

# MetroWest\*

## Portishead Branch Line (MetroWest Phase 1)

#### TR040011

Applicant: North Somerset District Council 5.6, Flood Risk Assessment, Part 15 of 17

Appendix O Part 2 of 3, Portishead station, Trinity Road footbridge and Avon Road

bridge drainage details

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)

Regulations 2009, regulation 5(2)(e)

**Planning Act 2008** 

**Author: CH2M** 

**Date: November 2019** 





















Please note some of the information shown on plans presented in the following documents has changed, as follows:

#### Trinity Footbridge, Form F001 (W1097B-ARP-FRM-ECV-000012)

Some of the information shown on the following plan has been updated:-

S051 Trinity Footbridge Proposed General Arrangement Plan Sheet 1- Drawing No. W1097B-ARP-DRG-EST-051101. Please see DCO Document 2.15 for the updated plan.

#### Trinity Footbridge F001 Addendum (W1097B-ARP-FRM-ECV-000024)

Some of the information shown on the following plans has been updated:-

S051 Trinity Footbridge Proposed Landscaping General Arrangement Sheets 1 and 2- Drawing No's. W1097B-ARP-DRG-ECV-051101-2. Please see DCO Document 2.16 for the updated plan.

S051 Trinity Footbridge Proposed General Arrangement Plans Sheet 1- Drawing No. W1097B-ARP-DRG-EST-051101. Please see DCO Document 2.15 for the updated plan.

S051 Trinity Footbridge Proposed General Arrangement Plans Sheet 2- Drawing No. W1097B-ARP-DRG-EST-051102. Please see DCO Document 2.8.3 for the updated plan.

#### Avon Road Underbridge, Form F001 (W1097B-ARP-FRM-ECV-000016)

Some of the information shown on the following plans has been updated:-

Avon Road Underbridge General Arrangement Proposed Sheets 1 Drawing No. W1097B-ARP-DRG-EST-007201. Please see DCO Document 2.22 for the updated plan.

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# Document history

Project	Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme
Planning Inspectorate Scheme Reference	TR040011
Volume and Application Document Reference	5, 5.6
Document title	Flood Risk Assessment, Part 15 of 17
	Appendix O Part 2 of 3, Portishead station, Trinity Road footbridge and Avon Road bridge drainage details
Regulation Number	Regulation 5(2)(e)
Applicant	North Somerset District Council
Lead Author	RB at CH2M

Version	Date	Status of Version
Rev: 01	12/11/19	Application Issue

### Network Rail

### **MetroWest Phase 1**

Approval In Principle (Form F001): Portishead Station Civils Design

W1097B-ARP-FRM-ECV-000015

A02 | 12 January 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 243952-00

Ove Arup & Partners Ltd 63 St Thomas Street Bristol BS8 2HH United Kingdom www.arup.com

**ARUP** 

Issue No A02

Issue Date 12 January 2018

#### 1.7.10 Fire protection

The platform/concourse structure will have an inherent fire resistance of 30 minutes. Fire protection to the reinforced concrete elements will be achieved by specifying minimum element thicknesses and cover to the reinforcement and prestressing strands. It is not anticipated that the fire condition will require greater cover than that required for durability.

Parts of the steelwork supporting fire rated partitions will be fire rated for 30 minutes. The system will be determined based on architectural considerations.

#### 1.7.11 Design standards

The structure and foundations will be designed in accordance with the Eurocodes using the UK National Annexes and NCCI documents and all applicable Network Rail standards.

### 1.8 Drainage

A new surface water drainage system is proposed to capture storm water runoff from the canopy and platform areas and a separate foul system has been designed to carry foul water away from the building itself.

#### 1.8.1 Surface water drainage

#### 1.8.1.1 Design parameters

The following parameters apply for the station surface water drainage:

Return Period: Due to the sensitivity of the site (sited within Flood Zone 2/3), the drainage has been designed for a 1 in 100 year storm event with an additional allowance (+30%) to account for climate change;

Methods for estimating run-off: The Rational Method (Q=CiA) has been used to calculate peak flows entering the system for the storm event discussed above. Rainfall intensity (i) and Runoff coefficient (C) have been taken conservatively as 80mm/hr and 1.0 respectively.

