

Job name:	A494 River Dee Bridge Deck Over Slabbing	Job no:	3094
Note by:	D.Hall	Our ref	TN/3094
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Subject:	NMWTRA Scheme ID Scheme Number 16/NM/CHR/003	Status:	Final for issue - V3 22-04-2024
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Screening A494 River Dee Bridge Deck Over Slabbing

A494 RIVER DEE BRIDGE DECK OVER SLABBING – REVIEW OF REQUIREMENT FOR EIA (REF DMRB LA102)

1 INTRODUCTION

- 1.1 The Welsh Government is responsible, as the highway authority, for all Motorway and Trunk Road networks in Wales. The A55, A550 and A494 corridor forms a primary East-West link between Queensferry/Ellesmere Port/north-west of England and the rest of North Wales and is part of the Trans-European road network.
- 1.2 The River Dee crossing of the A494 Queensferry Bypass, constructed in 1960, forms a critical part of this link, carrying approximately 64,000 vehicles per day (2014)¹ far more traffic than it was designed for. The corridor is below modern standards. Some of the junctions have slip roads that are too short or too close to the road, and poor visibility is an ongoing problem.
- 1.3 In recent years, there is evidence of concrete deck deterioration, which may have been occurring for many years. This deterioration has continued despite routine maintenance and repairs by North and Mid Wales Trunk Road Agent (NMWTRA) and NMWTRA estimate that they can maintain the bridge for, at most, a further 3 years² before routine maintenance becomes unsustainable. Currently there is a prohibition for the restriction on the movement of abnormal loads over the structure. Major maintenance and/or refurbishment has become essential.
- 1.4 As a result of the deterioration, NMWTRA have commissioned a Scheme to develop a major maintenance intervention should a critical defect be identified within the A494 River Dee Bridge structure and enable this to be implemented with minimal impact on traffic conditions.
- 1.5 The works are expected to commence with preliminary site investigation between May/June 2024. There will be some enabling works to the central reserve to create cross over points and works to widen a nearby junction, due to be undertaken June / July 2024. However, these lie outside the footprint of the Dee Bridge and are not relevant to this assessment or Record of Determination (RoD). The main works would only be undertaken if the condition of the existing road surface further deteriorates, and a critical defect found. Any works would be done as a reactive maintenance operation.

¹ WelTAG Assessment/2018-08-22 Rev 02 / A494 River Dee WelTAG Stage 2 Report (Rev02).docx 23 August 2018

² As suggested in 2018

2 PRINCIPLES AND PURPOSE OF SCREENING

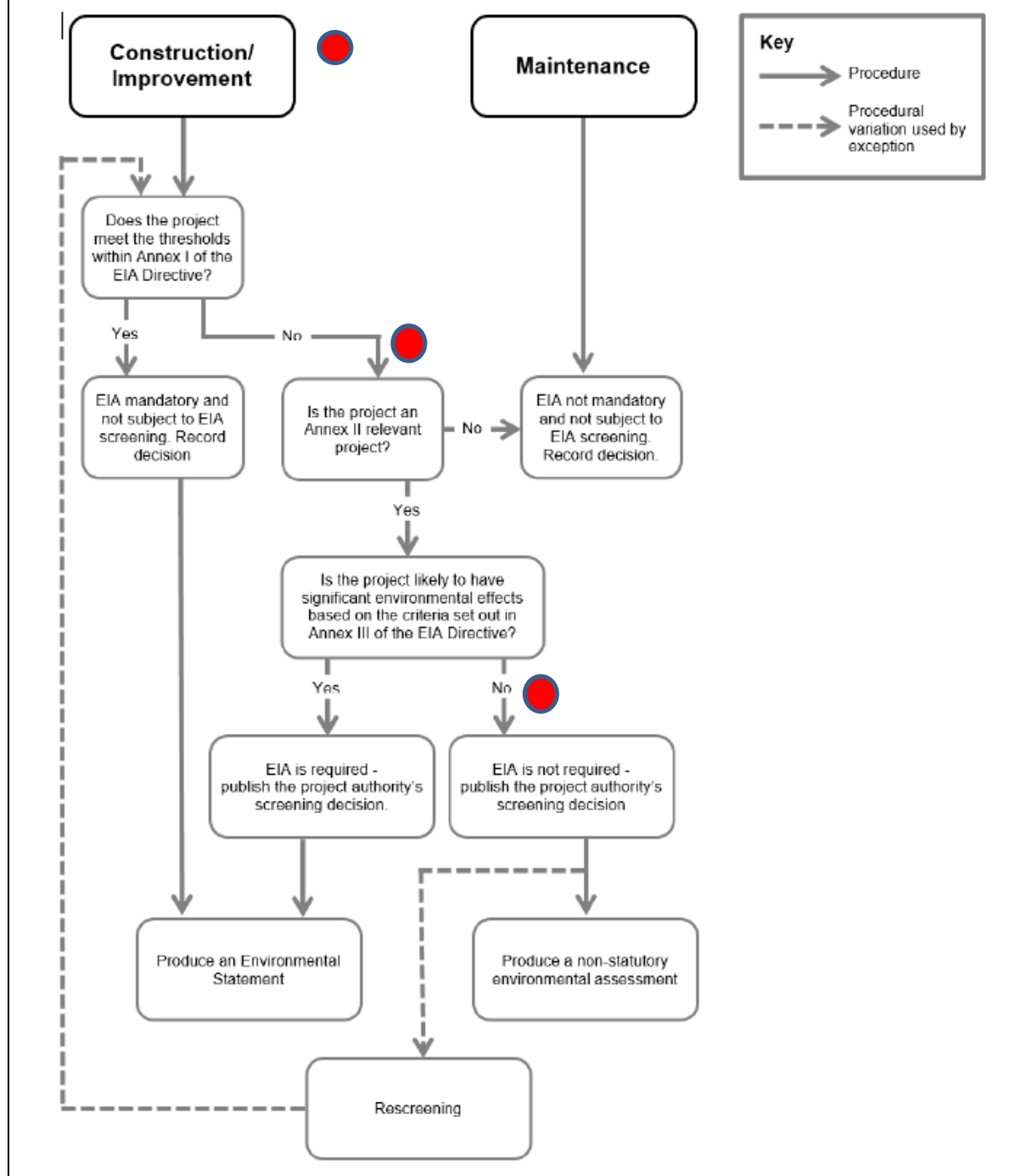
- 2.1 This Technical Note provides information for the basis of a screening report for the proposed design intervention in line with the Environmental Impact Assessment (Miscellaneous Amendments Relating to Harbours, Highways and Transport) Regulations 2017³, the EIA Directive (2014/52/EU)⁴ and in line with the requirements set out in DMRB LA102⁵.
- 2.2 Screening determines whether a Scheme requires an Environmental Impact Assessment (EIA) and publication of an Environmental Statement (ES) in line with the requirements of the Directive 2011/92/EU as amended by 2014/52/EU.
- 2.3 DMRB LA102 'Screening Schemes for Environmental Impact Assessment' Rev 0 sets out the screening process and criteria for highways Schemes. National Application Annex for Wales applies. This Technical Note records a screening carried out in accordance with the flowchart W/1.1. (see extract below). Red dots indicate the decision path taken to reach a conclusion.
- 2.4 The process establishes whether the Scheme falls within the thresholds of Annex 1 or Annex 2 of the EIA regulations. If the Scheme is classified as an Annex 1 Scheme, then EIA is a mandatory requirement. If the Scheme is not an Annex 1 Scheme, then it falls within Annex 2 and needs to be screened to determine whether it is a 'relevant Scheme'. A Scheme is a 'relevant Scheme' if the area of the completed works together with any area occupied during the period of construction or improvement by requisite apparatus, equipment, machinery, materials, plant, spoil heaps or other such facilities exceeds 1 hectare or if it, or any part of it, is situated in a sensitive area.
- 2.5 If the Scheme is classified as a relevant Scheme, then the test is whether the Scheme is likely to have any significant environmental effects. If the answer is yes, then an EIA is required. If the answer is no, then an EIA is not required but the Scheme authority may decide to produce a non-statutory environmental assessment. To support the determination as to whether a Scheme is a relevant Scheme falling within Annex II of the EIA Directive information shall be collated in a Record of Determination (RoD).

³ Environmental Impact Assessment (Miscellaneous Amendments Relating to Harbours, Highways and Transport) Regulations 2017 (<http://www.legislation.gov.uk/ukxi/2017/1070/made>)

⁴ EIA Directive 2014/52/EU (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0052>)

⁵ <https://www.standardsforhighways.co.uk/tse/attachments/dc73affe-4f24-4077-8637-e79e4fb7b198?inline=true>

Figure W/1.1 EIA screening for Highways Act 1980 (as amended) projects



Source: LA 102 Revision 0

3 DESCRIPTION OF THE SCHEME

Defining the terms of reference

- 3.1 The Highways Act 1980 (as amended)⁶, is a key piece of legislation governing highways in the United Kingdom and distinguishes between "construction" and "maintenance" in the context of highways, reflecting their different scopes and purposes within highway law and management.
- **Construction:** This term generally refers to the process of building new infrastructure. In the context of highways, construction would involve the activities associated with creating a new highway or significantly upgrading an existing one. This can include the planning, design, and building phases, which encompass earthworks, paving, installation of drainage and lighting systems, and the construction of related structures such as bridges and tunnels. Construction is about bringing new infrastructure into existence or significantly enhancing the capacity or layout of existing roadways.
 - **Maintenance:** Maintenance, on the other hand, refers to the activities required to keep the highway in a safe and usable condition. This includes routine activities such as repairing potholes, resurfacing roads, clearing drainage systems, replacing signage, and managing vegetation. Maintenance is crucial for ensuring the safety, functionality, and longevity of the highway infrastructure. It is about preserving the existing infrastructure and preventing its deterioration over time.
- 3.2 Understanding the distinction between construction and maintenance is important for grasping the full scope of responsibilities held by highway authorities under the Highways Act 1980. While construction Schemes may be more infrequent and involve significant planning and investment, maintenance is an ongoing responsibility that requires regular attention and resources to ensure the highway network remains safe and functional.

Description of the Scheme

- 3.3 The A494 River Dee Bridge Deck Over-Slabbing Contingency Scheme is a major maintenance intervention that involves the replacement of the existing road surface with a new reinforced concrete over-slab and combined waterproof and wearing membrane. The works will be contained within the existing footprint of the bridges surface structure and above the existing concrete deck slab. Below deck debris netting will be installed and the top 75mm of the bridge deck, existing kerbs and movement joints removed and disposed off-site. Concrete deck repairs will be carried out and new structural mesh will also be installed across the entire bridge deck. The combined waterproof and wearing membrane shall also be applied to the hard verge and central reserve.
- 3.4 The overall aim and nature of the works seek to preserve the existing infrastructure and prevent its further deterioration over time. However, to do so requires some elements of construction and significantly upgrading the existing bridge. The elements of construction

⁶ <https://www.legislation.gov.uk/ukpga/1980/66/part/VA>

include the replacement of steel mesh, filling voids with new concrete, replacement of movement joints, new kerbs, replacement of damaged gullies, construction of crossovers and the erection of temporary safety fencing.

- 3.5 With reference to the above, it is considered that the A494 River Dee Bridge Deck Over-Slabbing Contingency Scheme is classified as a construction and maintenance operation, and not just a maintenance operation.
- 3.6 In accordance with LA 102 (E/1.5) the Scheme is a maintenance Scheme which involves elements of construction or improvement and therefore must adhere to the requirements for screening 'relevant Schemes' in accordance with the EIA Directive. Therefore, the Scheme requires to be screened against the criteria of the Highways Act 1980 (as amended) and in accordance with LA 102 Figure W/1.1 EIA Screening for Highways Act 1980 (as amended).
- 3.7 The location of the Scheme (including compound areas) and Scheme proposals are provided in **Appendix A**.
- 3.8 Temporary traffic management will be required for the works and there are currently three scenarios that are being considered:
 1. Full closure of the bridge (both carriageways) – Total diversion until one deck has been repaired to allow for contraflow along the A55, M53, and parts of the M56.
 2. Failure of the Eastbound deck – Traffic to be directed into contraflow onto the Westbound deck (currently expected to be the most likely scenario as identified within the YGC AiP ref doc 'Queensferry By- Pass River Bridge Over-Slabbing of Both Decks. Structure Ref No: A494 380 Approval in Principle V5')⁷.
 3. Failure of the Westbound deck - Traffic to be directed into contraflow onto the Eastbound deck⁶.
- 3.9 Each of the above may be carried out as major maintenance works either as: -
 1. Reactive emergency work caused by a bridge or carriageway failure, OR
 2. As pre-planned works to proactively undertake the works before a critical defect occurs.

- 3.10 The works are expected to commence with preliminary site investigation between May/June 2024. The maintenance/construction works would only be undertaken if a critical defect was discovered.
- 3.11 The overseeing organisation would be the North and Mid Wales Trunk Road Agent.

Reasonable alternatives

- 3.12 There are no reasonable alternatives. The over-slabbing measure is required in the short-term, as an emergency measure until a Scheme for the replacement of the existing A494 River Dee Crossing has been determined.

⁷ full closure is also required for a short period of time to establish the contraflow temporary traffic management.

4 SCREENING

Does the Scheme meet the thresholds within Annex I of the EIA Directive?

- 4.1 The Scheme does not fall within Annex 1 of the EIA Directive. The works involve the resurfacing of an existing piece of infrastructure that crosses over the River Dee. The construction and maintenance works will be contained within the footprint of the existing bridge and apply to the upper surface of the existing structure.

Is the Scheme an Annex II relevant Scheme?

- 4.2 There are two criteria set out in LA102 that define whether a Scheme is a relevant Scheme, namely:
- A Scheme for constructing or improving a highway where :
 - a) the area of the completed works together with any area occupied during the period of construction or improvement by requisite apparatus, equipment, machinery, materials, plant, spoil heaps or other such facilities **exceeds 1 hectare**; or
 - b) where any such area is situated in whole or in part in a **sensitive area**.

- 4.3 The total area of the Scheme, including two temporary site compound sites, measures approximately **0.53 hectares**.

- 4.4 The two proposed compound areas are a total of 0.26 hectares. The bridge deck where the resurfacing works will be undertaken totals 0.27 hectares.

