

Record of a Habitats Regulations Assessment of a Project
NRW Stephenson Street Flood Defence Scheme
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Review Date: June 2022

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1. Project Details

1(b): Project details where NRW is the project proponent/instigator	
NRW Project reference	Stephenson Street
Activity proposed	<p>Stephenson Street Flood Defence Scheme:</p> <p>Detailed designs of the proposed scheme are provided in the planning drawings within the Pre-Application Pack. This includes cross reference to other relevant drawings (where available) and the proposed defence levels for the various sections of flood defences. In summary the proposed flood defences comprise:</p> <ul style="list-style-type: none"> ○ Orb Works Riverbank Minor Ground Raising – south of Kingfisher Walk and adjacent to Orb Electrical Steels. Localised ground raising at two locations to tie into existing Jetty Structure Wall and ground levels with 1:2 slope and 100mm of seeded topsoil. Located c. 6m and c. 30m southeast of the River Usk SAC boundary respectively and within the footprint of the existing flood defence structure. Drawing Ref.: 2001. ○ Stephenson Street Riverbank Minor Ground Raising – land abutting the eastbound carriageway of Stephenson Street, immediately adjacent to the Newport Transporter Bridge. Localised ground raising of existing riverbank adjacent to Transporter Bridge to tie into existing verge and bank with 100mm seeded topsoil and 1:2 slope. Located within the River Usk SAC boundary but within the footprint of the existing flood defence structure. Drawing Ref.: 2002. ○ Stephenson Street Flood Embankment and Upgrade to Wales Coast Path (WCP) – Western boundary of Coronation Park. Upgrading to the existing Stephenson Street flood embankment along the eastern boundary of Coronation Park. Works would include the raising and widening of the existing embankment with associated enhancement landscaping and WCP enhancements. Enhancements to the existing WCP would include the stepped and seating areas with associated landscaping along the embankment crest with variable crest widths and slope planting. Located partly within the River Usk SAC boundary but within the footprint of the existing flood defence structure. Drawing Ref.: 2003, 2004, 2005. ○ Access Ramp: formalised gated emergency / maintenance access from Stephenson Street adjacent to the Transporter Bridge. Existing access will be upgraded to include a formal access for emergency services and maintenance activities (removal of debris from SAC habitat). Localised to c. 100m² area of degraded grassland. Drawing Ref.: 2003. ○ Coronation Park Landscaping and Planting – Coronation Park, south of Stephenson Street. Comprehensive enhancement and mitigation planting throughout Coronation Park inclusive of benches, bins and concrete step

1(b): Project details where NRW is the project proponent/instigator

- areas. Inclusion of heritage and ecological interpretation boards to Stephenson Street embankment with grassland and ornamental shrub planting to the southern boundary, inclusive of 3no. urban forests. Located outside the River Usk SAC boundary within Coronation Park. Drawing Ref.: 2003.
- Sheet Pile Wall and Embankment with upgraded WCP, including improved new metal stepped access spanning the Hanson Conveyor Belt – River Usk riverbank and WCP PRoW. Construction of sheet pile wall with Corten steel copings and resurfacing/edging details (TBC) to the WCP. Upgrading of the existing WCP would include a variable width crest, enhancement planting, seating and observation areas. Provision of an improved stepped metal access spanning the Hanson Conveyor would be provided to minimise PRoW severance. Located partly within the River Usk SAC boundary but within the footprint of the existing flood defence structure. Minor encroachment required to install stanchions for the upgraded metal stepped access. Drawing Ref.: 3000, 3001, 3004.
 - Reinforced Concrete Flood Wall at Felnex Industrial Estate – Land comprising the lateral edges of East Bank Road, new proposed flood relief road and Hanson Conveyor crossing the Felnex Industrial Estate. Construction of a reinforced concrete flood wall adjacent to the Hanson Conveyor, extending to the site of the proposed T-junction access of East Bank Road. A secondary (larger) wall would extend from the proposed junction along the flood relief road and East Bank Road. Located c. 5m northeast of the River Usk SAC boundary behind the footprint of the existing flood defence structure. Drawing Ref.: 4000, 4001, 4002.
 - Flood Relief Road – Land comprising the Felnex Industrial Estate, Hanson Aggregates and Marshalls sites connecting East Bank Road to the north and Corporation Road to the south. Construction of a 0.7km single carriageway flood relief road connecting from East Bank Road adjacent to KDK Metals Industrial Unit to Corporation Road adjacent to Marshalls estate. Ramped access and T-Junction access to be provided for ingress and egress at East Bank Road with pedestrian footways. Located c. 5m northeast of the River Usk SAC boundary behind the footprint of the existing flood defence structure. Drawing Ref.: 274580-ARP-XX-XX-DR-CX-1120, -1121
 - Wales Coastal Path Resurfacing – Land situated to the west of Hanson Aggregates and East Bank Road, incorporating the WCP PRoW on the eastern bank of the River Usk. Resurfacing of Wales Coast Path with compacted Hoggin and Concrete edgings. Works would include a replacement metal stepped access minimising severance of the WCP at the existing Hanson Conveyor site. Surface water drainage for flood relief road to outfall into SAC boundary. Located partly within the River Usk SAC boundary but within the footprint of the existing flood defence structure. Minor encroachment required to install small headwall and outfall within the existing embankment. Drawing Ref.: 4003.
 - Corporation Road Flood Gate and Walls – Railway overbridge at Corporation Road, south of WCP. Construction of two reinforced flood walls adjacent to the Corporation Road railway overbridge and installation

1(b): Project details where NRW is the project proponent/instigator

of sliding highway flood gate which would run flush to the existing railway embankment. Located c. 330m northeast of the River Usk SAC boundary behind the Eastern Docks. Drawing Ref.: 4004 and 4005.

- Railway Flood Wall and Access Track – land comprising the existing WCP to the northeast of the existing railway line and land immediately adjacent to the embankment slope. Construction of a reinforced concrete flood wall adjacent to the existing railway embankment with non-return tidal flap valve at the base. Temporary resurfacing and widening of the WCP to be reinstated upon completion of the flood wall 'Type A' and extension of the track 'Type B' surfacing to remain in perpetuity. Located c. 400m east of the River Usk SAC boundary behind the footprint of the existing flood defence structure. Drawing Ref.: 5000, 5001, 5002.
- Marshalls Railway Embankment Culvert with access and maintenance hardstanding – Railway embankment situated to the northern boundary of Marshalls. Installation of reinforced concrete culvert chamber with non-return duckbill tidal valve. Provision of 15m² concrete hardstanding to the west of the culvert of maintenance and access with reinstated fence line. Located c. 280m north of the River Usk SAC boundary behind the footprint of the existing flood defence structure. Drawing Ref.: 7000.
- Liberty Steel Railway Embankment Culvert – Railway embankment situated to the north eastern boundary of Liberty Steel Installation of reinforced concrete culvert chamber with a non-return duckbill return valve. Additional provision of a gravel (type B) access and construction tracks at railway embankment. Located c. 360m north of the River Usk SAC boundary behind the footprint of the existing flood defence structure. Drawing Ref.: 7001.
- Nash Flood Wall and Access Track – Nash Sewerage Treatment Works. Construction of a reinforced concrete flood wall to the north of the existing Nash site with raised permanent access track (subject to landowner agreement). Located c. 150m east of the River Usk SAC boundary (Julian's Gout outfall) behind the footprint of the existing flood defence structure. Drawing Ref.: 6000, 6001.

Amenity, biodiversity and landscape enhancements are detailed in the Planning Drawings within the Pre-Application Consultation pack and describe the proposed enhancements the project will deliver, focussing around Coronation Park. Upgraded access will be provided, at the entrances to Coronation Park, along the new bund section and within Coronation Park itself to provide better connection between the riverside walk and the sports pitches and creating a circular walking route. Viewing platforms will be integrated into the soil bund section to allow for resting areas and provide a connection with the riverside habitats. One viewing platform will encroach into the SAC beyond the defence footprint; construction will be undertaken from the bund (dry side), no temporary access track is required, and a no-dig construction will be employed during installation. Additional planting will be provided within the park and wildflower planting on the inland embankment to increase local biodiversity without compromising integrity of the flood defence. Further biodiversity enhancements will be delivered by the project, including: provision of higher

1(b): Project details where NRW is the project proponent/instigator	
	<p>value habitat (three urban forests, reedbed habitat and wildflower planting), restriction of access to SAC / SSSI habitats, provision of bins to reduce litter / dog waste and planting of c. 84 trees.</p> <p>The total length of the flood defence improvement works proposed, as described above, is approximately 1,600m. The proposed works cover an area of circa 2.5 hectares.</p> <p>The timescale for the Proposed Development is currently uncertain, given investment programme pressures. However, if funding can be secured and consents obtained, the earliest construction start date is Autumn 2021.</p> <p>Construction Methods</p> <p>The enlarged embankment in Coronation Park and localised ground raising north of the Transporter Bridge will be built up with imported clean soil of known origin. No construction access will be required within the foreshore and the footprint will not encroach into the protected sites.</p> <p>The sheet pile wall will be installed using a hydraulic press (Giken 'silent' piling rig) to reduce nuisance (noise, vibration, etc.), but more importantly, to avoid the need for a construction access track within the River Usk SAC. By implementing a specialised sheet pile mounted crane and sheet pile delivery system, the piling rig and supporting equipment can 'crawl' along the installed sheet piles and therefore do not require construction access at the riverside toe of the embankment. The initial few sheet piles may need to be installed by conventional methods to provide a mount for the piling rig. The initial few piles may be installed using vibro-piling and would be a very short duration activity; a counterweighted solution may be employed that would preclude the need for the initial vibratory piling. The hydraulic piling technique was specified through the iterative HRA process and has been secured through the supporting Environmental Action Plan (EAP) and via construction contracts.</p> <p>The Railway Wall and Nash Wall will be cast in situ to reduce the scale of construction access necessary to accommodate pre-cast units. Pre-cast units may be a viable option in the Felnex Estate.</p>
Statutory basis	<p>Flood Defence - Stephenson Street flood defence embankment reduces tidal flood risk to much of the Lliswerry area of Newport. This includes significant industry, leisure and residential properties. Assuming a breach was to occur today some 192 residential and 620 non-residential properties in Spytty have greater than a 1 in 200 risk of tidal flooding in any given year. Sea level rise due to climate change increases the predicted risk significantly to 1,117 residential and 1,016 non-residential properties. The predicted speed and depth of inundation is hazardous, extending some 2.5km from the embankment.</p> <p>In the embankment's current condition, it would be classified as a failing asset due to subsidence and structural failures; although, this asset is not recorded on the NRW register as its ownership is currently under Newport City Council. The embankment crest level varies along its length, with known low spots originating from the original design, subsequent subsistence and landowner activity. NRW estimate the standard of protection provided is as low as a 1 in</p>

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	30-year tidal event (3.33% chance of occurrence) at certain low spots. Near misses have occurred during recent high tides, including in January and March 2014, which corroborate NRW's estimate of the lowest standard of protection.
Location	<p>The current Stephenson Street flood defences include an existing 1,350m long flood defence embankment located on the left (eastern) bank of the River Usk from Stephenson Street south past Coronation Park in Newport, between National Grid Reference (NGR): ST3191986152 and NGR ST32411 85563.</p> <p>The proposed improvement works are portrayed within a Location Plan and Environmental Constraints Plan provided in Appendix A; specific locations for each element are provide below:</p> <ul style="list-style-type: none"> • Stephenson Street Embankment – Bund and sheet pile improvement: ST3191986152 to ST 32411 85563; Felnex Estate: ST 32411 85563 to ST 32789 85712; new highway: ST 32529 85597 to ST 32877 85442. • Corporation Road - ST 33147 85442. • North of the Transporter Bridge - ST 31915 86175, ST 32502 86525, ST 32622 86655. • Railway Wall - ST 33574 85070. • North of the Nash Wastewater Treatment Works - ST 33529 84144.
NRW team responsible for carrying out the project, and name of lead officer	Jared Gethin, Project Executive, Project Delivery Team, NRW
NRW team responsible for carrying out this HRA, and name of lead officer	c/o Laura Cotton, Lead Specialist Advisor, Environmental Assessment, NRW
Project documents	<p>EIA Screening Request (March 2020)</p> <p>Pre-Application Consultation Pack (March 2021)</p> <p>Planning Design and Access Statement (June 2021)</p> <p>Planning Drawings (June 2021)</p>

1(b): Project details where NRW is the project proponent/instigator	
	<p>Environmental Constraints and Opportunities Record (ECOR) (June 2021)</p> <p>Environmental Action Plan (June 2021)</p> <p>Preliminary Ecological Appraisals (May 2021)</p> <p>Ecological Appraisal (May 2021)</p> <p>WFD Compliance Assessment (March 2021)</p> <p>Landscape and Visual Assessment (June 2021)</p>
Environmental Statement	N/A – Non-EIA Development - Newport City Council EIA Screening Opinion (22/05/2020)

2. Determining the need for a Habitats Regulations Assessment

2.1 Is the whole of the project directly connected with or necessary to the management of one or more Natura 2000 sites, for the purposes of conserving the habitats or species for which the Natura 2000 site(s) is/are designated?	NO
2.2 Is there a possibility that the project could affect a different Natura 2000 site to the one it is intended to conserve?	N/A
2.3 Is it necessary to carry out an HRA?	YES
2.4 For the reasons given above, this project is not considered to require HRA	N/A

3. Considering the likelihood of a significant effect (LSE)

3.1 Renewal of a permission on the same or more restrictive terms as the extant permission

<p>3.1.1 Is this project a renewal of a current permission which complies with NRW approved criteria for ruling out significant effects of renewals (see 6.2 A of OGN 200) without conducting a project-specific LSE test?</p>	<p>NO</p>
<p>3.1.2 This project is considered not likely to have a significant effect on any Natura 2000 sites, on the grounds that it is a renewal which has been screened out of the requirement for further HRA.</p>	<p>N/A</p>

3.2.1 Likelihood of significant effects (LSE) test

<p>3.2.1 Which Natura 2000 sites might be affected by the proposal?</p>	<p><u>Based on the project specification or information provided in the application, it is considered that the following Natura 2000 sites have features which could be affected by the project:</u></p> <ul style="list-style-type: none"> - River Usk SAC (UK0013007) – project elements within boundary. <p>Certain features of the River Usk SAC have been screened out following confirmation that they are not present within the Management Unit in which the works are to progress which is tidal. No pathway for effect has been identified on these freshwater features; not present in Management Unit 1; p.10, River Usk Core Management Plan¹. The features screened out of this assessment are as follows: bullhead (<i>Cottus gobio</i>), brook lamprey (<i>Lampetra planeri</i>) and watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation.</p>
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¹ Countryside Council for Wales. 2008. Core Management Plan including Conservation Objectives for River Usk Special Area of Conservation.

During outline design, NRW Fisheries Team provided the following advice regarding the need for any percussive (worst-case) sheet pile installation: '*Percussive piling works within 30m of the River Usk during the shad migration period must only be undertaken during the falling tide of the river (high tide plus one hour and low tide minus one hour). Should it be necessary to undertake percussive piling during the shad migration period outside the time constraint identified above, it will be necessary to first agree appropriate mitigation measures as required with NRW and Newport City Council prior to any such works taking place.*' Noting that mitigation is only required where the spatial separation between piling works and the river at Mean High Water Springs (MHWS) is $\leq 30\text{m}$, it can be ascertained that no mitigation is required for any piling activities since all piling activities will be more than 30m from the MHWS mark of the River Usk. As such, no pathway for effect is predicted on vibration-sensitive fish from piling activities.

The potential for the project to affect the following Natura 2000 sites (Severn Estuary European Marine Site) was also initially considered in an earlier version of the HRA, but can be ruled out without further consideration:

- Severn Estuary / Mor Hafren SAC (UK0013030) c. 2km from project.
- Severn Estuary Ramsar Site (UK11081) c. 2km from project.
- Severn Estuary SPA (UK9015022) c. 2km from project.