#### **1.8.1.2 Proposals**

Surface water drainage proposals are outlined in full the listed in the drawings in Appendix A1.1.4

It is proposed to drain the canopy via a downpipe arrangement (as noted above) and convey flows to a Type-B manhole in the maintenance area. From this manhole, a 450mm Ø perforated collector drain will extend along the entire length of the maintenance area at self-cleansing gradient to collect flows from the exposed portion of the platform (designed with a back-fall of 1 in 40 to drain directly onto the maintenance walking route), the maintenance route itself and adjacent access path.

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Issue Date 12 January 2018

The perforated collector drain will connect to the proposed track drainage via a manhole at Ch 18101m before continuing to the proposed outfall, 'The Cut.' Refer to W1097B-ARP-FRM-EDR-000001 (Drainage Form A: Approval in Principle) report for further details of the outfall.

A shallow channel drain (M100D No. 0100 ACO or similar approved) is proposed for platform cleaning reasons only along the western section of the platform (under the canopy). It should be noted that this ACO drain has been sized to meet constraints imposed by the platform structure; the channel can deal with 1.5l/s for a 60m run and may be prone to blockage due to its small size.

#### 1.8.1.3 Maintenance

It is proposed that all of the station surface water drainage, including the collector drain, will be maintained by the buildings RAM up to the manhole at Ch. 18101m to which the track drainage connects.

An increased maintenance regime is recommended for the platform ACO drain.

#### 1.8.2 Foul drainage

#### 1.8.2.1 Design parameters

The following parameters apply for the station foul water drainage:

Methods for estimating peak flows: The Discharge Unit Method  $(Q = k_{DU}\sqrt{\Sigma n_{DU}})$  has been used to determine an anticipated peak foul flows of 6 l/s. A frequency factor  $(k_{DU})$  of 1 has been used to conservatively estimate discharge for a 'congested' frequency of use.

Self-cleansing regime: All 100mm Ø lateral drains are designed at a minimum gradient of 1:80, and 150mm Ø pipes laid at 1:150 as per Sewers for Adoption (7th Edition).

#### 1.8.2.2 Proposals

Foul water drainage proposals are outlined in full the listed in the drawings in Appendix A1.1.4

Based on information from the MEP layouts, sub-base foul drainage has been designed to collect flows from internal Soil Vent Pipes (SVPs) and gullies in line with Sewers for Adoption (7th Edition) guidance.

The foul drainage design is to be adopted by CH2M Hill outside of the building.

#### 1.8.2.3 Maintenance

It is proposed that all of the foul drainage within the station will be maintained by the TOC and/or buildings RAM.

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NR/L3/CIV/030	Issue 3	Platform Components and Prefabricated Construction Systems
GI/GN7616	Issue 2	Guidance on Interface between Station Platforms, Track and Trains
GI/RT7016	Issue 5	Interface between Station Platforms, Track and Trains
DfT Code of Practice	Version 4	Design Standards for Accessible Railway Stations
BLDG-SP80-002		Station Design Principles for Network Rail
W1097B-ARP-FRM- EDR-000001	1	Drainage Report: Approval in Principle

## A1.6 Any Other Relevant Information

Arup's design boundary is the edge of the Network Rail Boundary and is marked on the location plan drawing (W1097B-ARP-DRG-EST-101101). Outside of this boundary is being designed by CH2M who we have coordinated these designs with.

# A1.7 Special Access Arrangements/Requirements for Examination, Inspection, Repair, Renewal or Removal

#### A1.7.1 Platform

Access to the voids under the platform is to be via the mesh panels at the rear of the platform. The Network Rail maintenance walk route behind the platform allows access to the underside of the open section of the platform for inspection. The covered section in front of the building can only be accessed for inspection and maintenance from the front edge of the platform, requiring a possession. Due to the time period between structural inspections this was deemed to be acceptable and could be done out of operating hours.

#### A1.7.2 Drainage

Access points for inspection and maintenance have been provided throughout the drainage network at suitable intervals. These have been positioned to avoid the

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need to close access routes during maintenance operations where possible. All equipment has been placed adjacent to trafficked areas where possible so that access is provided for maintenance activities.

The drainage components, their purposes, impact of damages or poor maintenance and the suggested maintenance regime are outlined below in the following format:

- Component description and purpose;
- Factors damaging the hydraulic performance of components;
- Results of damage or poor maintenance to the hydraulic performance of components;

Suggested maintenance regime.

