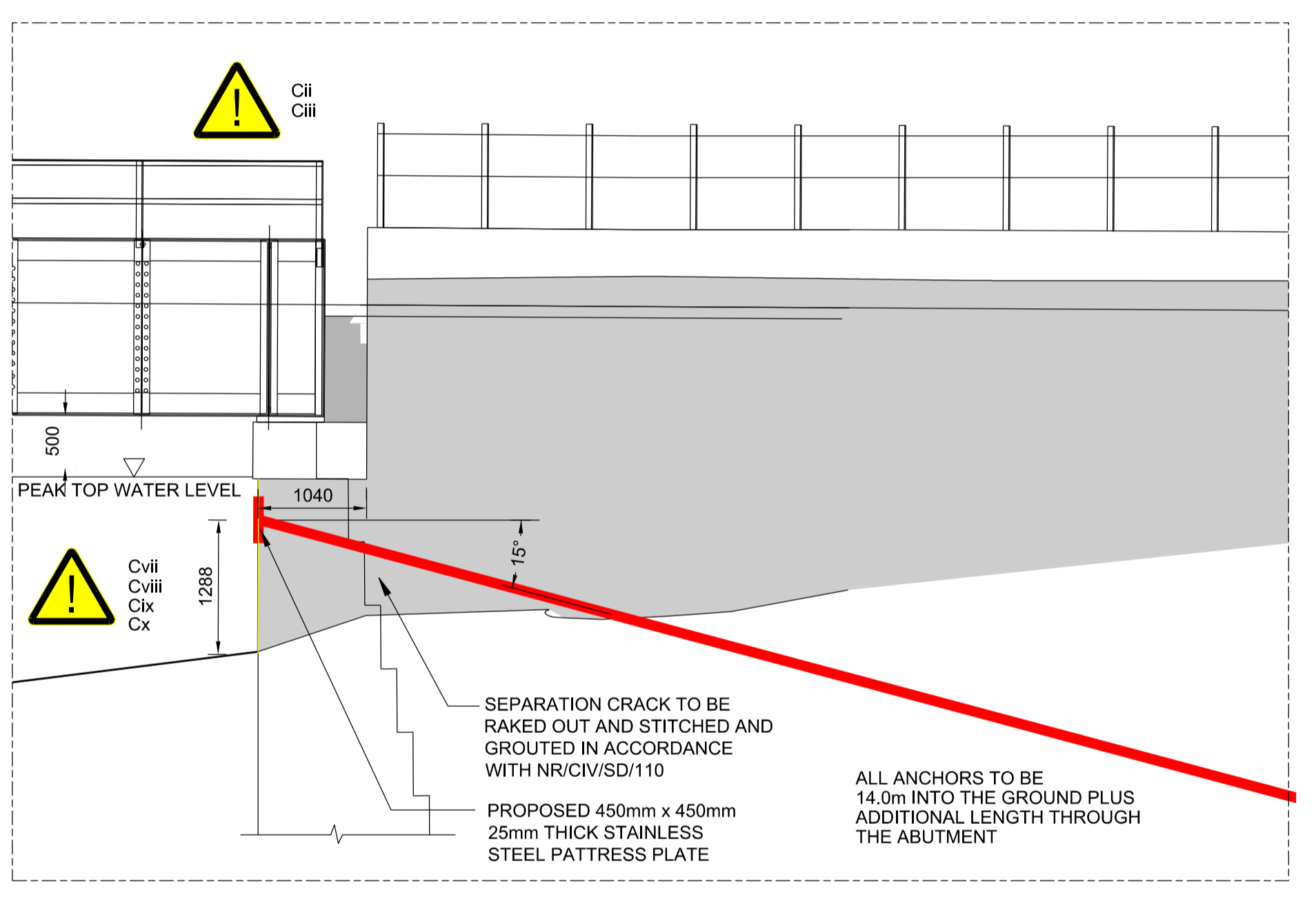
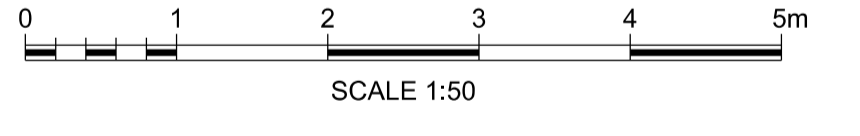
!
A MAXIMUM OF 60 M² OF POINTING REPAIRS HAVE BEEN ALLOWED FOR. ANY EXTRA REPAIRS TO BE AGREED WITH DESIGNER AND NR.



