

TECHNICAL NOTE

Job Name: Water Lane, Angmering

Job No: 46353

Note No: HYD-TN01

Date: 7th April 2020

Prepared By: Hazel Fielding

Subject: Flood Risk Statement

Item	Subject
1.	In 2018, Edenvale Young Associates Ltd (EYV) constructed a 1D-2D Estry-Tuflow model of a 2.6km length of the Black Ditch, adjacent to Water Lane in Angmering. The model was constructed using cross-section survey that was commissioned for the modelling work, LiDAR ground data and site topographic survey data. The model was run for the following events: • 1 in 20yr • 1 in 100yr • 1 in 100yr+10%CC • 1 in 100yr+20%CC • 1 in 100yr+35%CC • 1 in 1000yr The model was run using the HPC solver version of Tuflow. Due to the use of such a small model grid size (1m), the GPU module was used instead of the standard CPU processor in order to reduce run times. A copy of the Edenvale Young Modelling Report (EYV0668_WLAM_revA_v01.pdf) dated July 2018 and Flood Estimation Calculation Record (Proforma_Angmering_v01_PD.pdf) will be submitted with this Technical Note, Appendix A.
2.	Barrett Homes has commissioned Stantec UK Ltd (Stantec) to design a bridge which will link Water Lane to their development site. The development site is located on the opposite side of the Black Ditch to Water Lane.
3.	The Environment Agency (EA) require the assessment of the 1 in 100yr+45% and 1 in 100yr+105% climate change allowance events when assessing the soffit level of the proposed new bridge. The EA requirement is for the provision of a 600mm freeboard above the 1 in 100yr plus climate change allowance event flood level.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked & Reviewed (Discipline Lead)	Approved (Project Director)
46353/4000/TN01	-	07.04.20	HF	RWR	DH

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4.	Stantec has re-run the EVY model for the 1 in 100yr+45% and 1 in 100yr+105% climate change events. Stantec do not have access to the GPU module that EVY used to run the model so have used the standard CPU processor. However, this increases run times considerably. Therefore, the grid size has been increased from 1m to 2m in order to maintain manageable run times. It is considered that this would not materially affect the results in the area of interest. However, in order to assess any differences, Stantec has also re-run the 1 in 100yr event with the adjusted set-up and compared these results with the original results. At the location of the proposed bridge there was a 10mm difference in peak water level, which is not considered significant. The peak modelled levels at the proposed location of the bridge are as follows: • 10.99m aOD – 1 in 100yr event (original EVY model results) • 11.03m aOD – 1 in 100yr+35%CC event (original EVY model results) • 11.04m aOD – 1 in 100yr+45%CC event (Stantec UK model run results) • 11.05m aOD – 1 in 1000yr event (original EVY model results) • 11.09m aOD – 1 in 100yr+105%CC event (Stantec UK model run results)
5.	The current proposal is to provide a 21m clear span bridge with a soffit level that will provide the requisite maintenance requirements and suit the local topography. The final soffit level is still to be confirmed but will be set at a <u>minimum</u> of 600mm above the 100yr+45% climate change allowance event level (11.04m aOD). This minimum soffit level will satisfy the EA's requirements for freeboard. As the difference in water levels between the 100yr+45% and 100yr+105% climate change allowance events is relatively small (approximately 50mm), the provision of a minimum 600mm freeboard to the 100yr+45% climate change allowance event level is sufficient for the purposes of the design.
6.	The bridge proposal is presented in the drawing 46353-STN-SBR-AB-DR-CB-0101 accompanying this Technical Note, Appendix B. It can be seen that the right bank abutment will slightly encroach into the 1 in 100yr+45% climate change event flood extent. It is considered that this encroachment will only reduce floodplain storage by a small amount but it is proposed to provide level-for-level and volume-for-volume compensation for this loss of floodplain storage.
7.	Given that the bridge will be clear span, the soffit will be set more than 600mm above the 1 in 100yr+45% climate change event modelled peak level and flood compensation will be provided on a level-for-level and volume-for-volume basis for any incursion of the road embankment into the floodplain, no post-development modelling will be undertaken.