Spatial separation is considered sufficient to avoid potential effects on the features present within the Severn Estuary European Marine Site (EMS) since the site is located c. 2km south of the Study Area. No direct effects on Severn Estuary EMS features will occur during construction or operation. No indirect effects on Severn Estuary EMS features would occur during the operational phase following completion of the flood defence improvements. Indirect construction effects are considered to be addressed in the River Usk SAC assessment below. Spatial separation is sufficient to ensure that dilution and dispersion of any water quality issues will have no effect on the range, extent and distribution, supporting habitats, natural processes or key food plants of the Severn Estuary EMS features. Biodiversity records data have not yielded any records of associated waterbird features within 1.5km of the improvement works. Survey observations corroborate this with no significant roosts of waterbirds associated with the Severn Estuary EMS observed within the study area. Observations have been limited to small numbers of redshank (*Tringa totanus*) limited to the right (western) bank of the River Usk north of the Transporter Bridge. Disturbance from recreational users and dog walkers along the current embankment make it

less likely that the proposed development area provides important roosting habitat. As such, it is considered unlikely that more than 1% of Severn Estuary waterbird populations would be present within the immediate vicinity of the proposed improvement works during construction. Any individuals disturbed by recreational users, river users or construction activities have adjacent habitat of significant quantity within the Severn Estuary and along the banks of the River Usk to move to.

Research² suggest that supporting habitat in areas beyond the boundary of a SAC or SPA which are connected with or 'functionally linked' to the life and reproduction of a population for which a site has been designated or classified should be taken into account in HRA. However, that assessment will need to determine how critical the area may be to the population of the qualifying species and whether the area is necessary to maintain or restore the favourable conservation status of the species. Based on the information provided above it is assumed the bankside habitat on the River Usk in the vicinity of the Newport Transporter Bridge, c. 2km from the Severn Estuary EMS boundary is not critical for populations of the qualifying species and is not therefore essential to maintain or restore associated favourable conservation status.

Migratory fish features of the River Usk are also features of the Severn Estuary SAC and Ramsar site; these features will be considered as part of the River Usk SAC.

The impacts of 'coastal squeeze', where infrastructure prevents coastal habitats (e.g. saltmarsh) from retreating inland during climate change induced sea level rise, were considered. The proposed works sit within the Shoreline Management Plan (SMP) 'NEW5' policy unit. NRW have confirmed that policy units within the River Usk, including NEW5, and policy units within the Severn Estuary will not be affected by the improved flood defences and provided confirmation (02/09/2020) that a Coastal Squeeze Assessment was not required to support the project.

Since no permanent or temporary infrastructure is required within the River Usk SAC beyond the footprint of the existing flood defences, no direct effect on the river planform or coastal habitats (e.g. saltmarsh) are predicted.

List any other Natura 2000 sites initially considered but immediately ruled out: N/A

² Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions. Natural England Commissioned Report NECR207, February 2016.

3.2.2 Likelihood of Significant Effects (LSE) Test - Matrix

3.2.2 Screening Assessment

Colour coding has been used in the 'impact pathway' column II as follows:



There is no impact pathway from the proposal to the qualifying feature



There is an impact pathway in principle, but significant effects from the proposal when considered alone can be ruled out



There is an impact pathway and significant effects cannot be ruled out.

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
River Usk SAC			
(Supporting Habitat; not a Feature of the SAC) General Conservation Objective for the Watercourse	General	<p>Screened Out:</p> <p>No direct effects on the watercourse are predicted during construction or operation.</p> <p>No indirect effects on the watercourse are predicted during the operational phase following completion of the flood defence improvements. The new highway drainage (bioretention swales and attenuation ponds) is SUDS-compliant and has been designed to comply with the strict SUDS Approval Body (SAB) requirements to ensure that any surface water discharge is adequately treated. This</p>	<p>Important Note</p> <p>The design of the permanent works has sought to minimise encroachment into the protected site.</p>

³ River Usk SAC – Core Management Plan Version 1.5 [2008]

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>will be secured through the SAB Consent via Newport City Council Drainage Officers.</p> <p>Screened In:</p> <p>As construction will be undertaken within the SAC boundary, potential pathways for indirect effects during construction were considered; as follows: (a) potential mobilisation of sediment through construction activities or plant movements, (b) pollution incident involving spills of fuel, oil or construction materials (e.g. concrete), (c) in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>Depending on construction methods, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been secured to avoid this requirement. (NB this assessment is made without mitigation in this section).</p> <p>The following considers each Conservation Objective in turn.</p>	<p>No other avoidance measures have been accounted for given recent (12/4/18) 'People over Wind' ruling in the European court indicates that 'mitigation measures' should not be taken into account when screening for LSE. This HRA reports the iterative assessment process that has been undertaken over several years. The screening stage therefore includes elements that have been agreed will not</p>

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
			<p>be progressed; e.g. the provision of a temporary access track in the SAC.</p> <p>Note: Above applies to whole table</p>
	<p>(1) The capacity of the habitats in the SAC to support each feature at near-natural population levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics, should be maintained as far as possible, or restored where necessary.</p>	<p>Screened Out:</p> <p><u>Hydromorphological Processes:</u> the river planform will not be affected by the proposed works; the WFD Compliance Assessment (274580-ARP-XX-XX-RP-EN-0003) confirms that hydromorphological processes will remain unchanged.</p> <p><u>Ecological Processes:</u> none of the supporting habitats used by features 1 to 5 (sea lamprey, river lamprey, brook lamprey, allis shad, twaite shad, Atlantic salmon and bullhead) will be affected by the proposed works.</p> <p>Screened In:</p> <p><u>Ecological Processes:</u> No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>maintenance access ramp onto the foreshore from Stephenson Street, to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.</p> <p>Potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	
	<p>(2) The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure. It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process given in Annexes 1-3.</p>	<p>Screened Out:</p> <p><u>Water quantity:</u> no change will occur to water quantity within the River Usk.</p> <p>Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p>Screened In:</p> <p><u>Physical habitat, community composition and structure:</u> No flood defence infrastructure will be constructed beyond the existing defence</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.</p> <p><u>Water Quality – Construction</u>: potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	
	<p>(3) Flow regime, water quality and physical habitat should be maintained in, or restored as far as possible to, a near-natural state, in order to support the coherence of ecosystem structure and function across the whole area of the SAC.</p>	<p>Screened Out:</p> <p><u>Flow regime</u>: the WFD Compliance Assessment (274580-ARP-XX-XX-RP-EN-0003) confirms that flow regime will remain unchanged.</p> <p>Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only..</p> <p>Screened In:</p> <p><u>Physical habitat:</u> No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.</p> <p><u>Water Quality - Construction:</u> Potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	
	(4) All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat as far as possible, except where natural	<p>Screened Out:</p> <p><u>Fish breeding, spawning and nursery sites:</u> fish breeding, spawning and nursery habitats will not be affected; no works are located in the river channel nor near known spawning sites or nursery areas no pathway for effect identified.</p> <p><u>Fish Migration:</u> In accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	processes cause them to change.	during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS. Screened In: None	
	(5) Flows, water quality, substrate quality and quantity at fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed.	Screened Out: <u>Flows, substrate quality and quantity at fish spawning sites and nursery areas:</u> no abstraction, in-river engineering or gravel extraction are proposed; no pathway for effect identified. Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only. Screened In: <u>Water Quality - Construction:</u> Potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	<p>(6) The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC, including, but not limited to, revetments on active alluvial watercourses using stone, concrete or waste materials, unsustainable extraction of gravel, addition or release of excessive quantities of fine sediment, will be avoided.</p>	<p>Screened Out: Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p>Screened In: <u>River planform and profile:</u> the river planform and profile will remain predominantly unmodified. No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p><u>Water Quality - Construction:</u> Potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	
	<p>(7) River habitat SSSI features should be in favourable condition.</p>	<p>Screened Out:</p> <p>Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p>Screened In:</p> <p><u>River habitat SSSI features:</u> No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street,</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.</p> <p><u>Water Quality - Construction</u>: Potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	
	<p>(8) Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, e.g. weirs, bridge sills, acoustic barriers.</p>	<p>Screened Out:</p> <p><u>Natural range</u>: no works are to be undertaken in the river channel; as such there will be no operational effects or barrier to fish migration or otter movement.</p> <p>Extensive surveys of potential functional habitat to the rear of the Stephenson Street embankment, comprising camera traps and monthly searches for holts, resting places, signs of presence (footprints, scat, scent marking, slides, etc.) were all negative; no foraging or commuting otter are considered to use this area. NRW Species Team confirmed that in light of the negative results, specific mitigation to retain access over the sheet pile wall was not warranted; refer to Section 7 for details.</p> <p>Otter were recorded c. 300m east of the Railway Wall works, but at sufficient distance to preclude potential disturbance effects. No holts, resting places or suitable habitat was identified within the vicinity of the Railway Wall area or access track.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p><u>Fish Migration</u>: In accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>Screened In: None</p>	
	(9) Natural factors such as waterfalls, which may limit the natural range of a species feature or dispersal between naturally isolated populations, should not be modified.	<p>Screened Out:</p> <p><u>Natural factors</u>: no natural range-limiting features will be affected by the proposal.</p> <p>Screened In: None</p>	
	(10) Flows during the normal migration periods of each migratory fish species feature will not be depleted by abstraction to the extent that passage upstream to spawning sites is hindered.	<p>Screened Out:</p> <p><u>Flows during fish migration</u>: no abstraction will be required, no change to river flows will occur.</p> <p>Screened In: None</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	(11) Flow objectives for assessment points in the Usk Catchment Abstraction Management Strategy will be agreed as necessary. It is anticipated that these limits will concur with the standards used by the Review of Consents process.	<p>Screened Out:</p> <p><u>Flow objectives:</u> the proposed works will not affect river flows.</p> <p>Screened In: None</p>	
	(12) Levels of nutrients, in particular phosphate, will be agreed for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain nutrients below these levels. It is anticipated that these limits will concur with the standards used by the Review of Consents process.	<p>Screened Out:</p> <p><u>Nutrient Levels:</u> the proposed works will not affect nutrient levels, including phosphate levels during operation.</p> <p><u>Water Quality – Operation:</u> The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>Screened In:</p> <p><u>Water Quality - Construction:</u> Potential pathways for pollution, including sediment release that may locally affect nutrient levels on a temporary basis, were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	
	<p>(13) Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain pollution below these levels. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 3 of this document.</p>	<p>Screened Out:</p> <p><u>Water Quality Parameters</u> – Operation: operation of the scheme will not affect water quality parameters. The new highway drainage within the Felnax and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p>Screened In:</p> <p><u>Water Quality - Construction:</u> Potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	(14) Potential sources of pollution not addressed in the Review of Consents, such as contaminated land, will be considered in assessing plans and projects.	<p>Screened Out:</p> <p><u>Potential Sources of Pollution</u> - Ground Investigation (GI) has not identified any contamination sources. Sheet pile installation may act to cut off any existing flow paths between the industrial estates and the protected site.</p> <p>Screened In: None</p>	
	(15) Levels of suspended solids will be agreed for each Water Framework Directive water body in the Usk SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.	<p>Screened Out: None</p> <p>Screened In:</p> <p><u>Suspended solids:</u> Potential pathways for pollution, including suspended solids, were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>Sea lamprey (<i>Petromyzon marinus</i>)</p>	General	<p>Screened Out:</p> <p>No direct effects on SAC features are predicted during construction or operation.</p> <p>No indirect effects on SAC features are predicted during the operational phase following completion of the flood defence improvements.</p> <p>Screened In:</p> <p>As construction will be undertaken within the SAC boundary, potential pathways for indirect effects during construction were considered; as follows: (a) potential mobilisation of sediment through construction activities or plant movements, (b) pollution incident involving spills of fuel, oil or construction materials (e.g. concrete), (c) in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>The following considers each Conservation Objective in turn.</p>	
	(1) The conservation objective for the watercourse must be met.	<p>Screened Out:</p> <p>Various; refer to Conservation objectives for the watercourse above.</p> <p>Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales,</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p><u>Potential Sources of Pollution</u> - Ground Investigation (GI) has not identified any contamination sources. Sheet pile installation may act to cut off any existing flow paths between the industrial estates and the protected site.</p> <p>Screened In:</p> <p><u>Water Quality – Construction:</u> potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p> <p><u>Physical Habitat:</u> No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate. No works will encroach into or near the River Usk and will not affect sea lamprey habitat.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	(2) The population of sea lamprey in the SAC is stable or increasing over the long term.	<p>Screened Out:</p> <p><u>Population:</u> in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>Furthermore, lamprey are regarded as ‘non-specialists’ with respect to hearing ability, since they do not possess a swim-bladder and therefore are not regarded to be sensitive to acoustic effects (Popper, 2005)⁴.</p> <p>Noting that mitigation is only required where the spatial separation between piling works and the river at Mean High Water Springs (MHWS) is ≤30m, it can be ascertained that no mitigation is required for any piling activities since all piling activities will be more than 30m from the MHWS mark of the River Usk. As such, no pathway for effect is predicted on vibration-sensitive fish from piling activities.</p> <p>Screened In: None</p>	

⁴ Popper, A. 2005. A Review of Hearing by Sturgeon and Lamprey.

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	<p>(3) The natural range of sea lamprey in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms; e.g. suitable flows to allow upstream migration, depth of water and substrate type at spawning sites, and ecosystem structure and functions e.g. food supply (as described in sections 2.2 and 5). Suitable habitat need not be present throughout the SAC</p>	<p>Screened Out:</p> <p><u>Natural range:</u> the natural range of sea lamprey in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. No works will encroach into or near the River Usk and will not affect sea lamprey habitat.</p> <p>Screened In: None</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity, such as physical barriers to migration, will be assessed in view of 4.2.4.		
	(4) There is, and will probably continue to be, a sufficiently large habitat to maintain the sea lamprey population in the SAC on a long-term basis.	<p>Screened Out:</p> <p><u>Habitat Extent:</u> the proposed flood defence improvements will not reduce the extent of supporting habitat features.</p> <p>Screened In: None</p>	
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>River lamprey (<i>Lampetra fluviatilis</i>)</p>	General	<p>Screened Out:</p> <p>No direct effects on SAC features are predicted during construction or operation.</p> <p>No indirect effects on SAC features are predicted during the operational phase following completion of the flood defence improvements.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>Screened In:</p> <p>As construction will be undertaken within the SAC boundary, potential pathways for indirect effects during construction were considered; as follows: (a) potential mobilisation of sediment through construction activities or plant movements, (b) pollution incident involving spills of fuel, oil or construction materials (e.g. concrete), (c) in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>The River Usk SAC Core Management Plan⁵ (p.10) notes that: <i>management for twaite shad and sea lamprey should also be sympathetic for Atlantic salmon, river/brook lamprey (spawning habitat) and bullhead.</i></p> <p>The following considers each Conservation Objective in turn.</p>	
	(1) The conservation objective for the watercourse must be met.	<p>Screened Out:</p> <p>Various; refer to Conservation objectives for the watercourse above.</p> <p>Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall)</p>	

⁵ Countryside Council for Wales. 2008. Core Management Plan including Conservation Objectives for River Usk Special Area of Conservation.

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p><u>Potential Sources of Pollution</u> - Ground Investigation (GI) has not identified any contamination sources. Sheet pile installation may act to cut off any existing flow paths between the industrial estates and the protected site.</p> <p>Screened In:</p> <p><u>Water Quality - Construction:</u> potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p> <p><u>Physical Habitat:</u> No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate. No works will encroach into or near the River Usk and will not affect river lamprey habitat.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	(2) The population of river lamprey in the SAC is stable or increasing over the long term.	<p>Screened Out:</p> <p><u>Population:</u> in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>Furthermore, lamprey are regarded as ‘non-specialists’ with respect to hearing ability, since they do not possess a swim-bladder and therefore are not regarded to be sensitive to acoustic effects (Popper, 2005)⁶.</p> <p>Noting that mitigation is only required where the spatial separation between piling works and the river at Mean High Water Springs (MHWS) is ≤30m, it can be ascertained that no mitigation is required for any piling activities since all piling activities will be more than 30m from the MHWS mark of the River Usk. As such, no pathway for effect is predicted on vibration-sensitive fish from piling activities.</p> <p>Screened In: None</p>	
	(3) The natural range of river lamprey in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those	<p>Screened Out:</p> <p><u>Natural range:</u> the natural range of river lamprey in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. No works will encroach into or near the River Usk and will not affect river lamprey habitat.</p>	

⁶ Popper, A. 2005. A Review of Hearing by Sturgeon and Lamprey.