Characteristics of Schemes

- 4.5 The characteristics of Schemes must be considered, with particular regard to those listed within Directive 2014/52/EU and includes various aspects including the size, pollution risks, production of waste and noise.

Locations of Schemes

- 4.6 The environmental sensitivity of geographical areas likely to be affected by Schemes must be considered with particular regard to those listed within Directive 2014/52/EU and includes:
- a) the existing and approved land use;
 - b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground;
 - c) the absorption capacity of the natural environment, paying particular attention to the following areas:
 - i. wetlands, riparian areas, river mouths;
 - ii. coastal zones and the marine environment;
 - iii. mountain and forest areas;
 - iv. nature reserves and parks;

- v. areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC⁸;
- vi. areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the Scheme, or in which it is considered that there is such a failure⁹;
- vii. densely populated areas; and
- viii. landscapes and sites of historical, cultural or archaeological significance

4.7 The Scheme is located on the existing A494 River Dee Bridge that crosses above the River Dee Site of Special Scientific Interest (SSSI) and River Dee and Bala Lake Special Areas of Conservation (SAC), a former Natura 2000 site which now forms part of the new National Site Network (NSN) (v above).

4.8 The River Dee is tidal and is hydrologically linked to the coastal zone and marine environment which is also covered by a number of designations. The boundary of these designations is within 1 km of the location of the proposed over-slabbing works. The designations include the following:

- The Dee Estuary Ramsar;
- The Dee Estuary SAC/SPA/SSSI; and
- The Dee Estuary SAC (marine components)

4.9 Therefore, and in accordance with DMRB LA 102 and Directive 2014/52/EU, the Scheme can be classified as a 'relevant Scheme' as it lies close to and crosses, sensitive areas. However, it should be noted that the Dee Bridge is an existing structure that crosses the River Dee and is not located within the sensitive sites.

4.10 The locations of the sensitive sites are illustrated on the Drawing provided in **Appendix B**.

Types and characteristics of the potential impacts

4.11 The likely significant effect of Schemes on the environment must be considered in relation to the Schemes location and characteristics. The potential impact of the Scheme must consider the magnitude and extent of the Scheme, the nature of the impact, its intensity, duration, frequency and reversibility.

⁸ The Conservation of Habitats and Species Regulations 2017 (as amended) are one of the pieces of domestic law that transposed the land and marine aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (together known as the Nature Directives) into UK law. The 2017 Regulations (Regulation 9(1)), as amended by the 2019 Regulations, require the Secretary of State and Welsh Ministers to secure compliance with the requirements of the Nature Directives. Since the UK left the EU, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network. The 2019 Regulations have created a National Site Network (NSN) on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes existing SACs and SPAs, new SACs and SPAs designated under these Regulations. Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

⁹ The UK's Statutory Nature Conservation Bodies (SNCBs) are responsible for assessing the condition of habitats and species protected the designated SAC and SPAs etc. This is generally carried out through [Common Standards Monitoring](https://www.rmlconsult.com).

5 DESCRIPTION OF LOCAL ENVIRONMENTAL CONDITIONS

Landuse

- 5.1 The land use of the area is predominantly urban, with industrial and commercial uses located on the left-hand bank and residential and agricultural fields located on the right-hand bank. The A494 River Dee Bridge crosses the River Dee east of the built-up and urban area of Queensferry and west of the residential area of Garden City.
- 5.2 The existing bridge carries two lanes of traffic east and westbound and has a central reserve and hard verge either side. There are safety barriers along each verge and central reservation and the parapets defined by railings on both sides. The bridge spans 118 metres between abutments on the north and south bank is approximately 6.6 metres above the Mean High Water Spring (MHWS) mark of the River Dee at this location.

Landscape and visual

- 5.3 National Landscape Character Area (NLCAs) are non-statutory designations defined at a broad landscape scale throughout Wales. The descriptive profiles for the 48 individual character areas highlight what distinguishes one landscape from another, with reference to their regionally distinct natural, cultural and perceptual characteristics. The site lies within the boundary of NLCA 13 Deeside and Wrexham. Key characteristics relevant to the study area include the River Dee.
- 5.4 LANDMAP is an all-Wales resource that is administered by Natural Resources Wales. It records and evaluates landscape characteristics, qualities and influences on the landscape in a nationally consistent data set. The site lies within Local Landscape Character Area (LCA) 097 – River Dee Canal, Saltney Ferry to Wepre Gutter.
- 5.5 The River Dee is a simple and canalised feature of inland water. Its excavation facilitated the reclamation of neighbouring marshland to agricultural use and then gradually to industrial, retail and residential development. The river is contained by embankments and crossed by several road and rail bridges. It is a large-scale area of open characteristic. The embankments are accessible and used as paths and cycleways, the river itself still serves as a transport route. Crossing road and rail bridges are an additional source of noise and movement. There is little source of night-time light within the LCA, neighbouring built-up areas and road corridors have an influence on the river corridor.

Geology and soils

- 5.6 No Regionally Important Geological / Geomorphological Sites or important outcrops are present within the vicinity of the Scheme.
- 5.7 The banks of the River Dee sit at approximately 5m above ordnance datum (AOD). The river was realigned in 1737 to form a straight channel from Chester to the river mouth. The original course of the river ran to the north of its current position from Chester through Sealand and Burton. To the north-east of the river the land continues to lie flat at 5mAOD. To the southwest of the river, the elevation gradually rises to 10m AOD at Queensferry Interchange. Past this point the elevation increases more steeply towards the south-west.

Road drainage and the water environment

- 5.8 Under the Water Framework Directive (WFD), the River Dee forms part of the Dee (N.Wales) (ID: GB31106708200) transitional water body. This water body is classified as heavily modified. It has an overall status of 'Moderate'.
- 5.9 A Flood Consequences Assessment (FCA) was undertaken as part of the wider A494 River Dee Bridge Improvement Scheme. The FCA concluded that the site is at risk of both tidal and fluvial flooding from the River Dee, and of fluvial flooding from the Queensferry Drain. Tidal flooding from the River Dee is considered the predominant source of flood risk to the site and the site is protected by flood defences. It is highly unlikely that works to the bridge deck would be at risk from flooding, however one of the proposed compound sites is located on lower ground, within an Area classified as Zone C1, and stated as served by significant infrastructure, including flood defences¹⁰.
- 5.10 The existing A494 drainage in this location consists of kerbs and gullies connected to carrier drains. There are also filter drains collecting cutting and embankment runoff, which are connected to the carrier drains. The discharges are to the St David's Park lagoon, to the Daisy Bank Drain culvert and to the Queensferry Drain culvert. All discharges are untreated with no attenuation. The River Dee is the final receiving watercourse for all drainage derived from the existing A494 bridge, this would include waste from construction and maintenance works.
- 5.11 The River Dee at this location is not within a catchment zone for phosphorous as indicated on DataMap Wales¹¹. The Scheme is located adjacent to a Nitrate Vulnerable Zone, which is located on the east and includes Garden City.
- 5.12 ***Population and human health (includes all Travellers)***
- 5.13 Temporary traffic management will be required for the works and there are currently three scenarios that are being considered, all of which include some form of road closure and diversions of traffic (refer to **Section 3.8**).
- 5.14 The construction/maintenance works required has the potential to cause driver stress from the short periods of full or partial closure of the A494 required to undertake the works, causing diversions, congestion, increased journey times and a greater risk of accidents.
- 5.15 The Scheme does not require the closure of any Public Rights of Way or Cycle Routes, though these do pass underneath the River Dee Bridge. The key route is the NCN568, which runs underneath the A494 River Dee Bridge and crosses NCN 5 at the Hawarden Bridge (Shotton). Measures will need to be taken to ensure that path users are not affected by pollutants such as dust and run-off during construction and maintenance operations.
- 5.16 There is currently no complete pedestrian or cycle route across the River Dee at the A494 bridge (FP01). A narrow footpath with no cycle provision is present alongside the eastbound carriageway between the Queensferry Interchange and the Wales Coast Path. North of the Interchange the footway runs adjacent to the carriageway until it meets the rail line where a

¹⁰https://gisgeoext.cyfoethnaturiolcymru.gov.uk/Geocortex/Viewers/Html5Viewer_4145/index.html?viewer=FoodRisk

¹¹ <https://datamap.gov.wales/maps/>

grass verge is present between the footway and carriageway. Over the River Dee the footway is behind a barrier and lies within the working width of the vehicle restraint system.

- 5.17 During the maintenance/construction works, temporary noise and vibration impacts associated with the Scheme have the potential to directly affect sensitive receptors, including nearby residential properties (for example, those at Claremont Avenue), Toyota and the Haulage and Auto Repair yard.

Biodiversity

- 5.18 The Scheme crosses above the River Dee SSSI and River Dee and Bala Lake SAC. The River Dee is tidal and is hydrologically linked to the coastal zone and marine environment which is also covered by a number of designations:

- The Dee Estuary Ramsar;
- The Dee Estuary SAC/SPA/SSSI; and
- The Dee Estuary SAC (marine components)

- 5.19 A summary of these sites, including their reasons for designation is provide in **Table 5.1**.

Table 5.1: Statutory designated sites within proposed Scheme area

Site	Designation	Reasons for designation	In proximity
River Dee and Bala Lake	SAC - UK 0030252	Annex I habitats that are a primary reason for selection of this site: 3260 Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation. Annex II species that are a primary reason for selection of this site 1106 Atlantic salmon <i>Salmo salar</i> 1831 Floating water-plantain <i>Luronium natans</i> Annex II species present as a qualifying feature, but not a primary reason for site selection 1095 Sea lamprey <i>Petromyzon marinus</i> 1096 Brook lamprey <i>Lampetra planeri</i> 1099 River lamprey <i>Lampetra fluviatilis</i> 1163 Bullhead <i>Cottus gobio</i> 1355 Otter <i>Lutra</i>	Crossed by Scheme
River Dee	SSSI - 2554	Fluvial geomorphology, carboniferous geology, range of river habitat types, saltmarsh transition habitats floating water plantain, slender hare's ear, sea barley, hard grass, otter, salmon, bullhead, brook lamprey, river lamprey, sea lamprey, club tailed dragonfly and other aquatic invertebrates.	Crossed by Scheme

Site	Designation	Reasons for designation	In proximity
Dee Estuary	Ramsar Site (UK11082)	The Dee Estuary Ramsar site is currently considered to qualify under the following San Jose criteria: Criterion 2: Breeding colonies of the natterjack toad <i>Epidalea calamita</i> Criterion 5: Internationally important wetland for water birds (>200,000 individuals) Criterion 6: Contains >1% of the region's waterfowl Sub features include: rocky shores, shingle banks, saltmarsh, Intertidal mudflats and sandflats and estuary channels.	1.0km due northwest (Tidal link)
Dee Estuary	SPA - UK 9013011	This site qualifies as SPA under Article 4.1 of the Directive for the Conservation of Wild Birds (79/409/EEC: a/b) by supporting populations of importance of wintering, breeding and migratory bird assemblages. The area qualifies under Article 4.2 of the Directive for the Conservation of Wild Birds (79/409/EEC: a/b) by regularly supporting at least 20,000 waterfowl.	1.0km due northwest (Tidal link)
Dee Estuary	SAC -UK - 0030131	Annex I habitats that are a primary reason for selection of this site: 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows Annex I habitats that are present as a qualifying feature, but not a primary reason: 1210 Annual vegetation of drift lines 2110 Embryonic shifting dunes 1130 Estuaries 2190 Humid dune slacks 2130 Fixed dunes with herbaceous vegetation ('grey dunes') 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts Qualifying species: The site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II: 1395 Petalwort <i>Petalophyllum ralfsii</i> 1099 River lamprey <i>Lampetra fluviatilis</i> & 1095 Sea lamprey <i>Petromyzon marinus</i>	1.0km due northwest (Tidal link)

Site	Designation	Reasons for designation	In proximity
Dee Estuary	SSSI - 0839	Populations of internationally important wintering waterfowl; its populations of individual waterfowl and tern species; its intertidal mud and sandflats, saltmarsh and transitional habitats; the hard rocky sandstone cliffs of Hilbre Island and Middle Eye with their cliff vegetation and maritime heathland and grassland; its assemblage of nationally scarce plants; and its populations of sandhill rustic moth <i>Luperina nickerlii gueneei</i> , a Red Data Book species	1.0km due northwest (Tidal link)

- 5.20 There is one Wildlife Site located within 500 m (420 m due west). This is the River Dee Wildlife Site (36NW01) noted for its coastal and floodplain grazing marsh, Coastal saltmarsh, Mudflats, Ornithological interest. This would not be impacted by the Scheme.
- 5.21 There are no notable habitats located within the footprint of the Scheme, all of which, including the site compounds would be located within existing hard standing.
- 5.22 The northern bank which lies directly under the River Dee is dominated by tall common or sea Couch (or a hybrid of the two), with abundant sea purslane dominating towards the lower saltmarsh zone with intertidal mud below that. The southern bank and the Queensferry Drain outflow are dominated by scrub and intertidal mud, with scattered saltmarsh species in between. These habitats would not be directly affected.
- 5.23 The Dee Estuary Ramsar/SPA sites supports internationally important populations of a number of bird species. The A494 bridge is located 1.0 km from these sites. However, birds are mobile and so will utilise other areas along the River Dee. These areas include the intertidal habitats (for loafing, roosting, foraging and refuge) and adjacent fields and sand bars (for high tide refuge, depending on food availability and the state of the tide).
- 5.24 In terms of nesting birds, there are a number of pigeons which utilise the underside of the bridge and could nest where below deck netting is to be positioned. Feral pigeons (*Columba livia*) are capable of breeding all year round, but the peak breeding season is in the spring and autumn. The main breeding season is typically between March and July, outside the timing of the proposed works. NRW issue general licences which authorise certain actions affecting wild birds which would otherwise be illegal, without the need to apply for a specific licence. General licences are only issued for particular purposes and apply to certain species, including feral pigeons. General Licence Number: WCA / GEN / 002 / 2024 is a license to kill or take feral pigeon or to take or destroy their nests or eggs for the purposes of preserving public health, public safety or preventing the spread of disease. More information can be found on the NRW website¹².
- 5.25 If works are delayed and commence within the nesting bird season (generally considered to be from March – August inclusive) consideration would need to be given to the potential

¹² <https://naturalresources.wales/permits-and-permissions/species-licensing/bird-licensing/general-licences-2024/general-licence-002/?lang=en>

presence of other nesting birds. Birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended)¹³.

