

TECHNICAL NOTE

Job Name: Angmering Water Lane
Job No: 46353/4001/FRAP001
Date: 18 December 2020
Prepared By: Arjun Gossain
Checked By: Robert Riddington
Subject: Flood Risk Activity Permit Supporting Statement: Angmering Water Lane

1. Introduction

- 1.1. This Technical Note forms the supporting statement for the Flood Risk Activity Permit (FRAP) for the works required to complete the culvert design and construction associated with the proposed access crossing to the Land South of Water Lane development project. This culvert also forms the first part of a new structure associated with the wider Angmering Flood Alleviation Scheme (FAS).
- 1.2. Stantec has been appointed by Barratt Homes (the client) to carry out detailed civils works design for the culvert accommodating the Black Ditch watercourse to run beneath the access crossing connecting Water Lane to the development to the south, as part of the wider Land South of Water Lane, Angmering, development.
- 1.3. This Technical Note identifies the works associated with the construction of the required culvert which lies within 8m of the local Main River watercourse, the Black Ditch.
- 1.4. The aim of this Technical Note is to outline the work required to construct the flood compensation area, and to collate and summarise relative documents to support the FRAP, detailing:
 - The proposed work (**Sections 3 & 4**);
 - Flood Risk (**Section 5**);
 - WFD Compliance and environment (**Section 6**);
- 1.5. This document assesses both the temporary and permanent situation during the scheme delivery.

2. Background and Location

- 2.1. The crossing provides access to the Land South of Water Lane development, a new residential development in the Angmering area.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Approved (Project Director)
46353/4001/FRAP001	-	03/12/20	AG	RR	RR
46353/4001/FRAP001	A	18/12/20	AG	RR	RR
46353/4001/FRAP001	B	11/02/21	AG	RR	RR
46353/4001/FRAP001	C	04/03/21	AG	RR	RR

This report has been prepared by Stantec UK Limited ('Stantec') on behalf of its client to whom this report is addressed ('Client') in connection with the project described in this report and takes into account the Client's particular instructions and requirements. This report was prepared in accordance with the professional services appointment under which Stantec was appointed by its Client. This report is not intended for and should not be relied on by any third party (i.e. parties other than the Client). Stantec accepts no duty or responsibility (including in negligence) to any party other than the Client and disclaims all liability of any nature whatsoever to any such party in respect of this report.

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- 2.2. The proposals for the access have evolved from the original design of a clear span bridge to the current proposals for a culvert, wingwalls and associated embankment. The evolution to the current design has been completed in association with the Environment Agency (EA) and West Sussex County Council (WSCC).
- 2.3. WSCC identified that the location of the new access crossing provided the opportunity to form additional flood storage by altering the clear span bridge to a more restrictive structure. WSCC's designers developed a design that would facilitate increased storage upstream of the crossing. This was formed of two elements, 1) a new culvert and 2) an upstream control.
- 2.4. It is intended that the culvert will be constructed by Barratt Homes as part of their new access, with the upstream control structure constructed at a later date by WSCC.
- 2.5. WSCC prepared a Flood Risk Assessment (FRA) for the Angmering Flood Alleviation Scheme (FAS) in October 2020 to meet the obligations of Planning Policy Guidance Note 25: Development and Flood Risk Assessments (PPG 25).
- 2.6. This FRAP and supporting statement relates to the culvert and the associate crossing which will be constructed by Barratt Homes. The access crossing is located to provide access to the proposed development project at the Land South of Water Lane, directly east of the Angmering centre, bound by Water Lane and the A280.
- 2.7. The location of the access crossing, culvert and the wider development proposals are shown in the Masterplan, **Appendix A**, and within the annotated extract, **Figure 1**.



Figure 1: Location of Road Access, Culvert and Land South of Water Lane

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- 2.8. It is necessary to implement the access crossing and culvert in advance of the Land South of Water Lane development. The construction is planned to commence in spring 2021, to allow for safe site access for ongoing construction and ultimately the new development.

3. Ecological Considerations

Ecological Walkover Survey

- 3.1. As indicated in the Part B10 form, an ecological walkover survey was conducted by James Blake Associates on 11th February 2020. A report detailing the outcome of this can be produced on request. This section summarises the key observations.
- 3.2. The report recommends a number of considerations be made for key species prior to construction. The summary of these outcomes is outlined in **Table 1**.

Ecological Receptor	Summary of Findings	Likely Impact and Recommendation
Designated wildlife areas -statutory	Four Sites of Special Scientific Interest (SSSI) one Local Nature Reserve (LNR), and one National park.	For any planning application in this area, consultation between NE and the LPA will be required.
Habitats	The site is considered suitable to support bats, badger, great crested newt, hedgehog, water vole, otter, breeding birds and wintering birds.	The stream habitat on site should be retained as much as possible and enhanced for biodiversity. Due to possible impacts, a pollution prevention plan may be required.
Badger	The site was considered suitable for sett creation as well as commuting and foraging activities.	Six months prior to development works, a badger survey should be undertaken.
Bats	The site was considered to have 'moderate' suitability for foraging and commuting bats.	Currently layout proposes all trees with bat roosting potential will be retained. Should these trees be impacted, further surveys will be required.
Hazel dormouse	The majority of site is considered unsuitable for dormice.	No further surveys recommended.
Water vole and otter	Habitats on site are considered suitable for these species.	Any works along the stream including bridge instalment, will require a water vole and otter survey prior to works.
Mammals -other	No evidence of hedgehogs was found during the walkover survey.	No further surveys recommended.
Birds	Habitats suitable for nesting were identified. A single bird nest was identified adjacent to the eastern boundary.	A breeding bird survey in accordance with BTO guidelines is recommended.

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Reptiles	Habitats on site are considered suitable for reptiles.	Further reptile surveys are recommended.
Amphibians, particularly Great Crested Newt (GCN)	The site is considered suitable terrestrial habitat for GCN. GCN are present within the surrounding area.	Further surveys will be necessary in the first instance by testing for GCN presence/absence within the four waterbodies (1, 3, 4 and 5) using the environmental DNA (eDNA) method.
Invertebrates	The habitats on site are unlikely to support a diverse assemblage of invertebrates.	No further surveys recommended.
Flora	The habitats on site are unlikely to support any rare or protected flora.	No further surveys recommended.

Table 1: Summary of recommended survey timings from Ecological Walkover Survey Report.

- 3.3. The report outlines precautions and surveys recommended prior to works, and highlights that a badger survey should be conducted within 6 months of any ground works/construction activities.
- 3.4. The report concludes that, if the above outlined considerations are maintained, the development is able to proceed with minimal impact on the local conservation status. Moreover, the report suggests potential for the site to be improved for local wildlife post-development.

Landscape Plan

- 3.5. Existing trees and vegetation will be checked for bats or birds before clearance, and any additional planting will be native to the location. A landscape plan is included in **Appendix B** to illustrate the placement of new vegetation.