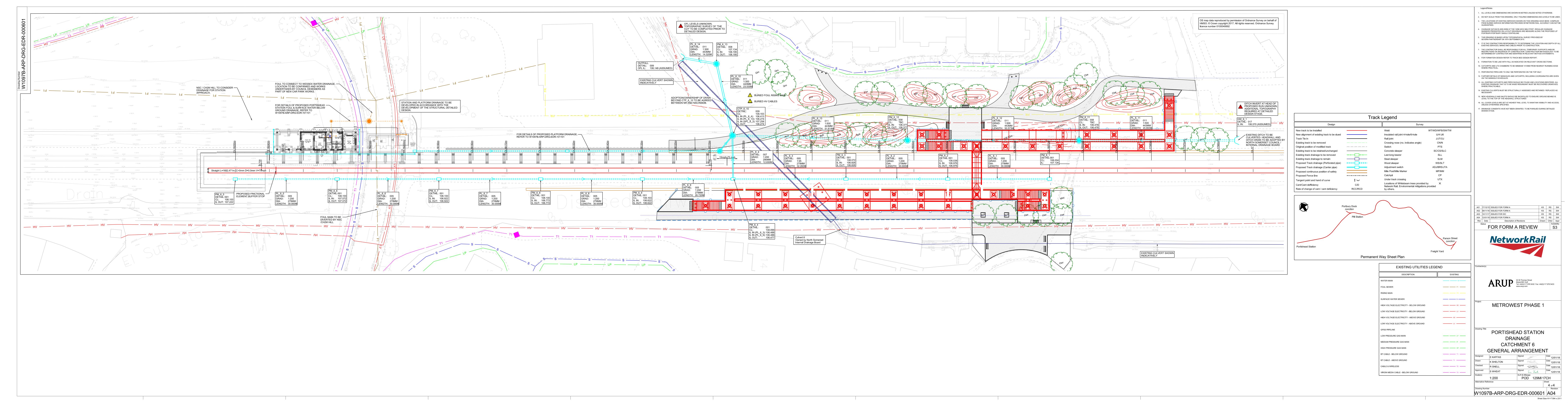
#### A1.7.3 Linear Drains and Gullies

- The proposed platforms will be drained by linear drains.
- Blockage of the linear drains and gullies will reduce the capacity of the
  drainage network. Blockages are usually increased if the gratings on the
  gullies and linear drains are removed or damaged by unforeseen loading
  actions and acts of vandalism. Damaged or removed gratings to the units also
  pose a safety risk to the public and should therefore be replaced immediately.
- Reduced capacity of the drainage units will significantly increase the risk of localised flooding as flows seek alternative flow paths. Standing water created by blocked linear drains and gullies can reduce the design life of the pavement below it.
- Gullies and linear drains should generally be inspected every 4 months and cleaned out on a regular basis. The visual inspections should record locations where siltation is prevalent and additional care and removal should be undertaken as required at these locations.

## A1.8 Checking Category

The Design of the Permanent Works is to be checked in accordance with:-

- Category I of NR/L3/CIV/003
- Network Rail Drainage Manual NR/L3/CIV/003
- Building Regulations 2002 Approved Document H (including 2010 amendments);