- 5.26 Mobile species which are features of interest of the designated sites which occur directly under the bridge (River Dee SSSI and River Dee and Bala Lake SAC) include otter and migratory fish species.
- 5.27 Otters are a feature of interest of the River Dee and Bala Lake SAC and evidence of otters has previously been found along the River Dee during surveys for the wider River Dee Bridge Improvement Scheme including feeding remains, spraint and footprints. However, suitable secure breeding sites or resting sites are absent from the areas directly under the bridge. Otters would only be on passage or foraging.
- 5.28 Bullhead are a feature of interest of the River Dee and Bala Lake SAC but this species is a freshwater fish confined to the river above the tidal limit at Chester Weir (located 11km upstream of the Scheme) and will not be affected by the proposals.
- 5.29 Fish species that migrate through the River Dee and under the location of the bridge include those which are features of interest of the designated sites. These are Atlantic salmon (*Salmo salar*), Sea lamprey (*Petromyzon marinus*) and River lamprey (*Lampetra fluviatilis*).
- 5.30 The canalised section of the River Dee is a uniform habitat with few species at fairly low densities. There is little habitat for resident fish populations and any fish present, which would also include any Eel (*Anguilla Anguilla*) would only be transient. All these protected species are migratory and none feed on the journey up the estuary. There is therefore no risk of a resident population being present over a long period.
- 5.31 Other mobile species of note (though not a feature of interest of the designated sites) are bats. During surveys in respect of the wider River Dee Improvement Scheme, common pipistrelles (*Pipistrellus pipistrellus*) and soprano pipistrelle (*P. pygmaeus*) bats were detected at the A494 River Dee Bridge commuting and foraging along the River Dee. No roosts have been identified. The bridge is considered to have negligible potential to support roosting bats.

Cultural heritage

- 5.32 There are three listed buildings in the vicinity of the proposed works:
- Bascule Bridge, Grade II. (Grid ref; 332244 368702). 150m north west of proposals;
 - Ferry Bank Farm, Grade II. (Grid Ref; 332846 368751). 431m north east of works;
 - Former Willans & Robinson Factory buildings. Grade II. (Grid Ref; 332510 368065). 452m south east of works.
- 5.33 Due to the nature of the works proposed and the distances from the listed buildings, it is not anticipated that the proposals will impact these listed buildings or their settings.
- 5.34 There are no World Heritage Sites, Scheduled Ancient Monuments (SAM), or Historic Parks and Gardens within 500m of the proposed bridge.

¹³ <https://www.legislation.gov.uk/ukpga/1981/69>

Air quality

- 5.35 There are currently no declared Air Quality Management Areas (AQMA) within the Flintshire County Council (FCC) administrative area. The closest AQMA is located over 8.9km from the Scheme to the south east, within Chester City centre. This AQMA was declared by Chester City Council for exceedances of the annual mean nitrogen dioxide (NO₂) objective.
- 5.36 FCC does not currently undertake any automatic monitoring. The nearest automatic monitoring site is at the junction of South Bank and Old Aston Road, circa 800m from the bridge.
- 5.37 FCC monitoring indicates that annual and hourly mean NO₂ and annual and daily PM₁₀ concentrations are well below the relevant objectives in the study area and wider surrounding area.
- 5.38 Baseline air quality is mainly influenced by vehicles travelling along the A494. Secondary sources are derived from day-to-day agricultural and industry.
- 5.39 The construction and maintenance activities can result in temporary effects from dust. 'Dust' is a generic term which usually refers to particulate matter in the size range 1-75 microns in diameter; the most common impacts from dust emissions are soiling and increased ambient PM₁₀ concentrations. Dust can arise from the construction/maintenance activities such as planing of the bridge deck and concrete repair works. It can be mechanically transported either by wind or through the movement of vehicles onto the public highway (transport of debris on vehicle wheels, or uncovered loads).

Noise and vibration

- 5.40 Baseline noise levels are mainly influenced by vehicles travelling along the A494 trunk road. Secondary sources are likely derived from day-to-day nearby industrial and/or agricultural land management activities. Areas beneath and directly adjacent to the bridge abutments are subject to rhythmic low frequency noise caused by vehicles passing over bridge expansion joints.
- 5.41 It is likely that the proposed work would result in a temporary increase in noise and vibration levels above existing due to the nature of the works. In addition, there may be some requirements to conduct the works overnight, increasing the potential for disturbance at times of lower existing ambient noise levels.
- 5.42 Noise sensitive receptors are likely to include private residential properties 30m north and 120m south east of proposals, business premises approx. 50m south west and south east of proposals, protected areas (SAC, SSSI) directly beneath, and Public rights of way beneath bridge.

Materials and waste

- 5.43 Under the Site waste Management Plans Regulations 2008¹⁴ any client who intends to carry out a Scheme on any one construction site with an estimated cost greater than £300,000

¹⁴ <https://www.legislation.gov.uk/uksi/2008/314/regulation/5/made>

excluding VAT must prepare a Site Waste Management Plan conforming to these Regulations before construction work begins.

- 5.44 The quantities of waste to be produced were unknown at the time of writing. The main waste produced would consist of bituminous material (Non-hazardous waste code 17-03-02), concrete (Non-hazardous waste code 17-03-02) and steel (Non-hazardous waste code 17-04-05).
- 5.45 The Contractor would prepare a Construction Environmental Management Plan (CEMP) for approval prior to commencing the works. Measures would be implemented to reduce the effects of material resource use and waste generation by the Scheme during the maintenance and construction of the bridge deck repair work.
- 5.46 ***Invasive Non-native Species***
- 5.47 YGC report highlighted the presence of the invasive species Darwin's Barnacle in the River Dee directly beneath the bridge, as indicated by data provided by Cofnod. This is not a species listed on Schedule 9 of the Wildlife and Countryside Act; however it is considered invasive. This species is typically found in the intertidal habitat. No plant machinery or equipment will be located within the intertidal habitat therefore no special measures need to be taken, providing this situation doesn't change.
- 5.48 Chinese mitten crab (*Eriocheir sinensis*) was recorded within 1735m from the Scheme in Wepre Brook. The first record of the Chinese mitten crab in North Wales was made in the River Dee in 2006. In their report¹⁵, NRW state that a substantial population is thought to be present on the River Dee, however this is based on anecdotal evidence. However, the Chester Weir fish trap has captured a total of 234 mitten crabs since 2007, 94% of which were caught in the months of September and October. The NRW report suggests that the canalised section of the River Dee between Connah's Quay and Saltney (which includes the areas subject to this assessment) does not appear to be favourable habitat due to a lack of vegetation below the high tide water mark. However, evidence suggests that the River Dee population size and geographical range is increasing.
- 5.49 A stand of giant hogweed (*Heracleum mantegazzianum*) occurs within plantation woodland adjacent to the footpath which heads under the A494 bridge crossing. This plant is a hazardous skin irritant and appears to have been treated with herbicide.

Climate

- 5.50 A detailed carbon assessment has not been calculated for this Scheme. However, It is considered that the maintenance/construction effects of the Scheme on climate will not have a material impact on the ability of the Welsh Government to meet its carbon reduction targets. Therefore, the effects are deemed to be not significant (in accordance with the DMRB criteria¹⁶) due to the relatively low quantity of emissions in comparison to overall Welsh emissions for construction.

¹⁵ A. Falkingham, J. Yeardley, R. Hughes (NWWT) Monitoring of Chinese Mitten Crabs *Eriocheir sinensis* on the River Dee. NRW report No 154

¹⁶ Standards for Highways (2021). Design Manual for Roads and Bridges – Sustainability and Environment LA 114 (Climate) [online] available at: <https://www.standardsforhighways.co.uk/dmrbs/search/d1ec82f3-834b-4d5f-89c6-d7d7d299dce0>

6 DESCRIPTION OF POTENTIAL EFFECTS AND PROPOSED MITIGATION

- 6.1 Construction and maintenance activities are likely to give rise to an increased risk of pollutants such as noise, light and airborne emissions such as dust, sediment and pollutants used in the process. There is also a risk of pollutants entering surface water and draining indirectly into the River Dee. An Initial Environmental Appraisal (IEA) (reference CPF6610)¹⁷ of the over-slabbing works was undertaken by YGC in April 2019. The IEA identified potential environmental risks associated with the works and are considered within the production of this Technical Note.

Landuse

- 6.2 Works are restricted to areas of made-ground on the A494 Bridge and works do not require any private land acquisition. The works will also not affect the integrity of the current or future land use within the local area. As such, the proposed Scheme is assessed as having no impacts on residential, commercial, or community land.

Landscape and Visual

- 6.3 Considering the nature and duration of the works, no significant impacts on landscape are envisaged. Upon completion of the works, no residual impacts are anticipated e.g., the works only involve like-for-like bridge deck refurbishment.

Geology and soils

- 6.4 As the works will take place entirely on the A494 River Dee Bridge and due to the structure's height above the River Dee, there will be no impact on geology and soils. The proposed compound areas are located within existing hard standing.

Road drainage and the water environment

- 6.5 The proposed work is due to take place across the River Dee which is classed as a main river. and therefore Flood Risk Activity Permit (FRAP) may therefore be required. Consultation with Natural Resource Wales (NRW) was sought on the 2nd April 2024 where it was confirmed that:

'the works are unlikely to be consider an activity under Sch.5: Para 3 of the Environmental Permitting Regulations 2016 requiring a FRAP. They are likely to fall under an exemption if meeting all the relevant conditions as set out in [GPG 222 - Technical guidance - flood risk activity exclusions accessible copy \(naturalresources.wales\)](#)'.

- 6.6 NRW confirmed that the works will not require a FRAP and fall under an exclusion.
- 6.7 NRW have also been consulted with regards to the need for a marine licence. NRW have confirmed that as the bridge crosses above the Mean High Water Spring Mark (MHWS) then the works would require a band 2 marine licence.

¹⁷ Thomas, R (2019) A494 Queensferry River Bridge – Initial Environmental Appraisal CPF6610 – A494 Queensferry River Bridge. NMWTRA

- 6.8 While works at the A494 Bridge located above the River Dee will not result in a direct impact on the river or designated features of interest, there is the potential for indirect risks. A loss of containment e.g., fuel, oil, chemicals (i.e., hydraulic fluid), or concrete/cement wash could have a significant adverse environmental impact if it entered the River Dee, the severity being contingent on the substance and quantity lost. The works could also pose a risk of pollution into the River Dee from works associated with any concrete repairs and resurfacing works.
- 6.9 Throughout the construction/maintenance operations it is recommended that appropriate attenuation and pollution prevention measures be included in the drainage design to reduce surface water run-off and subsequent flood risk. It is assumed best practice measures would be included within a CEMP and these would adhere to relevant guidance including the CIRIA guidance and GPP5 'Works or maintenance in or near water' and CIRIA 'Environmental good practice on site' and GPG 22.
- 6.10 The Scheme does not pose a risk of deterioration from the existing WFD status for the Dee (N.Wales), Garden City Drain or the Dee Carboniferous Coal Measures, provided the following mitigation measures as detailed with a CEMP are followed, examples of mitigation are provided below.
- No work will take place within the River Dee.
 - The abstraction or transfers of water, or the washing of tools in the River Dee is not permitted.
 - Appropriate containment measures will be in place to prevent any loss of material, ancillary plant, debris, sediment, etc., escaping over the bridge deck during works construction materials into the River Dee.
 - The Contractor will develop an Incident (Emergency) Response Plan (IRP) which describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and suitable for particular circumstances.
 - All site personnel will be made aware of site spillage response procedures and in the event of a spill.
 - All waste, vehicles, ancillary plant, NRMM and fuels will be stored in the compound(s) as indicated.
 - Refuelling will only be undertaken at designated refuelling areas (e.g., on hardstanding, with spill kits available, and >10 m from drainage entry points and the River Dee, where practicable).
 - Spill kits will also be available within all site vehicles and spill kits will be replenished onsite when required.
 - Only designated trained and competent operatives will be authorised to refuel plant.
 - Generators, and other ancillary plant and NRMM, where there is a risk of leakage of oil or fuel, will have internal bunding OR must have a secondary containment system

(e.g., drip trays, plant nappies, etc.) placed beneath them that meets 110% capacity requirements. Containment systems will also be emptied regularly.

Population and human health

- 6.11 While the impact on drivers will be minimised, driver stress may be further reduced by managing the lane and road closures to minimise the impact on traffic, by warning of likely disruption upstream of the works using Variable Message Signs on the A55 and M53 and clearly signing any diversion routes. Driver stress may also be mitigated by clearly publicising the works several weeks before their commencement, particularly in Deeside and Chester, to reach drivers who would be most often affected for the duration of works.
- 6.12 There is risk of air quality impacts from the works in terms of dust arising during the planning of the deck and carrying out concrete repairs. This could impact residential and commercial properties nearby.
- 6.13 A CEMP would be produced by the Contractor. This would set out how various construction activities would be managed to comply with the relevant environmental legislation and best practice. The aim of the CEMP would be to minimise effects on residents, including human health effects. The CEMP would also include a Traffic Management Plan (TMP) to manage all temporary traffic diversions.
- 6.14 The full CEMP would manage all access arrangements, so that access can be maintained to routes and community assets throughout construction and operation.
- 6.15 Proposed population and human health mitigation measure include:
- All mitigation measures detailed within 'Air quality' and 'Noise and vibration' will be adhered to.
 - Any changes of schedule (e.g., change to night-time works programme) must be communicated to local residents throughout the programme.
 - Appropriate measures will be implemented to permit the safe passage on existing pathways and cycle paths, as necessary.
 - Journey planning information will be available for drivers online and other relevant media sources.
 - Production of a CEMP and associated documents.

Biodiversity

- 6.16 The designated sites which are crossed by the bridge are the River Dee and Bala Lake SAC and River Dee SSSI. No significant effects on the Annex I habitats that are a primary reason for selection of the SAC are envisaged, as the habitat type supporting these communities does not occur at the location of the proposed Scheme. The SSSI includes intertidal mud and sandflats and saltmarsh. These habitats would not be directly affected by land take. All works would be in existing hard standing.
- 6.17 Otters are a feature of interest of the River Dee and Bala Lake SAC which is crossed by the bridge and evidence of otters has been found along the River Dee. Suitable secure sites for

natal dens and suitable rest-up are absent from the areas directly below the bridge or compound sites. Passage for otters along the River Dee would be maintained.