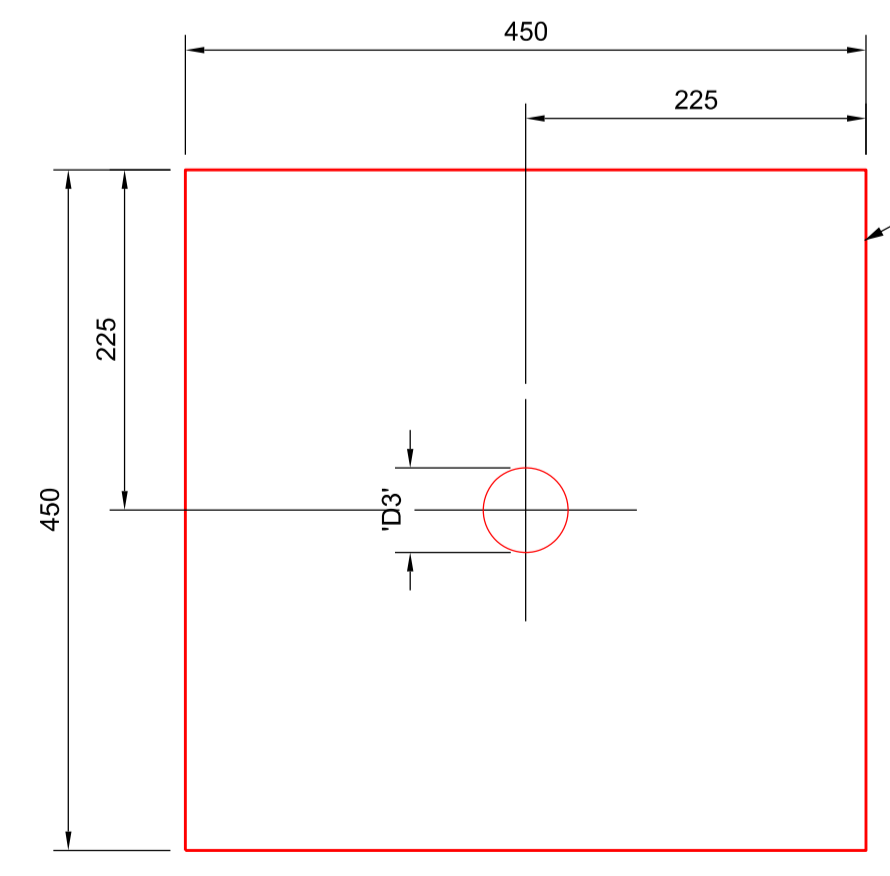
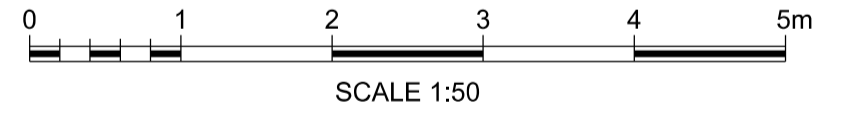
3 REPAIR M - SOUTH ELEVATION OF WESTERN ABUTMENT
000015 SCALE: 1:50