4. Proposals

- 4.1. The works relate to the new road crossing of the Black Ditch. This will require the provision of a new culvert and wingwalls, minor local channel realignment, road embankment and ancillary works as shown in **Appendix C** and the extracted **Figure 2** and **Figure 3** overleaf.
- 4.2. The design involves the reprofiling of the existing ground and the provision of a new culvert and headwalls. Following the installation of the culvert, the surrounding embankments and access road will be reprofiled as detailed in the drawing attached in **Appendix C**.

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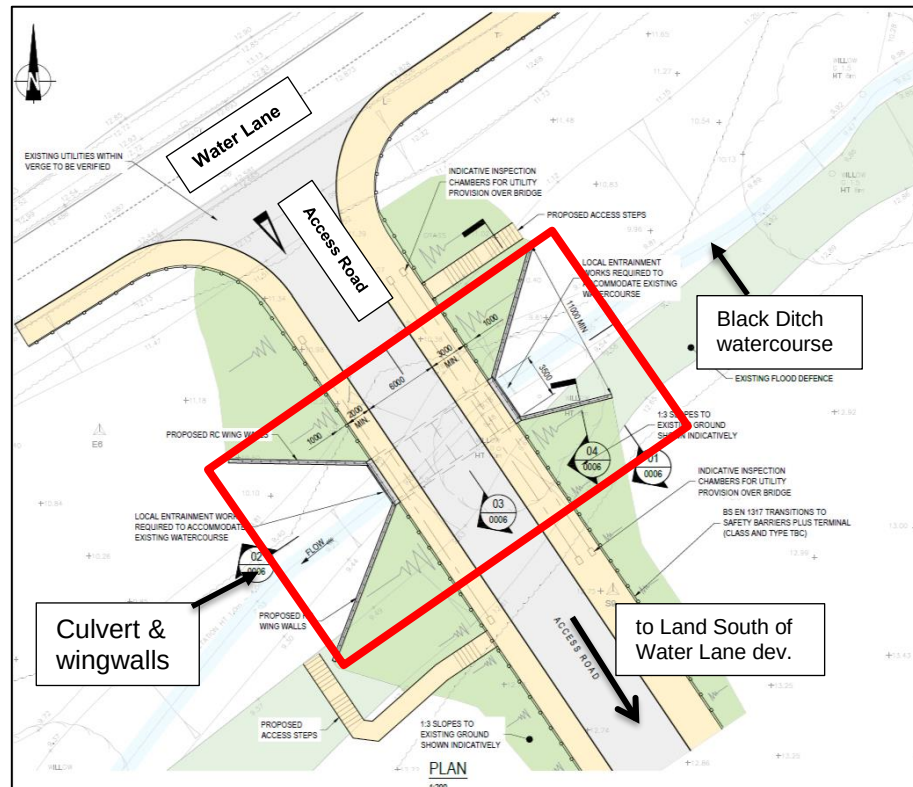


Figure 2: Proposed detail of access road and culvert, including upstream and downstream step access to watercourse.

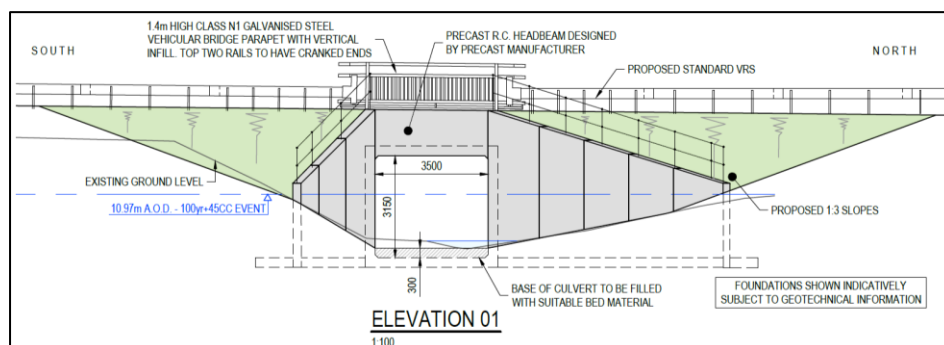


Figure 3: Proposed detail of access road and culvert (Elevation 01).

- 4.3. The new culvert (3.5m x 3.15m) has been designed in accordance with hydraulic modelling to maintain flows in the Black Ditch and avoid any increase in flood risk. The new culvert has been set at a level to maintain a similar bed level to the existing channel (9.30m AOD) and will incorporate granular material through the culvert. The works will result in local excavation to facilitate the construction of the new culvert and wing walls, but material removal will be minimised. It is anticipated that excavated material within the construction of the embankment where possible.
- 4.4. To facilitate the local ground levels and the culvert, there will be a minor realignment of the Black Ditch immediately in the vicinity of the culvert. The upstream and downstream of the channel will not be affected as wingwalls will train the channel to the existing route. The banks and the road embankment will be profiled at a minimum 1 in 3 gradient to provide a stable slope.
- 4.5. The above design has been reviewed within the hydraulic model by WSCC's consultants to demonstrate that the culvert will not increase flood risk and meets the project design requirements, see Section 5 and **Appendix D**.

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4.6. The permanent and temporary activities to support the FRAP are summarised in **Tables 2 and 3**.

Table 2: Proposed permanent activities within 8m of Main River

Proposed Activities (Permanent)	Status	Description
P1	Bespoke Activity	Provision of New Culvert & Wing Walls Within Channel The permanent installation of the culvert and associated wingwalls on the Black Ditch, as detailed in drawing 46353-STN-SBR-1772-DR-CB-0006.
P2	Bespoke Activity	Provision of Embankments, Access Steps & Overhead Access Road As detailed in drawing, 46353-STN-SBR-1772-DR-CB-0006, there will be ground reprofiling and the construction of embankments to facilitate the new road crossing.
P3	Exempt Activity	Provision of Surface Water Outfalls Surface water outfalls will be included as part of the works. As these are likely to be less than 300mm diameter and will be through a new headwall. This is an exempt activity but has been included here for completeness.

Table 3: Proposed temporary activities within 8m of Main River

Proposed Activities (Temporary)	Status	Description
T1	Bespoke Activity	Diversion of River Channel During Construction & provision of temporary culvert crossing To allow for safe and dry works to be conducted at the site location, it is necessary to facilitate the temporary diversion of the Black Ditch. A temporary access point will be constructed upstream of the permanent culvert (2No. 900mm diameter culverts). See draft construction method statement (Appendix E). Once the permanent culvert (P1) has been constructed, the watercourse will be reinstated back on its original route through the new culvert..
T2	Bespoke Activity	Construction of Culvert within Channel The temporary works to facilitate the construction of the culvert.
T3	Bespoke Activity	Construction of Embankments, Access Steps & Overhead Access Road The temporary works associated with the construction of embankments and the overhead access road.