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms; e.g. suitable flows to allow upstream migration, depth of water and substrate type at spawning sites, and ecosystem structure and functions e.g. food supply (as described in sections 2.2 and 5). Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing	Screened In: None	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	artificial influences on natural range that cause an adverse effect on site integrity, such as physical barriers to migration, will be assessed in view of 4.2.4.		
	(4) There is, and will probably continue to be, a sufficiently large habitat to maintain the river lamprey population in the SAC on a long-term basis.	<p>Screened Out:</p> <p><u>Habitat Extent:</u> the proposed flood defence improvements will not reduce the extent of supporting habitat features.</p> <p>Screened In: None</p>	
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>Twaite shad (<i>Alosa fallax</i>)</p> <p><i>Annex I habitats and Annex II species present as qualifying features, but not primary reasons for site selection:</i></p>	General	<p>Screened Out:</p> <p>No direct effects on SAC features are predicted during construction or operation.</p> <p>No indirect effects on SAC features are predicted during the operational phase following completion of the flood defence improvements.</p> <p>Screened In:</p> <p>As construction will be undertaken within the SAC boundary, potential pathways for indirect effects during construction were considered; as follows: (a) potential mobilisation of sediment through construction activities or plant movements, (b) pollution incident involving spills of fuel, oil or construction materials (e.g. concrete), (c) in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
Allis shad (<i>Alosa alosa</i>)		<p>7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>The following considers each Conservation Objective in turn.</p>	
	<p>(1) The conservation objective for the watercourse must be met.</p>	<p>Screened Out:</p> <p>Various; refer to Conservation objectives for the watercourse above.</p> <p>Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p><u>Potential Sources of Pollution</u> - Ground Investigation (GI) has not identified any contamination sources. Sheet pile installation may act to cut off any existing flow paths between the industrial estates and the protected site.</p> <p>Screened In:</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p><u>Water Quality - Construction</u>: potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p> <p><u>Physical Habitat</u>: No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate. No works will encroach into or near the River Usk and will not affect twaite and allis shad habitat.</p>	
	(2) The population of twaite and allis shad in the SAC is stable or increasing over the long term.	<p>Screened Out:</p> <p><u>Population</u>: in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>Noting that mitigation is only required where the spatial separation between piling works and the river at Mean High Water Springs (MHWS) is ≤30m, it can be ascertained that no mitigation is required for any piling activities since all piling activities will be more than 30m</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>from the MHWS mark of the River Usk. As such, no pathway for effect is predicted on vibration-sensitive fish from piling activities.</p> <p>Screened In: None</p>	
	<p>(3) The natural range of twaite and allis shad in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms; e.g. suitable flows to allow upstream migration, depth of water and substrate type at spawning sites, and ecosystem</p>	<p>Screened Out:</p> <p><u>Natural range:</u> the natural range of twaite and allis shad in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. No works will encroach into or near the River Usk and will not affect twaite and allis shad habitat.</p> <p>Screened In: None</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	structure and functions e.g. food supply (as described in sections 2.2 and 5). Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity, such as physical barriers to migration, will be assessed in view of 4.2.4.		
	(4) There is, and will probably continue to be, a sufficiently large habitat to maintain twaite and allis shad populations in the SAC on a long-term basis.	<p>Screened Out:</p> <p><u>Habitat Extent:</u> the proposed flood defence improvements will not reduce the extent of supporting habitat features.</p> <p>Screened In: None</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>Atlantic salmon (<i>Salmo salar</i>)</p>	General	<p>Screened Out:</p> <p>No direct effects on SAC features are predicted during construction or operation.</p> <p>No indirect effects on SAC features are predicted during the operational phase following completion of the flood defence improvements.</p> <p>Screened In:</p> <p>As construction will be undertaken within the SAC boundary, potential pathways for indirect effects during construction were considered; as follows: (a) potential mobilisation of sediment through construction activities or plant movements, (b) pollution incident involving spills of fuel, oil or construction materials (e.g. concrete), (c) in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>The River Usk SAC Core Management Plan⁷ (p.10) notes that: <i>management for twaite shad and sea lamprey should also be sympathetic for Atlantic salmon, river/brook lamprey (spawning habitat) and bullhead.</i></p> <p>The following considers each Conservation Objective in turn.</p>	
	(1) The conservation objective for the	Screened Out:	

⁷ Countryside Council for Wales. 2008. Core Management Plan including Conservation Objectives for River Usk Special Area of Conservation.

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	watercourse must be met.	<p>Various; refer to Conservation objectives for the watercourse above.</p> <p>Water Quality – Operation: The new highway drainage within the Felnex and Marshalls Estates is SUDS-compliant and has been designed to comply with the strict SAB requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. The design integrates 4m wide vegetated swales, bioretention corridors and attenuation ponds to encourage infiltration (reducing periodicity and volume of overflows via the riverside outfall) and remove sediment and hydrocarbons prior to any overflow event. The system must be SAB compliant, therefore interceptors (which are not SUDS compliant) are not permitted or required. Overflows to the riverside outfall are likely to be limited to storm events and all flows would comprise treated surface water only.</p> <p><u>Potential Sources of Pollution</u> - Ground Investigation (GI) has not identified any contamination sources. Sheet pile installation may act to cut off any existing flow paths between the industrial estates and the protected site.</p> <p>Screened In:</p> <p><u>Water Quality - Construction:</u> potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p> <p><u>Physical Habitat:</u> No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate. No works will encroach into or near the River Usk and will not affect Atlantic salmon habitat.	
	(2) The population of Atlantic salmon in the SAC is stable or increasing over the long term.	<p>Screened Out:</p> <p><u>Population:</u> in accordance with NRW Fisheries Team advice (refer to Section 3.2.1 and Section 7) no pathway for effect has been identified regarding disturbance to migrating vibration-sensitive fish during piling operations due to sufficient spatial separation of >30m from the River Usk and MHWS.</p> <p>Furthermore, salmon are regarded as 'hearing generalists' (Popper, 2005)^{Error! Bookmark not defined.} Since salmon lack adaptations that enhance the acoustic coupling between the swim bladder and inner ear but do possess a swim bladder, salmon are more sensitive than lampreys but not as sensitive as shad; thus, adherence to requirements for shad are sufficient to avoid impacts on Atlantic salmon.</p> <p>Noting that mitigation is only required where the spatial separation between piling works and the river at Mean High Water Springs (MHWS) is ≤30m, it can be ascertained that no mitigation is required for any piling activities since all piling activities will be more than 30m from the MHWS mark of the River Usk. As such, no pathway for effect is predicted on vibration-sensitive fish from piling activities.</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		Screened In: None	
	(3) The natural range of Atlantic salmon in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms; e.g. suitable flows to allow upstream migration, depth of water and substrate type at spawning sites, and ecosystem structure and functions e.g. food	<p>Screened Out:</p> <p><u>Natural range:</u> the natural range of Atlantic salmon in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. No works will encroach into or near the River Usk and will not affect Atlantic salmon habitat.</p> <p>Screened In: None</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	supply (as described in sections 2.2 and 5). Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity, such as physical barriers to migration, will be assessed in view of 4.2.4.		
	(4) There is, and will probably continue to be, a sufficiently large habitat to maintain the Atlantic salmon population in the SAC on a long-term basis.	<p>Screened Out:</p> <p><u>Habitat Extent:</u> the proposed flood defence improvements will not reduce the extent of supporting habitat features.</p> <p>Screened In: None</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>European otter (<i>Lutra lutra</i>)</p>	General	<p>Screened Out:</p> <p>No direct effects on SAC features are predicted during construction or operation. Extensive surveys of potential functional habitat to the rear of the Stephenson Street embankment, comprising camera traps and monthly searches for holts, resting places, signs of presence (footprints, scat, scent marking, slides, etc.) were all negative; no foraging or commuting otter are considered to use this area. NRW Species Team confirmed that in light of the negative results, specific mitigation to retain access over the sheet pile wall was not warranted; refer to Section 7 for details. As such, no effect on functional habitat is predicted.</p> <p>No indirect effects on SAC features are predicted during the operational phase following completion of the flood defence improvements.</p> <p>Screened In:</p> <p>Potential pathways for effect during construction were considered; as follows: (a) potential mobilisation of sediment through construction activities or plant movements, (b) pollution incident involving spills of fuel, oil or construction materials (e.g. concrete), (c) disturbance or entrapment of commuting otters during construction works.</p> <p>The following considers each Conservation Objective in turn.</p>	
	(1) The population of otters in the SAC is stable or increasing over the long term and reflects the	<p>Screened Out:</p> <p><u>Population:</u> Extensive surveys of potential functional habitat to the rear of the Stephenson Street embankment, comprising camera traps and monthly searches for holts, resting places, signs of presence</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	<p>natural carrying capacity of the habitat within the SAC, as determined by natural levels of prey abundance and associated territorial behaviour.</p>	<p>(footprints, scat, scent marking, slides, etc.) were all negative; no foraging or commuting otter are considered to use this area. Refer to Ecological Appraisal and supporting Preliminary Ecological Appraisal reports for details; Doc. Ref.: 274580-ARP-XX-NW-RP-EN-0004.</p> <p>NRW Species Team confirmed that in light of the negative results, specific mitigation to retain access over the sheet pile wall was not warranted, but that it would be desirable to encourage potential otter access to habitats to the rear of the embankment in strategic locations; refer to Section 7.</p> <p>Access to habitats to the rear of the embankment will be maintained at the Hanson's conveyor belt, should otter commence using these habitats in the future, by accessing around the masonry wall (c. 70m) to gain access to the pond and scrub habitats behind the flood defence. Furthermore, the detailed design removes the OBC proposal to include sheet pile wall along the full southerly extent of the Stephenson Street embankment. This change maintains access to any otter that may wish to access the southerly habitats and the 'main' pond in this vicinity (Waterbody 4 - 274581-ARP-XX-XX-RP-EN-0010 Stephenson Embankment PEA). Reedbed planting of the attenuation pond and bioretention swales would likely provide additional connectivity following past vegetation clearance along this section. As such, no effect on functional habitat is predicted.</p> <p>Habitat suitability of all waterbodies across the study area was low. Subsequent otter survey of the Railway Wall recorded footprints along the western edge of waterbody 10 (northern sludge lagoon; circa 600m east of the River Usk SAC at the Julian's Gout outfall) and a spraint recorded on a culvert crossing a stream to the south of waterbody 11 (southern sludge lagoon); approximately 500m southeast of the Railway Wall works. Otter cameras on a raft at the</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
		<p>eastern bank of the sludge ponds (c. 300m east of the Railway Wall) returned three otter recordings. Presence is considered to be limited to foraging and or commuting otter, travelling through the Railway Wall site. No permanent resting / breeding places were recorded. As such, no holts or resting places are likely to be affected.</p> <p>Screened In:</p> <p><u>Water Quality - Construction</u>: potential pathways for pollution were identified in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	
	<p>(2) The natural range of otters in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding territories.</p> <p>The whole area of the Usk SAC is considered to form potentially suitable</p>	<p>Screened Out:</p> <p><u>Natural Range</u>: Extensive surveys of potential functional habitat to the rear of the Stephenson Street embankment, comprising camera traps and monthly searches for holts, resting places, signs of presence (footprints, scat, scent marking, slides, etc.) were all negative; no foraging or commuting otter are considered to use this area. Refer to Ecological Appraisal and supporting Preliminary Ecological Appraisal reports for details; Doc. Ref.: 274580-ARP-XX-NW-RP-EN-0004.</p> <p>NRW Species Team confirmed that in light of the negative results, specific mitigation to retain access over the sheet pile wall was not warranted, but that it would be desirable to encourage potential otter access to habitats to the rear of the embankment in strategic locations; refer to Section 7.</p> <p>Access to habitats to the rear of the embankment will be maintained at the Hanson's conveyor belt, should otter commence using these habitats in the future, by accessing around the masonry wall (c. 70m) to gain access to the pond and scrub habitats behind the flood</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	<p>breeding habitat for otters.</p> <p>The size of breeding territories may vary depending on prey abundance.</p> <p>The population size should not be limited by the availability of suitable undisturbed breeding sites. Where these are insufficient they should be created through habitat enhancement and where necessary the provision of artificial holts. No otter breeding site should be subject to a level of disturbance that could have an adverse effect on breeding success.</p> <p>Where necessary, potentially harmful levels of disturbance must be managed.</p>	<p>defence. Furthermore, the detailed design removes the OBC proposal to include sheet pile wall along the full southerly extent of the Stephenson Street embankment. This change maintains access to any otter that may wish to access the southerly habitats and the 'main' pond in this vicinity (Waterbody 4 - 274581-ARP-XX-XX-RP-EN-0010 Stephenson Embankment PEA). Reedbed planting of the attenuation pond and bioretention swales would likely provide additional connectivity following past vegetation clearance along this section. As such, no effect on functional habitat is predicted.</p> <p>Habitats adjacent to Stephenson Embankment are subject to disturbance from the industrial units, dog kennels and recreational users and their dogs. Disturbance is predicted to reduce during the operational phase, as the sheet pile wall would act as a barrier, restricting access to the foreshore for recreational users, dogs and potentially damaging operations.</p> <p>Habitat suitability of waterbodies in the vicinity of the Railway Wall, Nash Wall and associated access routes was low, no potential resting places, holts or feeding remains were identified and the nearest record of presence is c. 300m east of the Railway Wall. Neither the Railway Wall nor the Nash Wall will restrict access to otter. The Landscape Masterplan described the proposed habitat enhancement, which is likely to benefit any local otter with additional foraging / lay-up sites.</p> <p>As such, no pathway for effect on the reduction of natural range has been identified.</p> <p>Screened In: None</p>	

Qualifying Feature	Assessment of likelihood of significant effect		
	I Relevant conservation objectives ³	II Potential impact pathway (in the absence of mitigation measures)	III Avoidance measure
	(3) The safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etcetera at road bridges and other artificial barriers.	<p>Screened Out: <u>Physical Habitat - Operational:</u> No flood defence infrastructure will be constructed beyond the existing defence footprint to avoid encroachment into the River Usk SAC. However, depending on the sheet pile installation method, a temporary access track may be required at the riverside toe of the embankment within the River Usk SAC; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate. None of the proposed infrastructure would affect the movement of safe dispersal of otter within their range.</p> <p>Screened In: <u>Safe Movement of Otter:</u> the presence of otter 300m east of the Railway Wall suggests otter could be commuting throughout the proposed works area. The potential for entrapment within excavations during construction works is acknowledged in addition to potential disturbance (lighting, noise).</p>	

3.2.3 Screening decision (consideration of project alone)

(a) If ALL rows in column II of Table 3.2.2 are GREEN	<u>N/A</u>

<p>(b) If there are NO rows coloured RED in column II of Table 3.2.2, and there are ANY rows which are BLUE</p>	<p><u>N/A</u></p>
<p>(c) If ANY rows in Column II of Table 3.2.2 are RED</p>	<p>The project may have a likely significant effect on one or more Natura 2000 sites in the absence of any mitigation measures and should be subject to an appropriate assessment.</p> <p>Screened In:</p> <p><u>General Conservation Objective for the Watercourse:</u></p> <ul style="list-style-type: none"> • Water Quality - Construction: Conservation Objectives 1, 2, 3, 5, 6, 7, 12, 13, 14 and 15. • Physical Habitat - Construction: Conservation Objectives 1, 2, 3, 6 and 7. <p><u>Sea lamprey (<i>Petromyzon marinus</i>), River lamprey (<i>Lampetra fluviatilis</i>), Twaite shad (<i>Alosa fallax</i>), Atlantic salmon (<i>Salmo salar</i>), Allis shad (<i>Alosa alosa</i>):</u></p> <ul style="list-style-type: none"> • Water Quality - Construction: Conservation Objective 1. • Physical Habitat - Construction: Conservation Objective 1. <p><u>European otter (<i>Lutra lutra</i>):</u></p> <ul style="list-style-type: none"> • Water Quality - Construction: Conservation Objective 1. • Disturbance and Entrapment - Construction: Conservation Objective 3. <p>Note:</p> <p><u>Water Quality - Construction</u> relates to the potential for a pollution incident in the absence of any mitigation measures.</p> <p><u>Physical Habitat</u> relates to the potential construction of a temporary access track on the riverside toe of the Stephenson Street embankment; options have been explored to avoid this requirement. Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to install the footbridge over the flood defence at the conveyor adjacent to the Felnax Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.</p>