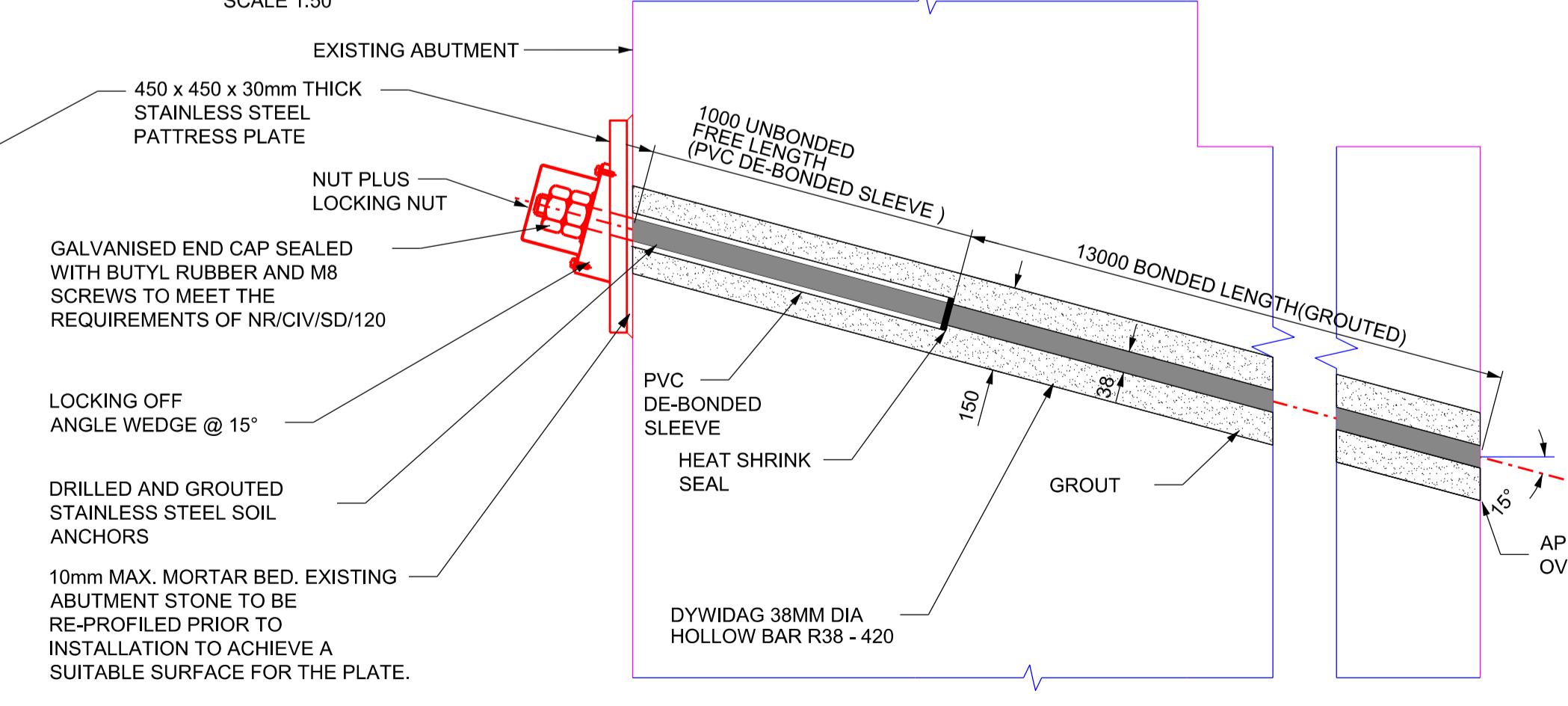
C REPAIR M - CROSS SECTION OF EASTERN ABUTMENT
000015 SCALE: 1:50



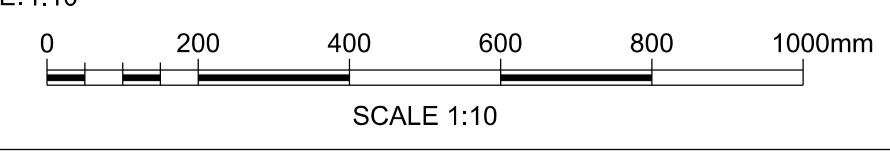
4 REPAIR M - SOUTH ELEVATION OF EASTERN ABUTMENT
000015 SCALE: 1:50



NOTE:
DIAMETER "D3" TO SUIT NAIL DEBONDING SLEEVE AND GASKET
D3=BAR DIAMETER+6mm



TYPICAL DETAIL OF PROPOSED ANCHORS
SCALE: 1:10



ALL WORK ANCHORS MUST BE PRE-STRESSED TO 95kN BY APPLYING A PRE-STRESSING TORQUE OF 0.67 kNm.

PRESTRESSING TO BE CARRIED OUT FOLLOWING THE ACCEPTANCE TESTING

ALL GROUND ANCHORS HAVE BEEN DESIGNED TO BE 14000 INTO THE GROUND FOUNDED IN THE GLACIAL TILL CLAY. THIS LENGTH HOWEVER MAY BE REVISED FOLLOWED THE SUITABILITY TESTING REQUIRED ON 2No. SACRIFICIAL ANCHORS

NOTE:
MINIMUM POSITION OF ANCHORS FROM THE EDGE OF THE ABUTMENT TO BE 750mm ALTHOUGH IT MAY BE INCREASE TO 950mm

NOTE:
SPACERS AT MAX 2500mm CENTRES MUST BE INSTALLED ON THE ANCHOR BAR TO ENSURE OPTIMAL GROUTING



FOR DRA REFER TO DOC. REF. 152092-CGE-RSA-ECV-000002. SEE ALSO CONSTRUCTION IN DRAWING 152092-CGE-RSA-ECV-000121.

- Legend/Notes
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES AOD UNLESS NOTED OTHERWISE.
 - DO NOT SCALE OFF THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
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 - WATER LEVEL SHOWN IS REPRESENTATIVE OF THE PREDICTED MEAN HIGH WATER SPRINGS TIDE BETWEEN 2006 AND 2026. AT 9.54m CHART DATUM (4.54m OS) BASED ON THE DATA AT MUMBLES, SWANSEA.