5. Construction Methodology

- 5.1. A draft working sequence for the culvert construction works has been prepared and are included in **Appendix E**. On appointment these will be finalised by the selected contractor and will be incorporated within their Construction Environmental Management Plan (CEMP).
- 5.2. The environmental requirements under the CEMP will cover best practice for working near water and are likely to include the following control measures:
 - Site drainage;
 - Material excavation, storage and movement;
 - Washing activities;

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- Monitoring;
 - Silt management;
 - Minimise sediment mobilisation;
 - Minimise impact on biodiversity; and
 - To prevent and minimise environmental harm.
- 5.3. The CEMP will include waste management, ecological management, land use management, hazardous materials management and other areas. The final methodology of works will be agreed with the appointed contractor.

6. Flood Risk Recommendations

- 6.1. This work is for the provision of a new culvert crossing the Black Ditch. The development of this design has been completed in association and liaison with the EA and WSCC. The proposed works are in accordance with NPPF, local planning policy and the FRA for the consented application.
- 6.2. WSCC are proposing to construct a Flood Alleviation Scheme for the wider Angmering area in the future, which will incorporate and build on the proposed culvert crossing of the Black Ditch. WSCC have produced a Flood Risk Assessment (Flood Risk Assessment for Angmering Flood Alleviation Scheme: V 1.0, October 2020) that details this proposed FAS.
- 6.3. For the purposes of this FRAP submission flood risk has only been considered in relation to the potential impact of the culvert and its associated works and does not consider the impact of the future flood alleviation scheme. WSCC have confirmed, via the use of hydraulic modelling, that this interim situation (with only the culvert in place) does not increase flood risk.

7. WFD Compliance Statement

- 6.1 A Water Framework Directive (WFD) compliance statement (December 2020) has been prepared to assess the compliance of the culvert works with the objectives of the WFD (**Appendix F**).
- 6.2 The Compliance Statement reviewed the construction of the culvert, the new road embankment and associated works to facilitate the crossing of the Black Ditch.
- 6.3 The assessment demonstrated that the proposed culvert, headwalls, road crossing, and embankments will not have significant long-term impacts on the water quality within any of the aforementioned, WFD water body.
- 6.4 The proposals do not result in a significant change away from baseline conditions, and, as demonstrated, will not result in deterioration of the current WFD status/potential of 'poor' for the Black Ditch. As such, the works are compliant with the WFD and will not prevent the water bodies from achieving good ecological status/potential in the future.

8. Summary

- 8.1. This Technical Note supports the Flood Risk Activity Permit (FRAP) associated with culvert construction beneath the access road from Water Lane to the Land South of Water Lane development.
- 8.2. A Flood Risk Assessment (FRA) was carried out for the Angmering Flood Alleviation Scheme (FAS) in October 2020. Through hydraulic modelling completed and approved by the EA and West Sussex, it is demonstrated that the presence of the culvert crossing the Black Ditch has no detrimental impact on flood risk or the wider FAS.

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- 8.3. The delivery of culvert will require the excavation of material and minor realignment of the watercourse and reprofiling of the banks and embankment. Works will also be undertaken to landscape and replant the upstream area which will be affected by the works. This has been detailed in the FRAP and the associated drawings.
- 8.4. Draft details of the construction methodology have been provided. These will be expanded upon once the contractor is appointed. In addition, on appointment the contractor will be required to prepare of a Construction Environmental Management Plan in accordance with best practice and the procedures identified.
- 8.5. A WFD compliance statement for the culvert beneath the access road connecting Water Lane and the Land South of Water Lane development has been completed. This identifies that the proposals are compliant with the objectives of the WFD and are therefore able to proceed.
- 8.6. The proposals for the works associated with this FRAP supporting statement are therefore able to be consented.

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Appendix A: Masterplan

- 2020 Masterplan



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Appendix B: Landscape Plan

- Drawing JBA 19-283 01 Detailed Soft Landscape Proposals for Plots



- | ANIMAL SHELTERS - AVAILABLE FROM NHBS TEL. 01803 | |
|--|--|
| | 150c. SCHWEIGER WOODCRETE BATBOX TYPE 2F - DFP. REFER TO BATBOX INSTALLATION INSTRUCTIONS BY MANUFACTURER. |
| | 30c. SPARROW TERRACE, FSC NEST BOX. #201458. REFER TO INSTALLATION INSTRUCTIONS BY MANUFACTURER. |
| | 30c. WOODSTONE SWIFT NEST BOX. #217160. REFER TO INSTALLATION INSTRUCTIONS BY MANUFACTURER. |
| | 30c. VIVARA PRO STARLING WOODSTONE NEST BOX. #210690. REFER TO INSTALLATION INSTRUCTIONS BY MANUFACTURER. |
| | 25c. KEESTREL OPEN NEST BOX. #218279. REFER TO INSTALLATION INSTRUCTIONS BY MANUFACTURER. |
| | 30c. VIVARA PRO WOODSTONE TWINY OWL NEST BOX. #230630. REFER TO INSTALLATION INSTRUCTIONS BY MANUFACTURER. |
| | 30c. LOG PILES. REFER TO ECOLOGIST'S RECOMMENDATIONS AND REPORT. |

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ASSOCIATES

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jamesblake@jba-landmarc.com www.jba-landmarc.com