- 6.18 Species that are a primary reason for selection / designation of the River Dee and Bala Lake SAC and the River Dee SSSI could be exposed to indirect effects. Salmonids, sea and river lamprey could be exposed to pollution incidents and/or changes in water quality during maintenance/construction works.
- 6.19 These species, and otter, could be exposed to lighting and vibration / noise during the bridge repair works. Night-time working is likely to be required to enable the emergency works to progress as quickly as possible and to minimise disruption to traffic. The main environmental risk associated with this operation is light spillage onto the River Dee and potentially adverse effects on migratory fish and otters. While night-time working may be unavoidable, the negative effects could be mitigated by directional lighting considerations to reduce the risk of light trespass onto the surface of the river.
- 6.20 All works are restricted to made-ground on the A494 Bridge, with only upgrading on a like-for-like basis, essential bridge deck components being undertaken. There would be no in-river works, therefore the river will retain its present flow characteristics and will continue to allow fish passage.
- 6.21 The Dee Estuary Ramsar/SPA sites located 1km from the A494 bridge supports internationally important populations of a number of bird species. These species are not considered to be heavily reliant on the habitats which occur beneath the existing bridge. Although the coastal bird assemblages within the site extent were frequently encountered, there was a much greater presence of bird species >1.50km east and west of A494 River Dee crossing. This could be due to the current high disturbance within the site extent including heavy traffic on the crossing above the river, pedestrians and regular agricultural practices within the fields surrounding the site.
- 6.22 While works will not result in a direct impact on the River Dee SAC/SSSI, potential indirect risk exists. The proposed works, for example, will be carried out directly over the designated sites. Any loss of containment e.g., concrete/cement wastewater or spill of fuel, oil, chemicals (i.e., hydraulic fluid), or concrete/cement wash water could therefore have an indirect effect. Pollution prevention measures will be strictly enforced onsite and Pollution Prevention Guidance (for example GPP5) measures will be strictly adhered to, reducing the likelihood of a loss of containment occurring.
- 6.23 The proposed works also have the potential to cause noise disturbance impacts to the qualifying interests of the River Dee SAC. Considering the existing baseline noise level it is likely that species such as otters are accustomed to noise. Disturbance will be localised to the bridge deck, the compounds, and the immediate surrounding area.
- 6.24 Considering the nature, short-term duration, size and scale of the Scheme, and the mitigation detailed below, the potential for significant effects upon species and habitats is highly unlikely.
- 6.25 Upon completion of the works, no residual impacts are anticipated in relation to biodiversity.

6.26 Proposed biodiversity mitigation measures include:

- All mitigation measures detailed within 'noise' and 'road drainage and water environment' will be adhered to.
- All site personnel will be made aware of the protected status of the River Dee SAC/SSSI.
- There will be no materials, ancillary plant, vehicles or NRMM stored within 10 m of the River Dee.
- To reduce disturbance, standard construction hours will be 07:30 - 17:30 (Monday to Friday). If any works are required out with the agreed working hours, these would be agreed with FCC.
- The Contractor will utilise a CEMP, which will detail the mitigation to be implemented and how this will be monitored. The CEMP will include best practice construction methods and include the use of appropriate pollution controls (i.e. PGG, GPPs).
- Toolbox Talks, as appended to the CEMP, will be delivered to all site personnel prior to works commencing. The Toolbox Talks will provide details of protected species that have the potential to be impacted by the works and any mitigation measures required to prevent disturbance.

Cultural heritage

6.27 Due to the nature of the works proposed and the distances from the listed buildings, it is not anticipated that the proposals will impact these listed buildings or their settings.

6.28 There are no World Heritage Sites, Scheduled Ancient Monuments (SAM), or Historic Parks and Gardens within 500m of the proposed Scheme footprint.

Air quality

6.29 There is risk of air quality impacts from the works in terms of dust arising during the planning of the deck and carrying out concrete repairs. This could impact the water environment beneath the bridge and the riverbank habitat, along with residential and commercial properties nearby. Mitigation measures should be considered, such as wetting or vacuuming, and also appropriate seals or screens should be put in place to prevent pollution from impacting the watercourse and footpaths beneath the bridge.

6.30 The works will require Traffic Management systems to be implemented which are likely to cause an increase in queuing traffic in the locality. This may have a localised impact on air quality through increased emissions.

6.31 As a minimum, the following measures are required to prevent significant effects during the repair works. These measures would be implemented by the Contractor through a CEMP):

- Develop and implement a Dust Management Plan (DMP), this will be integrated into a CEMP.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.
- Ensure all vehicles switch off engines when stationary - no idling vehicles
- Only use cutting, grinding or sawing equipment fitted, or in conjunction, with suitable dust suppression techniques.
- Ensure an adequate water supply on the site for effective dust / particulate matter mitigation (using recycled water supply where possible).
- Materials that have a potential to produce dust will be removed from site as soon as possible.

Noise and vibration

- 6.32 Given the nature of the works, no ground-borne vibration impacts are envisaged.
- 6.33 During the maintenance/construction phase, activities undertaken on site could potentially have some localised and short-term noise impacts in proximity to the works. The works will, for example, require a range of equipment, vehicles and NRMM for cold milling in preparation for carriageway resurfacing.
- 6.34 Any temporary short-term increase in noise levels could cause disturbance to local wildlife and/or human receptors. Given the short-term duration and in consideration of the mitigation below, the proposed Scheme impacts on noise levels throughout the repair works are not significant. Incorporated mitigation related to construction noise will be set out within the CEMP. This would identify the series of measures to reduce the environmental effects during the construction period and cover environmental and safety aspects affecting the interests of residents and the general public.
- 6.35 Good public relations are invaluable in securing public acceptance of construction noise. People are more tolerant of noise if they understand the reason for it, the likely duration, start and stop dates, and that everything is being done to minimise noise levels. Letter box drops explaining these would be considered.
- 6.36 Typical means by which noise and vibration would be minimised include the following:
- Selecting quiet equipment
 - Ensuring equipment is maintained in good working order and is used in accordance with the manufacturer's instructions;
 - Members of the construction team trained and advised during tool box briefings on quiet working methods;
 - Equipment not to be left running unnecessarily;
 - Equipment fitted with silencers or mufflers;
 - Plant enclosures used whenever feasible;

- Careful orientation of plant with directional features;
- Informing nearby sensitive receptors in advance of construction activities and keeping them up to date with progress and changes;
- Managing deliveries to prevent queuing of site traffic at access points; and
- Using adjustable, directional audible vehicle-reversing alarms or alternative warning systems (for example white noise alarms).

6.37 Upon completion of the works, no residual impacts are anticipated in relation to noise

Materials and waste

- 6.38 Measures would be implemented to reduce the effects of material resource use and waste generation by the Scheme during the repair works. There is overlap in the mitigation for both aspects (material resource use and waste generation) due to the synergy between the re-use of materials and the avoidance of waste generation.
- 6.39 A Materials Management Plan (MMP) would be compiled by the contractor as part of the Construction Environmental Management Plan (CEMP). It would identify ways to re-use site-won or excavated materials, provided they meet the requirements of the CL:AIRE Code of Practice (CoP) .
- 6.40 A Site Waste Management Plan (SWMP) would be compiled by the contractor as part of the CEMP. It would contain specific information on how waste is managed and disposed of during the construction and maintenance works to the bridge deck. It is recommended that the SWMP includes procedures to prevent the generation of inert waste where possible and to prioritise the re-use or recycling of inert waste to divert it from landfill.
- 6.41 The MMP and SWMP within the CEMP would show how efficient use of material resources and reduction of waste arisings would be achieved and how the potential impacts would be reduced.

Invasive Non-native Species

- 6.42 In order to minimise the potential effects of INNS, biosecurity measures designed to manage and control the spread of INNS would be a contractual requirement for construction. Information set out within the Marine Biosecurity Planning Guidance¹⁸ will be used and an outline is presented within the CEMP. In Summary, the following measures will be implemented, where possible:
- Contractors to be made aware of INNS which may be encountered on site by way of ‘toolbox’ talks and posters
 - No works within the River Dee would be permitted.

¹⁸ Cook, E.J., Macleod, A. Payne, R.D., and Brown, S. (2014) edited by Natural England and Natural Resources Wales (2015). Marine Biosecurity Planning – Guidance for producing site and operation-based plans for preventing the introduction and spread of non-native species in England and Wales.”

7 REQUIREMENT FOR STATUTORY EIA

- 7.1 The likely significant effects of the Scheme must be considered in relation to the location and characteristics of the Scheme that are described above, and its potential effects on the environmental baseline conditions.
- 7.2 The Scheme is confined to the existing bridge deck and the proposed site compounds would be on existing hard standing. There would be no loss of or effect upon the natural environment.
- 7.3 The Scheme will not have significant effects on the environment by virtue of factors such as:

Characteristics of the Scheme

- The total working area is less than 1 hectare
- The works are limited to like-for-like replacement of existing A494 bridge components
- The works footprint is restricted to made-ground on the bridge, and no works are required within the River Dee
- Compound site areas would be located within existing hard standing
- Works are anticipated to only take 14 weeks to complete
- There will be limited consumption of materials and natural resources or generation of waste associated with the works
- Bridge deck refurbishment works will provide an intervention which can be implemented quickly and safeguard the immediate future of the bridge. There would be the requirement for temporary traffic management

Location of the Scheme

- The Scheme does not lie within any sites of historical, cultural or archaeological significance
- The Scheme is not located within any areas designated for landscape interests
- Land use will not change as a result of the works
- The works do not require any private land acquisition
- Although the bridge spans the River Dee SSSI/SAC, all works are contained to the A494 Bridge therefore no direct land take, land use or site clearance is required, and the works will therefore not result in habitat loss or species fragmentation from within the SAC/SSSI.
- The Scheme does not lie within any sites designated for their geology or soils.
- The Scheme is located within a densely populated area.

Characteristics of potential impacts of the Scheme:

- With good practice pollution prevention measures implemented onsite, there is a negligible risk of a pollution event e.g., the CEMP, Designer's Risk Register, and activity-specific method statements include plans to address environmental incidents.

- Any potential NMU impacts will be temporary, short-term, and limited to the duration of the repair works.
- As the works are restricted to upgrading and strengthening, on a like-for-like basis, essential bridge components, no change is predicted in respect to the vulnerability of the A494 bridge to the risk (or severity) of major accidents or disasters.
- No impacts on the environment are expected during the operational phase as a result of the works.

7.4 The main environmental risks of the project relate to the construction activities required to replace elements of the existing bridge. The potential environmental risks identified above are not considered likely as the works are contained within the footprint of the existing bridge and defined by new kerbs. The works to the outer limits of the bridge are limited to the installation of a waterproof and wearing membrane. The existing bridge parapet and upstand would remain as existing and clearly define the edge of the works.

7.5 The project covers an area less than the Annex II size threshold of 1 hectare but lies over and adjacent to a sensitive area and is therefore a “relevant project” under Annex II of the EIA directive. The works are well defined within the footprint of the existing bridge that crosses the river Dee. The works would be undertaken by a suitably experienced Contractor who would prepare a CEMP that would identify best working practices and identify further measures to reduce environmental risk. The works required for completing the project would be of limited duration and are not considered likely to cause significant adverse environmental effects and as such will not require a statutory EIA.

Annex II Information referred to in Article 4(4) and Annex III

In accordance with Directive 2014/52/EU, the following information is required and is summarised below: -

ANNEX II.A INFORMATION REFERRED TO IN ARTICLE 4(4) (INFORMATION TO BE PROVIDED BY THE DEVELOPER ON THE SCHEMES LISTED IN ANNEX II) ¹⁹	
1. A description of the Scheme, including in particular: (a) a description of the physical characteristics of the whole Scheme and, where relevant, of demolition works; (b) a description of the location of the Scheme, with particular regard to the environmental sensitivity of geographical areas likely to be affected.	The A494 River Dee Bridge Deck Over-Slabbing Contingency Scheme is a major maintenance intervention that involves the replacement of the existing road surface with a new reinforced concrete over-slab and combined waterproof and wearing membrane. The works will be contained within the existing footprint of the bridge's surface structure and above the existing concrete deck slab. Concrete deck repairs will be carried out and new structural mesh will also be installed across the entire bridge deck. The combined waterproof and wearing membrane shall also be applied to the footway and central reserve. New vehicle restraint systems (VRS) and crash cushions will be installed to replace existing. The total area of the Scheme, including two temporary site compound sites, measures approximately 0.53 hectares. The Scheme is located on the existing A494 River Dee Bridge that crosses above the River Dee SSSI and River Dee and Bala Lake SAC. The River Dee is tidal and is hydrologically linked to the coastal zone and marine environment which is also covered by a number of designations. The boundary of these designations is within 1km of the location of the proposed over-slabbing works. The designations include the following: The Dee Estuary Ramsar; The Dee Estuary SAC/SPA/SSSI; and The Dee Estuary SAC (marine components)

¹⁹ Directive 2014/52/EU Annex II

2. A description of the aspects of the environment likely to be significantly affected by the Scheme.	No aspects of the environment would be significantly affected by the Scheme with the implementation of the advised mitigation.
3. A description of any likely significant effects, to the extent of the information available on such effects, of the Scheme on the environment resulting from: (a) the expected residues and emissions and the production of waste, where relevant; and (b) the use of natural resources, in particular soil, land, water and biodiversity	With the recommended mitigation, no likely significant effects are envisaged.

Annex III

It has been established that the Scheme is a relevant Scheme and therefore an assessment of the likelihood of significant effects needs to be undertaken to establish whether an EIA is required or not. The following table summarises the report text and the test of likely significance in accordance with the EIA regulations.