KEY:
ALL MASONRY TO BE RAKED OUT TO A DEPTH OF 80mm AND REPOINTED IN ACCORDANCE WITH NR/SD/CIV/101.

Safety, Health and Environmental Information
Notes below are additional to hazards risks normally associated with this type of work

Construction	Operations
Ci. Lifting steel plates during demolition and construction works	Oi. Disturbing the track during works
Cii. Uncontrolled bridge collapse during strengthening works	Oii. Working at height, risk of personnel falling
Ciii. Bridge fail due to poor condition of the structure	Oiii. Personal injury to workers due to contact with trains
Civ. Significant corrosion/degradation arising from mechanical cleaning/grit blasting	Oiv. Slip/trip/falls due to uneven or steep ground
Cv. Bridge collapse due to overloading to understung scaffold	Ov. Disturbance to local area and environment
Cvi. Abutment instability due to refurbishment works on the abutment/wing walls	Ovi. Contamination to environment and species
Cvii. Abutment instability due to ground anchor installation	Ovii. Injury or infection due to contact to hazardous material
Cviii. Ground anchor under designed capacity	Oviii. Injury due to drilling into steel plates
Cix. Ground anchors and underground services	Oix. Damage to service cables laid along the ballast
Cx. Ground anchors and rail clearance	Ox. Personal injury due to mechanical cleaning / Grit blasting
	Oxi. Personal injury by drowning due to working near/above water
	Oxii. Bridge/scaffold impacted by large object during flooding events
	Oxiii. Limited signal sighting on the bridge approaches
	Oxiv. Abutment instability during anchor installation
	Maintenance
	Mi. Vegetation to be cleared
	Mii. Ground anchors inspection works and re-tensioning
	Miii. Potential additional ground anchor and services
	Miv. Potential additional ground anchor and rail clearances
	Mv. Potential additional ground anchor design capacity
	Mvi. Dismantling/Demolition (Future)
	Mvii. Abutment stability during future works

B01	19/01/21	FOR APPROVAL	KL	TV	
P01	02/12/20	FIT FOR INFORMATION	MM	TV	
Rev	Date	Description of Revisions	Drawn	Chkd	Appr
Status					Suitability
FIT FOR CO-ORDINATION					S1



Authorised	Signed	Date
------------	--------	------

Contractor(s)
Centregreat Rail

Location	SOUTH WALES MAIN LINE (GLOUCESTER YD JN - NEYLAND)		
Type	CAD Drawing	Sub-type Detail	
Role	Civil Engineer	Sub-Role Structures and Buildings	
Zone	Wales Region		
Phasing	Grip Stage	5	
Region			

Western and Wales

Contract No.
152092

Contract Title
Kidwelly Viaduct
Drawing Title
Kidwelly Viaduct Proposed Abutment Repairs Ground Anchors (Sheet 3 of 3)

Designed	P. LLANES	Signed	Electronically Signed	Date	04/12/20
Drawn	M. MITCHELL	Signed	Electronically Signed	Date	04/12/20
Checked	T. VINCENT	Signed	Electronically Signed	Date	04/12/20
Approved		Signed		Date	

Scale(s)	ELR & Mileage	113.0164	to	285.0572
As Shown				
Alternative Reference	152092-CGE-DRG-ECV-000123	Sheet	3 of 3	
Drawing Number	152092-CGE-WLS-SWM2-DRG-ECV-000123	Revision	B01	

Appendix 4: Correspondence with NRW

From: "[Willis, Graham](mailto:graham.willis@cyfoethnaturiolcymru.gov.uk)" <graham.willis@cyfoethnaturiolcymru.gov.uk>

To: "[Rachel Barker](mailto:rachel.barker@ecusltd.co.uk)" <rachel.barker@ecusltd.co.uk>

Date: 12/17/2020 6:26:51 AM

Subject: PA2009 Kidwelly Viaduct Refurbishment Phase 2

Good afternoon Rachel,

Thank you for your time on the call this morning.