LANDSCAPE ARCHITECTURE • ARBORICULTURE • ECOLOGY

GENERAL NOTES

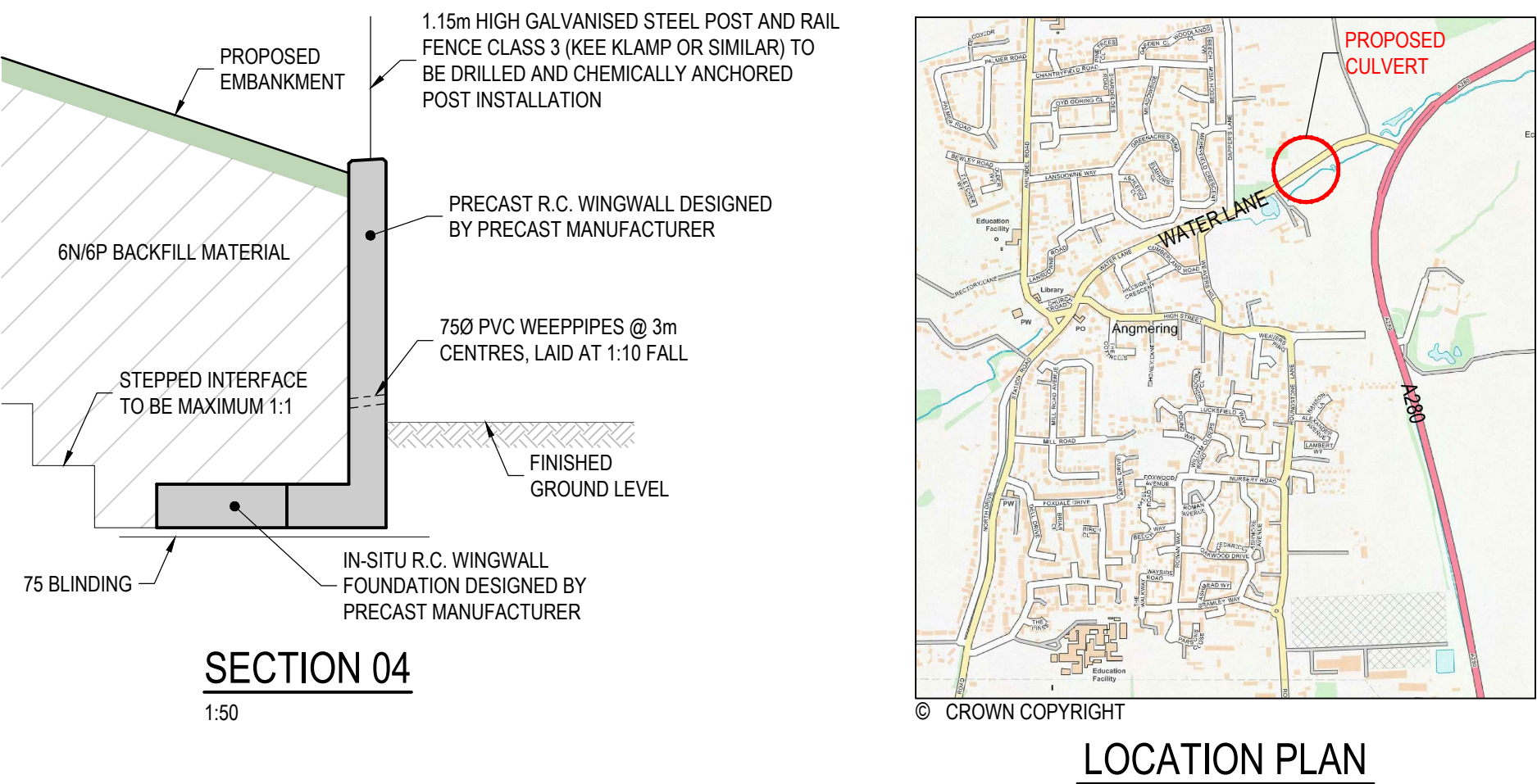
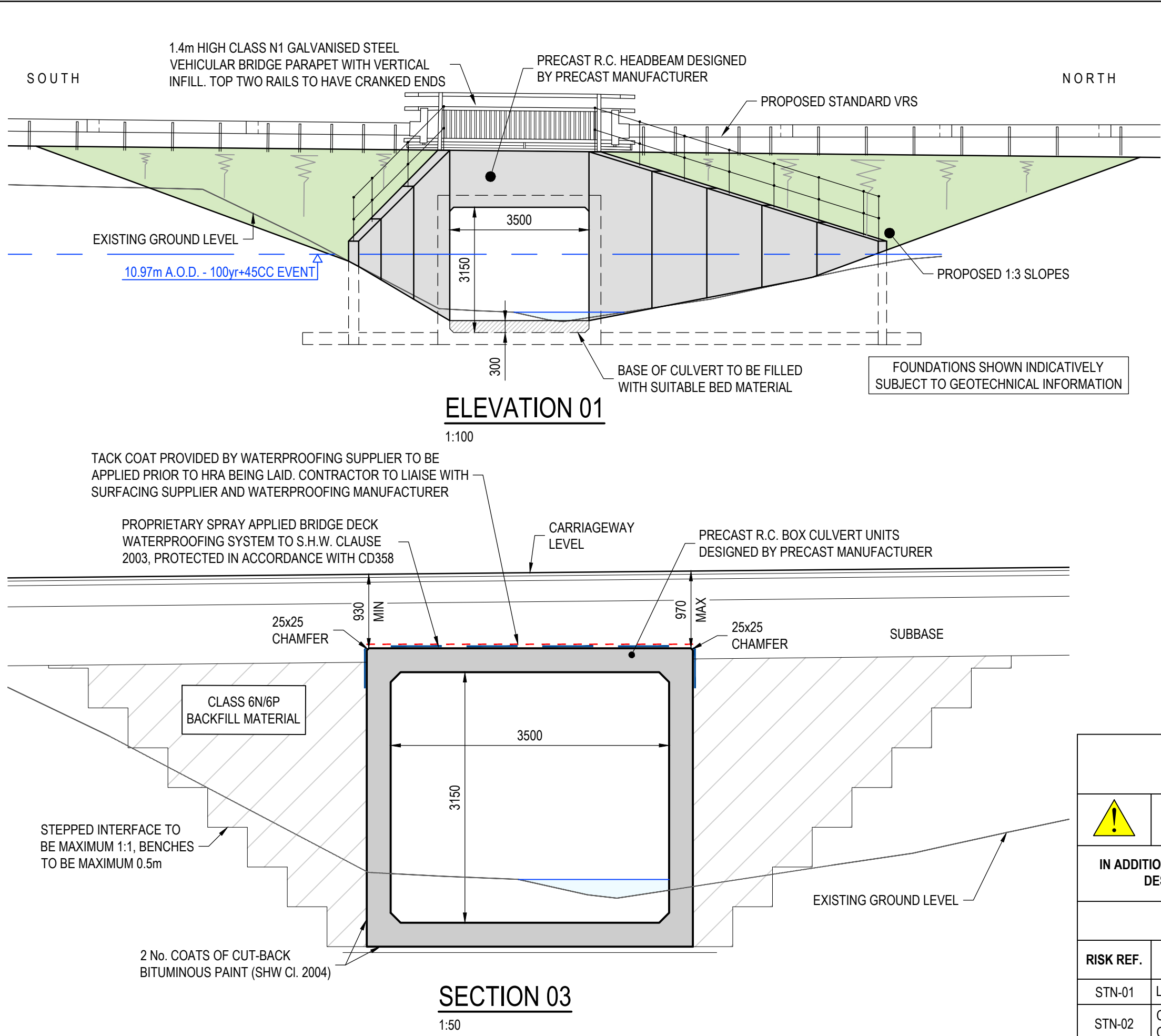
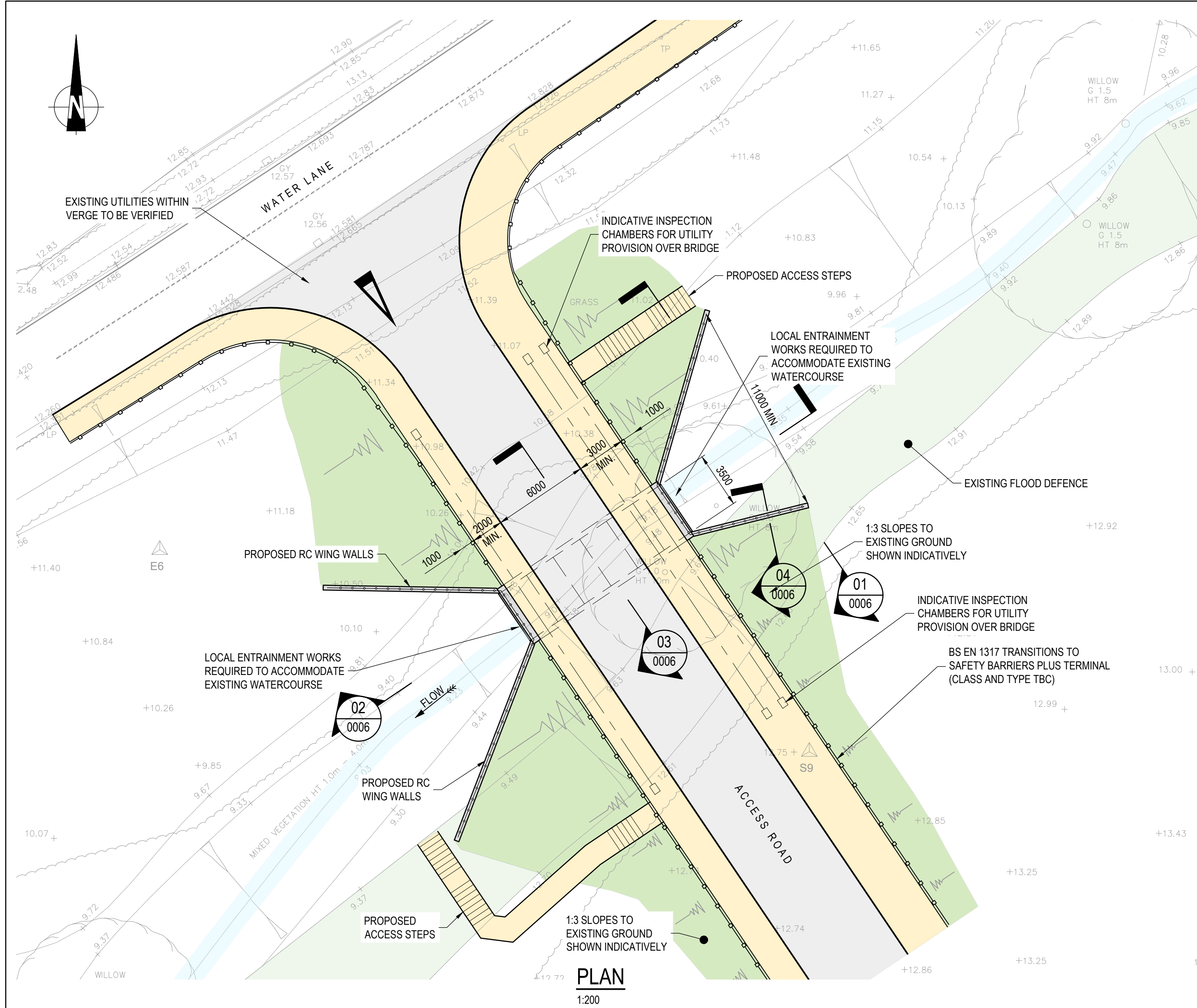
- ALL DIMENSIONS IN MILLIMETRES
- DO NOT SCALE OFF THIS DRAWING
- ALL DIMENSIONS TO BE CHECKED ON SITE