ANNEX III SELECTION CRITERIA REFERRED TO IN ARTICLE 4(3) (CRITERIA TO DETERMINE WHETHER THE SCHEMES LISTED IN ANNEX II SHOULD BE SUBJECT TO AN ENVIRONMENTAL IMPACT ASSESSMENT²⁰	
1. Characteristics of Schemes The characteristics of Schemes must be considered, with particular regard to:	The A494 River Dee Bridge Deck Over-Slabbing Contingency Scheme is a major maintenance intervention that involves the replacement of the existing road surface with a new reinforced concrete over-slab and combined waterproof and wearing membrane.
(a) the size and design of the whole Scheme;	The total area of the Scheme, including two temporary site compound sites, measures approximately 0.53 hectares. The two proposed compound areas are a total of 0.26 hectares. The approximate area of concrete over-slab surfacing (Eastbound and Westbound) is 0.18 hectares. The additional areas of waterproof and wearing membrane (Eastbound and Westbound and the Central Reservation) is 0.08 hectare.
(b) accumulation with other existing and/or approved Schemes	There are no candidate development sites within the Flintshire Local Development Plan that are in close proximity to the proposed works.
(c) the use of natural resources, in particular land, soil, water and biodiversity;	No use of natural resources is required
(d) the production of waste	The quantities of waste to be produced were unknown at the time of writing. The main waste produced would consist of bituminous material (Non-hazardous waste code17-03-02), concrete (Non-hazardous waste code17-03-02) and steel (Non-hazardous waste code17-04-05).
(e) pollution and nuisances;	A loss of containment e.g., fuel, oil, chemicals (i.e., hydraulic fluid), or concrete/cement wash could have a significant adverse environmental impact if it entered the River Dee, the severity being contingent on the substance and quantity lost. Temporary lighting There is risk of air quality impacts from the works in terms of dust arising during the planning of the deck and carrying out concrete repairs. During the maintenance/construction phase, activities undertaken on site could potentially have some localised and short-term noise impacts in proximity to the works.

²⁰ Directive 2014/52/EU Annex III

(f) the risk of major accidents and/or disasters which are relevant to the Scheme concerned, including those caused by climate change, in accordance with scientific knowledge;	As the works are restricted to upgrading and strengthening, on a like-for-like basis, essential bridge components, no change is predicted in respect to the vulnerability of the A494 bridge to the risk (or severity) of major accidents or disasters.
(g) the risks to human health (for example due to water contamination or air pollution).	Driver stress caused by road closures and diversion. Increased noise and air pollution.
2. Location of Schemes	
The environmental sensitivity of geographical areas likely to be affected by Schemes must be considered, with particular regard to:	
(a) the existing and approved land use	Works are restricted to areas of made-ground on the A494 Bridge and works do not require any private land acquisition.
(b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground	Works are restricted to areas of made-ground on the A494 Bridge and works do not require any private land acquisition.
the absorption capacity of the natural environment, paying particular attention to the following areas:	
(i) wetlands, riparian areas, river mouths	Not Applicable
(ii) coastal zones and the marine environment	The River Dee is tidal and as such, is subject to daily change as well as inputs and discharges from anthropogenic sources. No absorption capacity modelling has been conducted, however, the Scheme does not pose a risk of deterioration from the existing WFD status for the River Dee (N.Wales), provided the mitigation measures as detailed with a CEMP are followed.
(iii) mountain and forest areas	Not Applicable
(iv) nature reserves and parks	Not Applicable

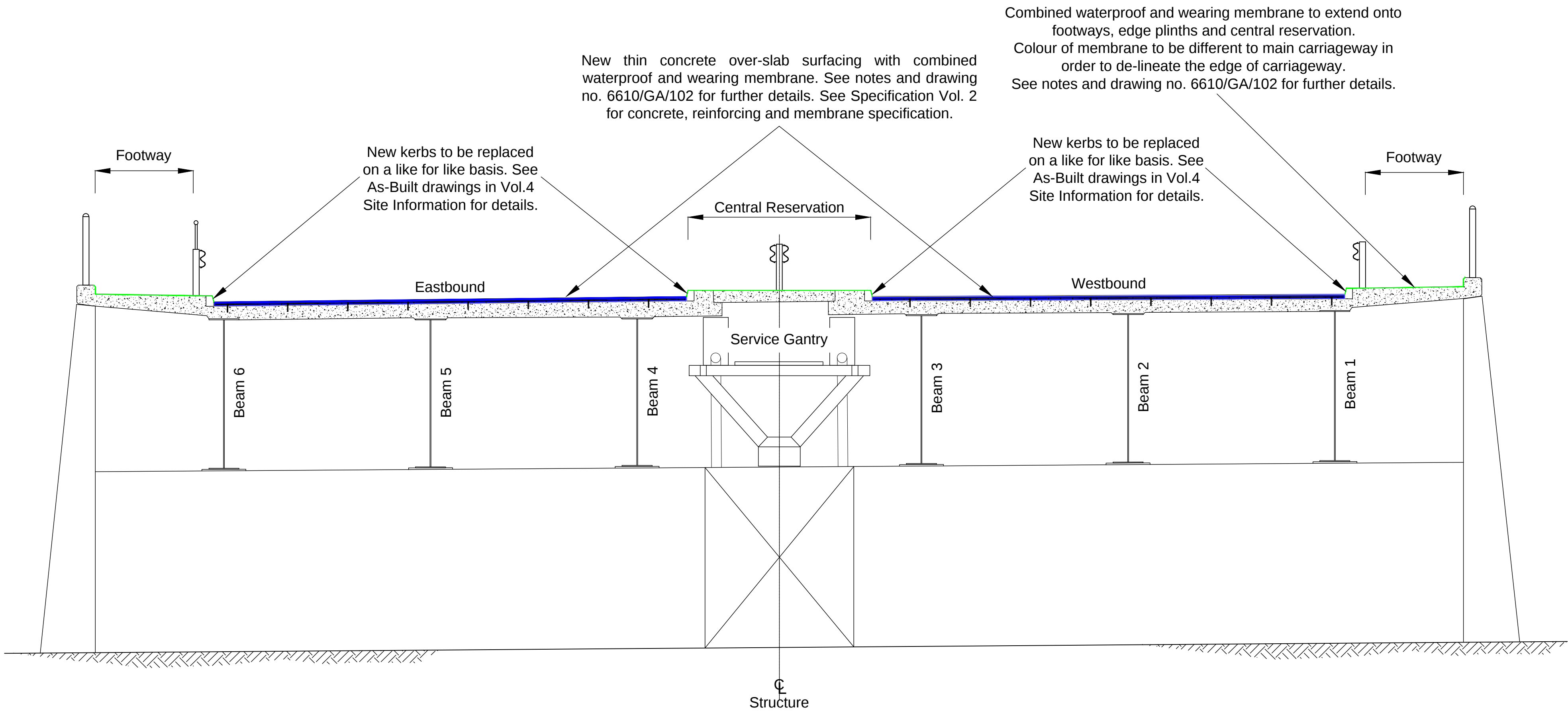
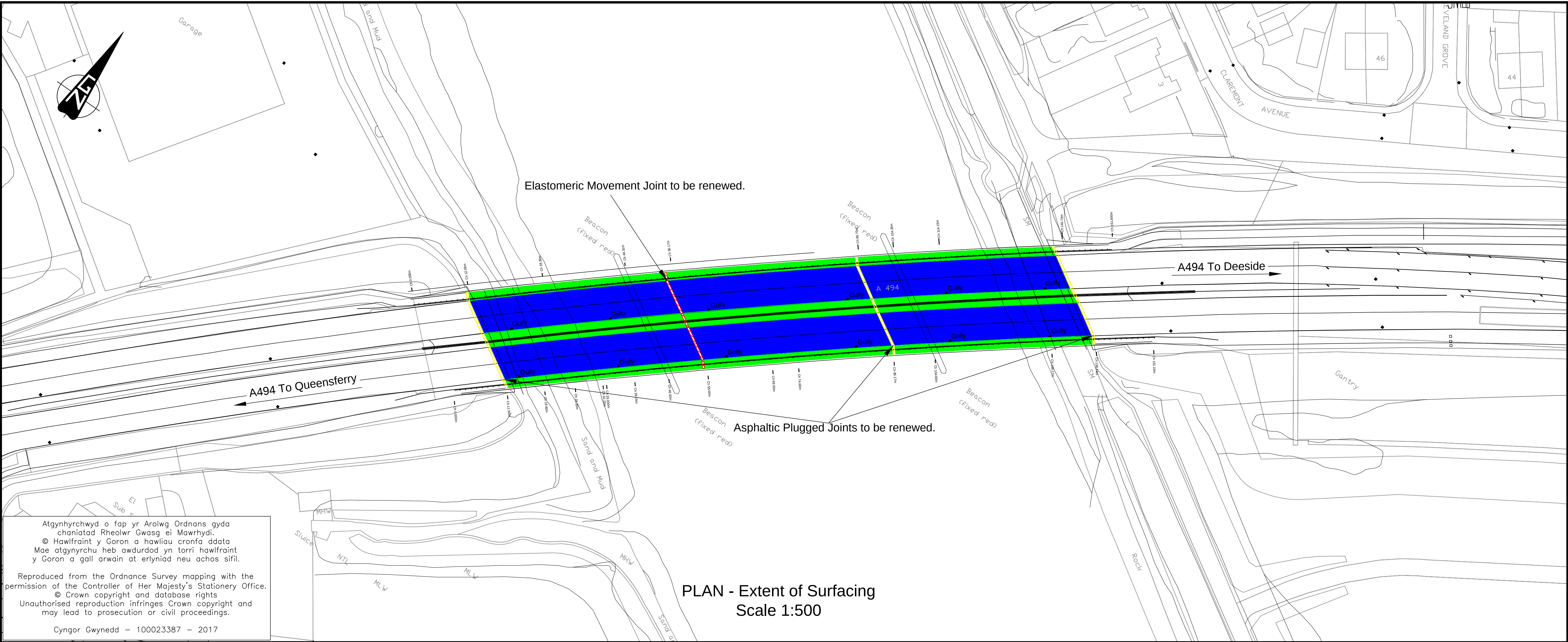
(v) areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC	The Scheme is located on the existing A494 River Dee Bridge that crosses above the River Dee SSSI and River Dee and Bala Lake SAC. The River Dee is tidal and is hydrologically linked to the coastal zone and marine environment which is also covered by a number of designations. The boundary of these designations is within 1km of the location of the proposed over-slabbing works. The designations include the following: The Dee Estuary Ramsar; The Dee Estuary SAC/SPA/SSSI; and The Dee Estuary SAC (marine components) The Scheme does not pose a risk of deterioration from the existing WFD status for the River Dee (N.Wales), provided the mitigation measures as detailed with a CEMP are followed.
(vi) areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the Scheme, or in which it is considered that there is such a failure;	Not Applicable
(vii) densely populated areas;	The area is predominantly urban and industrial and is fairly densely populated. rural and not densely populated.
(viii) landscapes and sites of historical, cultural or archaeological significance	Not Applicable – no designations known on or adjacent to the site

Annex IV Assessment of factors likely to be significantly affected by the Scheme

ANNEX IV INFORMATION REFERRED TO IN ARTICLE 5 (1) (INFORMATION FOR THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT) – 4. A DESCRIPTION OF THE FACTORS SPECIFIED IN ARTICLE 3 (1).²¹			
Is the Scheme likely to significantly affect the following factors	Yes	No	Additional Information/Mitigation
Population		✓	No change
Human Health		✓	No, mitigation would be implemented in terms of driver stress and pollution control.
Biodiversity		✓	Considering the nature, short-term duration, size and scale of the Scheme, and the mitigation detailed in the relevant section, the potential for significant effects upon species and habitats is highly unlikely.
Land		✓	No land use change
Soil		✓	No change
Water		✓	No residual effects
Air Quality		✓	No residual effects
Climate		✓	No residual change
Material Assets		✓	No change
Cultural Heritage		✓	No change
Landscape		✓	No change

²¹ Directive 2014/52/EU Annex IV

APPENDIX A: SCHEME PROPOSALS



CLEIENT/CLIENT :

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NODIADAU/NOTES

- All dimensions in millimetres unless otherwise stated.
- All levels in metres above Ordnance Datum.
- All chainages in metres.
- Do not scale off drawing.
- Extent of surfacing is from South West Abutment asphalt plug joint to North East Abutment asphalt plug joint.
- New kerbs to be installed between South West Abutment asphalt plug joint and North East Abutment asphalt plug joint. Approximate lengths as follows:
Eastbound Lane 1 - 128 lin.m
Eastbound Lane 2 - 128 lin.m
Westbound Lane 1 - 128 lin.m
Westbound Lane 2 - 128 lin.m
Kerbs to be replaced on a like for like basis as shown on as built drawings in Vol.4 Site Information.
- Existing gullies to be maintained where possible. Any gullies damaged during the works to be replaced on a like for like basis. Any damaged gullies identified prior to works commencing is to be notified and arrangements made to replace on a like for like basis.

Key

Extent of thin concrete over-slab surfacing and Waterproof and Wearing Membrane. The Overall construction thickness shall be unchanged at 75mm or slightly reduced to ensure the total weight of the proposal is no greater than the existing surfacing. See drawing no. 6610/GA/102 for further details. See Specification in Volume 2 Appendix 17/1.

Approximate area of surfacing:
Eastbound - 932m²
Westbound - 930m²

Additional areas of Waterproof and Wearing membrane. Colour of membrane to be different to main carriageway in order to de-lineate the edge of carriageway.
Approximate additional area of membrane:
Eastbound - 226m²
Westbound - 236m²
Central Reservation - 391m²

Asphaltic Plug Joints to be replaced.

Elastomeric Movement Joint to be replaced.

B Scheme title changed. Amendments to dowels and reinforcing. Amendments to notes.

A Additional notes and include renewal of kerbs.

RHEF NO. NEWIDIADAU MODUR

YGC

CYNGOR GWYNEDD COUNCIL

CYNLLUN / SCHEME :
A494 380 Queensferry River bridge
Over-slabbings of Both Decks

TEITL LLUNIAD / DRAWING TITLE :
GENERAL ARRANGEMENT

DARLUNWYD GAN : TL
DATE DRAWN : 12/2018

GWIRIWYD GAN : RH
DATE CHECKED : 12/2018

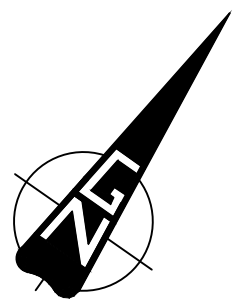
Taflien Sheet 1 of 3

GRADDIFYDD : AS SHOWN

Rhif Lluniad Drawing No. 6610/GA/101

CYWI B

23/07/2023 13:03:10



Steel T-Bar dowels to be 12mm high yield grade W. Dowels to be installed one in every square metre.

Dowels to be offset a minimum of 100mm from movement joints at 250mm spacing.