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APPENDIX A

Edenvale Young Modelling Report (EVY0668_WLAM_revA_v01.pdf) dated July 2018

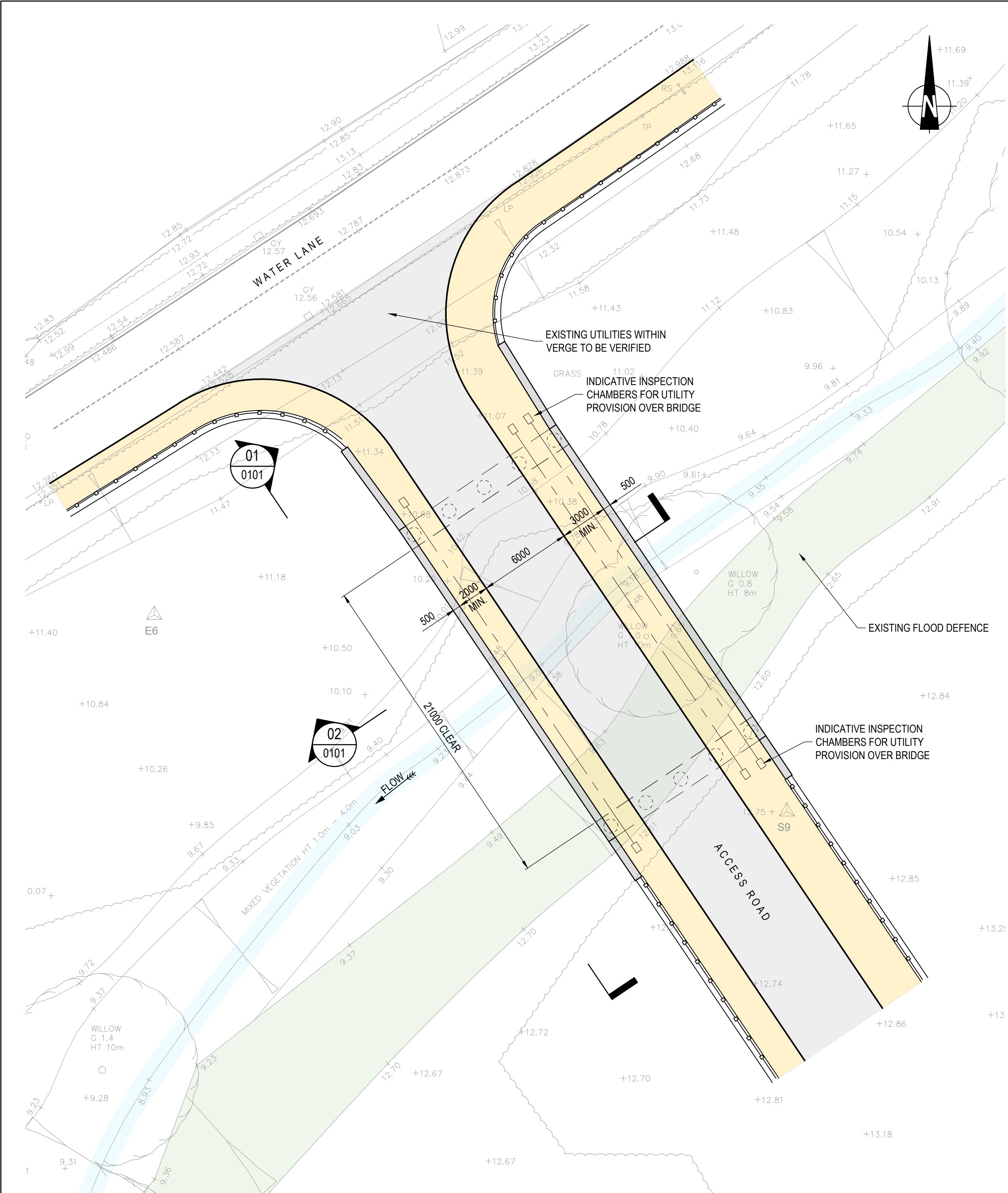
Flood Estimation Calculation Record (Proforma_Angmering_v01_PD.pdf)