To Summarise:

In Attendance:

Rachel Barker – Ecus Ltd

Hannah Breen – Centregreat Rail

John Falconer -

Graham Willis – NRW Marine Licensing Team

The Kidwelly Viaduct Refurbishment project was described by Rachel and Hannah as:

- Phase 1 – Scaffolding and laydown area, grit blasting, painting and masonry work. This work will be done inhouse.
- (Marine Licence application CML2050 is currently under determination and will replace CML2038 if determination is successful).
- Phase 2 – Installation of the ground anchors utilising the scaffolding and laydown area erected in phase 1. This work will be undertaken by subcontractors who had not yet been appointed at the time of the initial Phase 1 marine licence application therefore there was not enough information available to submit a single marine licence application covering all phases. Phase 2 is expected to take approximately 1 month which includes an allowance for working around tides.
- For Phase 2, an area on the North West side of the Viaduct has been identified for use as a laydown area . This location falls within the SAC/saltmarsh and is expected to be approximately 40m2 in total.
- This location has been discussed at length between Ecus/Centregreat Rail and your subcontractors and there is no alternative option due to ease of access to the site and the locations proximity to the ground anchor works.
- Ecus Ltd are therefore keen to discuss with NRW how best to protect the area to the North West of Kidwelly Viaduct, specifically with regards to the approach to monitoring and mitigation.

From a Marine Licensing Team perspective:

- It is not in our remit to discuss potential monitoring and mitigation measures, however you can obtain pre-application advice through our Discretionary Advice Service (DAS), information on this can be found on our [website](#) , you can also contact the NRW Marine Area Advice and Management Team directly via their general inbox: marine.area.advice@cyfoethnaturiolcymru.gov.uk .
- As Phase 2 is reliant upon the utilisation of the scaffolding and the laydown area erected as part of Phase 1 there is a risk that the Marine Licence issued for Phase 1 will expire before completion of Phase 2 if there are any delays over and above those that you have already considered such as working around tides.
- I understand from our call and previous correspondence in the emails below that you have considered whether or not an EIA is required for the project and are currently satisfied that the development does not fall within Schedule 1 or Schedule 2 of The Marine Works (Environmental Impact Assessment) Regulations 2007.
- If you do submit a marine licence application for Phase 2 of the project it will be sent out for consultation, during which it may be determined that an EIA is required following review of your application documents.
- You can request a Screening Opinion from the NRW Marine Licensing Team. Information on this can be found [here](#) .
- It is understood from our call that Rachel and Hannah will soon be leaving their respective roles. With respect to Marine Licence CML2038 and the application for CML2050 please can you provide contact details for the person that is picking up the Kidwelly Viaduct project in your absence.
- In addition, please can you ensure that the invoicing details below are up to date.

We now consider this pre-application advice (ref: PA2009) to be closed and will issue an invoice once all time recordings have been posted to our master sheet and the above details have been confirmed.

Kind Regards

Graham Willis

Uwch Swyddog Trwyddedu Morol \u8203 ? / Senior Marine Licensing Officer

Cyfoeth Naturiol Cymru\u8203 ? / Natural Resources Wales

Maes y Ffynnon, Bangor, LL57 2DW\u8203 ?

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Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.

Yn sgil y datblygiadau diweddaraf rwy'n gweithio gartref ar hyn o bryd ac felly nid mewn cyswllt ar y ffôn. Os oes angen i chi gysylltu, anfonwch e-bost ataf os gwelwch yn dda a byddaf yn ymateb cyn gynted â phosib.

In light of recent events, I am currently working from home and as such not contactable on the phone. If you need to get in touch, please email me and I will respond as quickly as possible.

From: Rachel Barker <rachel.barker@ecusltd.co.uk>
Sent: 07 December 2020 13:05
To: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk>
Cc: Hannah Breen <hannah.breen@centregreat.net>; Rebecca Yearsley <Rebecca.yearsley@ecusltd.co.uk>
Subject: RE: Q20094 RE: Kidwelly - next phase of works

Thanks Graham,

We are available next week on Thursday morning or anytime of Friday, if suitable?

Best wishes
Rachel
07814 687652

From: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk>
Sent: 07 December 2020 11:03
To: Rachel Barker <rachel.barker@ecusltd.co.uk>
Cc: Hannah Breen <hannah.breen@centregreat.net>; Rebecca Yearsley <Rebecca.yearsley@ecusltd.co.uk>
Subject: RE: Q20094 RE: Kidwelly - next phase of works

Good morning Rachel,

Apologies for the delay in getting back to you on this, I was aiming to get in touch with you this week to arrange a meeting, ahead of this please can you confirm your availability for next week.

Kind Regards
Graham Willis

Uwch Swyddog Trwyddedu Morol / Senior Marine Licensing Officer

Cyfoeth Naturiol Cymru / Natural Resources Wales
Maes y Ffynnon, Bangor, LL57 2DW

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In light of recent events, I am currently working from home and as such not contactable on the phone. If you need to get in touch, please email me and I will respond as quickly as possible.