Dowels to be offset a minimum of 100mm from movement joints and placed at 250mm spacing. See Detail B for preferred arrangement at elastomeric movement joints.

Dowels to be offset a minimum of 100mm from kerb lines at 500mm spacing.

Thin over-slab should be thickened by exposing the top layer of reinforcement to the existing slab. Area to be exposed shall be a minimum of 500mm either side of joint.

Expansion joint to be renewed.

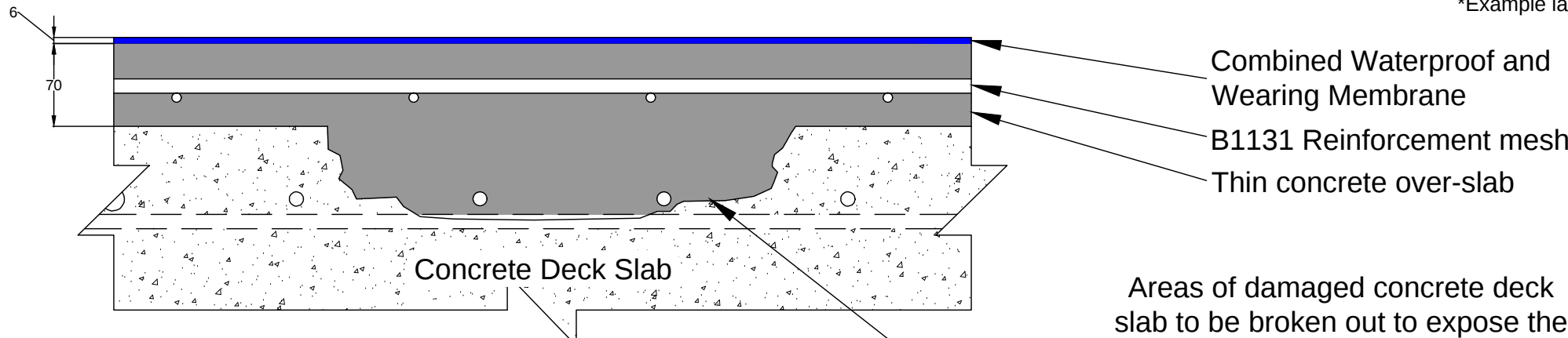
Britflex hot poured resin nosings

Holding down bolts of previous joint.

Indicative Layout of Dowels in Concrete Slab

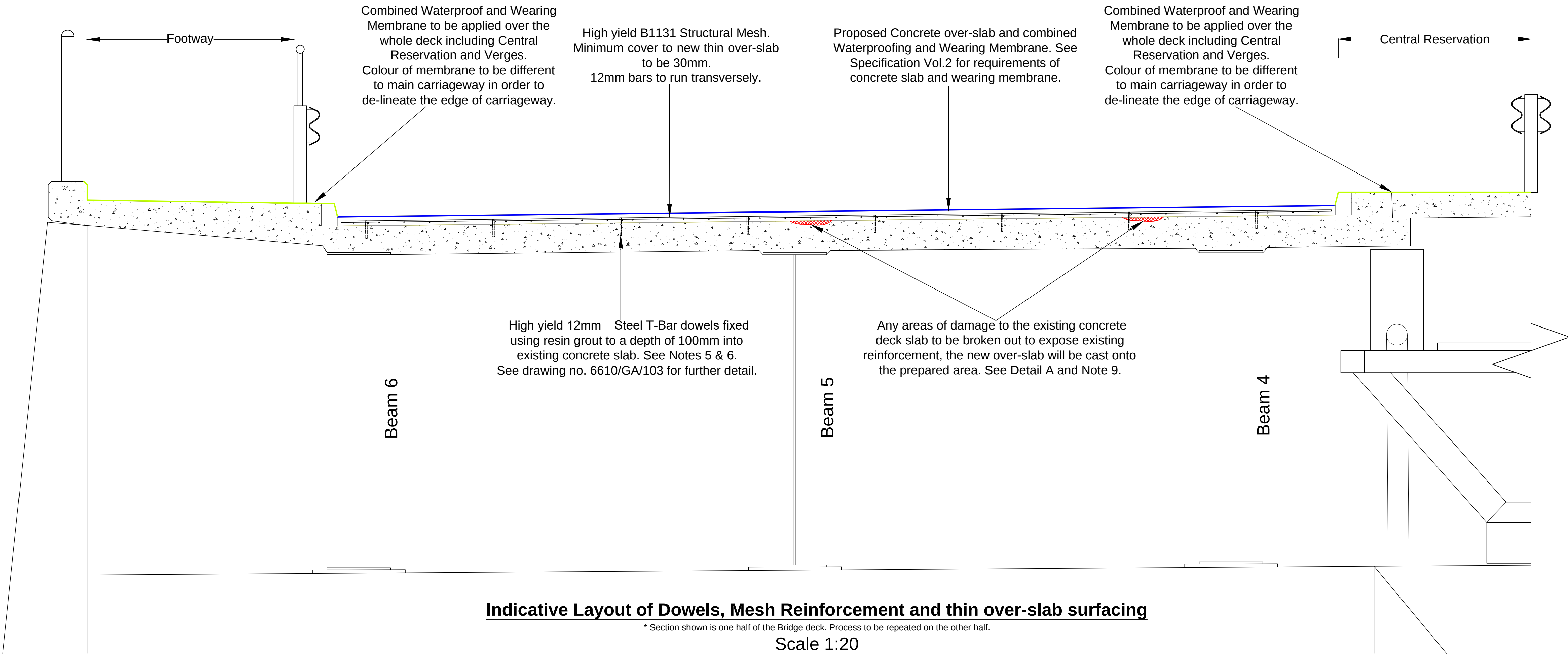
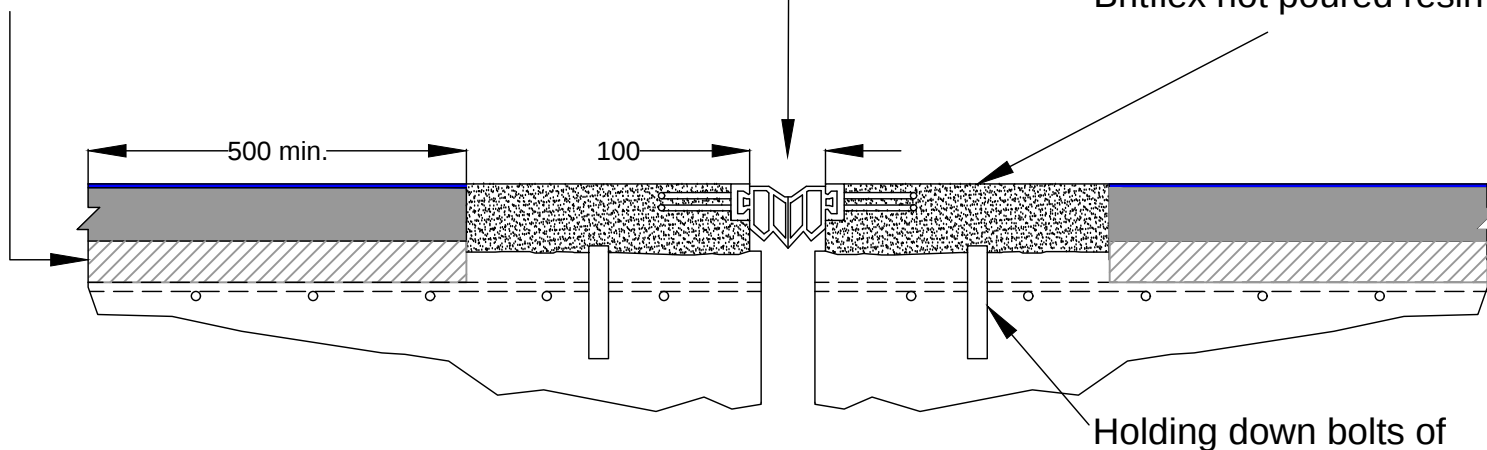
*Example layout between movement joints. Process to be repeated on all sections of the bridge deck.

Scale 1:100



Detail A - Concrete Repair Areas
Scale 1:5

Detail B - Preferred layout at Elastomeric Movement Joints
Scale 1:10



Indicative Layout of Dowels, Mesh Reinforcement and thin over-slab surfacing

* Section shown is one half of the Bridge deck. Process to be repeated on the other half.

Scale 1:20

CLEIENT/CLIENT :

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NODIADAU/NOTES

- All dimensions in millimetres unless otherwise stated.
- Do not scale off drawing.
- The new surfacing will comprise of a concrete over-slab and combined waterproofing and wearing membrane. The Overall construction thickness will be unchanged at 75mm or slightly reduced to ensure the total weight of the proposal is no greater than the existing surfacing.
- The Contractor is responsible for the concrete design mix specification which is to be approved by the Overseeing Organisation. See specification Vol.2 Appendix 17/1 for an indicative design mix that may be used to achieve a desirable design mix
- Steel T-bar dowels to be installed every 1m² by method of resin grout to the approval of the overseeing organisation. Dowels adjacent to kerbs to be offset a minimum of 100mm from kerb face and installed at 500mm spacing parallel to kerb face. See drawing 6610/GA/103 for isometric view of proposed dowel and mesh arrangement.
- Steel T-bar dowels may be tied or welded to the B1131 Structural Steel Mesh over-slab deck reinforcement. (If welding, BS 8548 Guidance for arc welding of reinforcing steel; should be followed). Dowels and Mesh to be high yield and weldable steel grade W. Minimum 30mm cover to be provided to the new reinforcement and dowels.
- See Detail B for preferred method of over-slabbing adjacent to expansion joints. If detail B is not incorporated, steel dowels to be offset a minimum of 100mm from movement joints and installed at 250mm spacing parallel to joints.
- Existing Elastomeric Movement Joint and plugged asphaltic joints to be renewed throughout. Contractor to identify suitable replacement joints for the approval of the overseeing organisation.
- When the existing surfacing has been planned off any necessary repairs will be carried out to the existing slab. If appropriate the areas requiring repair shall be prepared, exposing the existing reinforcement, the exposed reinforcement shall be primed with a suitable protective coating and the over-slab cast onto the prepared area. This will have the advantage of tying the slabs together via the reinforcement at repair locations and negate the need for dowels at those locations. See Detail A.
- The central reserve deck cantilevers rely on the top layer of transverse reinforcement for their support. Caution is required when removing concrete to the top of the existing slab such that very large areas of reinforcing bars are exposed and that the anchorage to the bars providing support to the cantilevers is lost. This is particularly important near the kerbs to the fast lanes; here it is important not to remove a large area such that a significant number of adjacent reinforcing bars are exposed. If this situation should arise the allowable construction loading will need to be reduced. The design engineer should be informed who can determine a revised allowable construction load. In addition, Construction loading should be managed such that;
 - Stockpiled materials should not exceed 2.5 Tonne/m².
 - Any vehicles outside Construction & Use limits should be approved by the Design Engineer.
- The proposed Combined Waterproof and Wearing membrane is to be applied over the whole deck, including verges and central reservation to prevent surface water penetrating to the deck slab. Example of such a system is "Bridgemaster" by Stirling Lloyd. Any system chosen should be repairable in the event of damage see minimum requirements of membrane in specification Vol.2 Appendix 20/1.

B Scheme title changed. Amendments to dowels and reinforcing. Amendments to notes.

A Additional notes.

RHIF NO. NEWIDIADAU MODUR

TL

03/2019 04/2019

REVISIONS

YGC



CYNLLUN / SCHEME :

A494 380 Queensferry River bridge
Over-slabbing of Both Decks

TEITL LLUNIAD / DRAWING TITLE :

General Arrangement -
Over-Slab Detail

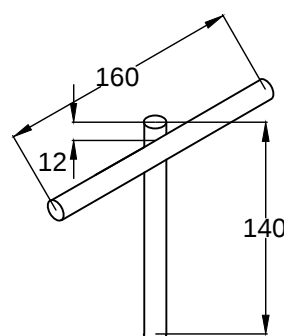
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GWIRIWDYD GAN : CHECKED BY :	RH	DYDDIAD GWIRIWDYD : DATE CHECKED :	12/2018
Taflien Sheet	2 of 3	GRADDIFYDDO : SCALES :	AS SHOWN

Rhif Lluniad
Drawing No. 6610/GA/102

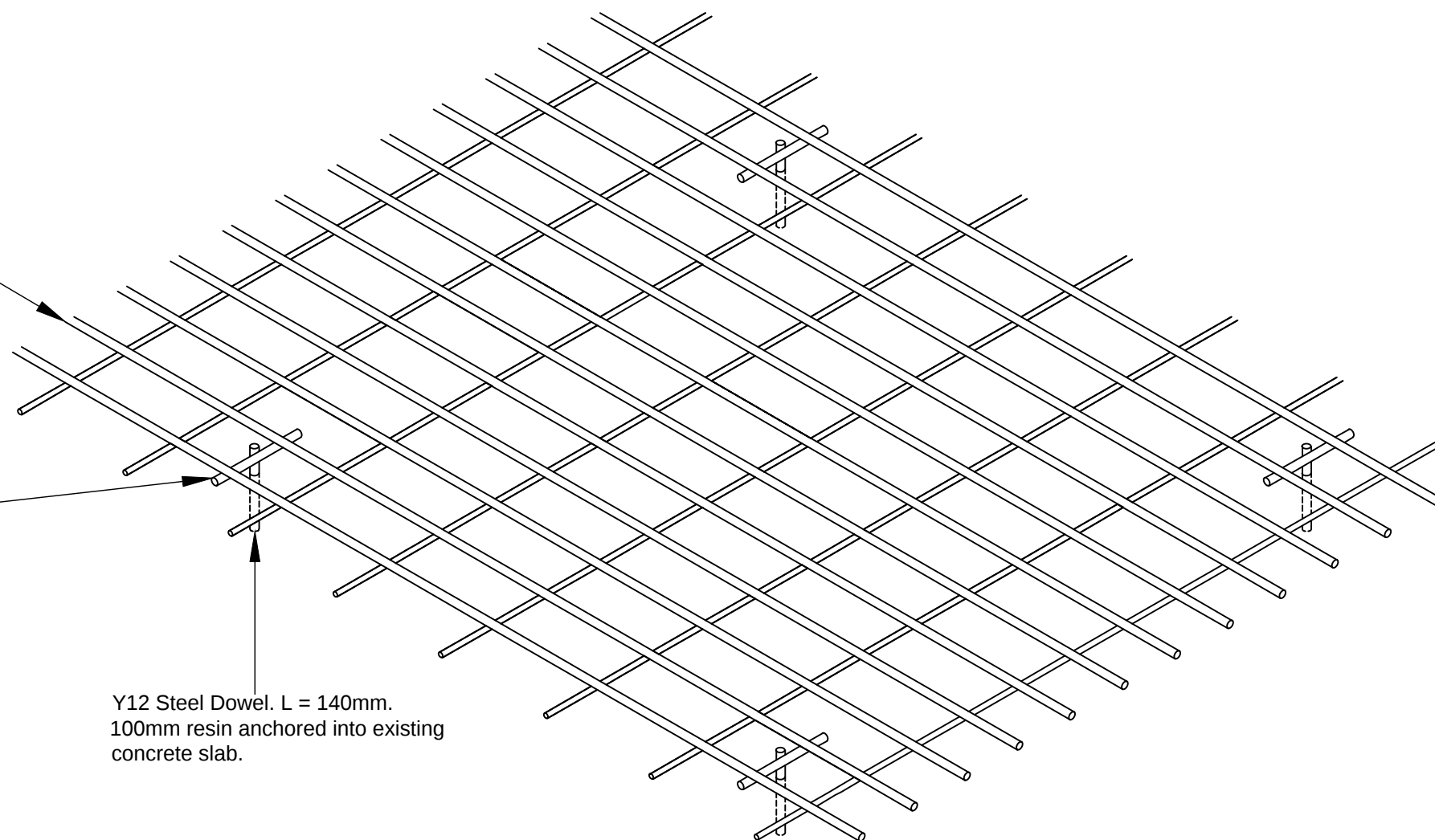
CYWI
REV
B

High yield B1131 Structural Mesh.
12mm bars to run transversely across deck.