(C)JAMES BLAKE ASSOCIATES LTD 2020

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Appendix C: Box Culvert Detailed Design Drawings

- Drawing 46353-STN-SBR-1772-DR-CB-0006: Water Lane, Angmering; Proposed Box Culvert General Arrangement



- ### NOTES
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
 - THE SPECIFICATION SHALL BE THE 'SPECIFICATION FOR HIGHWAY WORKS', PUBLISHED BY THE STATIONERY OFFICE (FORMERLY HMSO) INCLUDING REVISIONS UP TO APRIL 2020 AND CONTRACT SPECIFIC NUMBERED APPENDICES.
 - ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 - ALL LEVELS ARE IN METRES AND RELATIVE TO ORDNANCE DATUM (NEWLYN).
 - ALL CO-ORDINATES ARE IN METRES AND RELATIVE TO ORDNANCE SURVEY GRID. TOPOGRAPHICAL DATA - SURVEY GRID RELATES TO OS NATIONAL GRID. PLEASE NOTE THE SURVEY WAS ORIGINALLY PRODUCED ON METRIC SCALE FACTOR 1 AND HAS BEEN RETROSPECTIVELY CONVERTED TO OS NATIONAL GRID.
 - ALL PROPRIETARY PRODUCTS SHALL BE APPROVED BY THE OVERSEEING ORGANISATION AND SHALL BE PLACED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS. WHERE OUTLINES OF PROPRIETARY PRODUCTS ARE SHOWN ON THE DRAWINGS, SUCH DETAILS ARE INDICATIVE ONLY.
 - THIS DRAWING IS BASED UPON THE FOLLOWING SUPPLIED DIGITAL INFORMATION:
 - TOPOGRAPHICAL SURVEY PROVIDED BY MKS SURVEYS, DATED SEPT 2019.
 - PRELIMINARY HIGHWAY ALIGNMENT: Drg. REFERENCE x.pr_design.dwg
 - THE GEOMETRY DEPICTED IN THIS DRAWING HAS BEEN DETERMINED FROM THE FOLLOWING:
 - THE DEPARTMENT FOR TRANSPORTATION / HIGHWAYS ENGLAND DESIGN MANUAL FOR ROADS AND BRIDGES.
 - REFER TO APPROVAL IN PRINCIPLE DOCUMENT 46353-1504-AIP-001 FOR STRUCTURAL MATERIALS AND FINISHES (i.e. CONCRETE GRADES, CONCRETE FINISHES, ETC.)
 - UTILITY SERVICE POSITIONS SHOWN INDICATIVELY.
 - PARAPET, TRANSITION, SAFETY BARRIER AND TERMINAL SUPPLY AND INSTALLATION IS TO BE BY LICENSED COMPANIES HAVING THIRD PARTY VERIFIED UK HIGHWAYS ENGLAND SECTOR SCHEME 5A & 5B (FOR PARAPETS) AND/OR 2B (FOR OTHER ITEMS) APPROVAL AND A QUALITY MANAGEMENT SCHEME IN ACCORDANCE WITH ISO 9001 OR 9002.
 - THE DECK SHALL BE PROTECTED WITH A BBA CERTIFIED PROPRIETARY BRIDGE DECK WATERPROOFING SYSTEM, RETURNED OVER THE DECK ENDS. ALL OTHER BURIED CONCRETE SURFACES TO RECEIVE TWO COATS OF BITUMINOUS PAINT TO CLAUSE 2004 OF THE SPECIFICATION OF HIGHWAY WORKS.