From: Rachel Barker <rachel.barker@ecusltd.co.uk> >
Sent: 07 December 2020 10:42
To: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk> >
Cc: Hannah Breen <hannah.breen@centregreat.net> >; Rebecca Yearsley <Rebecca.yearsley@ecusltd.co.uk> >
Subject: RE: Q20094 RE: Kidwelly - next phase of works

Hi Graham,

Do you have any update on when we may be able to schedule a meeting to discuss the proposals?

Best wishes
Rachel
07814 687652

From: Rachel Barker <rachel.barker@ecusltd.co.uk> >
Sent: 25 November 2020 10:28
To: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk> >
Cc: Hannah Breen <hannah.breen@centregreat.net> >
Subject: RE: Q20094 RE: Kidwelly - next phase of works

Hello Graham,

Please see below programme/phases summary in response to the first and second queries. We have considered whether EIA is required and concluded that the development does not fall within any of the categories, either within Schedule 1 or Schedule 2. Before we pencil in a meeting, please could you provide a quotation for the pre-application advice?

Under Band 1 licence -

Span 1:

Scaffold installation & encapsulation– December – January

Grit blasting – January – February

Paint - March

Span 2:

Scaffold installation & encapsulation– December – January

Grit blasting – January – February

Paint - March

Span 3:

Scaffold installation & encapsulation–January - February

Grit blasting – February - March

Paint - March

Span 4:

Scaffold installation & encapsulation–February

Grit blasting – February - March

Paint – March - April

Ballast work and repairs – March – May

Band 2 Licence –

Repointing & ground anchors – June - July

Best wishes
Rachel
07814 687652

From: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk> >
Sent: 13 November 2020 15:56
To: Rachel Barker <rachel.barker@ecusltd.co.uk> >
Cc: Hannah Breen <hannah.breen@centregreat.net> >
Subject: RE: Q20094 RE: Kidwelly - next phase of works

Good afternoon Rachel,

I have reviewed the emails logged under Q20073 and can see that you have been advised that all the works eligible for the band 1 application can be considered under one application, which includes scaffolding/grit blasting etc. I understand that this was to ensure that the preparatory activities (scaffolding erection) could be completed in advance of any upcoming construction phase(s).

Following your application for a Band 1 Marine Licence, CML2038 was issued – noting that you have since highlighted an error in 1/22/2021

the method statement and have been advised that under CML2038 you are not permitted to position the scaffolding on the seabed. If you wish to change your methodology this will require another band 1 marine licence application. To support this application you will need to provide correspondence from the MCA and Trinity House.

Regarding Phase 2, thank you for the information provided below.

To allow us to fully understand your project please can you provide the following information:

- If available, please provide your overall project programme – noting that your previous response referred to the Band 1 method statement (ECUS14951Kidwelly Viaduct-band-1-low-risk-activity-method-statement-template_Oct2020v2) however, this does not provide any detail on the overall project scope, any additional activities or the installation of ground anchors.
- Total number of expected project phases and brief description of each phase – (are there any activities/phases to follow after the ground anchors have been installed).
- Please can you also consider if the project requires an EIA. Details of project categories that require an EIA under the Marine Works (EIA) regulations Schedules A1 and A2 can be found [here](#) .

Following receipt of this information I am happy to arrange a skype call to discuss further.

Kind Regards
Graham Willis

Uwch Swyddog Trwyddedu Morol \u00203 ? / Senior Marine Licensing Officer

Cyfoeth Naturiol Cymru\u00203 ? / Natural Resources Wales
Maes y Ffynnon, Bangor, LL57 2DW\u00203 ?

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Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.\u00203 ?**

Yn sgil y datblygiadau diweddaraf rwy'n gweithio gartref ar hyn o bryd ac felly nid mewn cyswllt ar y ffôn. Os oes angen i chi gysylltu, anfonwch e-bost ataf os gwelwch yn dda a byddaf yn ymateb cyn gynted â phosib.

In light of recent events, I am currently working from home and as such not contactable on the phone. If you need to get in touch, please email me and I will respond as quickly as possible.

From: Rachel Barker <rachel.barker@ecusltd.co.uk>
Sent: 09 November 2020 09:55
To: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk>
Cc: Hannah Breen <hannah.breen@centregreat.net>
Subject: RE: Q20094 RE: Kidwelly - next phase of works

Hi Graham,

Thanks for the response.

I received advice from one of your colleagues prior to submitting the first Band 1 licence application (CML2038) to confirm we could split the works into 'phases' and apply for separate licences. This was due to the programme of works and some elements (i.e. the scaffolding) needing to start sooner than others. This is under Q20073.