	MANHOLE				PIPI	ES			COVER				GENERAL	
REFERENCE	TYPE	EXTERNAL SIZE	CONFIGURATION	INVERT LEVEL	SDR RATE	PIPE DIA.	REFERENCE	TYPE	REFERENCE	SIZE	COVER LEVEL	LOCATION	DETAILS	COMMENTS
PM_6_1	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735	A	A - 107.126	A - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.004	X = 409913.660 Y = 286708.883	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_2	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735	A B	A - 106.976 B - 106.976	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.038	X = 409885.675 Y = 286719.693	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_3	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735	A	A - 106.826 B - 106.826	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.072	X = 409857.689 Y = 286730.500	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_4	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735	C A B	A - 106.477 B - 106.488 C - 106.488	A - SDR11 B - SDR17 C - SDR17	A - 290MM B - 279MM C - 279MM	DEMCO A - TERRALINE B - TERRADRAIN C - TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.099	X = 409826.655 Y = 286742.504	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_5	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735	A	A - 107.222	A - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.100	X = 409689.791 Y = 286795.388	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_6	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735	B	A - 107.072 B - 107.072	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.100	X = 409717.775 Y = 286784.575	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_7	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1035 X 575	B	A - 106.922 B - 106.922	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'NARASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/101352 OR SIMILAR APPROVED	1035 X 575	108.100	X = 409745.758 Y = 286773.762	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_8	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1035 X 575	B	A - 106.772 B - 106.772	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'NARASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/101352 OR SIMILAR APPROVED	1035 X 575	108.100	X = 409773.742 Y = 286762.948	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_9	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1035 X 575	B	A - 106.622 B - 106.622	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'NARASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/101352 OR SIMILAR APPROVED	1035 X 575	108.103	X = 409801.725 Y = 286752.135	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
CTP_6_10	TYPE B CATCHPIT	1500Ø	D C B	A - 106.274 B - 106.274 C - 106.413 D - 107.258	A - SDR17 B - SDR17 C - SDR11 D - SDR17	A - 443MM B - 443MM C - 290MM D - 279MM	DEMCO A -TERRADRAIN B - TERRALINE C - TERRALINE D - TERRALINE OR SIMILAR APPROVED	B125 / C250	-	600 X 600	108.103	X = 409381.112 Y = 286754.532	DETAIL 009	
PM_6_11	TYPE B MANHOLE	1350Ø	A B	A - 106.478 B - 106.478	A - SDR17 B - SDR17	A - 443MM B - 443MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	B125 / C250	-	600 X 600		X = 409878.715 Y = 286734.585	DETAIL 008	
PM_6_12	TYPE B MANHOLE	1350Ø	A B	A - 106.377 B - 106.377	A - SDR17 B - SDR17	A - 443MM B - 443MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	B125 / C250	-	600 X 600		X = 409925.880 Y = 286716.333	DETAIL 008	
PM_6_13	TYPE B MANHOLE	1350Ø	A	A - 106.195 B - 106.195	A - SDR17 B - SDR17	A - 443MM B - 443MM	DEMCO TERRALINE OR SIMILAR APPROVED	B125 / C250	-	600 X 600	107.134	X = 409834.338 Y = 286775.932	DETAIL 008	

end/Notes

- 1. ALL LEVELS AND DIMENSIONS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
- 2. DO NOT SCALE FROM THIS DRAWING, ONLY FIGURED DIMENSIONS AND LEVELS TO BE USED.

  3. THE LOCATIONS OF EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN COMPILED.
- 3. THE LOCATIONS OF EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN COMPILED FROM BURIED SERVICE INFORMATION PROVIDED BYNETWORK RAIL, ACCURACY CAN NOT BE
- 4. CHAINAGE DATUM IS 4000.000M AT THE 120M 40CH MILE POST. REGULAR CHAINAGE MARKERS PRESENTED ON LAYOUT DRAWINGS ARE MEASURE ALONG THE PROPOSED UP PORTBURY/PORTBURY SINGLE CENTRELINE.
- 5. THIS DRAWING IS BASED UPON TOPOGRAPHICAL SURVEY PROVIDED BY SEVERN PARTNERSHIP ON 19TH SEPTEMBER 2015.
- 6. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE LOCATION AND DEPTH OF ALL EXISTING SERVICES, MAINS AND CABLES PRIOR TO CONSTRUCTION.
- 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY SUPPORTS AND/OR RESTRICTIONS ON SEQUENCE OF CONSTRUCTION. CONSTRUCTION METHODOLOGY TO BE DETERMINED BY CONTRACTOR AND IDENTIFIED IN RELEVANT METHOD STATEMENTS.
- 8. FOR FORMATION DESIGN REFER TO TRACK BED DESIGN REPORT.
- 9. FORMATION TO BE LAID WITH FALL AS INDICATED ON RELEVANT CROSS SECTIONS.

ON THE MANHOLE SCHEDULES.