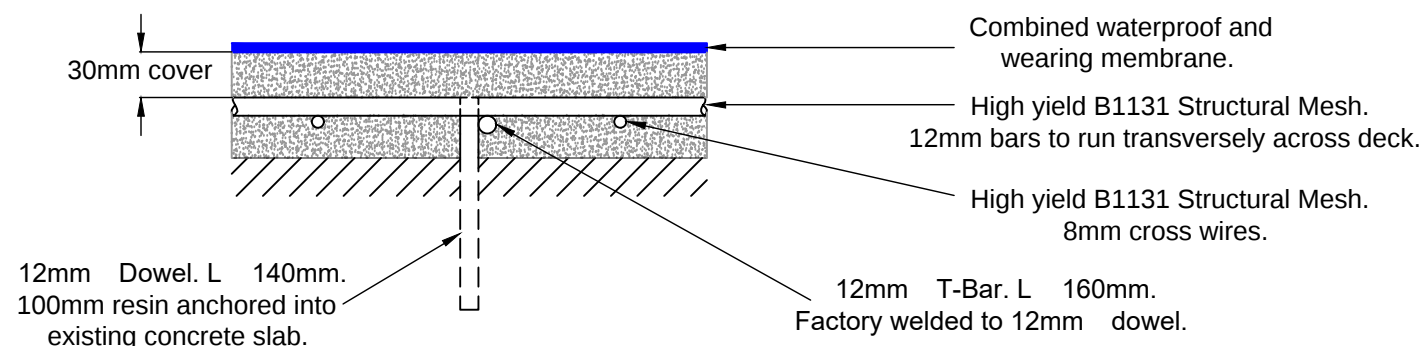
Y12 Steel T-Bar. L = 160mm.
Factory welded to Y12 steel dowel.
T-Bar dowel to be placed into
pre-drilled hole in deck, rotated and
fixed to mesh.



Y12 Steel Dowel. L = 140mm.
100mm resin anchored into existing
concrete slab.



Indicative Isometric Layout of T-Bar Dowels and Mesh Reinforcement
Scale 1:10



12mm T-Bar Dowel Detail
Scale 1:5

CYNLLUN / SCHEME :

A494 380 Queensferry River Bridge,
Over-slabbing of Both Decks

TEITL LLUNIAD / DRAWING TITLE :

Layout of T-Bar Dowels and Reinforcement Mesh

DARLUNWYD GAN :
DRAWN BY :

TL

DYDDIAD DARLUNWYD :
DATE DRAWN :

04/2019

GWIRIWDYD GAN :
CHECKED BY :

DYDDIAD GWIRIWDYD :
DATE CHECKED :

Taflen
Sheet

3
of 3

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SCALES :

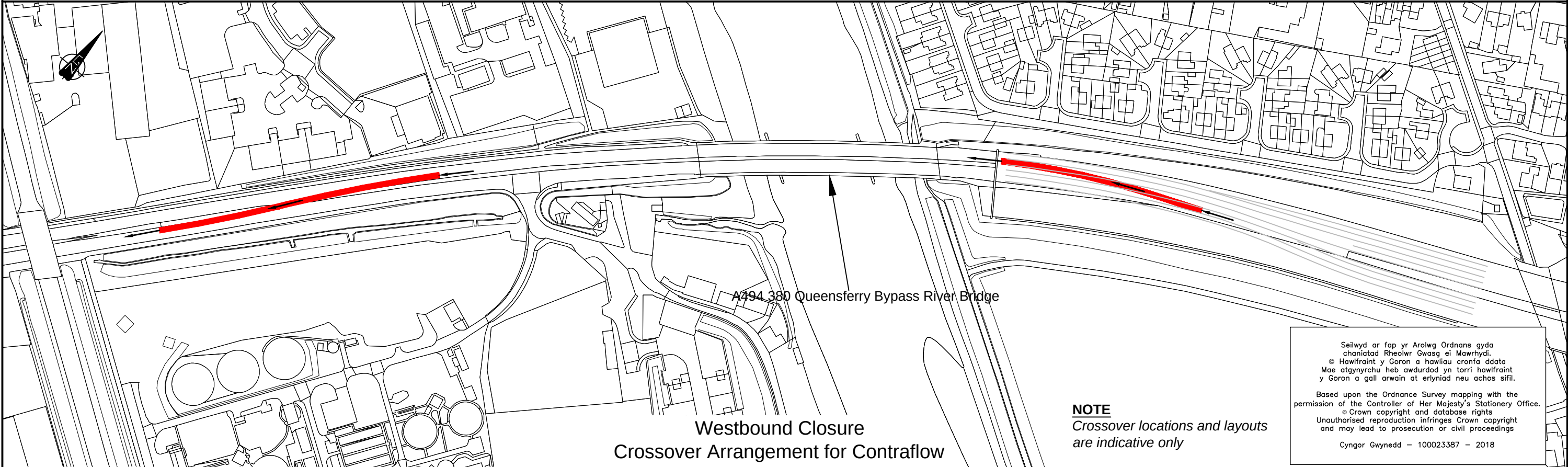
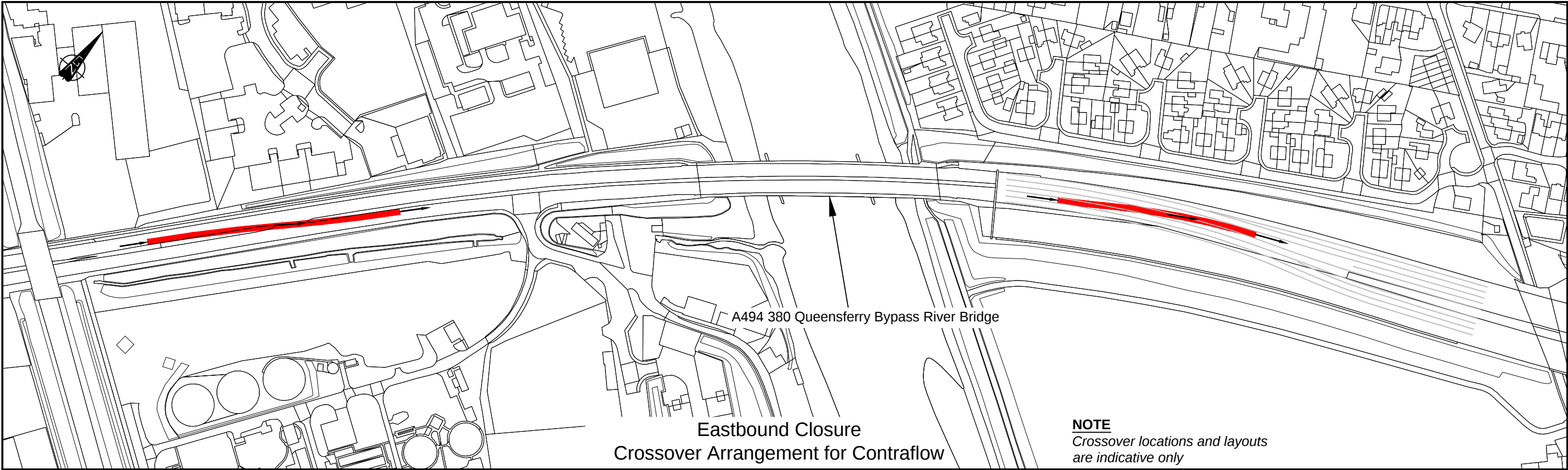
As Shown

Rhif Lluniad
Drawing No.

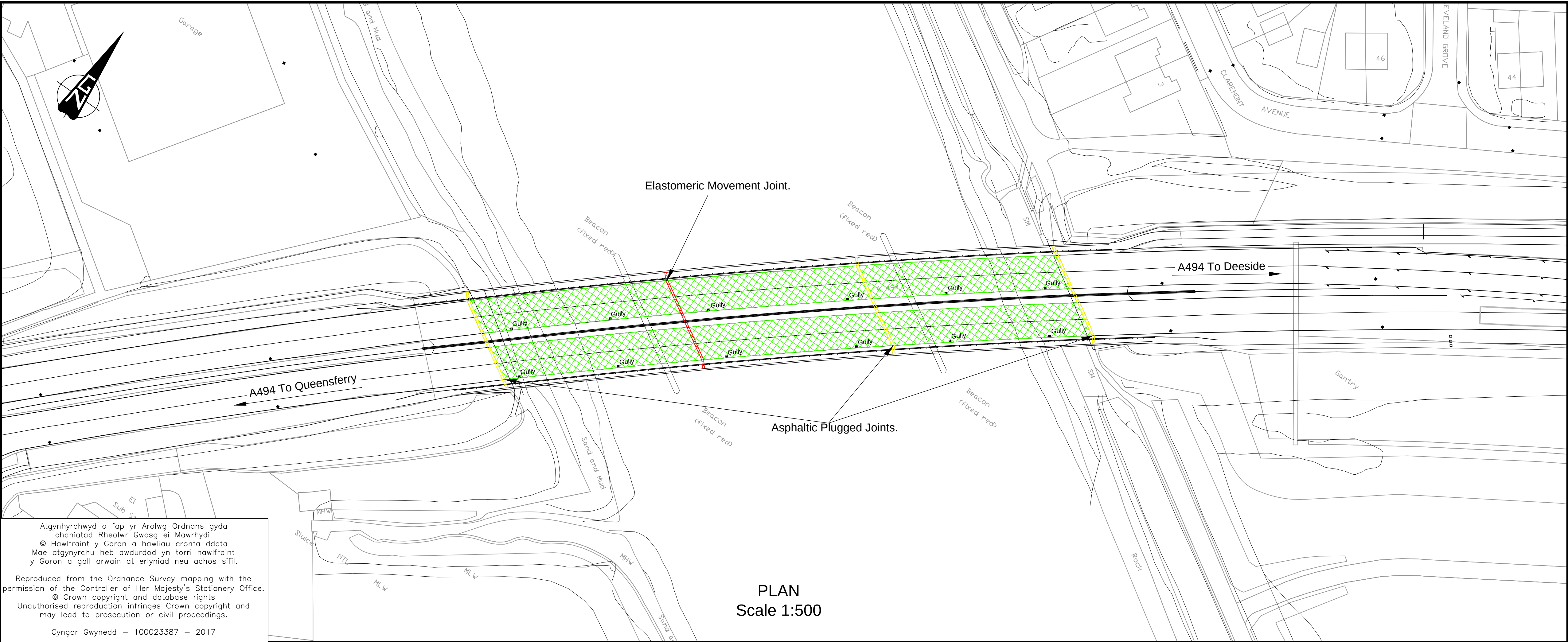
6610/GA/103

CYWI
REV

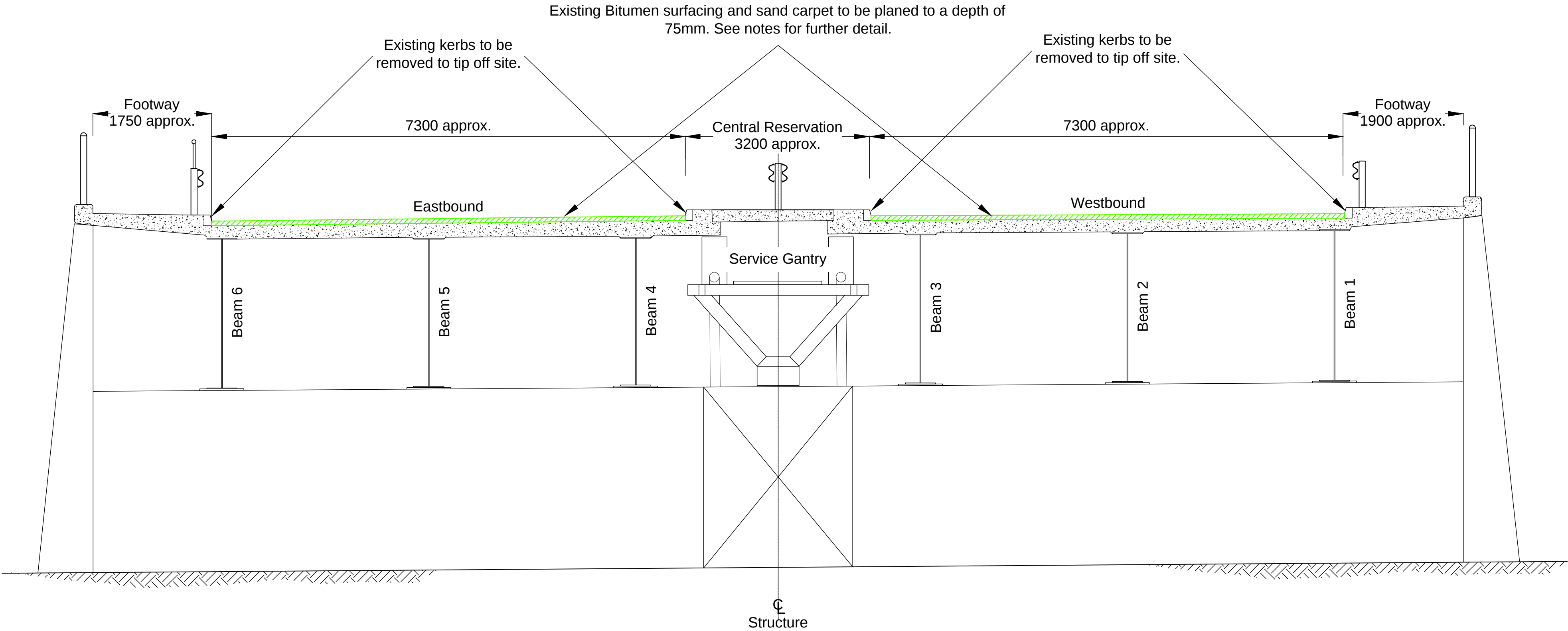




CYNLLUN / SCHEME :	A494 380 Queensferry River Bridge, Over-slabbing of Both Decks	DARLUNWYD GAN : DRAWN BY : TL		DYDDIAD DARLUNWYD : DATE DRAWN : 09/2023		YGC CYNGOR GWYNEDD COUNCIL
		GWIRIWYD GAN : CHECKED BY : RH		DYDDIAD GWIRIWYD : DATE CHECKED : 09/2023		
TEITL LLUNIAD / DRAWING TITLE :	Temporary Traffic Restriction Order Indicative Contraflow Crossovers	Taflen Sheet 1 of 1		GRADDIFYDD : SCALES : 1:2500		
		Rhif Lluniad Drawing No. 6610/MI/103				