I have included invoicing details below for the pre-application advice. Please could we request this is a meeting to go over everything? I think it would be easier to go through the details this way and find the best way forward. I would be grateful if we could have a quotation so that the PO amount is appropriate and within our budget before proceeding.

In summary, in response to your points below:

- All works are confined to the viaduct itself, apart from the access, compound and laydown areas as previously described. The estimated cost of the project is £2.7 million.
- Programme details are as per the method statement submitted for the Band 1 Licence, plus some additional activities. (Scaffolding to Span 4, plus some concrete works that Hannah emailed about last week; and the ground anchors planned

for 3 weeks in June/July)

- The laydown area under CML2038 will be used for the ground anchor works, but the scaffolding will not be utilised.

Best wishes
Rachel
07814 687652

From: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk> >
Sent: 06 November 2020 11:18
To: Rachel Barker <rachel.barker@ecusltd.co.uk> >
Cc: Hannah Breen <hannah.breen@centregreat.net> >
Subject: Q20094 RE: Kidwelly - next phase of works

Good morning Rachel,

I have discussed this query internally here at NRW and need further clarification to fully understand the full scale and timings of the project. This information will help determine which marine licence band needs to be applied for and to ensure that an appropriate level of assessment is made which may include consultation with all relevant stakeholders.

Please can you provide the following information:

- Size and scale of the project as a whole including details of each phase and total estimated project cost.
- Project programme including indicative timings of each phase/activity.
- Are the activities currently licenced under marine licence CML2038 linked with those of your proposed phase 2 – i.e. is the scaffolding and laydown area erected under CML2038 to be utilised for phase 2?

Kind Regards
Graham Willis

Uwch Swyddog Trwyddedu Morol \u8203 ? / Senior Marine Licensing Officer

Cyfoeth Naturiol Cymru\u8203 ? / Natural Resources Wales
Maes y Ffynnon, Bangor, LL57 2DW\u8203 ?

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Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.\u8203 ?**

Yn sgil y datblygiadau diweddaraf rwy'n gweithio gartref ar hyn o bryd ac felly nid mewn cyswllt ar y ffôn. Os oes angen i chi gysylltu, anfonwch e-bost ataf os gwelwch yn dda a byddaf yn ymateb cyn gynted â phosib.

In light of recent events, I am currently working from home and as such not contactable on the phone. If you need to get in touch, please email me and I will respond as quickly as possible.

From: Willis, Graham
Sent: 04 November 2020 17:00
To: Rachel Barker <rachel.barker@ecusltd.co.uk> >
Subject: RE: Kidwelly - next phase of works

Good afternoon Rachel,

Thank you for the description below, we will review this internally and get back to you.

In the meantime, I have logged this query as Q20094 for future reference.

Kind Regards
Graham Willis

Uwch Swyddog Trwyddedu Morol \u8203 ? / Senior Marine Licensing Officer

Cyfoeth Naturiol Cymru / Natural Resources Wales
Maes y Ffynnon, Bangor, LL57 2DW

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Yn sgil y datblygiadau diweddaraf rwy'n gweithio gartref ar hyn o bryd ac felly nid mewn cyswllt ar y ffôn. Os oes angen i chi gysylltu, anfonwch e-bost ataf os gwelwch yn dda a byddaf yn ymateb cyn gynted â phosib.

In light of recent events, I am currently working from home and as such not contactable on the phone. If you need to get in touch, please email me and I will respond as quickly as possible.

From: Rachel Barker <rachel.barker@ecusltd.co.uk>
Sent: 04 November 2020 11:15
To: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk>
Subject: RE: Kidwelly - next phase of works

Thanks Graham,

That's great!

In summary, the next phase involves installation of ground anchors to support both of the abutments. The works will take place over two weeks (currently planned for June 2021). The key area I believe may possibly need some discussion is highlighted first. However, equally, we could submit and resolve through the licensing process if that would be more appropriate.

- Materials will be brought in via the rail and placed within the laydown areas (including the second area within the SAC/saltmarsh as per previous plans). I have discussed at length and there's no alternative location for this area. It will be approx. 40m². To level the area, the preferred option will be a layer of stone over a membrane to protect the ground. This should minimise any damage to the habitat below and will be removed after the 2 week period. This is one key area I think would be useful to discuss – specifically, the approach to monitoring/mitigation, given the short time frame and potential for recovery.
- Seven anchors and two test anchors (stainless steel) are to be installed by rotary drill into the sea bed at a 15 – 20 degree angle, to a depth of approx. 25m and a plate attached to the abutment.
- Grouting will take place simultaneously with the drilling using marine safe grout (which will fill around and within each steel pole as it is installed). A small amount of water with grout suspension may be produced, this will be captured by a small, portable bund and removed from the works area.
- All anchors will be within the footprint of the viaduct and **not** extend within the boundary of the SAC.
- There will be a max. 1 hour drilling per anchor at a rate of approx. 1 m per minute (max time allows for some contingency).