	<p><u>Disturbance and entrapment</u> refer to potential lighting or noise disturbance and / or otter being trapped in excavations in the absence of any mitigation measures.</p>
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4. Appropriate assessment of the project when considered alone

4.1 Assessment of project as currently defined (N.B. without mitigation – see Table 4.2 for mitigation)

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
<i>River Usk SAC</i>				
(Supporting Habitat; not a Feature of the SAC) General Conservation Objective for the Watercourse	<u>Water Quality - Construction:</u> Potential pathways for pollution were identified, including sediment release, in the absence of best practice construction methods and application of standard pollution prevention protocols.	Should a pollution incident occur, in the absence of standard pollution prevention measures, chemicals, fuels or suspended sediment could migrate into the watercourse reducing water quality and / or affect SAC features.	Deterioration in water quality resulting from a pollution incident or sediment release may affect the attainment of conservation objectives 1, 2, 3, 5, 6, 7, 12, 13, 14 and 15.	NO
	<u>Physical Habitat: Temporary Construction Access Track (if needed) - Depending on construction methods, temporary access may be required along the riverside toe of the</u>	Temporary Construction Access Track (if needed) - Should vibratory or percussive piling activities be required a temporary access track may be required at the riverside toe of the embankment; options have been explored to avoid this requirement. The track would likely be a minimum of 3m in width and of a hardcore construction, as the scale	Physical Habitat: Temporary Construction Access Track (if needed) - Should temporary access be required for piling plant along the riverside toe of the Stephenson Street embankment, a substantial area may be required within the SAC that may affect the attainment of conservation objective 1, 2, 3, 6 and 7.	NO

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
	<p><u>Stephenson Embankment within the River Usk SAC.</u></p> <p><u>Saltmarsh features could be affected should a temporary access track be required.</u></p>	<p>of the requisite piling rigs would not accommodate bog mats or similar. Potential exists for encroachment of the track into the saltmarsh habitat (noting that saltmarsh is a SSSI feature, not a SAC feature). The track would be located within an area of historic vehicle access, borrow pit excavation and accumulation of river-deposited debris. The riverside toe of the embankment is not of favourable condition, but the heterogeneity introduced from prior disturbance has led to a more biodiverse sward.</p>		
	<p><u>Physical Habitat:</u> Associated Infrastructure - Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to accommodate the viewing platform (no excavation), to</p>	<p>Associated Infrastructure: Access Ramp – the access ramp (c. 140m²) from Stephenson Street will allow emergency river access to rescue services and maintenance access to allow clearance of fluvial debris deposited on the saltmarsh. Access to allow debris and refuse removal is required to ensure continuation of a SAC management measure to retain existing riverside habitats in favourable condition. The scale of the ramp has been minimised as far as practicable and has been located</p>	<p><u>Physical Habitat:</u> Associated Infrastructure - A negligible area (c. 200m²) of low value habitat will be permanently lost to accommodate the associated works. No SAC features would be directly, or indirectly affected and restricted access would be beneficial to the development of natural habitats and reduction in disturbance.</p>	<p>YES</p>

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
	install the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.	<p>in an area of disturbed ground with negligible floral interest (refer to Quadrat 43 of the Stephenson Street NVC report (274580-ARP-XX-XX-RP-EN-0016). No SAC features are affected by the installation of the ramp or continued access to the foreshore. During operation, access will be restricted to essential personnel only via a locked gated access reducing impacts relative to the baseline.</p> <p>Associated Infrastructure: Viewing Platform – the viewing platform will encroach into the SAC boundary by c. 1-2m. The structure will be installed using a no excavation method from the embankment; no access track is required within the SAC boundary to facilitate this. The habitat at the toe of the bund has historically been affected by vehicle rutting, borrow pits and debris accumulation. No SAC features are affected by the installation of the platform.</p> <p>Associated Infrastructure: Conveyor Footbridge – the footbridge at the conveyor facility is required to</p>		

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
		<p>enable continuity of access along the Wales Coast Path and Public Right of Way. It is an existing structure, but the project will replace it as the current one is in disrepair. To enable access over the sheet pile wall, encroachment into the SAC boundary is inevitable. The design acknowledges the sensitivity of the location utilising a raised structure with negligible permanent loss limited to the stanchions (and is replacement of an existing structure). It is located in an area already disturbed by vehicle movements and sand deposition from offloading at the adjacent dock and transport of material along and beside the conveyor. No SAC features are affected by the installation or operation of the ramp.</p> <p>Associated Infrastructure: Surface Water Drainage Outfall – minor headwall and outflow pipe to be installed through the existing embankment with storm overflow dissipating to ground. No SAC features will be affected by the</p>		

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
		installation or operation of the outflow.		
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>Sea lamprey (<i>Petromyzon marinus</i>), River lamprey (<i>Lampetra fluviatilis</i>), Twaite shad (<i>Alosa fallax</i>), Atlantic salmon (<i>Salmo salar</i>)</p> <p><i>Annex I habitats and Annex II species present as qualifying features, but not primary reasons for site selection:</i></p>	<p><u>Water Quality - Construction:</u></p> <p>Potential pathways for pollution were identified, including sediment release, in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	<p>Should a pollution incident occur, in the absence of standard pollution prevention measures, chemicals, fuels or suspended sediment could migrate into the watercourse and / or affect SAC features.</p>	<p>Deterioration in water quality resulting from a pollution incident or sediment release may affect the attainment of Conservation Objective 1: the conservation objective for the watercourse must be met.</p>	<p>NO</p>

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
Allis shad (<i>Alosa alosa</i>)				
	<p><u>Physical Habitat:</u></p> <p><u>Temporary Construction Access Track (if needed) - Depending on construction methods, temporary access may be required along the riverside toe of the Stephenson Embankment within the River Usk SAC.</u></p> <p><u>Saltmarsh features could be affected should a temporary access track be required.</u></p>	<p>Temporary Construction Access Track (if needed) - Should vibratory or percussive piling activities be required a temporary access track may be required at the riverside toe of the embankment; options have been explored to avoid this requirement. The track would be a minimum of 3m in width and of a hardcore construction, as the scale of the requisite piling rigs would not accommodate bog mats or similar. Potential exists for encroachment of the track into the saltmarsh habitat (noting that saltmarsh is a SSSI feature, not a SAC feature). The track would be located within an area of historic vehicle access, borrow pit excavation and accumulation of river-deposited debris. The riverside toe of the embankment is not of favourable condition, but the heterogeneity introduced from prior disturbance has led to a more biodiverse sward.</p>	<p>Physical Habitat: Temporary Construction Access Track (if needed) - Should temporary access be required for piling plant along the riverside toe of the Stephenson Street embankment, a substantial area may be required within the SAC that may affect the attainment of conservation objective 1, 2, 3, 6 and 7.</p>	<p>NO</p>

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
	<p><u>Physical Habitat:</u></p> <p>Associated Infrastructure - Minor encroachment into the SAC boundary will be required to install a maintenance access ramp onto the foreshore from Stephenson Street, to replace the footbridge over the flood defence at the conveyor adjacent to the Felnex Estate and to install a surface water outfall, pursuant to SUDS compliance, on the riverside embankment south of the Marshall's Estate.</p>	<p>Associated Infrastructure: Access Ramp – the access ramp (c. 140m²) from Stephenson Street will allow emergency river access to rescue services and maintenance access to allow clearance of fluvial debris deposited on the saltmarsh. Access to allow debris and refuse removal is required to ensure continuation of a SAC management measure to retain existing riverside habitats in favourable condition. The scale of the ramp has been minimised as far as practicable and has been located in an area of disturbed ground with negligible floral interest (refer to Quadrat 43 of the Stephenson Street NVC report (274580-ARP-XX-XX-RP-EN-0016)). No SAC features are affected by the installation of the ramp or continued access to the foreshore. During operation, access will be restricted to essential personnel only via a locked gated access reducing impacts relative to the baseline.</p> <p>Associated Infrastructure: Viewing Platform – the viewing platform will encroach into the SAC boundary by</p>	<p><u>Physical Habitat:</u> Associated Infrastructure - A negligible area (c. 200m²) of low value habitat will be permanently lost to accommodate the associated works. No SAC features would be directly, or indirectly affected and restricted access would be beneficial to the development of natural habitats and reduction in disturbance.</p>	<p>YES</p>

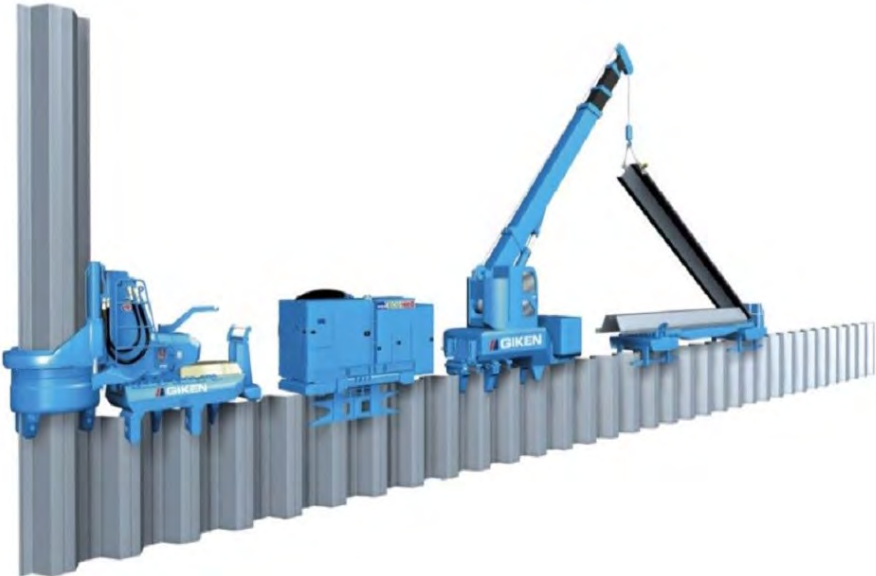
Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
		<p>c. 1-2m. The structure will be installed using a no excavation method from the embankment; no access track is required within the SAC boundary to facilitate this. The habitat at the toe of the bund has historically been affected by vehicle rutting, borrow pits and debris accumulation. No SAC features are affected by the installation of the platform.</p> <p>Associated Infrastructure: Conveyor Footbridge – the footbridge at the conveyor facility is in disrepair and will be replaced to enable continuity of access along the Wales Coast Path and Public Right of Way. To enable access over the sheet pile wall, encroachment into the SAC boundary is inevitable. The design acknowledges the sensitivity of the location utilising a raised structure (similar to existing) with negligible permanent loss limited to the stanchions. It is located in an area already disturbed by vehicle movements, the existing footbridge structure and sand deposition from offloading at the adjacent dock and transport of material along and</p>		

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
		<p>beside the conveyor. No SAC features are affected by the installation or operation of the ramp.</p> <p>Associated Infrastructure: Surface Water Drainage Outfall – minor headwall and outflow pipe to be installed through the existing embankment with storm overflow dissipating to ground. No SAC features will be affected by the installation or operation of the outflow.</p>		
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>European otter (<i>Lutra lutra</i>)</p>	<p><u>Water Quality - Construction:</u> Potential pathways for pollution were identified, including sediment release, in the absence of best practice construction methods and application of standard pollution prevention protocols.</p>	<p>Should a pollution incident occur, in the absence of standard pollution prevention measures, chemicals, fuels or suspended sediment could migrate into the watercourse and / or affect SAC features.</p>	<p>Deterioration in water quality resulting from a pollution incident or sediment release may affect the attainment of conservation objective 1.</p>	<p>NO</p>

Natura 2000 site feature (from Table 3.2.2 – RED rows only)	Impact pathway(s) (from Table 3.2.2) (in the absence of mitigation measures)	Description of impacts (in the absence of mitigation measures)	Assessment in view of conservation objectives (in the absence of mitigation measures)	Can adverse effect on site integrity be ruled out?
	Disturbance to commuting otter.	Construction noise and lighting could affect commuting otter that may transit through the site. Adequate alternative habitat exists, but in the absence of standard construction good practice, adequate controls on construction working hours and lighting are required.	Disturbance to commuting otter during construction could affect the attainment of conservation objective 3.	NO
	Entrapment of commuting otter.	In the absence of standard construction good practice, deep excavations could lead to the entrapment of commuting otter.	Entrapment of commuting otter during construction could affect the attainment of conservation objective 3.	NO

4.2 Assessment of the project taking into account additional mitigating measures, conditions or restrictions

Natura 2000 Feature (from Table 4.1 – ‘NO’ rows only)	Description of adverse effect(s)	Can adverse effect(s) be mitigated?	Description of mitigation measures, and how they would be applied (e.g. contractual obligations, consent conditions)	Can adverse effect on site integrity be ruled out?
<p>(Supporting Habitat; not a Feature of the SAC)</p> <p>General Conservation Objective for the Watercourse</p>	<p><u>Water Quality - Construction:</u> Should a pollution incident occur, in the absence of standard pollution prevention measures, chemicals, fuels or suspended sediment could migrate into the watercourse and / or affect SAC features.</p>	<p>YES</p>	<p>Standard best practice construction techniques will be secured through the project Environmental Action Plan (EAP); Doc. Ref. 274580-ARP-XX-XX-RP-EN-0006. The EAP includes site-specific methods to ensure that all site activities are controlled and are in accordance with standard operating procedures; e.g. relevant Guidelines for Pollution Prevention (GPP’s) and CIRIA best practice. Specific guidance includes GPP5: Works and Maintenance in or Near Water, CIRIA C741 ‘Environmental Good Practice on Site’; Fourth Edition (2015), etc.; refer to EAP (274580-ARP-XX-XX-RP-EN-0006) for full details. Silt management measures such as silt fencing, sediment retention ponds (or silt busters where space is constrained), surface roughening, containment, rock check dams and highway control measures will be implemented to prevent silt or contaminants from being released into connecting watercourses; indicative sketches of silt management measures are provided in Appendix D of the EAP (274580-ARP-XX-XX-RP-EN-0006) and will be refined during preparation of the CEMP.</p> <p>Following implementation of the best practice construction measures secured through the EAP (274580-ARP-XX-XX-RP-EN-0006), adverse effect on site integrity can be ruled out.</p>	<p>YES</p>
	<p><u>Physical Habitat - Construction:</u> Temporary Construction Access Track (if needed) - Should vibratory or</p>	<p>YES</p>	<p>The need for a temporary construction access track at the riverside toe of the embankment has been avoided through the specification of hydraulic piling for sheet pile installation along the Stephenson Street Embankment.</p> <p>The sheet pile wall will be installed using a hydraulic press (Giken ‘silent’ piling rig) to avoid the need for a construction access track</p>	<p>YES</p>

Natura 2000 Feature (from Table 4.1 – ‘NO’ rows only)	Description of adverse effect(s)	Can adverse effect(s) be mitigated?	Description of mitigation measures, and how they would be applied (e.g. contractual obligations, consent conditions)	Can adverse effect on site integrity be ruled out?
	<p>percussive piling activities be required a temporary access track would be required at the riverside toe of the embankment. The track would be a minimum of 3m in width and of a hardcore construction, as the scale of the requisite piling rigs would not accommodate bog mats or similar. Potential exists for encroachment of the track into the saltmarsh habitat (noting that saltmarsh is a SSSI feature, not a notified SAC feature). The track would be located within an area of historic vehicle access, borrow pit excavation and accumulation of river-</p>		<p>within the River Usk SAC; refer to Figure 1 below. By implementing a specialised sheet pile mounted service crane and sheet pile delivery system, the piling rig and supporting equipment can ‘crawl’ along the installed sheet piles and therefore do not require construction access at the riverside toe of the embankment. The initial few sheet piles will be installed by vibro-piling to provide a mount for the piling rig but will undertake this activity from the embankment. The hydraulic piling technique has been secured through the EAP.</p> <p>Figure 1: Hydraulic Piling Rig and Service Crane</p> 	

Natura 2000 Feature (from Table 4.1 – ‘NO’ rows only)	Description of adverse effect(s)	Can adverse effect(s) be mitigated?	Description of mitigation measures, and how they would be applied (e.g. contractual obligations, consent conditions)	Can adverse effect on site integrity be ruled out?
	deposited debris. The riverside toe of the embankment is not of favourable condition, but the heterogeneity introduced from prior disturbance has led to a more biodiverse sward.			
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>Sea lamprey (<i>Petromyzon marinus</i>), River lamprey (<i>Lampetra fluviatilis</i>), Twaite shad (<i>Alosa fallax</i>), Atlantic salmon (<i>Salmo salar</i>)</p> <p><i>Annex I habitats and Annex II species present as qualifying</i></p>	<p><u>Water Quality - Construction:</u> Should a pollution incident occur, in the absence of standard pollution prevention measures, chemicals, fuels or suspended sediment could migrate into the watercourse and / or affect SAC features.</p>	<p>YES</p>	<p>Standard best practice construction techniques will be secured through the project Environmental Action Plan (EAP); Doc. Ref. 274580-ARP-XX-XX-RP-EN-0006. The EAP includes site-specific methods to ensure that all site activities are controlled and are in accordance with standard operating procedures; e.g. relevant Guidelines for Pollution Prevention (GPP’s) and CIRIA best practice. Specific guidance includes GPP5: Works and Maintenance in or Near Water, CIRIA C741 ‘Environmental Good Practice on Site’; Fourth Edition (2015), etc.; refer to EAP (274580-ARP-XX-XX-RP-EN-0006) for full details. Silt management measures such as silt fencing, sediment retention ponds (or silt busters where space is constrained), surface roughening, containment, rock check dams and highway control measures will be implemented to prevent silt or contaminants from being released into connecting watercourses; indicative sketches of silt management measures are provided in Appendix D of the EAP (274580-ARP-XX-XX-RP-EN-0006) and will be refined during preparation of the CEMP.</p>	<p>YES</p>

Natura 2000 Feature (from Table 4.1 – ‘NO’ rows only)	Description of adverse effect(s)	Can adverse effect(s) be mitigated?	Description of mitigation measures, and how they would be applied (e.g. contractual obligations, consent conditions)	Can adverse effect on site integrity be ruled out?
<p><i>features, but not primary reasons for site selection:</i></p> <p>Allis shad (<i>Alosa alosa</i>)</p>			<p>Following implementation of the best practice construction measures secured through the EAP (274580-ARP-XX-XX-RP-EN-0006), adverse effect on site integrity can be ruled out.</p>	
<p><i>Annex II species that are a primary reason for selection of this site:</i></p> <p>European otter (<i>Lutra lutra</i>)</p>	<p><u>Water Quality - Construction:</u> Should a pollution incident occur, in the absence of standard pollution prevention measures, chemicals, fuels or suspended sediment could migrate into the watercourse and / or affect SAC features.</p>	<p>YES</p>	<p>Standard best practice construction techniques will be secured through the project Environmental Action Plan (EAP); Doc. Ref. 274580-ARP-XX-XX-RP-EN-0006. The EAP includes site-specific methods to ensure that all site activities are controlled and are in accordance with standard operating procedures; e.g. relevant Guidelines for Pollution Prevention (GPP’s) and CIRIA best practice. Specific guidance includes GPP5: Works and Maintenance in or Near Water, CIRIA C741 ‘Environmental Good Practice on Site’; Fourth Edition (2015), etc.; refer to EAP (274580-ARP-XX-XX-RP-EN-0006) for full details. Silt management measures such as silt fencing, sediment retention ponds (or silt busters where space is constrained), surface roughening, containment, rock check dams and highway control measures will be implemented to prevent silt or contaminants from being released into connecting watercourses; indicative sketches of silt management measures are provided in Appendix D of the EAP (274580-ARP-XX-XX-RP-EN-0006) and will be refined during preparation of the CEMP.</p> <p>Following implementation of the best practice construction measures secured through the EAP (274580-ARP-XX-XX-RP-EN-0006), adverse effect on site integrity can be ruled out.</p>	<p>YES</p>

Natura 2000 Feature (from Table 4.1 – ‘NO’ rows only)	Description of adverse effect(s)	Can adverse effect(s) be mitigated?	Description of mitigation measures, and how they would be applied (e.g. contractual obligations, consent conditions)	Can adverse effect on site integrity be ruled out?
	<p><u>Disturbance:</u> Construction noise and lighting could affect commuting otter that may transit through the site. Adequate alternative habitat exists (e.g. River Usk flood plain) but in the absence of standard construction good practice, adequate controls on construction working hours and lighting are required.</p>	YES	<p>Lighting - If any task lighting is required outside daylight hours (typically 30 minutes after sunrise and up to 30 minutes before sunset), directional lighting (away from linear habitat features and watercourses) with minimal upward spill will be implemented, to avoid light spill into adjacent habitats to avoid disturbance to any commuting otter.</p> <p>Noise & Vibration – General construction noise and vibration will be controlled through the timing restrictions within the EAP. Specification of hydraulic ‘silent’ piling has concomitantly reduced piling noise and vibration to negligible. General construction noise is controlled through good construction practice and hours of working within the EAP.</p>	YES
	<p><u>Entrapment:</u> In the absence of standard construction good practice, deep excavations could lead to the entrapment of commuting otter.</p>	YES	<p>Good practice working methods will be adhered to which prevent any adverse effects to any commuting otter. Materials or plant will not be left overnight in an area that may prohibit access for commuting otter and excavations will not be left uncovered overnight. If any excavations are required to be left open overnight, a ramp will be provided to allow any otter to escape. These measures are secured within the EAP.</p>	YES

4.3 Concluding the appropriate assessment of the project alone

<p>(a) If the right hand column of Table 4.1 and Table 4.2 (if applicable) shows 'YES' for all features</p>	<p>It has been ascertained that the proposal, when considered alone, will not adversely affect the integrity of any Natura 2000 sites.</p>
<p>(b) Are there any residual effects of the project (net of any mitigation measures identified) which, though insignificant on their own, could be significant if considered in combination with the effects of other plans or projects?</p>	<p>YES</p>
<p>(c) If there are any 'NO's in the right hand column of Table 4.1 that cannot be resolved to 'YES' through mitigation measures identified in Table 4.2</p>	<p>It has not been ascertained that the proposal, when considered alone, will not adversely affect the integrity of one or more Natura 2000 sites.</p>

5 In-combination assessment

5.1 Identifying possible in-combination effects

This section covers the in-combination assessments for both the LSE test and the Appropriate Assessment.

BLUE impact pathway from Table 3.2 and/or Residual effect (from Table 4.2)	Natura 2000 site feature(s) concerned	Other plans/projects with effects that could interact with the effects of the project to render its effects significant or to have an adverse effect on integrity (if any)	Nature of the in-combination effect (if any)	Is there likely to be any significant in-combination effects or adverse effects on integrity, in view of the site's conservation objectives?
<u>Water Quality - Construction</u> : Pollution incident; chemicals, fuels or suspended sediment could migrate into the watercourse and / or affect SAC features.	River Usk SAC	Transporter Bridge Visitor Centre [Planning App 19/1164].	Both projects secure best practice construction measures including adherence to relevant Guidelines for Pollution Prevention, including GPP5: works or maintenance in or near water. Application of the GPPs is considered sufficient to manage potential effects. As such, no significant in-combination effects are considered likely.	NO
<u>Disturbance [Otter]</u> : Construction noise and lighting could affect commuting otter that may transit through the site. Adequate alternative habitat exists (e.g. River	River Usk SAC	Transporter Bridge Visitor Centre [Planning App 19/1164].	Both projects secure ecological mitigation to avoid excessive light spill on key habitats. Piling noise has been avoided from the flood defence project through specification of hydraulic piling, whilst conditions are secured for the Visitor Centre to control noise. As such, no significant in-combination effects are considered likely.	NO

BLUE impact pathway from Table 3.2 and/or Residual effect (from Table 4.2)	Natura 2000 site feature(s) concerned	Other plans/projects with effects that could interact with the effects of the project to render its effects significant or to have an adverse effect on integrity (if any)	Nature of the in-combination effect (if any)	Is there likely to be any significant in-combination effects or adverse effects on integrity, in view of the site's conservation objectives?
Usk flood plain) but in the absence of standard construction good practice, adequate controls on lighting are required.				
<u>Entrapment [Otter]:</u> In the absence of standard construction good practice, deep excavations could lead to the entrapment of commuting otter.	River Usk SAC	Transporter Bridge Visitor Centre [Planning App 19/1164].	Both projects secure ecological mitigation to avoid potential entrapment of otter having secured provisions to provide a means of escape. As such, no significant in-combination effects are considered likely.	NO

6. Site Integrity test

<p>6.1 In light of the conclusions of the appropriate assessment (sections 4, and 5 if applicable), and taking account of the advice received from the protected sites advisors, has it been established that the project described in section 1 will not adversely affect the integrity of any Natura 2000 site, taking into account any conditions or restrictions, either alone or in-combination with other plans and projects?</p>	<p>YES</p>
<p>6.2 It has been ascertained the project described in section 1 will not adversely affect the integrity of any Natura 2000 site, if applicable subject to any conditions or restrictions identified. Approval of the project, subject to any conditions or restrictions as applicable, would be compliant with Article 6(3) of the Habitats Directive (and/or with Government policy towards Ramsar sites, if applicable)</p>	<p>Signed:</p> <p>Date:</p>

7. Consultation with protected sites advisor(s) and how sections 2, 3, 4 and 5 of this HRA report (as applicable) take into account that advice.

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
3, 4	NRW DPAS [17/05/2021]	<p>Protected Sites – River Usk Special Area of Conservation (SAC) We have reviewed the ‘Record of a Habitats Regulations Assessment of a Project NRW Stephenson Street Flood Defence Scheme’, prepared by Natural Resources Wales, reference 274580-ARP-XX-XX-RP-EN-0002, dated March 2021 submitted in support of the above application. We advise that an adverse effect from the proposed development on the integrity of the River Usk SAC cannot be ruled out.</p> <p>It is noted that the proposed works sit within the Shoreline Management Plan (SMP) ‘NEW5’ policy unit and that NRW have confirmed (02/09/2020) that policy units within the River Usk and the Severn Estuary will not be affected by the improved flood defences and that a Coastal Squeeze Assessment was not required to support the project.</p> <p>We agree that all relevant European Sites are included in the assessment. The River Usk SAC is correctly included and certain features of this site are appropriately screened out, that being those features not occurring at this location nor capable of receiving impacts due to being non-tidal, freshwater features. The Severn Estuary SAC/SPA/RAMSAR are also screened out at section 3.2.1.</p> <p>It is further noted that this HRA includes the iterative assessment process that has been undertaken over time and that therefore it includes elements that may have been considered at an earlier stage that now will not be taken forward.</p> <p>With regards to the impacts of the current adopted (see section 4.2) operations to install the sheet pile wall, in and of itself, it is noted that these operations cannot have direct impact upon the SAC habitat features as none occur at these locations (the habitat of the wall itself and the adjacent saltmarsh are not SAC features (the saltmarsh is an SSSI feature)).</p> <p>The Project Details section of the assessment (Activity Proposed) gives a full list of project components. The matters currently carried forward from here to section 3.2.2 are entirely relevant to test of likely significant effects. Some other components appear to be screened out at this stage without further discussion Whilst it is possible that some of the other matters are unlikely to have impact pathways (due, for example scale, nature and location) this is less clear with other matters. [Arup: where the Associated Infrastructure and Temporary Construction Access Track were previously</p>

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
		<p>combined, these activities have been split out in Table 4.1 to clearly separate activities that are screened out (Associated Infrastructure) and screened in (Temporary Construction Access Track)].</p> <p>Requirement 7: It is recommended that information is supplied for all matters where impact pathways are possible. If no pathway is present, then information to support this should be provided. For example, the Orb Works to raise ground are listed as being within c6 and c30 of the SAC boundary (significantly nearer than some matters included in further assessment). [Arup: the Orb ground raising works are specifically considered as a potential source of water quality impact. Indicative silt mitigation measures have been provided and secured in the EAP (Doc. Ref. 274580-ARP-XX-XX-RP-EN-0006; Appendix D) demonstrating the silt management measures proposed at the Orb Works and throughout the project.]</p> <p>Within section 3.2.1 there is discussion regarding the supporting habitat in areas beyond the boundary of a SAC which are connected with or 'functionally linked to the SAC features'. It is agreed that regarding the functionally linked habitat for all fish features this can be screened out. However, it is not clear that the impacts to functionally linked habitat used by otter has been fully assessed. The potential for continuity of use of habitat within and without the SAC for otter is not fully assessed. Reconsideration of this may show an impact pathway or if the construction design allows for, or does not impinge on this matter, or is mitigated for, this may need to be made clear in the assessment at the correct stage. [Arup: Section 3.2.2 of the HRA has been updated to clarify the otter survey results for the habitats to the rear of the Stephenson Street Embankment, stating that commuting and foraging otter are not considered to be present. The HRA also reiterates that access will be retained to habitats behind the Stephenson Street Embankment, should otter commence using these habitats in the future. The HRA confirms that no effect on functional habitat is predicted.]</p> <p>Likelihood of Significant Effects Section 3.2.2 screens the project for the likelihood of significant effects of the project components on the relevant features of the River Usk SAC. Some matters are correctly screened out at this stage as not being capable of having a significant effect on the SAC and this opinion is supported by the information set out within this stage of the assessment.</p> <p>For some other matters it is concluded at this stage that without measures intended to avoid or reduce harmful effects, there are impact pathways and significant effects that cannot be ruled out (and in line with People over Wind ruling), and these matters are taken to the appropriate assessment stage. We agree that these matters are correctly progressed.</p>

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
		<p>Requirement 8: Reconsideration to be given to whether Water Quality during operational period with regard to surface water drainage system for the new highway located within the Felnex and Marshalls Estate should be screened out. It is unclear whether the design and/or the control mechanisms within this part of the project are compliant with the 'People over Wind' ruling and you may wish to reconsider this matter. In doing so, it may be helpful to refer to the NRW guidance on this matter. Reconsideration may lead to this matter being "screened in" and therefore being taken to the next stage. [Arup: Section 3.2.2 is updated to clarify that the new highway drainage (bioretention swales and attenuation ponds) is SUDS-compliant and has been designed to comply with the strict SUDS Approval Body (SAB) requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. SAB compliance is a mandatory design requirement separate to HRA and inherent to the development of the highway design and not a mitigation measure].</p> <p>In section 1 the 'Activity Proposed' table description states "Upgrading to the existing Stephenson Street flood embankment along the eastern boundary of Coronation Park. Works would include the raising and widening of the existing embankment." It is understood, from discussion, that whilst this operation will widen the embankment on the eastern side, into the adjacent park (away from, not into the SAC) and that all works will be carried out from the eastern side, thereby negative impacts from the works, in and of themselves, on the SAC. It is recommended that this matter is made clear within the assessment and that any impact pathways that could occur from these works (such as pollution etc) are addressed within the assessment. [Arup: the Stephenson Street embankment upgrade works are specifically considered as a potential source of water quality impact. Indicative silt mitigation measures have been provided and secured in the EAP (Doc. Ref. 274580-ARP-XX-XX-RP-EN-0006; Appendix D) demonstrating the silt management measures proposed throughout the project.]</p> <p>The screening decision at section 3.2.3 identifies matters that require carrying to the next stage. This section lists the currently identified impact pathways for the matters covered at this stage and we agree that it is appropriate to carry these matters forward. However, subject to the outcomes of any reconsiderations, this stage of the assessment may require updating to reflect changes.</p> <p>Appropriate Assessment Section 4.1 assesses the currently identified potential impacts against the SAC conversation objectives where a potential impact pathway exists. As detailed above, subject to the outcomes of any reconsideration at this stage of the assessment may require updating to reflect the requirements of the Regulations.</p>

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
		<p>Requirement 9: It is unclear if it is deemed that these matters are capable of impacting upon the integrity of the identified SAC with or without control measures and it is recommended that these matters and any potential impacts pathways that may be associated with these are addressed fully as part of the assessment.</p> <p>Water Quality – Operational As detailed above, it is unclear that it is appropriate to screen out, at the likely significant effects stage, Water Quality during operational period with regard to the surface water drainage system for the new highway located within the Felnex and Marshalls Estates. [Arup: Section 3.2.2 is updated to clarify that the new highway drainage (bioretention swales and attenuation ponds) is SUDS-compliant and has been designed to comply with the strict SUDS Approval Body (SAB) requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. SAB compliance is a mandatory design requirement separate to HRA and inherent to the development of the highway design and not a mitigation measure].</p> <p>Section 4.2 Assessment of the project considering additional mitigating measures, conditions or restrictions.</p> <ul style="list-style-type: none"> • Water Quality – Construction: Measures are identified here to control any impacts associated with this matter. Provided that these measures are secured by the appropriate mechanism we agree that it can be concluded that no detrimental impact on the SAC integrity will occur in relation to this matter. [Arup: flood defence improvement works are specifically considered as a potential source of water quality impact. Indicative silt mitigation measures have been provided and secured in the EAP (Doc. Ref. 274580-ARP-XX-XX-RP-EN-0006; Appendix D) demonstrating the silt management measures proposed throughout the project.] • Physical Habitat: matters relating to the installation of the sheet piling method are appropriately concluded as not able to adversely affect the integrity through the adoption of the Giken method and the project commitment to this method. This method is assessed as an effective measure to prevent impacts in and of itself (and without requiring control measures). This is agreed, and it may be the case that the presentation of this method earlier within the assessment may have allowed this matter to have been screened out earlier. [Arup: Giken method and precautionary inclusion of a temporary construction access track included within HRA as advised by NRW to ensure compliance with People over Wind ruling]. However, it is agreed that the adoption of this method will avoid any impacts to the SAC and on that basis, we agree with the conclusion.

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
		<ul style="list-style-type: none"> • Association Infrastructures: the physical habitat pathways identified for the associated infrastructures have been carried to this stage of the assessment therefore assumes that they carry impact pathways. However, as detailed above there are no specific measures aligned to these matters that allow a “no impact” conclusion. [Arup: where the Associated Infrastructure and Temporary Construction Access Track were previously combined, these activities have been split out in Table 4.1 to clearly separate activities that are screened out (Associated Infrastructure) and screened in (Temporary Construction Access Track)]. • Water Quality – Operational: As detailed above it is unclear that it is appropriate to screen out, at the likely significant effects stage, Water Quality during the operational period with regard to the surface water drainage system for the new highway located within the Felnax and Marshalls Estate. [Arup: Section 3.2.2 is updated to clarify that the new highway drainage (bioretention swales and attenuation ponds) is SUDS-compliant and has been designed to comply with the strict SUDS Approval Body (SAB) requirements to ensure that any surface water discharge is adequately treated. This will be secured through the SAB Consent via Newport City Council Drainage Officers. SAB compliance is a mandatory design requirement separate to HRA and inherent to the development of the highway design and not a mitigation measure]. • Disturbance and Entrapment: Appropriate controls to prevent impacts from disturbance and entrapment are detailed here and provided that these are secured by the appropriate mechanism, we agree with the conclusion.
3	NRW Fisheries – Phillip Howell [20/01/2016]	<p>No piling will take place within 30m of the River Usk MHWS mark.</p> <p>NRW Fisheries - ‘Percussive piling works within 30m of the River Usk during the shad migration period will only be undertaken during the falling tide of the river (high tide plus one hour and low tide minus one hour). Should it be necessary to undertake percussive piling during the shad migration period outside the time constraint identified above, it will be necessary to first agree appropriate mitigation measures as required with NRW and Newport City Council prior to any such works taking place.’</p>
3	NRW Newport, Caerphilly & Blaenau Gwent Environment Team - Nick	<p>Concern regarding vibration-sensitive fish - NRW Fisheries Team recommendations were shared and NRW Fisheries Team advice accepted.</p> <p>Query regarding habitat composition on riverside toe of embankment. - NVC Report shared in addition to NRW Botanist comments for information.</p> <p>Query regarding access track footprint - Confirmation provided that specification of a ‘silent’ piling rig precludes the need for a temporary access track at the base of the riverside toe of the embankment.</p>

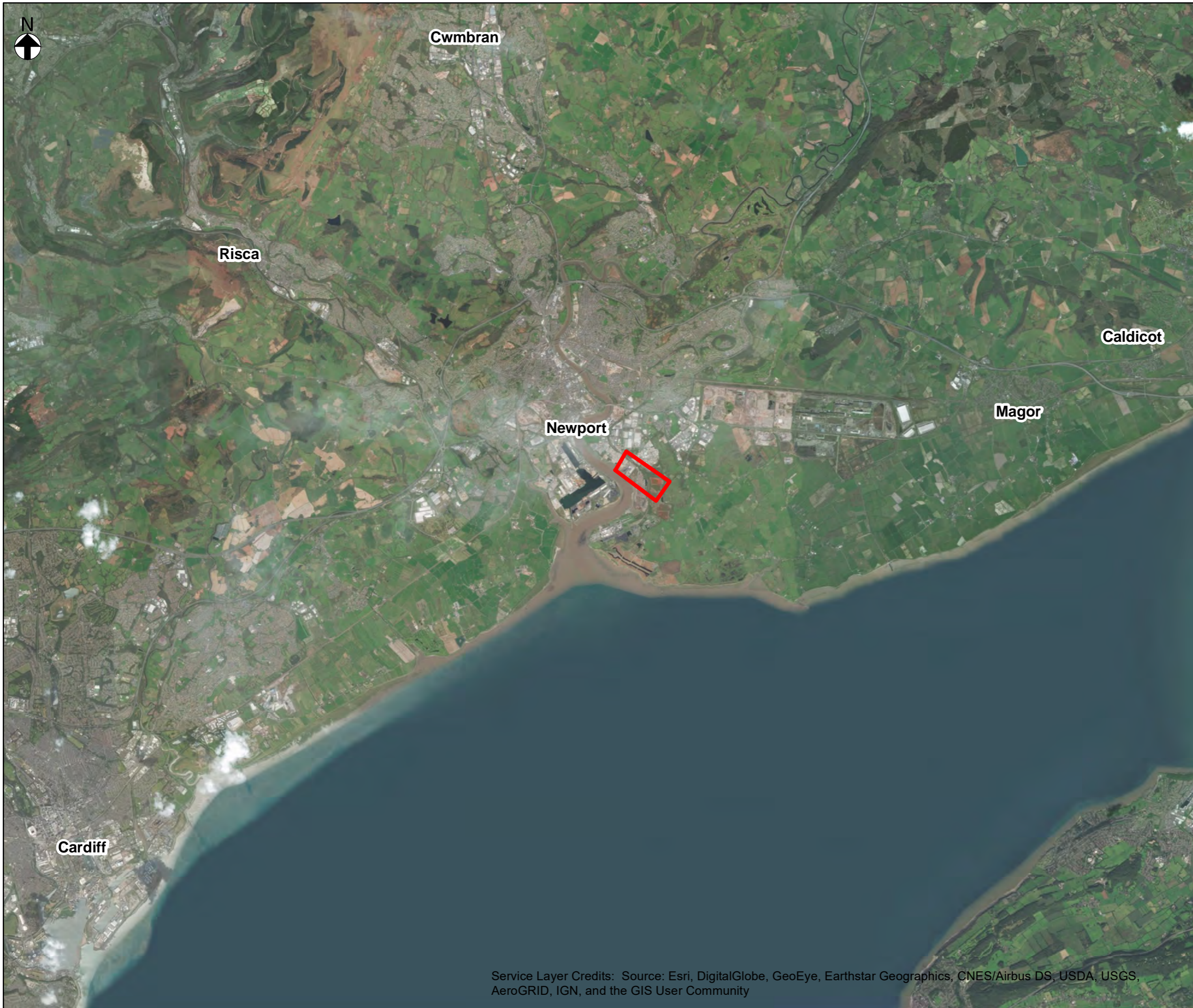
Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
	Hudson, Protected Sites Officer. [27/05/2020]	<p>Query regarding operational maintenance of the embankment (mowing) - NRW Operations Team confirmed that no operational access track required.</p> <p>Query regarding Severn Estuary waterbird feature use of River Usk in vicinity of works - Data provided herein (and ECOR); no significant usage by Severn Estuary waterbirds, closest records gadwall, redshank and shelduck c. 1.5km south. Confirmed with NRW Marine Ornithologist.</p> <p>Otter habitat query - survey data provided to demonstrate likely absence of otter and NRW Species Team communication that no otter specific mitigation was required.</p> <p>Consideration of minor encroachment of enhancements into SAC / SSSI beyond riverside embankment toe - No objection provided sensitively managed design.</p>
4	NRW - Newport, Blaenau Gwent and Caerphilly Environment Team – Nick Hudson, Tamarind Falk, Angela Hunt [04/02/2021]	<p>Query to NRW Protected Sites Team regarding surface water drainage, seed mix and minor encroachment in the SAC boundary for associated works.</p> <p>Two options presented for surface outfall design; unanimous agreement to proceed with proposed surface water outfall within the SAC boundary. The alternative option, locating an outfall outside the SAC boundary, would incur more construction works, a much larger structure, require major marine access improvements all of which would be likely to have a significant effect on the River Usk SAC; as such, this option was discounted.</p> <p>Nick Hudson confirmed the propose seed mix (EM2 standard general purpose meadow mix – originally discussed with Julian Woodman and Stuart Smith, NRW Botanists) was appropriate for the bund and would not affect SAC habitats.</p>
4	NRW - Newport, Blaenau Gwent and Caerphilly Environment Team – Nick Hudson, Tamarind Falk	<p>The hydraulic piling method has been specified and secured within the EAP to avoid the need for a temporary construction access track in the River Usk SAC. Best practice pollution prevention has also been secured within the EAP as described in Table 4.2 above.</p> <p>Updated Response [10/09/20] – Nick Hudson: <i>The updated method using a Giken push piler as set out in Design Freeze ECI Review appears to be a preferable option, which on the current information I support as the preferred approach on the basis that it removes the need for significant operations within the SSSI. Re the HRA, if this method is the intended approach and can be secured it appears reasonable to base the assessment on this. However, if unavailable re-assessment will be necessary.</i></p>

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
	[11/08/2020]	<p>Initial Responses [11/08/20]: Conservation Officer (Nick Hudson) - Protected Sites – Severn Estuary/Mor Hafren SPA, Severn Estuary/Mor Hafren Ramsar, Severn Estuary/ Mor Hafren SAC, River Usk / Afon Wysg SAC, River Usk (Lower Usk)/Afon Wysg (Wysg Isaf) SSSI.</p> <p><i>I support the comments made by the Specialist Advisor - Marine and Coastal Physical Processes, with regard to matters relevant to the above European Protected Sites and the River Usk SSSI. The project has stated that the works have to be carried out on the seaward side of the seawall, within the SSSI/SAC. The saltmarsh feature of the SSSI is present within the proposed footprint of the works. Two options of construction access are discussed within the ECOR document - bog mats (temporary ground covering) or a temporary stone track. The use of bog mats to carry out the works would likely lead to some low-level disturbance of the saltmarsh in the handling, moving and storage of these items. It is likely that due to the nature of bog matting it would be left in situ for relatively short time periods. This is the preferred option. The other option is a temporary stone track. No information has been supplied regarding the type and construction of track, the method of installation, any soil handling/storage method, material/s to be used, the removal and restoration, or overall working footprint. Whilst it is not certain that this option would cause long-term damage to the saltmarsh feature, it is also not clear what the outcomes would be. This option is carries a higher risk of detrimental impact on the SSSI due to the uncertainties involved and is not recommended (unless information/evidence can reasonably demonstrate that disturbance levels can be kept within acceptable limits).</i></p> <p>Environment Officer (Tamarind Falk) - <i>Welcome the FAS ECOR Part A document (p. 25) states: ‘Pollution Incident – EAP to include best practice; e.g. GPP5, CIRIA, etc. Any further mitigation required during construction to be controlled through EAP’.</i></p>
4	NRW Marine Ornithology – Nia Stephens [08/09/2020]	NRW Marine Ornithology – <i>Having read the preliminary HRA I can confirm that it won’t be necessary to undertake bird counts or any further survey work and that the existing survey data and information from the desk study will be sufficient for use in the HRA.</i>
4	NRW Protected Species - Annina Kortesiemi [20/08/2020]	<p>Locations of negative and positive survey findings have been clarified and put into context; i.e. camera trap records of otter located 300m east of the nearest proposed works. Mitigation has been secured within the EAP to avoid disturbance (lighting and / or noise) and entrapment within excavations to any commuting otter. Should baseline data be deemed out-of-date, further surveys will be undertaken to confirm likely presence / absence.</p> <p><i>We welcome the fact that biodiversity and nature conservation have been scoped in during both construction and operation.</i></p>

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
		<p>NRW Protected Species - <i>We note the Summary of baseline section of Table 3 – Baseline: challenges and opportunities within the ECOR states that species-specific surveys confirmed the likely absence of protected species (otter, badger, water vole, reptiles and great-crested newts) from the study area and refers to the Preliminary Ecological Appraisal for details. However, the same section indicates that “Subsequent camera traps located within the sludge lagoon near the Railway Wall site did record otter and water vole; however, no signs of presence or resting / breeding areas were identified near the proposed works areas.” We would wish to see further robust justification for any assumption of absence of otter and water vole from the area of works, especially where habitat suitable for the species is to be lost to or fragmented by the proposals, and where this loss or disconnect is proposed to go unmitigated.</i></p> <p><i>In addition, we would wish to see a robust mitigation scheme to avoid permanent habitat fragmentation by the new flood defence structures for all protected species potentially present and affected (otters, GCN, water voles), as well as avoiding light spill on commuting/ foraging habitat during construction, which could affect all the above species, plus bats. Diurnal and seasonal timing of all operations must be clearly stipulated, as well as the need for any European Protected Species licences required for the works to proceed legally. Following justification of any assumption of absence of protected species from the area of works, the recommendations as presented in the Ecological Appraisal, the subsequent addenda, and the Preliminary mitigation column of Table 4 - Environmental topics scoped-in /-out of Environmental Assessment within the ECOR document, would be likely to form a suitable basis for a mitigation scheme for the species likely to be affected.</i></p> <p><i>Finally, we note and support the recommendation of updated walkover survey, should the start of the works be significantly delayed from the timescale proposed, to ensure the baseline conditions of the site have not changed. Should that delay be significant, we advise that further targeted protected species survey may become necessary.</i></p>
4	NRW Geomorphology – Anne Lewis [28/07/2020]	<p>No action required.</p> <p>NRW Geomorphology - <i>The proposed scheme is below the tidal limit and I do not anticipate any significant upstream impacts. As a fluvial geomorphologist I therefore have no comments to offer on the scheme. The impacts on geomorphology should be address by the marine and tidal waters team.</i></p>
4	NRW Marine Fish and Fisheries – Alexander Scorey [25/08/2020]	<p>No piling will take place within 30m of the River Usk MHWS mark. The hydraulic piling method has been specified and secured within the EAP.</p> <p>NRW Marine Fish and Fisheries - <i>The use of non-vibratory methods sounds really promising if they can be secured. I’m happy that the >30m separation distance would mitigate for impacts on the diadromous species in the Usk from vibratory piling activities.</i></p>

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
		<p><i>Should vibratory piling be used within 30m of the river, then an impact pathway would remain for all diadromous fish species in the Usk that would need to be assessed in the HRA. My original comments below on the scope of the HRA would then apply. Whilst shads are most sensitive, they migrate at different times to salmon and lampreys so a seasonal application of the mitigation in March-June would not benefit key migratory life stages of the other species. Furthermore, the downstream post-spawning migration of adult twaite shad, and the downstream migration of juvenile shads happens later in the year (through to October/November).</i></p> <p><i>[31/07/2020] General comment to inform HRA: Within the HRA, it is advised that the process to identify impact pathways from the scheme to all the designated diadromous fish features of the River Usk SAC (sea lamprey, river lamprey, twaite shad, allis shad and Atlantic salmon) is documented and justified as these species migrate past the location of the scheme. It is advised that impact pathways of noise and vibration caused by piling and other construction activities, any artificial lighting, and the risk of pollution events or other water quality effects from site run-off are considered. These impact pathways, if present, could affect individuals as they are migrating through the estuary as either juveniles or adults. It is advised that the assessment discusses the timing of construction activities in relation to the timing of migration of the diadromous fish features. It is also advised that the assessment discusses the location of construction activities relative to the estuary, at high tide and low tide. If all activities are to be conducted at tidal states when the water level is >40m from the embankment, then it is advised that this is secured by the EAP. Finally, it is advised that the magnitude and duration of the impacts generated by the construction activities (including piling methods, piling sound source levels, pile numbers and piling duration) is considered if an impact pathway is present.</i></p>
4	NRW Marine Geomorphology and Physical Processes – Emmer Litt [02/09/2020]	<p>Confirmation that coastal squeeze was considered and screened out included within HRA. Further detail regarding construction methods has been included within the HRA. The hydraulic piling method has been specified and secured within the EAP to avoid the need for a temporary construction access track in the River Usk SAC. No reseeding is proposed in the SSSI. No enhancement measures are proposed within the SAC or below MHWS.</p> <p>NRW Marine Geomorphology and Physical Processes – <i>The project falls within 'NEW5' policy unit. No coastal squeeze impacts are identified for the Severn or Usk SACs and therefore a coastal squeeze impact assessment is not needed for this scheme.</i></p> <p>https://cyfoethnaturiolcymru.sharepoint.com/teams/evidence/coast/smpr2/Severn%20Estuary/PART%20B/SMP2%20PART%20B%20Policy%20Statements%20NEWPORT-USK%20only%20FINAL.pdf</p> <p><i>Initial Response to Draft ECOR [06/08/2020]:</i></p>

Relevant HRA section	Date(s) of correspondence*	How the comments from protected sites advisors have been taken into account
		<p><i>Key Issues</i></p> <p>1. No direct footprint losses have been calculated although it is not clear at present whether this will be a factor. If direct losses are identified, further discussion will be needed.</p> <p><i>Detailed comments</i></p> <p>2. We would recommend further detail is provided on the construction methodology, at present it is difficult to understand if further geomorphological or physical process assessment will be needed. There is little baseline characterisation on the River Usk/Severn to understand how this project may interact with the physical characteristics.</p> <p>3. Concern is raised around using an aggregate based solution as a temporary track, further information will be required. A stone track sounds large, industrious and potentially hard to ensure all is removed. The stone could become trampled into the saltmarsh and buried, depending on the size fraction, and at the very least cause depressions potentially in a linear feature. The removal method would need detailing as well. Bog mats are recommended alongside a slow driving speed.</p> <p>4. Further information is required about re-seeding of the SSSI as mentioned on page 24.</p> <p>5. Appendix B Enhancement Opportunities</p> <p>It is unclear what is meant by line 13 on geoengineering: Bioengineering techniques to promote further colonisation of erosional features / mudflats: reedbed creation, coir roll / pallet installation, etc. Need to confirm constructability, resilience (i.e. flood may wash structure away) and need versus SAC management. All the above mentioned measures will need further design and consideration.</p>
Protected Sites Officer and Protected Species Team	Various discussions and site visit, summarised into briefing note [2016]	HRA Briefing note [2016] – available on request.

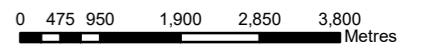


LEGEND

— Site Location

A3

ARUP



F1	2019-02-15	KJ	Preliminary	CP	PC	2019-02-21
Rev.	Date.	Drawn	Description.	Chkd.	Appd.	Date.



Project Name: Stephenson Street

Drawing Title: SITE LOCATION

Suitability: For Issue Suitability Code: S1

Originator: KJ Designer: CP Date: 2019-02-21

Internal Project Number: 246344 Scale: 1:90,000 Rev: F1

Drawing Number: 001

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- LEGEND**
- Phase 1 Works- Flood Defence Improvements
 - Phase 2 Works
 - 2km works buffer
 - 5km works buffer
 - Sites of Importance for Nature Conservation (SINC)
 - Sites of Special Scientific Interest (SSSI)
 - Special Protection Areas (SPA)
 - Special Areas of Conservation (SAC)
 - Ramsar

ARUP

PO	2018-07-24	EA	Preliminary	GM	PC	2018-07-24
Rev.	Date.	Drawn	Description.	Chkd.	Appd.	Date.

Cyfoeth Naturiol Cymru
Natural Resources Wales

Project Name: Stephenson Street Embankment

Drawing Title: **FIGURE 2**
STATUTORY AND NON-STATUTORY DESIGNATED SITES

Suitability: Preliminary Suitability Code: 2018-07-24

Originator: EA	Designer: GM	Date: 2018-07-24
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Internal Project Number: 245404	Scale: 1:41,990	Rev: P0
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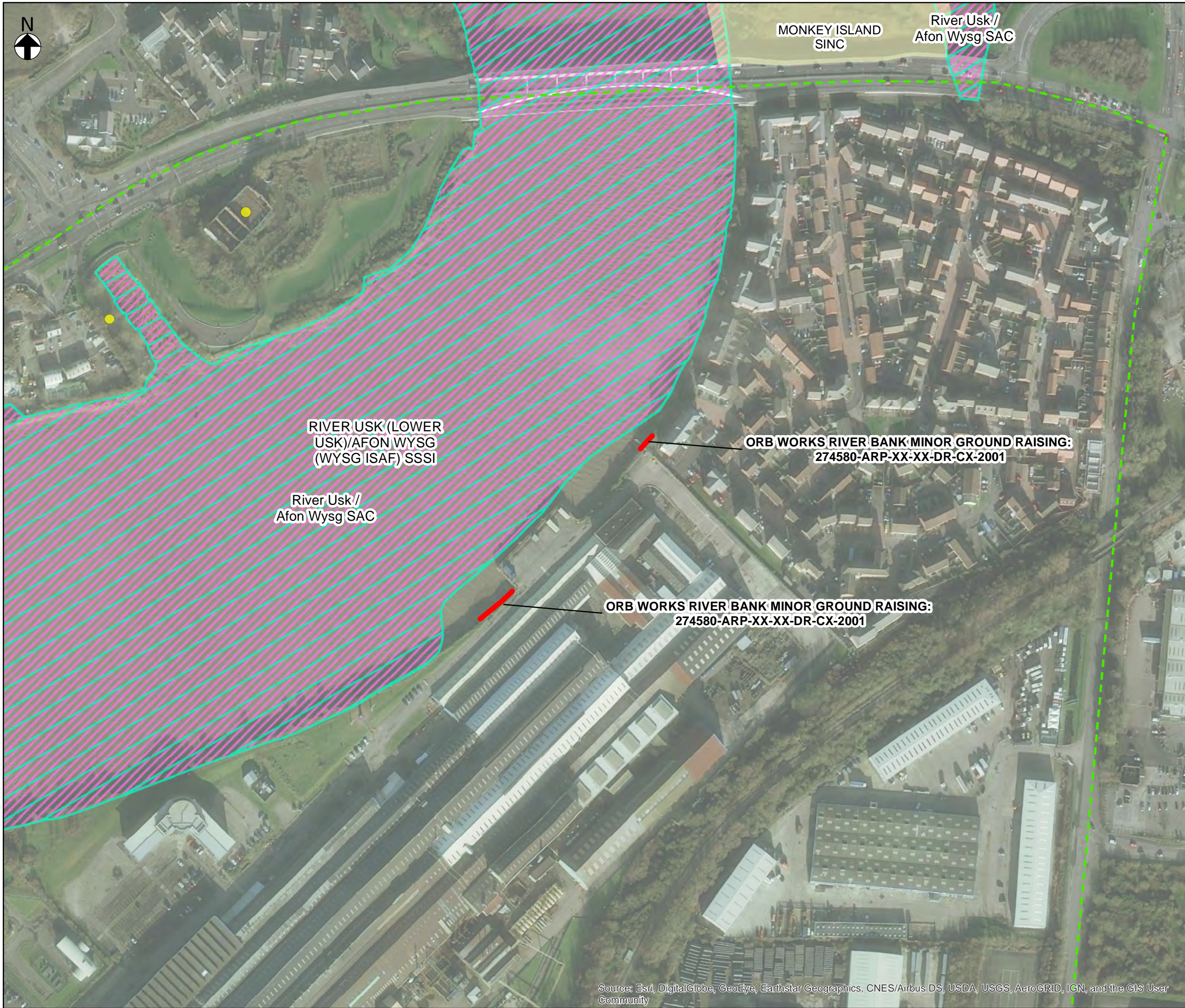
Drawing Number: 002

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, SIA, Airphoto, IGN, etc., GEBCO, Swire

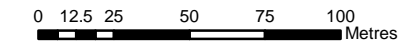


LEGEND

-  Proposed Works
-  Wales Coast Path
-  Site of Importance for Nature Conservation (SINC)
-  Site of Special Scientific Interest (SSSI)
-  Special Area of Conservation (SAC)
-  Listed Buildings



ARUP



F1	2021-02-16	IM	For Issue	GM	GM	2021-02-24
Rev.	Date.	Drawn	Description.	Chkd.	Appd.	Date.



Project Name: STEPHENSON STREET FLOOD DEFENCE SCHEME

Drawing Title: ENVIRONMENTAL CONSTRAINTS AND OPPORTUNITIES PLAN
APPENDIX A1 - ORB WORKS GROUND RAISING

Suitability: For Issue
Suitability Code: 2021-02-16

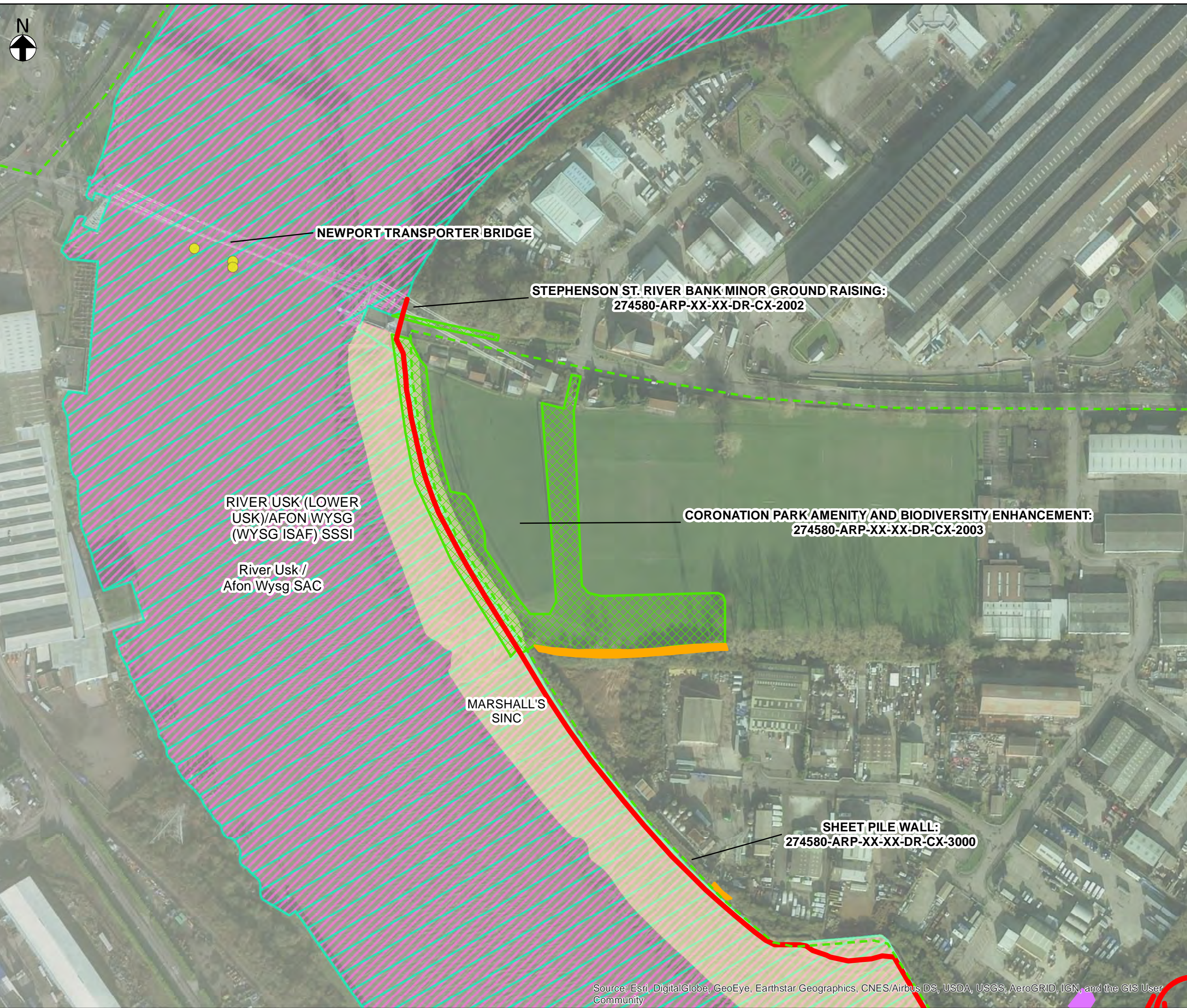
Originator	IM	Designer	GM	Date.	2021-02-16
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Internal Project Number	245404	Scale	1:2,500	Rev.	F1
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Drawing Number: 005

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

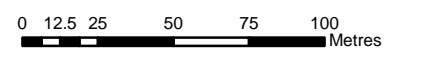
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LEGEND

- Proposed Works
- - - Wales Coast Path
- Japanese Knotweed (Treated)
- Japanese Knotweed
- Amenity and Biodiversity Enhancement
- Site of Importance for Nature Conservation (SINC)
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Listed Buildings

ARUP



F1	2021-02-16	IM	For Issue	GM	GM	2021-02-24
Rev.	Date.	Drawn	Description.	Chkd.	Appd.	Date.



Project Name: STEPHENSON STREET FLOOD DEFENCE SCHEME

Drawing Title: **ECOP APPENDIX A2 - STEPHENSON STREET BUND, MINOR GROUND RAISING, ENHANCEMENTS & SHEET PILE WALL**

Suitability: For Issue Suitability Code: 2021-02-16

Originator	IM	Designer	GM	Date.	2021-02-16
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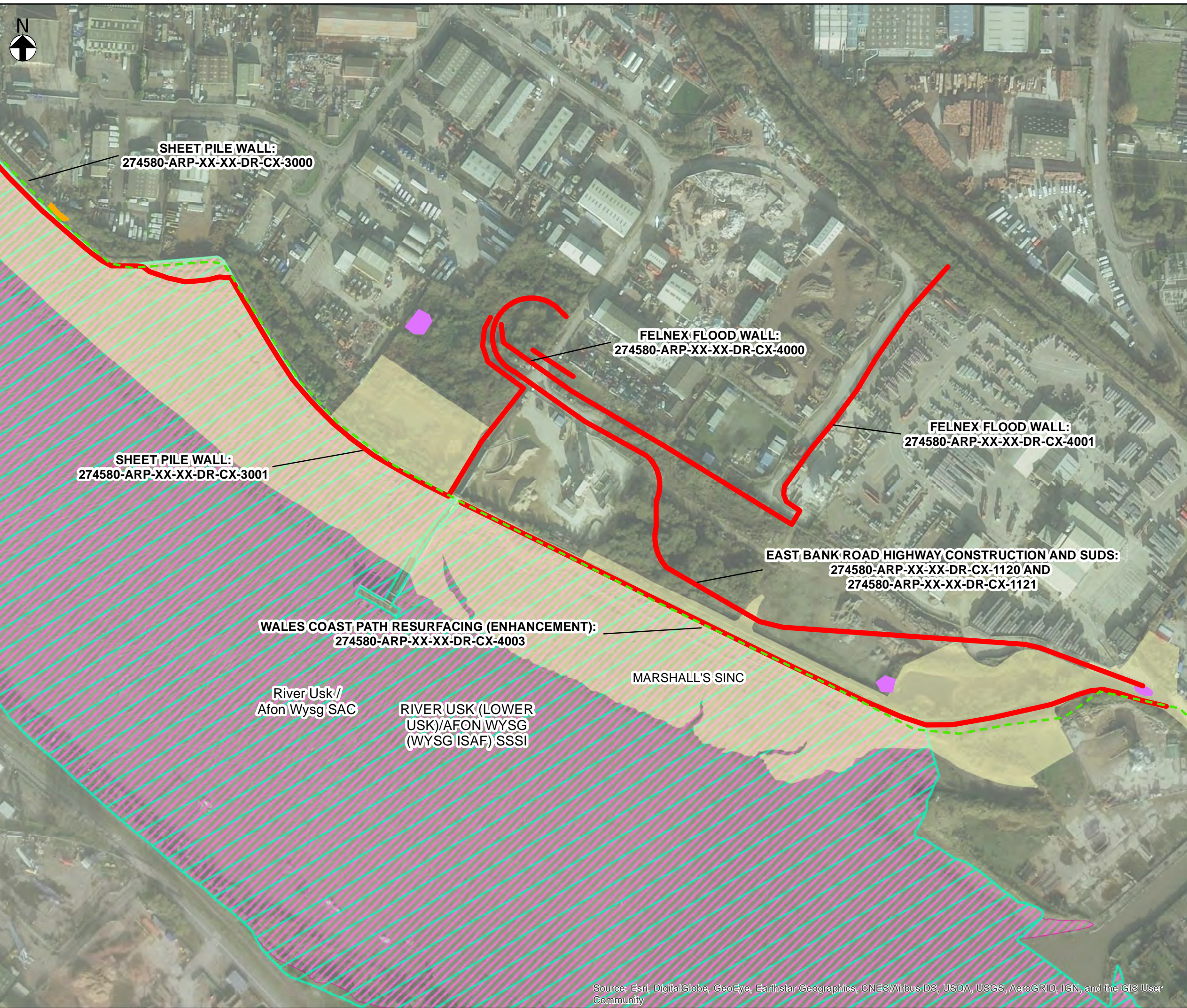
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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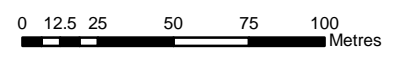
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LEGEND

- Proposed Works
- - - Wales Coast Path
- Japanese Knotweed (Treated)
- Japanese Knotweed
- Site of Importance for Nature Conservation (SINC)
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)

ARUP



F1	2021-02-16	IM	For Issue	GM	GM	2021-02-24
Rev.	Date.	Drawn	Description.	Chkd.	Appd.	Date.



Project Name: **STEPHENSON STREET FLOOD DEFENCE SCHEME**

Drawing Title: **ECOP APPENDIX A3 - SHEET PILE WALL, FELNEX FLOOD WALL & RAISED HIGHWAY**

Suitability: For Issue Suitability Code: 2021-02-16

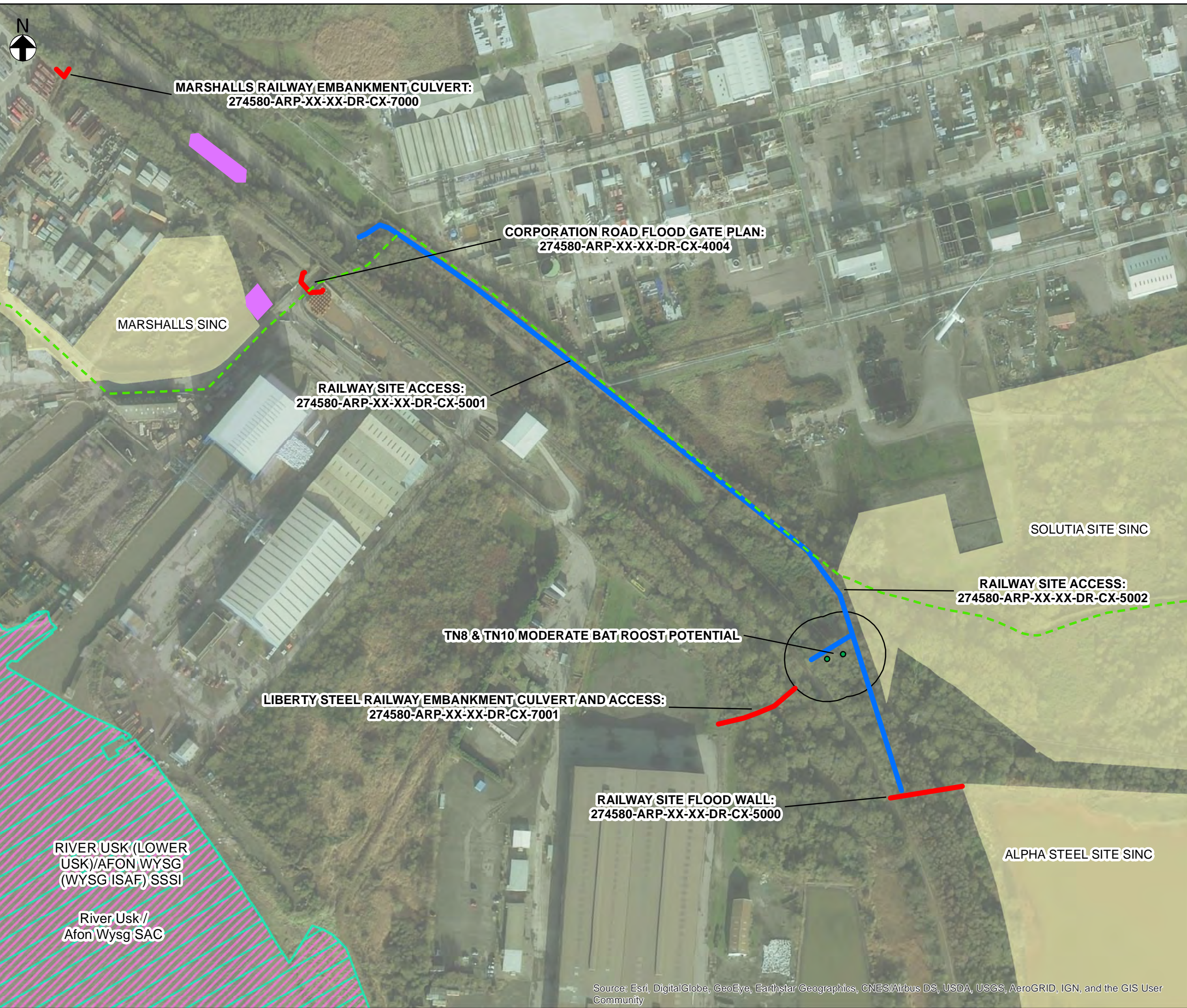
Originator	IM	Designer	GM	Date.	2021-02-16
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Internal Project Number	245404	Scale	1:2,500	Rev.	F1
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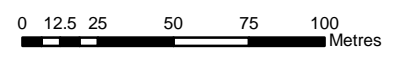
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LEGEND

- Proposed Works
- Wales Coast Path
- Access
- 30m Buffer
- Japanese Knotweed
- Site of Importance for Nature Conservation (SINC)
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Bat Roost Potential

ARUP



F1	2021-02-16	IM	For Issue	GM	GM	2021-02-24
Rev.	Date.	Drawn	Description.	Chkd.	Appd.	Date.



Project Name: STEPHENSON STREET FLOOD DEFENCE SCHEME

Drawing Title: ECOP - APPENDIX A4 - RAILWAY WALL & ACCESS, MARSHALLS & LIBERTY CULVERTS & CORPORATION RD FLOOD GATE

Suitability: For Issue
Suitability Code: 2021-02-16

Originator	IM	Designer	GM	Date.	2021-02-16
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Internal Project Number	245404	Scale	1:2,500	Rev.	F1
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Drawing Number: 008

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

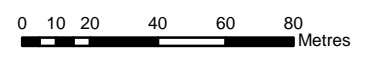
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LEGEND

- Proposed Works
- Access
- 30m Buffer
- Site of Importance for Nature Conservation (SINC)
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Bat Roost Potential

ARUP



F1	2021-02-16	IM	For Issue	GM	GM	2021-02-24
Rev.	Date.	Drawn	Description.	Chkd.	Appd.	Date.



Project Name: STEPHENSON STREET FLOOD DEFENCE SCHEME

Drawing Title: ENVIRONMENTAL CONSTRAINTS AND OPPORTUNITIES PLAN
APPENDIX A5 - NASH WALL & ACCESS

Suitability: For Issue Suitability Code: 2021-02-16

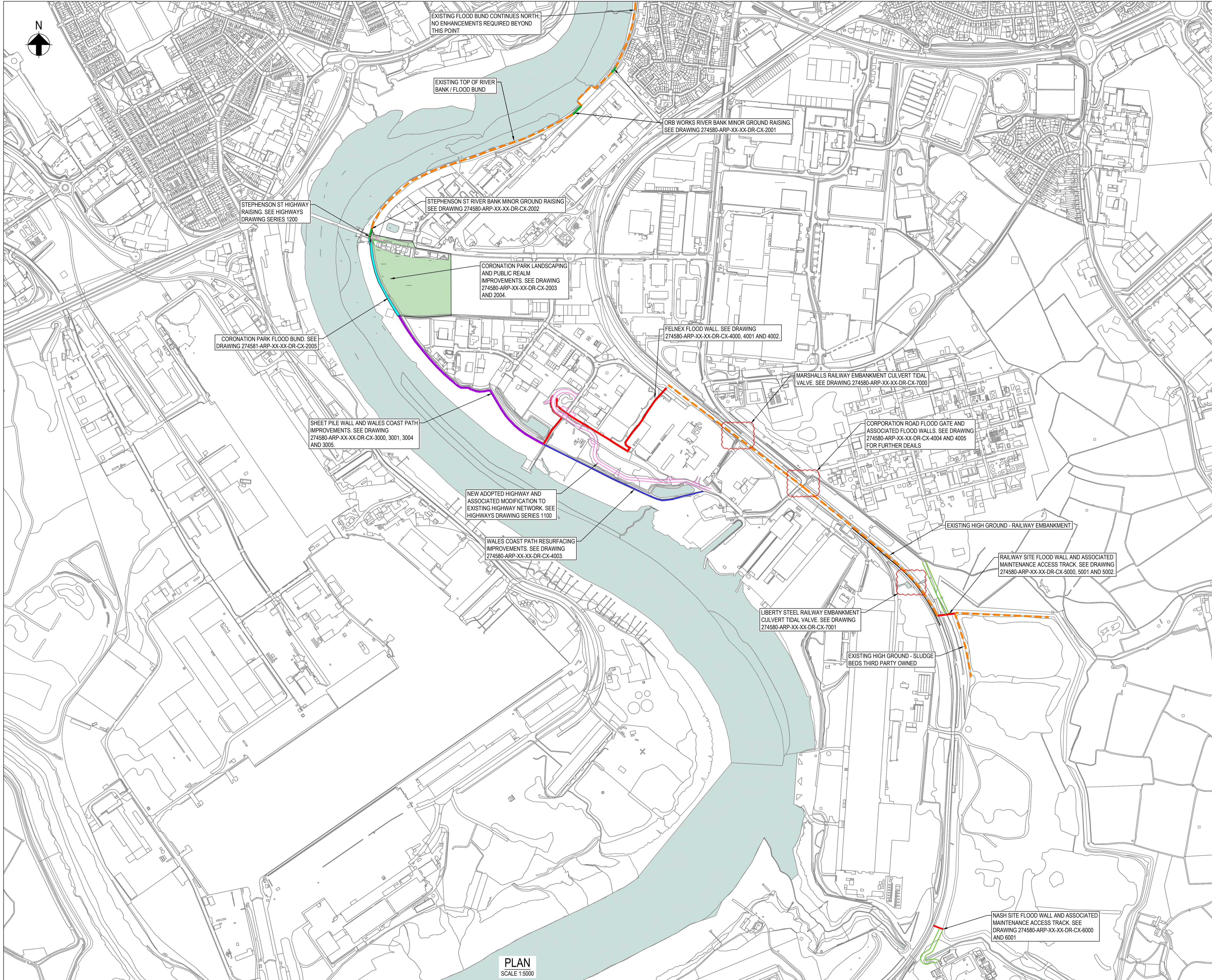
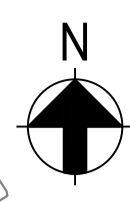
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Drawing Number: 009

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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EXISTING FLOOD BUND CONTINUES NORTH; NO ENHANCEMENTS REQUIRED BEYOND THIS POINT

EXISTING TOP OF RIVER BANK / FLOOD BUND

ORB WORKS RIVER BANK MINOR GROUND RAISING. SEE DRAWING 274580-ARP-XX-XX-DR-CX-2001

STEPHENSON ST HIGHWAY RAISING. SEE HIGHWAYS DRAWING SERIES 1200

STEPHENSON ST RIVER BANK MINOR GROUND RAISING. SEE DRAWING 274580-ARP-XX-XX-DR-CX-2002

CORONATION PARK LANDSCAPING AND PUBLIC REALM IMPROVEMENTS. SEE DRAWING 274580-ARP-XX-XX-DR-CX-2003 AND 2004.

CORONATION PARK FLOOD BUND. SEE DRAWING 274581-ARP-XX-XX-DR-CX-2005

FELNEX FLOOD WALL. SEE DRAWING 274580-ARP-XX-XX-DR-CX-4000, 4001 AND 4002

MARSHALLS RAILWAY EMBANKMENT CULVERT TIDAL VALVE. SEE DRAWING 274580-ARP-XX-XX-DR-CX-7000

SHEET PILE WALL AND WALES COAST PATH IMPROVEMENTS. SEE DRAWING 274580-ARP-XX-XX-DR-CX-3000, 3001, 3004 AND 3005.

CORPORATION ROAD FLOOD GATE AND ASSOCIATED FLOOD WALLS. SEE DRAWING 274580-ARP-XX-XX-DR-CX-4004 AND 4005 FOR FURTHER DETAILS

NEW ADOPTED HIGHWAY AND ASSOCIATED MODIFICATION TO EXISTING HIGHWAY NETWORK. SEE HIGHWAYS DRAWING SERIES 1100

WALES COAST PATH RESURFACING IMPROVEMENTS. SEE DRAWING 274580-ARP-XX-XX-DR-CX-4003

EXISTING HIGH GROUND - RAILWAY EMBANKMENT

RAILWAY SITE FLOOD WALL AND ASSOCIATED MAINTENANCE ACCESS TRACK. SEE DRAWING 274580-ARP-XX-XX-DR-CX-5000, 5001 AND 5002

LIBERTY STEEL RAILWAY EMBANKMENT CULVERT TIDAL VALVE. SEE DRAWING 274580-ARP-XX-XX-DR-CX-7001

EXISTING HIGH GROUND - SLUDGE BEDS THIRD PARTY OWNED










NASH SITE FLOOD WALL AND ASSOCIATED MAINTENANCE ACCESS TRACK. SEE DRAWING 274580-ARP-XX-XX-DR-CX-6000 AND 6001

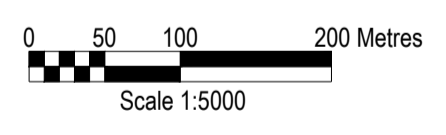
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GENERAL NOTES:


1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SPECIFICATIONS AND CONTRACT DOCUMENTS. NOTIFY THE PROJECT MANAGER OF ANY DISCREPANCIES.
2. ALL DIMENSIONS IN MILLIMETERS AND ALL LEVELS IN METERS ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.
3. DO NOT SCALE FROM DRAWING.

LEGEND:

-  EXISTING HIGH GROUND
-  GROUND RAISING
-  BUND
-  SHEET PILE WALL
-  REINFORCED CONCRETE WALL
-  WALES COASTAL PATH RESURFACING
-  MAINTENANCE ACCESS TRACKS
-  ADOPTED HIGHWAY
-  LANDSCAPING AND PUBLIC REALM ENHANCEMENTS



P01	DRAFT FOR COMMENT	SG	JL	RC	19.02.21
Rev.	Description	Drawn	Chkd	Appd.	Issue Date

 **ARUP**

Project Name:
STEPHENSON ST FLOOD DEFENCE SCHEME

Drawing Title:
SCHEME KEY PLAN

Subsidiary:	DRAFT FOR COMMENT	Subsidiary Code:	S2
Internal Project Number:	274580	Scale:	AS SHOWN
Drawing Number:	274580-ARP-XX-XX-DR-CX-2000	Rev.:	P01