Appended as separate pdf files due to their large size

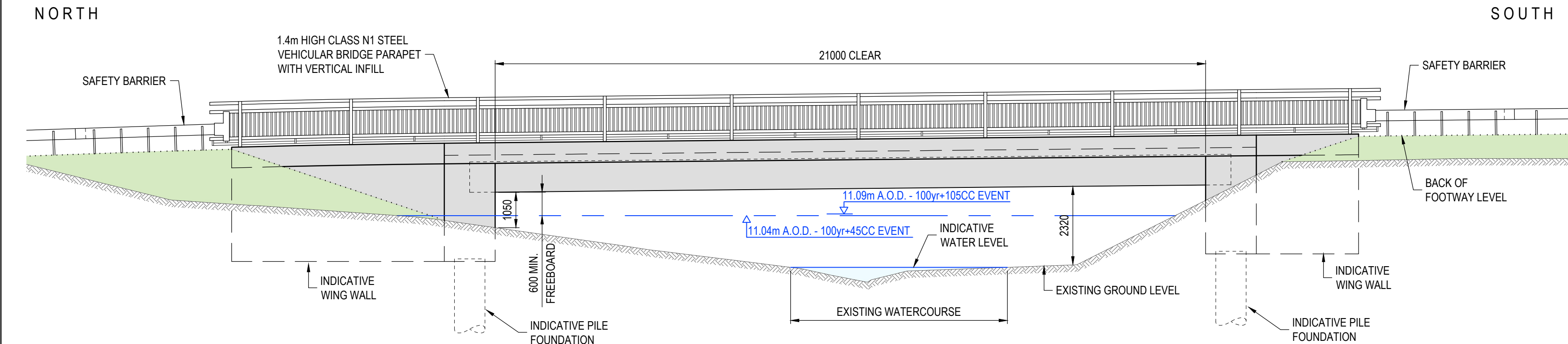
TECHNICAL NOTE

APPENDIX B

DRAWING 46353-STN-SBR-AB-DR-CB-0101

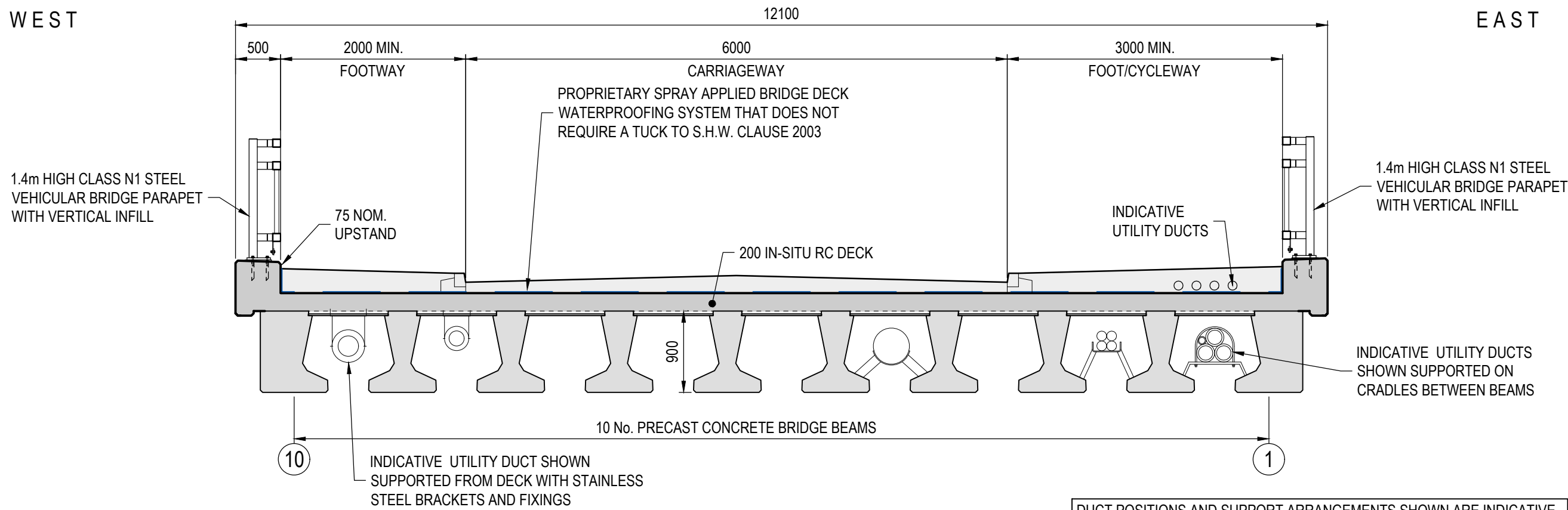


PLAN
1:200



ELEVATION 01
1:100

WEST



EAST

SECTION 02
1:50

NOTES

- 0100.1 THIS DRAWING IS BASED UPON PRELIMINARY DATA AND IS FOR ILLUSTRATIVE PURPOSES ONLY
- 0100.2 ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- 0100.3 ALL LEVELS ARE IN METRES AND RELATIVE TO ORDNANCE DATUM (NEWLYN).
- 0100.4 THIS DRAWING IS BASED UPON THE FOLLOWING SUPPLIED DIGITAL INFORMATION:
- TOPOGRAPHICAL SURVEY PROVIDED BY MKSURVEYS, DATED SEPT 2019.
 - PRELIMINARY HIGHWAY ALIGNMENT. Drg. REFERENCE x_pr_design.dwg
- 0100.5 THE GEOMETRY DEPICTED IN THIS DRAWING HAS BEEN DETERMINED FROM THE FOLLOWING:
- THE DEPARTMENT FOR TRANSPORTATION / HIGHWAYS ENGLAND DESIGN MANUAL FOR ROADS AND BRIDGES.

P01	PLANNING APPROVAL	03.04.20	GCP	NJH	JWS
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
PLANNING

WATER LANE, ANGMERING
ACCESS BRIDGE
WSCC REF: 1772
GENERAL ARRANGEMENT

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Date of 1st Issue	Designed	Drawn		
03.04.2020	GCP	GCP		
A1 Scale	Checked	Approved		
As Indicated	NJH	JWS		
Drawing Number		Revision		
46353-STN-SBR-AB-DR-CB-0101		P01		