General points:

- All works to be done at low tide
- All materials will taken from the laydown areas to the works are by hand.
- Hand tools will be used to level the seabed (locally) and redistributed (locally)
- A bund (plywood and visqueen membrane) will be put in place to capture any spoil/material. This will be removed from site (likely to a small skip within the laydown area) and disposed of off-site
- A hopper scaffold (approx. 1.8m H, 600x 600) will be used to reach areas for minor masonry repairs/joint raking and a smaller portable bund used to collect spoil.
- A running rail will be installed to the abutment walls and a drill fitted.
- All equipment at the works area (except the rail) will be removed after each shift.

Please do let me know if anything needs clarifying or if you have any further queries.

Best wishes
Rachel
07814 687652

From: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk>
Sent: 04 November 2020 09:59
To: Rachel Barker <rachel.barker@ecusltd.co.uk>
Subject: RE: Kidwelly - next phase of works

1/22/2021

Good morning Rachel,

If you could email me a brief description of the next phase we will look at it internally and advise on the next step, depending upon the complexity of this next phase of works, the next step may be this may be to approach NRW for [bespoke pre-application advice](#).

Regarding your previous emails that clarified the scaffold support methodology for Span 4, I am still awaiting a response from NRW technical experts and will let you know as I hear back from them.

Kind Regards
Graham Willis

Uwch Swyddog Trwyddedu Morol / Senior Marine Licensing Officer

Cyfoeth Naturiol Cymru / Natural Resources Wales
Maes y Ffynnon, Bangor, LL57 2DW

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Yn sgil y datblygiadau diweddaraf rwy'n gweithio gartref ar hyn o bryd ac felly nid mewn cyswllt ar y ffôn. Os oes angen i chi gysylltu, anfonwch e-bost ataf os gwelwch yn dda a byddaf yn ymateb cyn gynted â phosib.

In light of recent events, I am currently working from home and as such not contactable on the phone. If you need to get in touch, please email me and I will respond as quickly as possible.

From: Rachel Barker <rachel.barker@ecusltd.co.uk>
Sent: 04 November 2020 08:59
To: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk>
Subject: RE: Kidwelly - next phase of works

Hi Graham,

We now have the information ready to prepare our application and supporting documents for the next phase of works.

There are a couple of aspects that I think it would be worth discussing prior to submitting the application – would this need to be done as a separate process or would it make sense for us to speak with you (as you have the understanding of the project already)?

Best wishes
Rachel
07814 687652

From: Willis, Graham <graham.willis@cyfoethnaturiolcymru.gov.uk>
Sent: 02 November 2020 12:24
To: Rachel Barker <rachel.barker@ecusltd.co.uk>
Cc: Hannah Breen <hannah.breen@centregreat.net>
Subject: RE: Kidwelly - Band 1 Licence CML2038

Hi Rachel,

Thank you for your quick response, I have forwarded your emails onto our Technical Experts for review and will get back to you as soon as I have received their response.

Kind Regards
Graham Willis

Uwch Swyddog Trwyddedu Morol / Senior Marine Licensing Officer

Cyfoeth Naturiol Cymru / Natural Resources Wales

Maes y Ffynnon, Bangor, LL57 2DW

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Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.

Yn sgil y datblygiadau diweddaraf rwy'n gweithio gartref ar hyn o bryd ac felly nid mewn cyswllt ar y ffôn. Os oes angen i chi gysylltu, anfonwch e-bost ataf os gwelwch yn dda a byddaf yn ymateb cyn gynted â phosib.

In light of recent events, I am currently working from home and as such not contactable on the phone. If you need to get in touch, please email me and I will respond as quickly as possible.

Appendix 5: Annex I Habitats Map



Layers

- Designated sites
- Dee
- Menai
- PLAS
- Cardigan Bay
- Pembrokeshire Marine
- Carmarthen Bay and Estuaries
 - Atlantic Salt Meadows
 - Estuaries
 - Mudflats and Sandflats
 - Salicornia
 - Sandbanks
 - Shallow Inlets and Bays
 - Burry_inlet_Cockle_Fishery_Order
- Severn
- BAP and OSPAR