- 10. CATCHPITS AND UTX CHAMBERS TO BE MINIMUM 1410MM FROM NEAREST RUNNING EDGE WHERE PRACTICAL.
- 11. PERFORATED PIPES ARE TO ONLY BE PERFORATED ON THE TOP HALF.
- PERFORATED PIPES ARE TO ONLY BE PERFORATED ON THE TOP HALF.
   FURTHER DETAILS OF MANHOLES AND CATCHPITS, INCLUDING COORDAINATES ARE GIVEN
- 13. ALL EXISTING CATCHPITS AND PIPES SHOULD BE FOUND AND LOCATIONS IDENTIFIED. ALL EXISTING DRAINAGE THAT IS TO BE MADE REDUNDANT MUST BE RECOVERED (REMOVED) WHERE PRACTICABLE.
- 14. EXISTING CULVERTS MUST BE STRUCTURALLY ASSESSED AND RETAINED / REPLACED AS NECESSARY
- 15. NEW HEADWALLS AND INLETS SHOULD BE BACKFILLED TO ENSURE GROUND BEHIND IS LEVEL TO THE TOP OF THE HEADWALL STRUCTURES
- 16. ALL COVER LEVELS ARE SET AT HIGHEST RAIL LEVEL TO MAINTAIN VISIBILITY AND ACCESS, UNLESS OTHERWISE SPECIFIED.
- 17. DRAINAGE CONSENTS HAVE NOT BEEN GRANTED. TO BE PURSUED DURING DETAILED DESIGN STAGE.

01	17/12/15	ISSUED FOR FORM A	KS	RS	3	SW		
02	12/01/18	ISSUED FOR FORM A	KS	RS	S	SW		
Rev	Date	Description of Revisions	Drawn	Chl	κd	Appr		
St	tatus				Sui	tability		
	FOR FORM A REVIEW							



Contractor(s)



METROWEST PHASE 1

Drawing Title

PORTISHEAD STATION
TRACK DRAINAGE
CATCHMENT 6
MANHOLE SCHEDULE

Designed	E KAFFAS	Signed	Date 12/01/18
Drawn	K SHELTON	Signed Whelt	Date 12/01/18
Checked	R SNELL	Signed 1235	Date 12/01/18
Approved	S WHEAT	Signed I. Mit	Date 12/01/18
Scale(s)	-	ELR & Mileage	
	NTS	POD 129M	1I 17CH
Alternative Re	eference		Sheet
			3 % 3

W1097B-ARP-DRG-EDR-000611 A02

### Network Rail

### **MetroWest Phase 1**

## Trinity Footbridge, Form F001

W1097B-ARP-FRM-ECV-000012

A01 | 4 December 2015

ELR: POD

Chainage: 129m 06ch

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 243952-00

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Network Rail MetroWest Phase 1
Trinity Footbridge, Form F001

W1097B-ARP-FRM-ECV-000012: Approval in Principle

Issue No A01

Issue Date 4 December 2015 Structure No

**Project Title** MetroWest Phase 1

Project No Network Rail: 140569 Arup: 243952-00

PRS Reference No

**Location** Portishead, Bristol

 ELR(s)
 POD
 Mileage
 129m 06ch

 OS Grid Ref
 ST 347706, 176315
 Structure Nos
 S051

#### Part 1: Details

## 1.1 Proposed Works

MetroWest Phase 1 proposes to reopen the redundant Portishead Line with a half hourly passenger train service and a new station at Portishead (among others).

Trinity Primary School is located adjacent to the proposed Portishead Station. The school is currently unofficially accessed from the south via a footpath crossing the redundant tracks at grade. This route is to be removed as part of the proposed works and replaced with a new footbridge.

The new footbridge will follow the principle of a standard Network Rail non-stations footbridge (NR/CIV/SD/400 series). It shall be a bespoke design as the clear width will be increased from 2.0m to 2.5m and bridge parapet height amended to 1.85m. The approach footpaths and adjacent areas are to be landscaped as part of the architectural master plan.

## **1.2** Assets affected (See Appendix A)

This design submission relates to the design of the following new or altered assets:

<b>Description of Asset</b>	Proposed Works
Footbridge	A new 2.5m wide bespoke footbridge is proposed based on the principles of a standard Network Rail non-stations footbridge NR/CIV/SD/400 series. The bridge parapet height shall be amended to 1.85m for future OLE provision.
Foundations	Piled foundations are required below the structural supports.
Existing culverts	One of the piled foundations clashes with an existing culvert, so a piled slab is proposed, to span over the culvert, on to which the access ramps will found. This is intended to isolate the culvert from bridge loading. Consultation with NSIDB is to take place in the next phase.
Drainage	The bridge drainage shall outfall through spitter pipes as per the SDD.
Lighting	Lighting is proposed along the access ramps, stairs, main span and approach footpaths. Refer to the M&E F001 W1097B-ARP-FRM-EPT-000002 submission for details.