PLAN
Scale 1:500



ELEVATION (Indicative only)
Scale 1:50

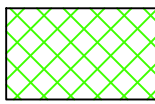
CLEIENT/CLIENT :

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NODIADAU/NOTES

1. All dimensions in millimetres unless otherwise stated.
2. All levels in metres above Ordnance Datum.
3. All chainages in metres.
4. Do not scale off drawing.
5. Extent of surfacing to be removed is from South West Abutment asphalt plug joint to North East Abutment asphalt plug joint.
6. Existing kerbs and concrete bedding to be removed to tip off site.
7. Existing gullies to be maintained where possible. Any gullies damaged during the works to be replaced on a like for like basis. Any damaged gullies identified prior to works commencing is to be notified and arrangements made to replace on a like for like basis.
8. Asphaltic Plug joints to be broken out for renewal.
9. Elastomeric Movement Joint to be removed for renewal.
10. All excavated material to be removed to tip off site.

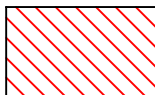
Key



Existing Bitumen surfacing and sand carpet to be planed to a depth of 75mm, exposing top of concrete slab. Any areas of defective concrete exposed to be broken out to expose sound concrete. In these areas the top layer of reinforcement should be exposed and the concrete removed to at least 25mm below the reinforcement.
Approximate area of surfacing to be removed:
Eastbound - 932m²
Westbound - 930m²



Existing Asphaltic Plug Joints to be broken out for renewal.



Existing Elastomeric Movement Joint to be removed for renewal.

B Scheme title changed

A Additional notes to include for removal of kerbs.

RHEF NO. NEWIDIADAU MODUR



CYNLLUN / SCHEME :
**A494 380 Queensferry River bridge
Over-slabbings of Both Decks**

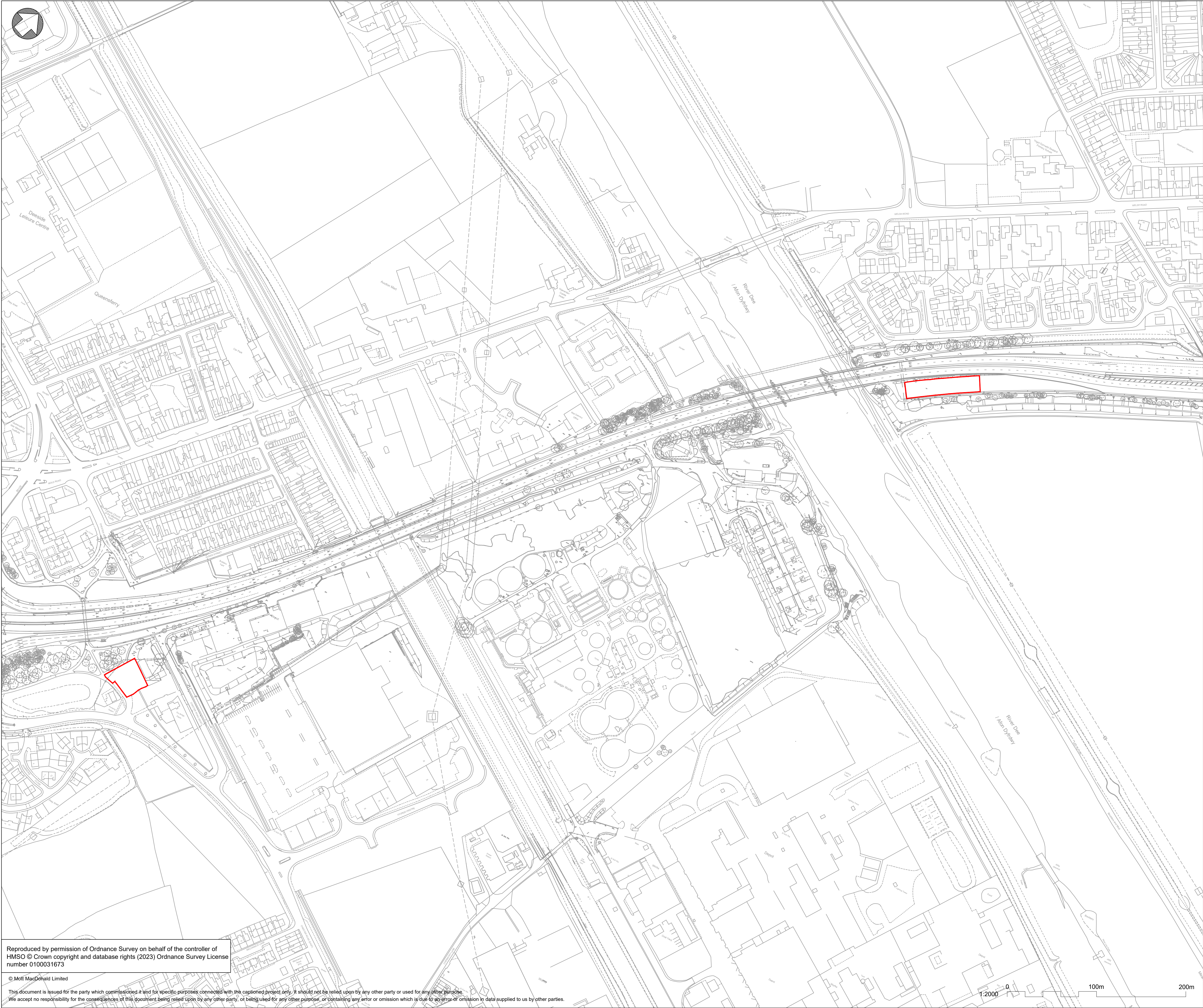
TEITL LLUNIAD / DRAWING TITLE :

SITE CLEARANCE

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GWIRIWDYD GAN : CHECKED BY :	RH	DYDDIAD GWIRIWDYD : DATE CHECKED :	12/2018
Taflen Sheet	1 of 1	GRADDIFYDDO : SCALES :	AS SHOWN

Rhif Lluniad
Drawing No. **6610/SC/101**

CYWI
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Notes

1. This drawing should be read in conjunction with all design drawings.

2. Design based on local topographic survey provided by PM Surveys (2018)

3. All dimensions are in millimeters unless otherwise stated. Do not scale any items or information from this drawing. This drawing is to be printed/read in colour.

4. Contractor to arrange necessary traffic management and highway approvals.

Key to symbols

Compound Locations

Reference drawings

395318-MMD-ZZ-XX-DR-C-3010 - Crossovers General Arrangement and Utilities

395318-MMD-ZZ-XX-DR-C-3011 - Crossovers Construction Proposals Sheet 1

395318-MMD-ZZ-XX-DR-C-3012 - Crossovers Construction Proposals Sheet 2

P01.1	13/12/23		First Issue		
Rev	Date	Drawn	Description	Ch'k'd	App'd

Status Stamp

For Review

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Working on behalf
of the
Welsh Government

Asiant Cefnffyrdd Gogledd a Chanolbarth Cymru
North & Mid Wales Trunk Road Agent

Title

A494 River Dee Bridge Deck
Over-Slabbing Contingency Scheme
Crossovers
Compound Locations
Sheet 1 of 1

Designed	J MCDONNELL	JM	Eng check		---
Drawn		---	Coordination		---
Dwg check		---	Approved		---
MMD Project Number	395318	Scale at A1	1:2000	Security	STD
Suitability Description	Suitable for Costing	Suit. Code	D1	Revision	P01.1
Drawing Number	395318-MMD-ZZ-XX-DR-C-3013				

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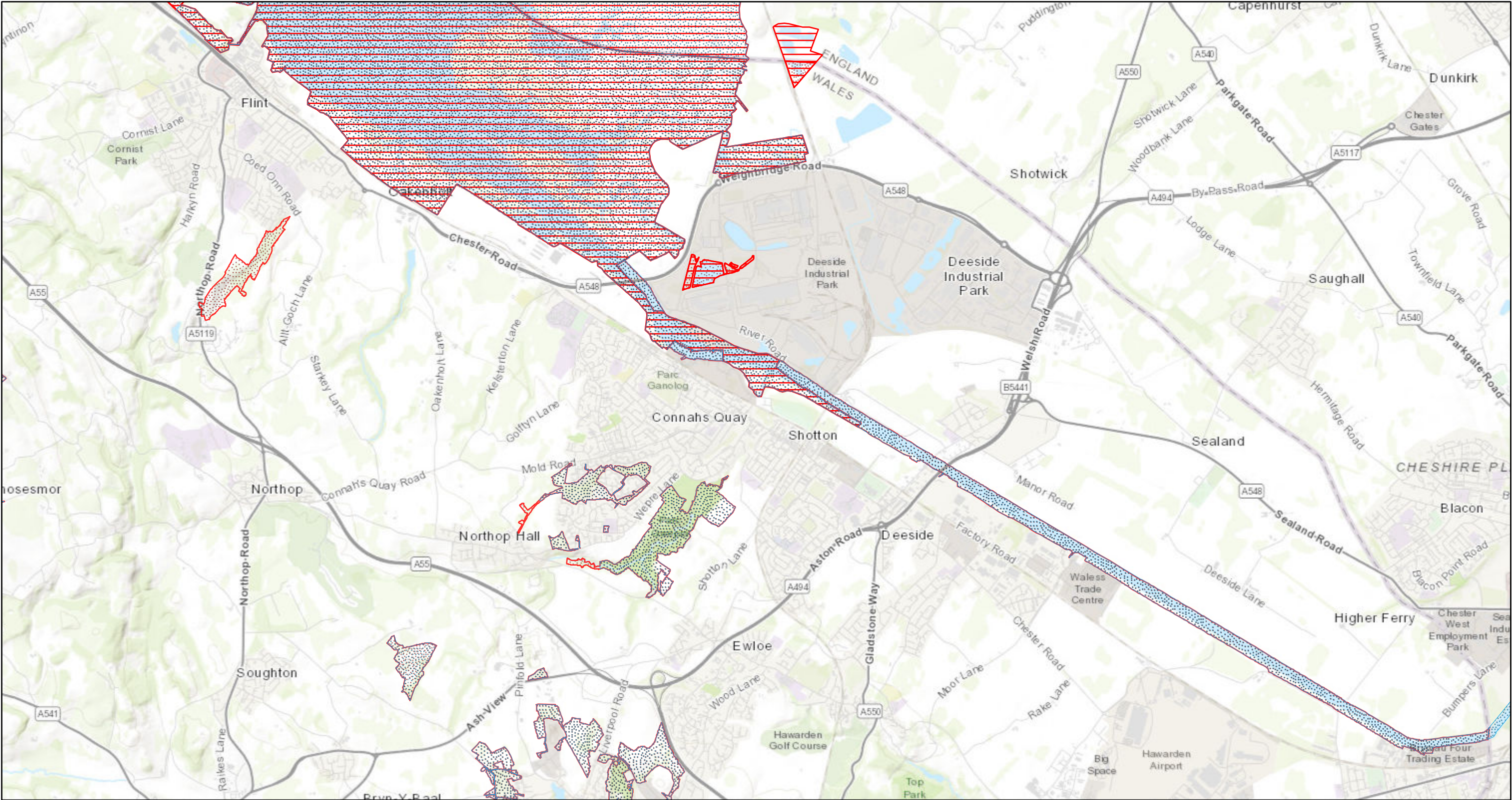
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APPENDIX B: DESIGNATED SITES

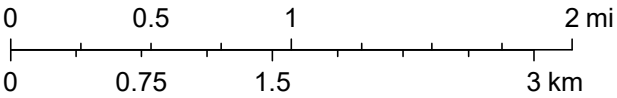
Designated Sites



3/19/2024, 12:17:31 PM

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-  SAC Special Areas of Conservation
-  SPA Special Protection Areas
-  SSSI Sites of Special Scientific Interest
-  SSSI Sites of Special Scientific Interest



Esri UK, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA

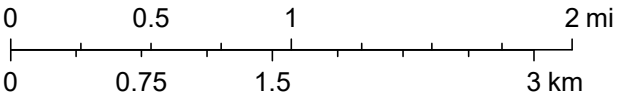
Designated Sites



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- Marine protected areas SAC
- Marine protected areas SPA
- Marine protected areas SSSI
- Marine protected areas SSSI
- SAC Special Areas of Conservation
- SPA Special Protection Areas
- SSSI Sites of Special Scientific Interest
- SSSI Sites of Special Scientific Interest



Esri UK, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA