



Client: Mr Philip Worthing

WFD SCOPING REPORT

Leckwith Quay Development





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CONTENTS

1	INTRODUCTION	1
2	BASELINE	4
3	WFD SCOPING	8
4	APPROACH TO WFD ASSESSMENT	17
5	CONCLUSION	18

Tables

Table 2-1 – WFD Status of the Cardiff Bay GB30947042 water body potentially impacted by the Proposed Scheme.	4
Table 3-1 – Potential risks of the Proposed Scheme on Hydromorphological quality elements.	9
Table 3-2 - Potential risks of the Proposed Scheme on Biological quality elements.	11
Table 3-3 - Potential risks of the Proposed Scheme on Physico-chemical quality elements.	13

Figures

Figure 1-1 - The Proposed Scheme study area.	3
Figure 1-2 - Aerial photograph of the proposed site of works and existing bridge crossings. Note the straight, homogenous character of the River Ely.	6

1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1. Natural Resources Wales require an assessment of the impact of any works/modifications to water bodies under the European Union's Water Framework Directive (WFD) (2000/60/EC). The WFD was transposed into law in England and Wales under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.
- 1.1.2. The primary aim of the Water Framework Directive (WFD) is to improve/maintain the Ecological Status/Potential of all water bodies and to prevent deterioration in status of the water bodies and their associated WFD quality elements. Ecological Status/Potential is determined by a suite of biological, physico-chemical and hydromorphological quality elements. This is achieved through establishing the baseline conditions, evaluating potential impacts of the Proposed Scheme and assessing compliance of the Proposed Scheme against WFD objectives.
- 1.1.3. The overarching objective of the WFD is for surface water bodies to attain overall 'Good Ecological Status (GES) or 'Good Ecological Potential' (GEP). GES refers to situations where the ecological characteristics show only a slight deviation from natural/near natural conditions. In such a situation, the biological, chemical, physico-chemical and hydromorphological conditions are associated with limited or no human pressure. Artificial and heavily modified water bodies have a target to achieve GEP, which recognises their important uses, whilst ensuring the quality elements are protected as far as possible.
- 1.1.4. The WFD sets a number of objectives including:
- Prevent deterioration in status for water bodies;
 - Aim to achieve good biological and good surface water chemical status in water bodies; those water bodies that did not achieve GES by 2015, alternative objectives have been set by the Environment Agency where water bodies have been allocated a target date for compliance of either 2021 or 2027. The target date set for each water body takes into consideration measures that are practicably achievable for achieving GES or GEP;
 - For water bodies that are designated as artificial or heavily modified (A/HMWB), the objective is to achieve GEP. Those A/HMWB that did not achieve GEP by 2015 need to achieve compliance by 2021 or 2027;
 - Where it is considered either technically infeasible or disproportionately expensive to achieve GES or GEP by 2021 or 2027, alternative objectives have been set for the water body, such as a target to achieve Moderate status;
 - Comply with objectives and standards for protected areas where relevant; and,
 - Reduce pollution from priority substances and cease discharges, emissions and losses of priority hazardous substances.
- 1.1.5. The introduction of a new modification, change in activity or change to structure on a water body needs to be considered in relation to whether it could cause deterioration in the Ecological Status or Potential of any water body. New modifications or changes to activities or structures may also result in any proposed mitigation measures or actions to achieve GES/GEP being ineffective. This could result in the water body failing to meet GES/GEP. Where a scheme is considered to cause deterioration, or where it may contribute to the failure of the water body to meet GES/GEP, then an Article 4.7 assessment would be
-



required which makes provision for deterioration of status provided that certain stringent conditions are met.

- 1.1.6. The purpose of this WFD Scoping Report is to identify risks of the Proposed Scheme's activities upon the Cardiff Bay (GB30947042) water body and its quality elements. A methodology will then be presented outlining the intended approach to undertaking a detailed WFD compliance assessment for the Proposed Scheme.

1.2 THE PROPOSED SCHEME

- 1.2.1. Leckwith Quay is a 7.7ha site located between the A4232, Leckwith Road and the River Ely on the outskirts of Cardiff in the Vale of Glamorgan. The site is under consideration for a mixed-use development consisting of commercial premises; residential dwellings; public open space and amenities; and, a new highway link via a bridge across the River Ely. The existing bridge would be demolished, along with the demolition of existing business units. The development is currently split into two parcels on either side of the proposed new bridge crossing referred to as the northern (1.3ha) and the southern plateaus (6.4ha) (see Figure 1-1 and Appendix A for design details). The site extends approximately 890m along the Ely riverbank in the Vale of Glamorgan (with the opposite bank within Cardiff City Authority) and some 100m inland. There are currently two river crossings at this location:
- 1.2.2. Leckwith Road (B4267) road bridge has a single span concrete arch conveying the channel itself with a springing level of 4.8m AOD and soffit of 9.26m AOD and includes a series of nine additional spans over the western bank as the road climbs to the higher ground.
- 1.2.3. Historic Road bridge (Grade II*) is a single track, triple arch, rough masonry viaduct with pedestrian refuges between each arch. The bridge sits lower than its more modern companion with each soffit approximately 7m AOD and the parapet generally below 9.0m AOD.
- 1.2.4. The study area is some 3km upstream of the River Ely's outfall into Cardiff Bay behind the Cardiff Bay Barrage and some 700m upstream of the Nant Cydfin's confluence with the Afon Ely, which itself is just upstream of the A432 Road bridge. Upstream there is at least one minor outfall, which once drained Leckwith Moors on the east bank and an unnamed watercourse draining the Leckwith Woods and Plymouth Woods as well as the remnants of what was the Caerau Brook on the western bank. The site is also downstream of another A432 Road bridge some 490m upstream as well as an Ely Trail Footbridge approximately 690m upstream.



- **BLOCK A**
50no. 2B 4P apartments.
Dwelling size average: 70m²
- **BLOCK B**
19no. 3B 5P houses (HOUSE TYPE B).
Dwelling size average: 116m²
18no. 2B 4P duplex (Duplex Dwelling Type 7)
Dwelling size average: 73m²
- **BLOCK C**
31no. 2B 4P apartments.
Dwelling size average: 70m²
- **BLOCK D**
26no. 2B 4P duplex (Duplex Dwelling Types 1 + 2)
Dwelling size average: 94m²
- **BLOCK E**
18no. 3B 5P duplex (Duplex Dwelling Types 3 + 4)
Dwelling size average: 113m²
- **BLOCK F**
14no. 2B 4P duplex (Duplex Dwelling Type 5)
Dwelling size average: 81m²
14no. 3B 5P duplex (Duplex Dwelling Type 6)
Dwelling size average: 118m²
- **HOUSE TYPE A**
7no. 3B 5P houses
Dwelling size average: 125m²
- **HOUSE TYPE C**
8no. 3B 5P houses
Dwelling size average: 96m²
- **HOUSE TYPE D**
7no. 4B 7P houses
Dwelling size average: 165m²
- **HOUSE TYPE E**
14no. 3B 5P houses
Dwelling size average: 178m²

DWELLING MIX:

Apartments	95
Duplex Dwelling	78
Houses	55
TOTAL	228

A 10.08.2020 OE
LEVELS UPDATED TO
NORTHERN PLATEAU

REVISIONS:
PAC SUBMISSION

1844/S.1
LECKWITH QUAY

PROPOSED
MASTERPLAN

Figure 1-1 - The Proposed Scheme study area.

2 BASELINE

2.1 BASELINE STATUS

2.1.1. The current status of the potentially impacted WFD water body is provided in Table 1-1. The potentially impacted waterbody has been identified as the Cardiff Bay (GB30947042) waterbody following consultation with Natural Resources Wales.

Table 2-1 – WFD Status of the Cardiff Bay GB30947042 water body potentially impacted by the Proposed Scheme.

Water Body ID	GB30947042
Water Body Name	Cardiff Bay
Water Body Type	Lake
Water Body Area	2.10 Km ²
Hydromorphological Designation	heavily modified
Overall Ecological Status/Potential	Moderate
Current Overall Status/Potential	Moderate
Status Objective (overall)	Good by 2027
Justification for not Achieving Good Status by 2015 (taken from 2009 Severn RBMP)	Diffuse agricultural pollution; point source water industry sewage works; physical modification barriers to fish migration; physical modification land drainage; physical modification flood protection; physical modification water storage and supply; diffuse source mixed urban run-off
Protected Area Designation	Cardiff Bay UKWACA2021
Overall Biological Quality Element Status Objective	Good by 2021
Fish	N/A
Invertebrates	N/A
Macrophytes	Good
Overall Physico-Chemical Quality Element Status Objective	Good by 2017

Water Body ID	GB30947042
Overall Chemical Status	Good
Overall Chemical Quality Element Status Objective	Good by 2027

2.2 STUDY AREA

CATCHMENT CHARACTERISTICS

- 2.2.1. The River Ely rises in Tonyrefail and formally joined the Bristol channel at Cardiff, prior to construction of the Cardiff Bay Barrage in 1999. The river flows past the settlements of Tonyrefail, Llantrisant, Pontyclun, Peterston Super-Ely, Ely, Cardiff and Penarth, and has three major tributaries which flow into the river, these are Nant Mychydd; Afon Clun and Nant Dowlais.
- 2.2.2. The River Ely at Lechwith has been severely altered due to industrialisation and urbanisation with the introduction of weirs, straightening the channel, flood defences and watercourse realignments. The result is a channel that exhibits very little hydromorphological and, by extension, ecological variation: the river is essentially a canalized channel with a notable homogenous character in terms of flow structure, sinuosity and habitat structure (**Figure 2-1**). In addition, the Cardiff Bay Barrage has had a significant effect on the natural functioning of the lower River Ely system, and, as such, the Cardiff Bay area, including the region adjacent to the proposed site of works, is classed a Lake water body under the WFD.



Figure 2-1 - Aerial photograph of the proposed site of works and existing bridge crossings. Note the straight, homogenous character of the River Ely.

CATCHMENT GEOLOGY AND SOILS

- 2.2.3. The catchment consists mainly of Coal Measures with some Millstone Grit in northern area; mixture of Trias, Lias, limestone and Old Red Sandstone to the south. Extensive superficial deposits, Boulder Clay in the north and sands and gravels in south. Soils have permeable substrate.
- 2.2.4. At Leckwith, the superficial geological deposits consist of Tidal Flat Deposits - Clay, Silt and Sand, toping bedrock consisting of the Mercia Mudstone Group. The soil textures are generally Clayey Loam to Silty Loam with high calcium carbonate content in the west moving towards a sandier texture and calcium carbonate poor content into Leckwith.

CATCHMENT HYDROLOGY

- 2.2.5. The Lake Ely catchment has an annual average rainfall of 1400mm/yr and an average 410,000 m³ per day with some abstraction occurring for industrial use. As of 2017, Natural Resources Wales allowed abstraction to occur on average 347 days/year.



HISTORICAL CHANNEL CHANGE

- 2.2.6. The River Ely has been heavily modified in the region of Leckwith. Downstream of Cowbridge Row West, the River Ely channel has been straightened and diverted to make room for development. The Leckwith Moors at Grangetown have been drained and an industrial estate was built. The Lake Ely was diverted to make room for the A4232 Grangetown Link. Downstream of Leckwith, the channel was straightened and at the mouth of the river, the Penarth Flats were permanently submerged with the creation of Cardiff Bay Barrage.

3 WFD SCOPING

3.1 INTRODUCTION

- 3.1.1. This section highlights potential risks to WFD hydromorphological, biological and physico-chemical quality element receptors as a result of the Proposed Scheme.

3.2 HYDROMORPHOLOGY

- 3.2.1. The hydromorphological quality elements that would potentially be impacted by the Proposed Scheme are presented in Table 3-1. Despite reference to the 'River Ely' the waterbody is hereafter generally treated as a lake¹.

¹ The waterbody is a river but is now classed as lake due to installation of the Cardiff Bay Barrage, therefore the Lake waterbody WFD quality elements are assessed based on instruction from NRW.

Table 3-1 – Potential risks of the Proposed Scheme on Hydromorphological quality elements.

Scheme Component	Potential Specific Operational Risks to Hydromorphology Quality Elements	Requires Impact assessment?
Bridge Crossing	<p>Quantity and Dynamics of Flow</p> <p>Bridge piers have the potential to adversely influence flow dynamics within open channels. Similarly, bridge abutments can impart a constriction effect on flow which can lead to additional hydromorphic impacts (see below). Even full-span bridges with piers placed on the adjacent floodplain can impact upon the quantity and dynamics of flow. The ponding effect of the Cardiff Bay Barrage may, however, regulate this process.</p> <p>Connection to Ground Water Bodies</p> <p>There is minimal risk to the connection to ground water bodies if the lake bed remains natural. However, impacts to ground water interactions can arise when artificial lake beds are constructed for the purposes of scour protection.</p> <p>Residence Time</p> <p>The proposed bridge crossing is not expected to impact upon residence time and is therefore scoped out for further assessment.</p> <p>Lake Depth Variation</p> <p>As previously described, the constriction effects potentially exerted by bridges can lead to bed and bank scour where cross-sectional geometry of the channel adjusts in response to loss in cross-sectional area. However, the ponding effect of Cardiff Bay Barrage would limit this.</p> <p>Quantity, Structure and Substrate of the Lake Bed</p> <p>There is minimal risk to the structure and substrate of the lake bed if it remains natural. However, impacts to the channel bed can arise when artificial lake beds are constructed for the purposes of scour protection. Moreover, the constriction effect of bridges may alter the composition of bedform local to a bridge structure, particularly if piers are placed in the channel.</p>	<p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p>

Scheme Component	Potential Specific Operational Risks to Hydromorphology Quality Elements	Requires Impact assessment?
	<p>Structure of the Lake Shore</p> <p>Bridge crossings may have significant impacts on the structure of their local riparian zone. Shading causes riparian vegetation to diminish which leaves lake banks bare and susceptible to erosion.</p>	Yes
Channel-side development	<p>Quantity and Dynamics of Flow</p> <p>The majority of Proposed Scheme sits immediately adjacent to the River Ely on the right bank; channel-floodplain interactions would remain essentially absent up to and exceeding a 100-year (plus allowance for climate change) event owing to the channel's grossly modified form. Thus, whilst the Proposed Scheme's channel-side development component would not degrade the flow dynamics beyond its current state, there are no measures in place to provide enhancements that would contribute towards GEP.</p> <p>Connection to Ground Water Bodies</p> <p>The existing floodplains of the study reach are heavily urbanised with largely impermeable surfaces. Therefore, connection to groundwater is currently extremely limited. The Proposed Scheme aims to re-develop the area of right bank that is currently defined by a concrete surface. Whilst it is unlikely that the Proposed Scheme would increase the area of impermeable surface, there is a risk that mixing of harmful compounds – stored within the soils beneath the site as legacy pollutants – could be made to interact with groundwater or surface water. Therefore, mitigation measures that maintain the current status quo should be explored to ensure harmful pollutants remain undisturbed.</p> <p>Residence Time</p> <p>The proposed bridge crossing is not expected to impact upon residence time and is therefore scoped out for further assessment.</p> <p>Lake Depth Variation</p> <p>Similarly, the channel-side development component of the Proposed Scheme would likely not influence the width and depth variation within the impacted reach. However, the channel has been modified significantly in response to rapid urbanisation, resulting in a channel morphology that is wholly unnatural. The width: depth ratio of the channel through</p>	<p>No</p> <p>Yes</p> <p>No</p> <p>No</p>

Scheme Component	Potential Specific Operational Risks to Hydromorphology Quality Elements	Requires Impact assessment?
	<p>the impacted reach is likely to be over-deep and probably too narrow as a consequence of its constrained, straightened form. However, the river has been further modified and today reflects the characteristics of a lake.</p> <p>Quantity, Structure and Substrate of the Lake Bed</p> <p>The Proposed Scheme could have an impacted upon fine sediment release to the local system. This would invariably have an adverse impact upon the structure and substrate of the bed.</p> <p>Structure of the Lake Shore</p> <p>The Proposed Scheme would result in the riparian zone being developed with infrastructure (a proposed cycle path). There is reasonable potential to incorporate riparian enhancements to the already degraded riparian environment adjacent to the proposed site of works.</p>	<p>Yes</p> <p>Yes</p>

3.3 BIOLOGY

3.3.1. The biological quality elements that would potentially be impacted by the Proposed Scheme are presented in Table 3-2.

Table 3-2 - Potential risks of the Proposed Scheme on Biological quality elements.

Scheme Component	Potential Specific Risks to Biological Quality Elements (Habitats)	Requires Impact assessment?
<p>Bridge Crossing</p>	<p>Fish</p> <p>Bridge piers and abutments have the potential to impact on flow dynamics, substrate and lake bed, the proposed development may therefore impact fish movement and behaviour.</p> <p>Benthic Invertebrates</p>	<p>Yes</p> <p>Yes</p>

Scheme Component	Potential Specific Risks to Biological Quality Elements (Habitats)	Requires Impact assessment?
	<p>Bridge piers and abutments have the potential to impact on flow dynamics, substrate and lake bed, the proposed development may therefore lead to localised change in the nature of the benthic invertebrate habitat brought about by the bridge structure, this may deliver both positive and negative effects on benthic invertebrates.</p> <p>Aquatic Macrophytes</p> <p>Bridge crossings may have significant impact upon the structure of the local riparian zone. The effect of shading can cause the species diversity of the macrophyte community to diminish and lead to a loss of habitat.</p> <p>Phytoplankton</p> <p>The shadowing effect from a bridge structure will cause a minor, temporary limitation in phytoplankton growth as water passes beneath the structure, but this is not considered significant.</p>	<p>Yes</p> <p>No</p>
<p>Channel-side development</p>	<p>Fish</p> <p>Any physical change to the nature of the lake frontage has the potential to affect the fish community both positively and negatively. Whilst unlikely to represent a barrier to fish movement, the proposed development of the lake bank may lead to change in fish behaviour within this section of the lake corridor.</p> <p>Benthic Invertebrates</p> <p>There may be minor and localised changes to the nature of the benthic invertebrate habitat brought about by the Proposed Development, this could deliver both positive and negative effects on benthic invertebrates. Factors such as shading or localised changes in scour, may cause a negative effect on more sedentary species; however, the potential increase in the local diversity of habitat (resulting from the exposure of harder substrates for instance), is likely to increase local benthic invertebrate diversity.</p> <p>Aquatic Macrophytes</p> <p>The channel-side development may lead to loss of riparian habitat or changes in the species diversity present, any over shadowing caused by the development will limit plant growth beneath.</p>	<p>Yes</p> <p>No</p> <p>Yes</p>

Scheme Component	Potential Specific Risks to Biological Quality Elements (Habitats)	Requires Impact assessment?
	<p>Phytoplankton</p> <p>The shadowing effect from any channel-side development may cause a minor, temporary limitation in phytoplankton growth as water passes adjacent to the development, but this is not considered significant.</p>	No

3.4 PHYSICO-CHEMICAL

3.4.1. The physico-chemical quality elements that would potentially be impacted by the Proposed Scheme are presented in Table 2-3.

Table 3-3 - Potential risks of the Proposed Scheme on Physico-chemical quality elements.

Scheme Component	Potential Specific Risks to Biological Quality Elements (Habitats)	Requires Impact assessment?
Bridge Crossing	<p>Transparency</p> <p>The bridge cross would not influence water transparency and is therefore scoped out of further assessment.</p>	No
	<p>Thermal Conditions</p> <p>Shading from the proposed bridge crossing could reduce water temperature locally underneath the bridge deck as water passes beneath the structure. This would likely be exacerbated by the slow-moving water created by the ponding effect of the Cardiff Bay Barrage.</p>	No
	<p>Oxygenation conditions</p> <p>Increased fine sediment and road runoff pollution could adversely impact upon the oxygenation conditions local to the proposed site of works. In addition, shading from the proposed bridge would likely limit plant growth, which could have knock-on effects and influence diurnal variation in oxygen levels.</p>	Yes

Scheme Component	Potential Specific Risks to Biological Quality Elements (Habitats)	Requires Impact assessment?
	<p>Salinity Increased input of road silts (including salt) could increase salinity locally.</p> <p>Acidification Acid deposition has been shown to influence aquatic biota and lead to a reduced species diversity, the potential risk from acidification resulting from the proposed Development is not considered significant.</p> <p>Nutrient Conditions Increased fine sediment input from the road may adversely impact upon the nutrient conditions locally.</p> <p>Specific Pollutants Increased road washings could provide a source of heavy metals and other specific pollutants leading to the deterioration of water quality.</p>	<p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p>
<p>Channel-side development</p>	<p>Transparency The channel-side development would not influence water transparency and is therefore scoped out of further assessment</p> <p>Thermal Conditions Not anticipated to be affected by the Proposed Scheme's channel-side development.</p> <p>Oxygenation conditions Not anticipated to be affected by the Proposed Scheme's channel-side development.</p> <p>Salinity Increased input of silts (including salt) could increase salinity locally; however, robust SuDS features would be incorporated into the development's design.</p>	<p>No</p> <p>No</p> <p>No</p> <p>No</p>

Scheme Component	Potential Specific Risks to Biological Quality Elements (Habitats)	Requires Impact assessment?
	<p>Acidification Acid deposition has been shown to influence aquatic biota and lead to a reduced species diversity, the potential risk from acidification resulting from the proposed Development is not considered significant.</p> <p>Nutrient Conditions Increased fine sediment input from the development may adversely impact upon the nutrient conditions locally.</p> <p>Specific Pollutants Increased surface water washings from areas of hardstanding, including parking areas and roads could provide a source of heavy metals and other specific pollutants which may lead to a deterioration of water quality.</p>	<p>No</p> <p>Yes</p> <p>Yes</p>

3.5 INVASIVE NON-NATIVE SPECIES (INNS)

- 3.5.1. A feasibility study conducted in 2016 concluded that Japanese knotweed and Himalayan balsam were both noted on site. It is recommended that a further confirmatory survey is conducted to establish the extent of these species, in addition to the presence of other INNS that were not present in 2016 yet may be present today. We recommend a management plan be produced for treatment for both these invasive species. We also advise that the applicant considers preparing a silt management plan, demonstrating how the site will manage construction activities that generate contaminated water (oil, silts etc) when, for example: land stripping, dewatering, digging foundations, moving/stockpiling soil, wheel washings etc.

4 APPROACH TO WFD ASSESSMENT

4.1 METHODOLOGY

- 4.1.1. This section outlines the proposed methodology for a detailed WFD assessment for the Proposed Scheme. The detailed WFD assessment would take forward those WFD receptors identified within this report that are sensitive to impacts and need further consideration for WFD compliance.
- 4.1.2. The WFD assessment process comprises of key elements to inform a full, detailed risk assessment. In the first instance a desk study would be undertaken to gather baseline information relating to the water environment local to the proposed site of works. Following this, walkover surveys by a geomorphologist and aquatic ecologist would be carried out to further inform the both the assessment of baseline conditions and potential impact; an aquatic ecology survey and hydromorphology survey would be conducted concurrently. The baseline data gathered during these exercises would inform appropriate mitigation to neutralise potential impacts of the Proposed Scheme. In addition, opportunities to enhance the watercourse to contribute towards achieving WFD objectives would be identified, as requested in the Natural Resources Wales scoping response dated July 2016. Due to constraints, opportunities for enhancements are likely to be focused of riparian buffer zone improvements.
- 4.1.3. The report would follow the standard five-step process set out in WFD guidance. The sequence of the WFD compliance assessment is summarised below:
- **Step 1:** Identify potential generic operational impacts of the proposed Scheme on hydromorphological quality elements;
 - **Step 2:** Site specific assessment of the proposed Scheme against biological, physico-chemical and hydromorphological quality elements;
 - **Step 3:** Review actions to deliver WFD objectives;
 - **Step 4:** Assessment of proposed options against WFD status objectives; and,
 - **Step 5:** Assessment of the proposed Scheme against other EU legislation.

4.2 CONSTRUCTION IMPACTS

- 4.2.1. The WFD assessment does not require assessment of potential construction impacts on a water body. This is because the impacts are temporary and do not permanently affect the water body. However, due to the potential duration of the construction period and the potential impacts, an assessment of construction impacts would be undertaken for a detailed WFD assessment along with mitigation to be included within the Construction Environmental Management Plan.

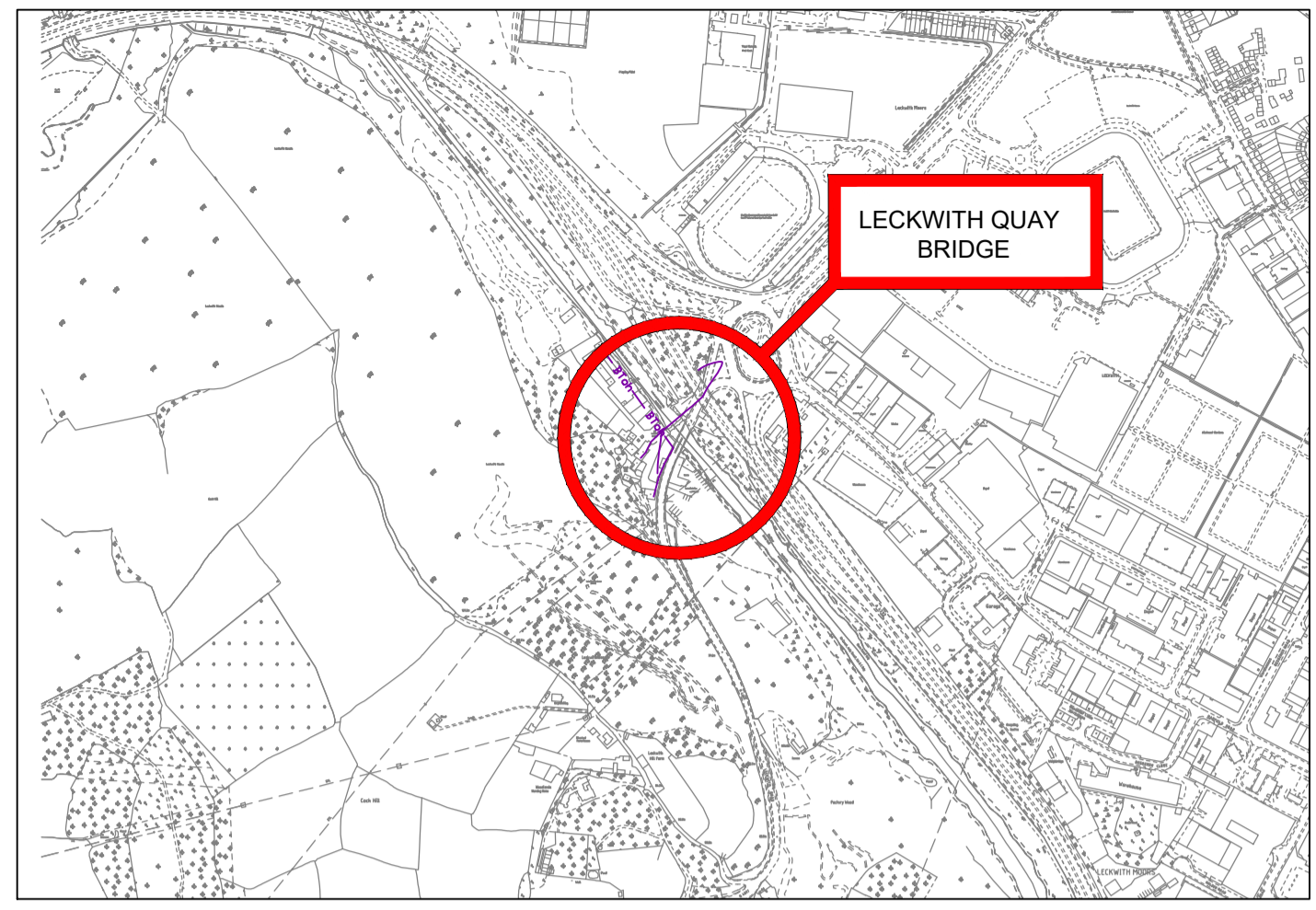
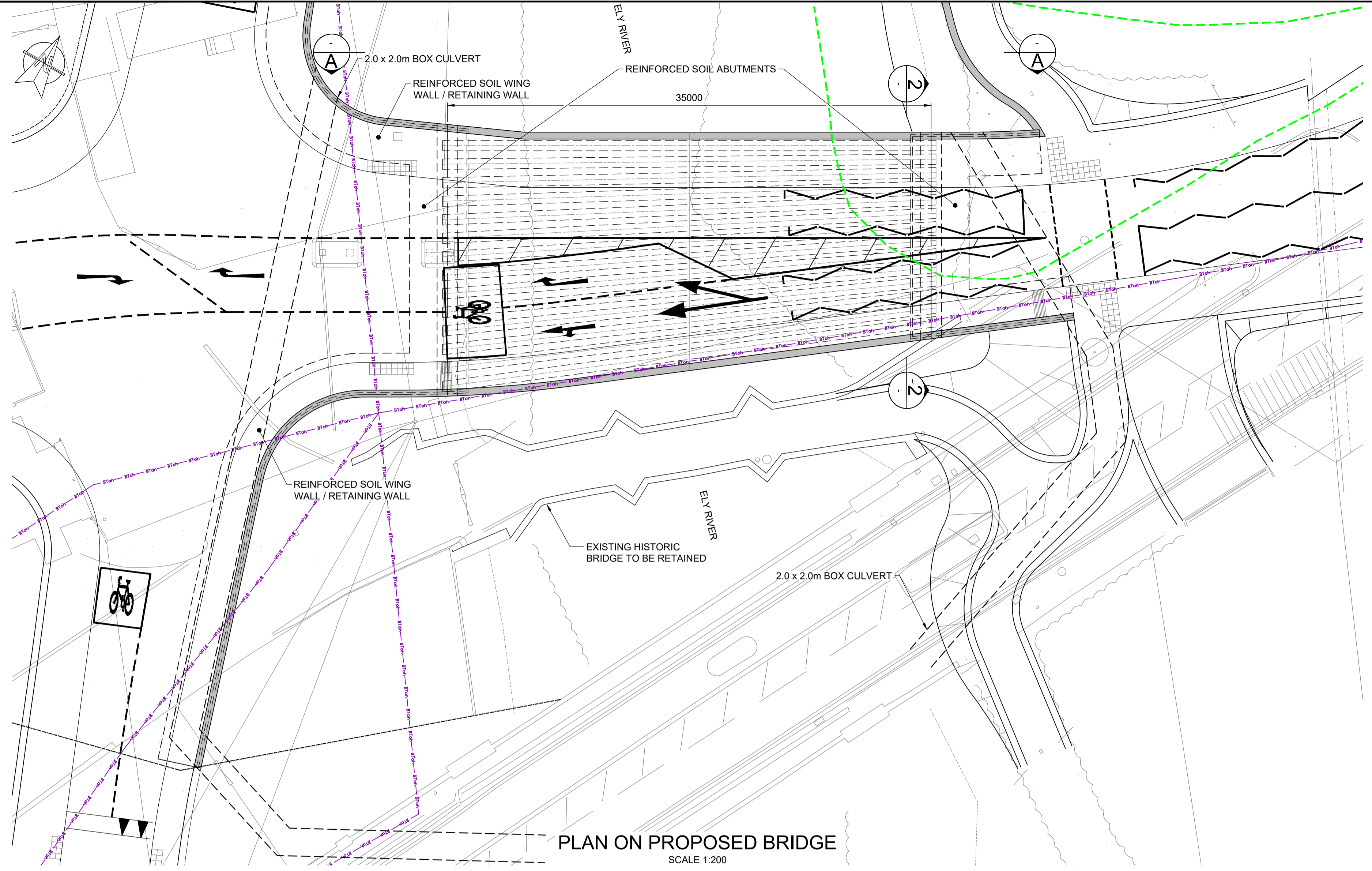
5 CONCLUSION

- 5.1.1. This WFD scoping exercise has demonstrated the Proposed Scheme could potentially have an impact upon a number of WFD Quality Element receptors on the adjacent Cardiff Bay waterbody and its riparian zone environment. Therefore, a full WFD assessment, to assess the impacts of the Scheme on the aspects that remain scoped in only, is recommended prior to construction to firstly assess the risks imposed by the Proposed Scheme upon WFD quality elements and status; secondly to identify mitigation options that would neutralise the impacts of the Proposed Scheme, thus preventing any deterioration in water body status; and thirdly, where practicable, identify enhancement opportunities to incorporate into the scheme design that would ultimately contribute towards achieving Good Ecological Potential.

Appendix A

DESIGN DRAWINGS





DO NOT SCALE

NOTES:

- DO NOT SCALE FROM THIS DRAWING - USE ONLY VALUES OF STATED DIMENSIONS.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
- ALL EXISTING STATUTORY INFORMATION SHOWN HAS BEEN PROVIDED BY THE RELEVANT STATUTORY AUTHORITIES. THE CONTRACTOR SHALL CONFIRM THE LOCATIONS AND OWNERSHIP OF THE SERVICES PRIOR TO ANY WORKS BEING CARRIED OUT. ANY DIVERSIONS REQUIRED ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITY PRIOR TO CONSTRUCTION.

KEY

BT OPENREACH

WESTERN POWER HV (33kV)

Health and Safety Symbols Legend
All Risks are Recorded in the Significant Residual Design H&S Risk Schedule
Document Number: 70053561-***

1. INDICATES A RESIDUAL RISK AS A WARNING.

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

Construction Risks - STR001 - Lifting of pre-cast beams.
STR002 - Landing of pre-cast beams onto capping beam.
STR003 - Superstructure construction.
STR004 - Proximity of existing Statutory Undertakers apparatus.
STR005 - Deck Construction
STR006 - Wingwall construction.
STR007 - Fixing reinforcement.
STR008 - Fixing reinforcement (piles).
Maintenance Risks - No significant maintenance risks identified.
Demolition/Adaptation Risks - No significant demolition risks identified.

PO2	27/08/2020	BJ	SPAN INCREASED	SH	SS
PO1	21/10/2019	BJ	FIRST ISSUE	SH	SS
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: **S0 - WORK IN PROGRESS**

1 Capital Quarter, Tyndall St, Cardiff, CF10 4BZ, UK
T+ 44 (0) 292 076 9200
wsp.com

CLIENT:

ARCHITECT:

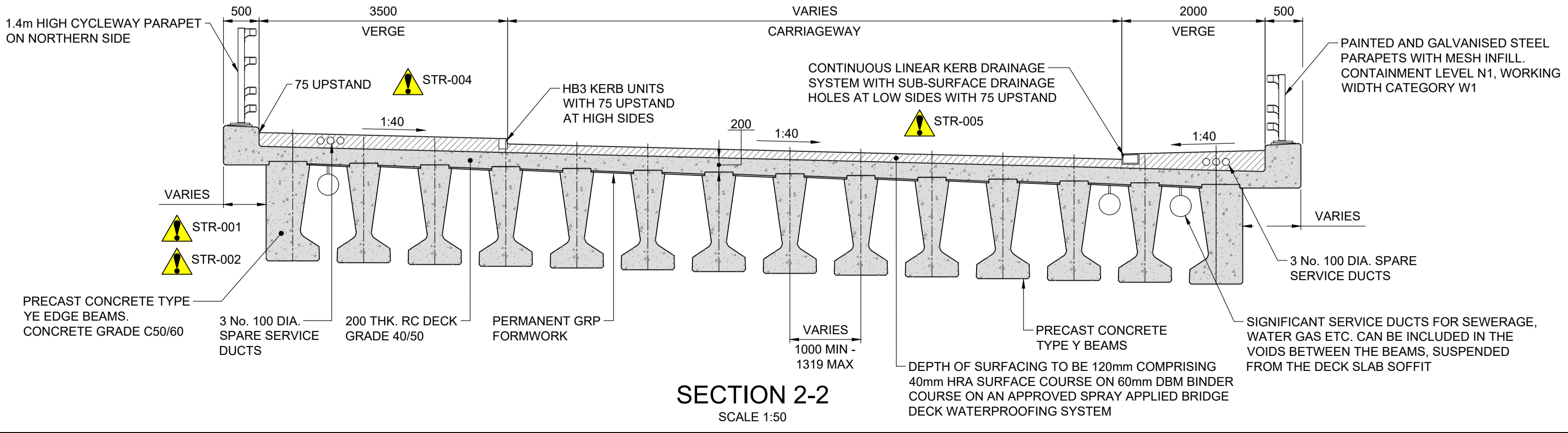
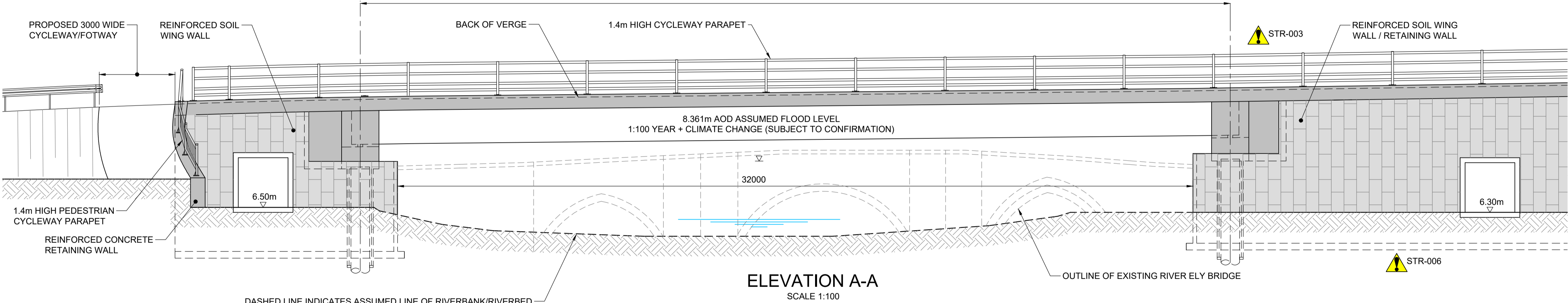
SITE/PROJECT: **LECKWITH QUAY DEVELOPMENT**