CDM, HEALTH, SAFETY AND ENVIRONMENTAL NOTES

⚠ DENOTES THE LOCATION OF RISK. FOR MORE INFORMATION REFER TO RISK REFERENCE AND DESCRIPTION

IN ADDITION TO THE HAZARDS AND THE RISKS NORMALLY ASSOCIATED WITH THE FORM OF CONSTRUCTION DESCRIBED ON THE DRAWINGS, THE FOLLOWING RESIDUAL RISKS SHOULD BE CONSIDERED

P - DETAILED DESIGN, C - CONSTRUCTION, S - IN SERVICE / MAINTENANCE, D - DECOMMISSIONING / DEMOLITION

RISK REF.	RISK DESCRIPTION	RISK PHASE
STN-01	LIFTING, HANDLING AND TRANSPORTATION OF PRECAST ELEMENTS BY VARIOUS METHODS.	C
STN-02	CONSTRUCTION VEHICLES MAY WISH TO TRAFFIC OVER BOX CULVERT BEFORE ROAD OPENS. CONTRACTOR TO REFER TO DESIGNER FOR ALLOWABLE LOADS.	C
STN-03	EXISTING SERVICES TO BE DIVERTED.	C
STN-04	CONSTRUCTION VEHICLES MAY WISH TO TRAFFIC OVER BOX CULVERT BEFORE ROAD OPENS.	C
STN-05	CONSTRUCTION VEHICLES MAY WISH TO TRAFFIC OVER BOX CULVERT BEFORE ROAD OPENS. CONTRACTR TO REFEER TO PRECAST DESIGNER FOR ALLOWABLE LOADS	C/D

END OF STRUCTURE JOINT DETAIL

1:25

25 DEEP x 20 WIDE SAW CUT AND SEALED GROOVE FILLED WITH HOT APPLIED SEALANT TO Cl. 1017 IN ACCORDANCE WITH THE SHW, SERIES 700, FIGURE 7/1

TACK COAT PROVIDED BY WATERPROOFING SUPPLIER TO BE APPLIED PRIOR TO HRA BEING LAID. CONTRACTOR TO LIAISE WITH SURFACING SUPPLIER AND WATERPROOFING MANUFACTURER

PROPRIETARY SPRAY APPLIED BRIDGE DECK WATERPROOFING SYSTEM TO S.H.W. CLAUSE 2003 THAT DOES NOT REQUIRE A TUCK, PROTECTED IN ACCORDANCE WITH CD 358.

2 No. COATS OF CUT-BACK BITUMINOUS PAINT (SHW Cl. 2004)

BACKFILL COMPACTED TO SPECIFICATION

200 MIN

SOFFIT LEVEL

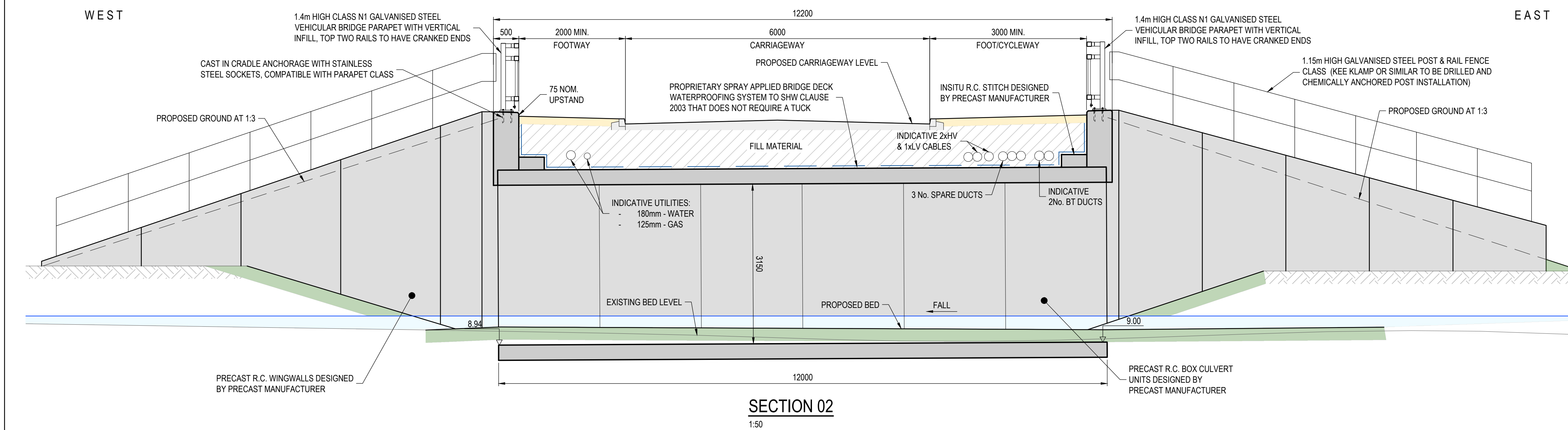
CARRIAGEWAY SURFACING

DECK CONSTRUCTION

BASE

BINDER COURSE

SURFACE COURSE



P03	REISSUED FOR TECHNICAL APPROVAL	04.03.21	AJA	GG	PC
P02	FOR TECHNICAL APPROVAL	16.02.21	AJA	GG	PC
P01	PLANNING	29.10.20	JS	HJ	PC
Mark	Revision	Date	Drawn	Chkd	Appd
SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay. UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.					
Drawing Issue Status					
FOR APPROVAL					
WATER LANE, ANGMERING PROPOSED BOX CULVERT WSCC REF: 1772 GENERAL ARRANGEMENT					
Client			  		
Date of 1st Issue 29.10.2020		Designed HJ	Drawn JS		
A1 Scale As Indicated		Checked HJ	Approved PC		
Drawing Number 46353-STN-SBR-1772-DR-CB-0006		Revision P03			
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Appendix D: Hydraulic Modelling / Approval

- Hydraulic Model Report (omitted due to size, available on request)

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Appendix E: Draft Method Statement and Working Sequence