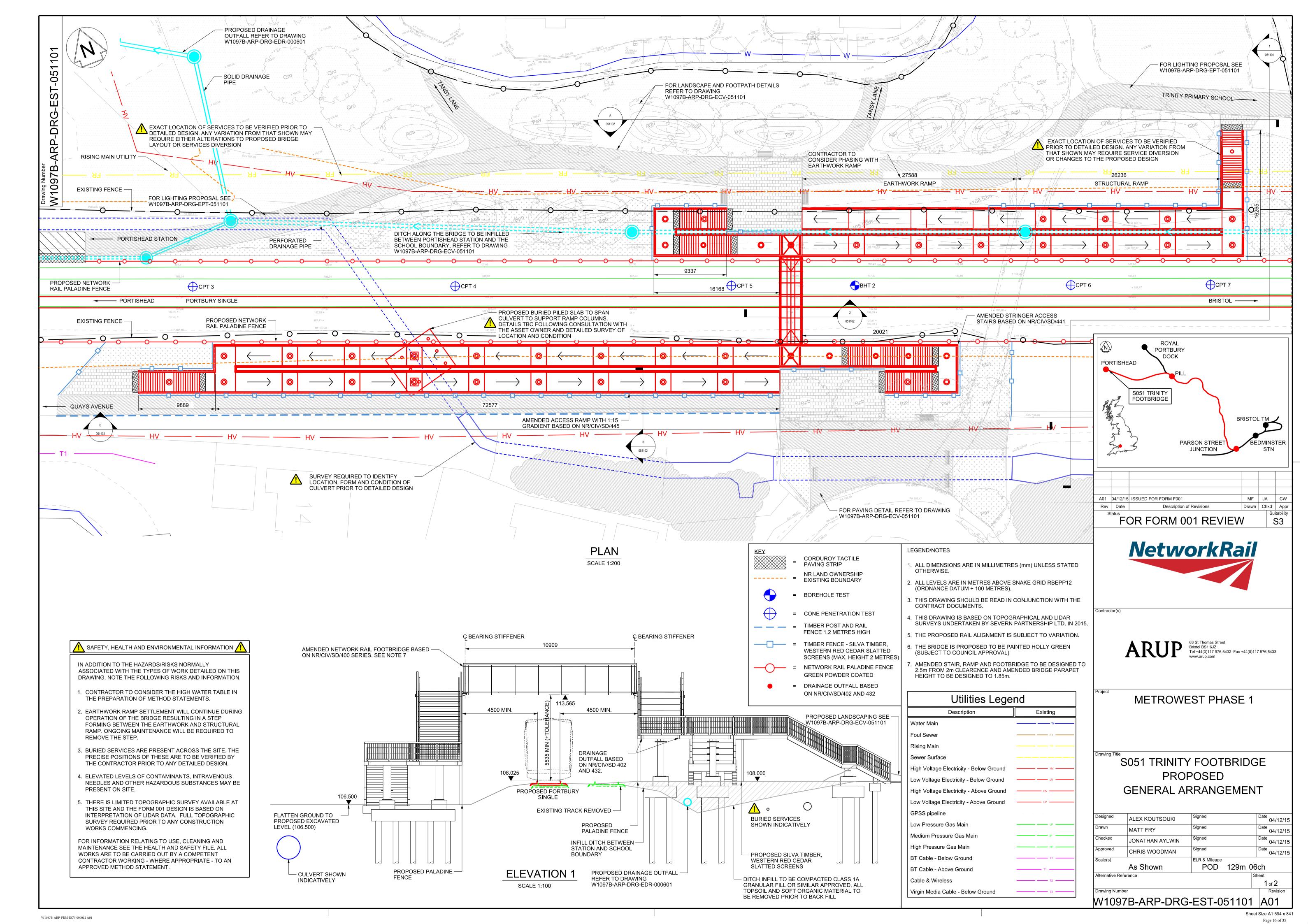
Network Rail MetroWest Phase 1
Trinity Footbridge, Form F001

#### W1097B-ARP-FRM-ECV-000012: Approval in Principle

Issue No A01

Issue Date 4 December 2015 Structure No

<b>Description of Asset</b>	Proposed Works
Existing drainage ditches	It is proposed to infill the existing ditches North of the bridge between the proposed station and Trinity School. This forms part of the architectural landscaping masterplan. The infill ditch will be replaced by a perforated pipe connecting the existing ditches with the Cut Gordano outfall.
Landscaped grassed mounds	Architectural landscaping is proposed around the bridge structure.