TITLE: **LECKWITH QUAY BRIDGE PROPOSED GENERAL ARRANGEMENT**

SCALE @ A1:	AS SHOWN	CHECKED:	SH	APPROVED:	SS
PROJECT NO:	70053561	DESIGNED:	SS	DRAWN:	BJ
				DATE:	September 20

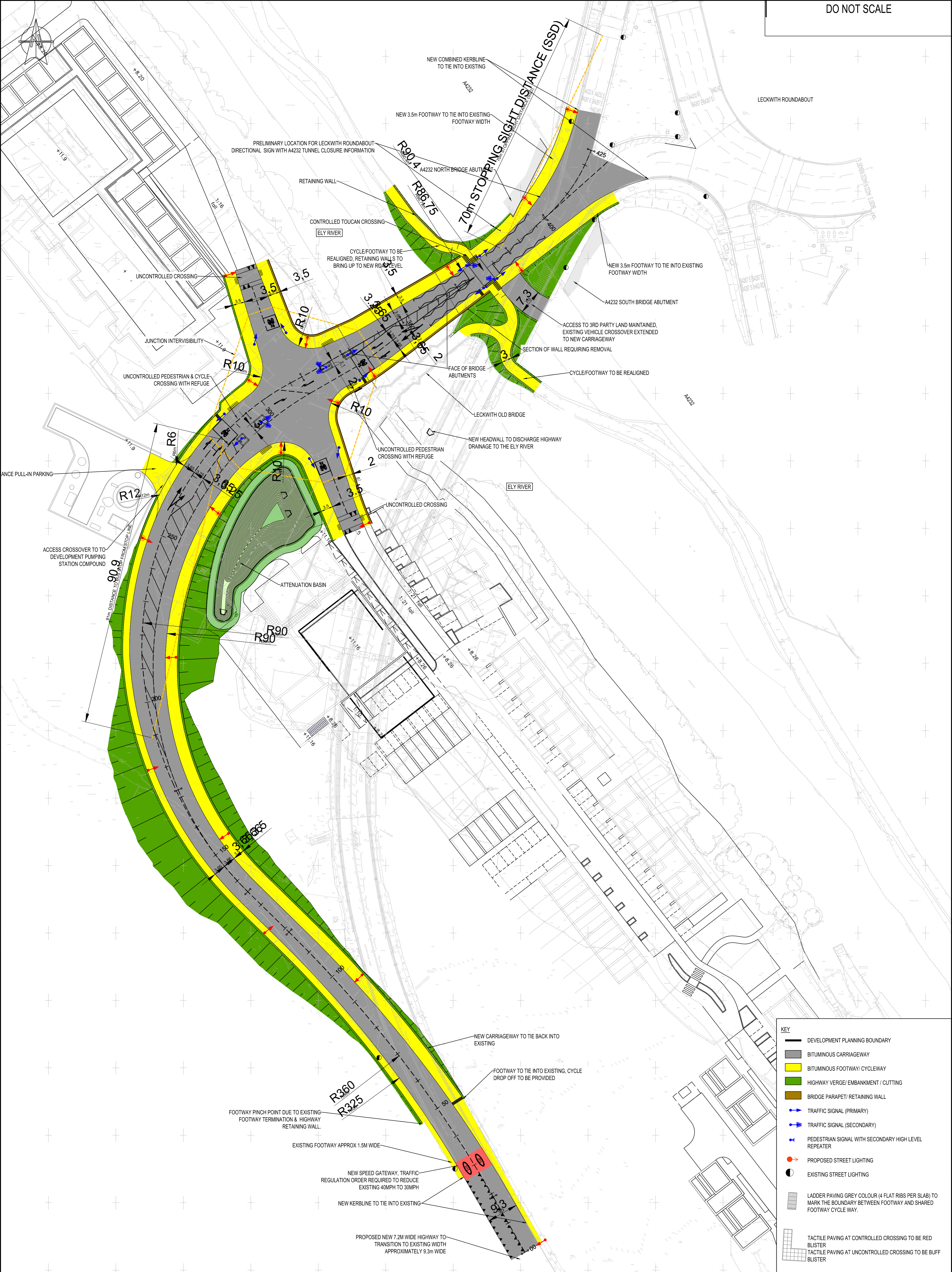
DRAWING NO: **70053561-002** REV: **P02**

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KEY

- DEVELOPMENT PLANNING BOUNDARY
- BITUMINOUS CARRIAGEWAY
- BITUMINOUS FOOTWAY / CYCLEWAY
- HIGHWAY VERGE / EMBANKMENT / CUTTING
- BRIDGE PARAPET / RETAINING WALL
- TRAFFIC SIGNAL (PRIMARY)
- TRAFFIC SIGNAL (SECONDARY)
- PEDESTRIAN SIGNAL WITH SECONDARY HIGH LEVEL REPEATER
- PROPOSED STREET LIGHTING
- EXISTING STREET LIGHTING
- LADDER PAVING GREY COLOUR (4 FLAT RIBS PER SLAB) TO MARK THE BOUNDARY BETWEEN FOOTWAY AND SHARED FOOTWAY CYCLE WAY.
- TACTILE PAVING AT CONTROLLED CROSSING TO BE RED BLISTER
- TACTILE PAVING AT UNCONTROLLED CROSSING TO BE BUFF BLISTER

NOTES

1. DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
2. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (AOD)
3. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
4. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS SUBJECT TO DETAILED DESIGN
5. HIGHWAY GEOMETRY & DESIGN IS SUBJECT TO TECHNICAL APPROVAL OF THE ADOPTING HIGHWAY AUTHORITIES

DRAWING STATUS: **FOR PLANNING**

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PROJECT: **LECKWITH QUAY**

TITLE: **B4267 LECKWITH ROAD HIGHWAY IMPROVEMENTS
GENERAL ARRANGEMENT (OPTION 2)**

SCALE @ A1: 1:500	CHECKED: GW	APPROVED: GW
PROJECT No: 70053561	DESIGNED: SID	DATE: September 19
DRAWING No: 70053561-WSP-XX-XX-CE-DR-102	DRAWN: SID	REV: -
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