- Draft Working Sequence

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Draft Working Sequence

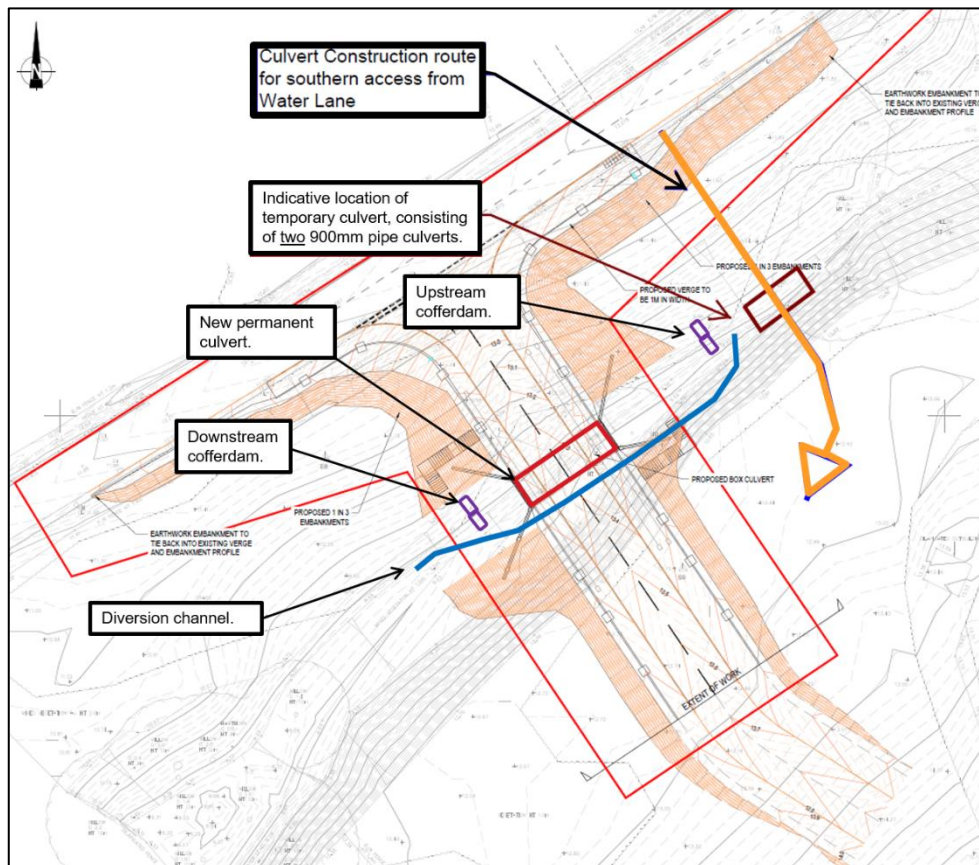
The following approach is to be finalised prior to commencement on appointment of the Principal Contractor and in accordance with draft Risk Assessments.

Stage 1: Site Mobilisation

- The working area will be defined and agreed with the Client's representative.
- The site access track/haul route will be established from the working area.
- An ecological walk-over survey for water voles and protected species, will be completed prior to commencement of any excavation in accordance with the Ecological Recommendations and CEMP.

Stage 2: Installation of Temporary Access

- A temporary crossing will be installed, crossing the Black Ditch upstream of the works area, to allow access to the south of the site from the north.
- Two 900mm diameter culverts will be installed to facilitate construction access across the channel. The Black Ditch will run beneath this temporary crossing on its original course.



Sketch 1: Locations of temporary access route (orange arrow), temporary culvert (brown), new culvert (red), cofferdams (purple) and diversion channel (blue).

Stage 3: Diversion of Watercourse

- The watercourse will be managed to facilitate the installation of the new culvert, this will be completed by the provision of a diversion channel to ensure a dry working area for the site. **Sketch 1** illustrates the pathway of the diverted watercourse:

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- An open diversion channel will be dug around the south of the site area to allow for a diversion path of the Black Ditch to flow around and re-join the watercourse downstream of the site area. This is expected to be either an open channel or 900mm twin-wall pipe.
- A cofferdam will be installed upstream of the working area, downstream of the temporary crossing, to facilitate a dry working area.
- A cofferdam may also be installed downstream of the new permanent culvert to prevent water backing upstream into the working area.
- The cofferdams will allow overtopping for flood events in excess of the 10-year event.

Stage 4: Preparation of Culvert Installation Working Area

- The existing vegetation – primarily agricultural grassland, will be stripped and the area cleared.
- Topsoil will be removed at the depth required for the installation of the culvert and wingwalls.
- Materials will be stored outside the Flood Zone 3 prior to being reinstated or hauled to another part of the Land South of Water Lane site.
- Run-off and drainage from the excavated faces will be managed by the contractor to prevent silt loaded water entering the local watercourses. The use of silt management measures, such as silt curtains will be employed to prevent sediment loading.

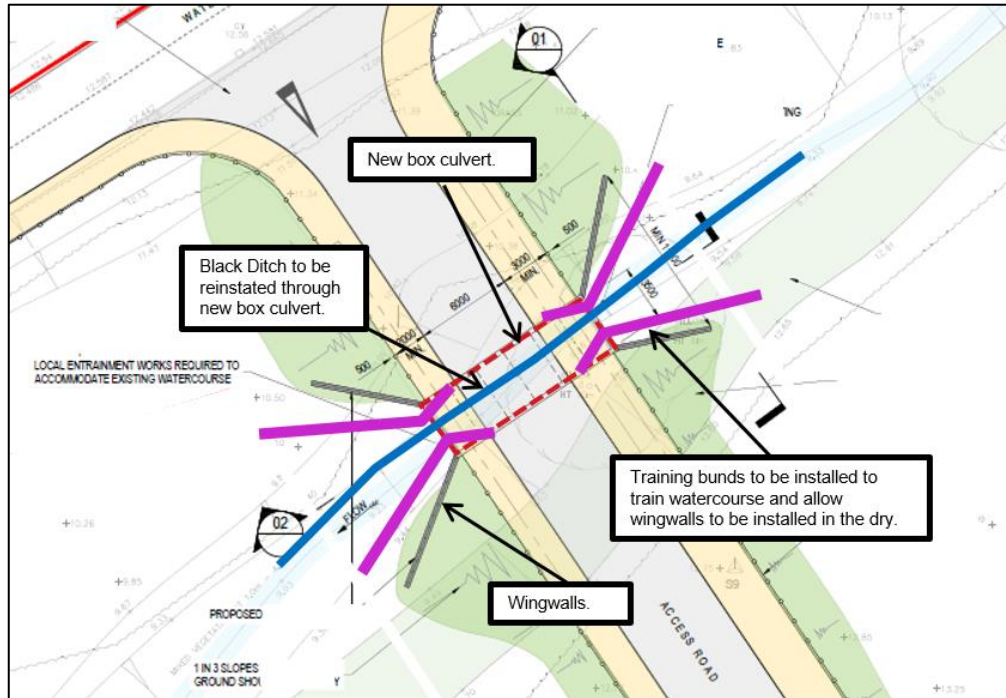
Stage 5: Construction of Culvert

- The contractor will commence the excavation in a sequenced manner
- Material is to be removed from area and stored outside of the Flood Zone 3, prior to being hauled to another part of the development site.
- Culvert sections will be pre-cast off-site and brought in via road access and lifted by plant into place.

Stage 6: Reinstatement of Original Watercourse Path

- Once the culvert has been installed, the original watercourse pathway will be reinstated to run through the newly installed culvert.
- Training bunds will be installed to ensure that the watercourse is returned on its original course. This is illustrated in **Sketch 2**.

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Sketch 2: Pathway of reinstated watercourse (blue line) through new box culvert (dotted red) and location of training bunds (purple).

Stage 7: Construction of Wingwalls, Embankment and Overhead Road

- On completion of the culvert and reinstatement of the Black Ditch through this culvert, the wingwalls will be installed.
- Construction of embankments on both sides of culvert and profiling of earthworks to facilitate the construction of road.
- The profile of the slope will be in accordance with the engineering drawings.
- At this stage, the construction of the overhead road can be completed.
- Finally, the temporary crossing, illustrated in **Sketch 1**, can be removed. The final profile and planting regime is to be completed in accordance with the landscape specification.

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Appendix F: WFD Compliance Statement

Application for an environmental permit

Part B10 – Flood Risk Activities



Environment
Agency

Apply for a permit for 'Flood Risk Activities' which are activities in, under and over a main river and other activities that could affect flooding from a main river or sea.

Fill in this part of the form, together with parts A and F3.

Please read through this form and the guidance notes that came with it. Please write clearly in the answer spaces and reference supporting documents when required.

Contact us if you need help completing this form.

It will take less than one hour to fill in this part of the application form but may take longer if you need to prepare supporting information.

Contents

- 1 About the permit
- 2 About the site
- 3 About your activities
- 4 Supporting information
- 5 Management systems
- 6 Additional permits and permissions
- 7 How to contact us

1 About the permit

1a Discussions before your application

If you have had discussions with us before your application, give us the reference number or details below.

Discussions have been held with Adrian Jackson (EA) and Ray Drabble (West Sussex) between August to November 2020. These discussions related to the works associated with the access crossing of the Black Ditch and how these could be included within the Angmering Flood Alleviation Scheme

2 About the Site

2a Tell us in detail where the activities will take place

The proposed activities take place adjacent to Water Lane, Angmering, where there is a proposed crossing of the watercourse "Black Ditch". This crossing is to provide access to the proposed development project at the Land South of Water Lane, proposed by Barratt Homes. The development site is bound by Water Lane and the A280. These activities refer to a culvert and discharge headwall into the Black Ditch, designed in conjunction with WSP to comply with both the requirements of the access route into the new development and the wider Angmering Flood Alleviation Scheme

Please give us the Ordnance Survey National Grid Reference for the site (for example, ST 12345 67890)

TQ 07464 04699

If the site is made up of a number of different activities that are a distance apart, please give us the individual grid references as part of supporting information with this application.

2b For activities that take place over a stretch of the watercourse, rather than in one particular place, please provide an upstream and downstream grid reference (NGR)

Upstream NGR

Downstream NGR

Leave blank if this does not apply.

2c Tell us the name of the watercourse

The Black Ditch

2d Has a site plan been included within this application?

Yes ☒

No ☐

Now go to section 3.

3 About your activities

3a Is your application for permanent or temporary work?

Permanent (e.g. new bridge) ☐Temporary (e.g. scaffolding) ☐Both ☒

3b How many different activities are you applying for?

5

3c Please provide a detailed description of the activities you propose and how you intend to undertake them

This FRAP is for the completion of the works associated with an access crossing of the Black Ditch in the vicinity of Water Lane, Angmering. The following activities have been identified:

PERMANENT WORKS

P1: Bespoke Activity; Provision of New Culvert and Wingwalls Within Channel

The permanent installation of the culvert and wingwalls beneath in the channel. This will include the minor realignment of the Black Ditch to accommodate the adjacent ground levels. The wingwalls will ensure that the channel returns to its original alignment.

P2: Bespoke Activity; Provision of Embankments, access steps and Overhead Access Road

Construction of the embankments for the culvert and bridge crossing, as well as works associated with the road. Access steps to the channel will be installed upstream and downstream of the culvert.

P3: Exempt Activity; Provision of surface water outfalls (<300mm diameter) & associated headwalls.

An exempt activity, but included for completeness (but excluded from number of activities)

TEMPORARY ACTIVITIES

T1: Bespoke Activity; Diversion and Management of Watercourse During Works

To allow for safe and dry works to be conducted at the site location, it is necessary to facilitate the diversion of the Black Ditch. Including new temporary access crossing (2 No. 900mm diameter culverts). See draft construction methodology.

Once works for the culvert and wingwalls have been completed, the watercourse will be reinstated to its original route.

T2: Bespoke Activity; Construction of Permanent Culvert within Channel

The temporary works associated with the construction of the culvert.

T3: Bespoke Activity; Construction of Embankments, Access Steps and Overhead Access Road

The temporary works associated with the construction of embankments and the overhead access road.

3d Please tell us when you plan to start and complete your activities

Start date (DD/MM/YYYY)

01/03/2021

Completion date (DD/MM/YYYY)

01/01/2022

For activities that are repeated over a longer period, please give us an indication of when and how often they will take place.

N/A

4 Supporting Information

4a Please list the plans and documents included with this application

The following information is provided as supporting information:

1) FRAP Supporting Flood Risk and Construction Statement:

-Appendix A: Masterplan

-Appendix B: Landscape Plan

-Appendix C: Drawings

-Appendix D: Approved Model & Hydraulic Report, June 2019, not included (available on request) and EA approval

-Appendix E: Method Statements

-Appendix F: WFD Compliance Statement, Stantec, December 2020

4 Supporting Information, continued

4b Environmental Risk Assessment

Provide a brief summary of the risks that each of your activities pose to the environment, including any measures to mitigate the impact. If you don't think there are any, tell us why.

Flood modeling results from WSP has indicated that there is no detrimental effect of the culvert's installment to the water levels outside the context of the site upstream.

Flood risk and WFD compliance are covered within separate documents. Draft construction sequence has been provided in the supporting statement. On appointment of the Contractor the construction sequence and the method statements will be finalised. A walkover survey has been carried out by an ecologist ahead of the construction work, to inspect the watercourses and any potential drainage routes for protected species with mitigation measures taken if required. A report has been written summarising the findings and recommendations to carry out future work.

4c Have you submitted a more detailed environmental risk assessment with this application?

Yes ☒

No ☐

Guidance on what needs to be in an assessment can be obtained by referring to our website or contacting us directly.

5 Management systems

A management system describes what measures you will put in place to manage flood risk, and risks to drainage and the environment. Compliance with a management system will be a condition of any permit.

Does your written management system meet the conditions set out in our guidance?

Yes ☒

No ☐

You can find detailed guidance on management systems on our website. You can get these by calling 03708 506 506 or by downloading them from our website at www.gov.uk/environment-agency.

6 Additional permission or permits

Please tell us about any other planning permissions or other environmental permits that you hold or have applied for in relation to your activities. If you have details on previous public consultation on environmental issues, include this as a separate document in the application.

The access route is being reviewed by WSCC Highways Authority to confirm AIP.
The planning application for the access route has been approved.

Leave this section blank if there are none.

7 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: www.gov.uk/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.