### Network Rail

### **MetroWest Phase 1**

## Trinity Footbridge F001 Addendum

W1097B-ARP-FRM-ECV-000024

A01 | 8 February 2019

ELR: POD

Chainage: 129m 06ch

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied

upon by any third party and no responsibility is undertaken to any third party.

Job number 243952

Ove Arup & Partners Ltd 63 St Thomas Street Bristol BS1 6JZ United Kingdom www.arup.com



# **Document verification**



Job title		MetroWest	Phase 1		Job number			
					243952			
Document title Trinity Footbridge F001 Addendum				dum	File reference			
Document 1	ref	W1097B-A	RP-FRM-ECV-0000					
Revision	Date	Filename	Form001 Addendu	Form001 Addendum.docx				
A01	08 Feb 2019	Description	For NR approval					
			Prepared by	Checked by	Approved by			
		Name	Chris Woodman	Laura Millar	Rob Snell			
		Signature						
		Filename						
		Description						
			Prepared by	Checked by	Approved by			
		Name						
		Signature						
		Filename		•				
		Description						
			Prepared by	Checked by	Approved by			
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		Signature						
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		Description						
			Prepared by	Checked by	Approved by			
		Name						
		Signature						
			Issue Docum	ent verification with	document			

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## **Appendices**

## Appendix A

Drawings

#### Part 1: Details

#### 1.1 Form 001

A Form 001 (ref: W1097B-ARP-FRM-ECV-000012) for the proposed Trinity footbridge was submitted on 22/12/15 and approved on 04/03/16

An instruction was received from Network Rail in January 2019 to produce an addendum to the Form 001, in line with the following changes:

- 1. Remove the flight of steps at the north east corner associated with access to the school.
- 2. Landscaping modifications in line with the council drawings provided.

## 1.1 Updated Drawings

The following updated drawings are provided in Appendix A:

- W1097B-ARP-DRG-ECV-051101\_A02\_S051 Trinity Footbridge Proposed Landscaping General Arrangement
- W1097B-ARP-DRG-ECV-051102\_A02\_ S051 Trinity Footbridge Proposed Landscaping General Arrangement
- W1097B-ARP-DRG-EST-051101\_A02\_ S051 Trinity Footbridge Proposed General Arrangement
- W1097B-ARP-DRG-EST-051102\_A02\_ S051 Trinity Footbridge Proposed General Arrangement

#### 1.2 Notes

The following should be noted:

- 1. The changes documented in this addendum do not materially change the principles as set out in the approved Form 1.
- 2. It is assumed the standards freeze is as per the original Form 001 date. No review against updated standards has been carried out.
- The CDM/CSM risks documented are not significantly changed by these amendments and the associated risk registers have therefore not been amended.
- 4. As requested by Network Rail the associated bridge and bridge approach lighting design has not been updated to suit the revised proposals.

## Part 2: Designer's Submission

I confirm that the criteria specified in NR/L2/CIV/003 have been considered, and that the design is submitted for Approval in Principle on behalf of:

Ove Arup & Partners Ltd, 63 St Thomas Street, Bristol, BS1 6JZ

Signed		Title	CRE – Civil Engineering
Name (Print)	Chris Woodman	Date	08/02/2019

To be signed by the Contractor's Responsible Engineer appointed for the relevant Design phase.

## **Part 3: Project Engineer Comments**

I have considered this submission for Approval in Principle and I am satisfied that this has adequately addressed the criteria specified in NR/L2/CIV/003, and confirm that the Design of the Permanent Works is to be checked in accordance with the Design Check Categories listed in Appendix A of NR/L2/CIV/003.

My comments on the submission are given below. Provided that these comments are addressed, I hereby give Approval in Principle to the proposals:

Proi	iect	Engir	neer (	Comm	ents
V.					CIICL

Signed	Title	
Name (Print)	Date	

To be signed by the Project Engineer (Building and Civil Engineering)

Signed	Title	
Name (Print)	Date	

To be signed by other responsible person, such as the Project Engineer (Building Services)

# Part 4: Asset Manager's Approval

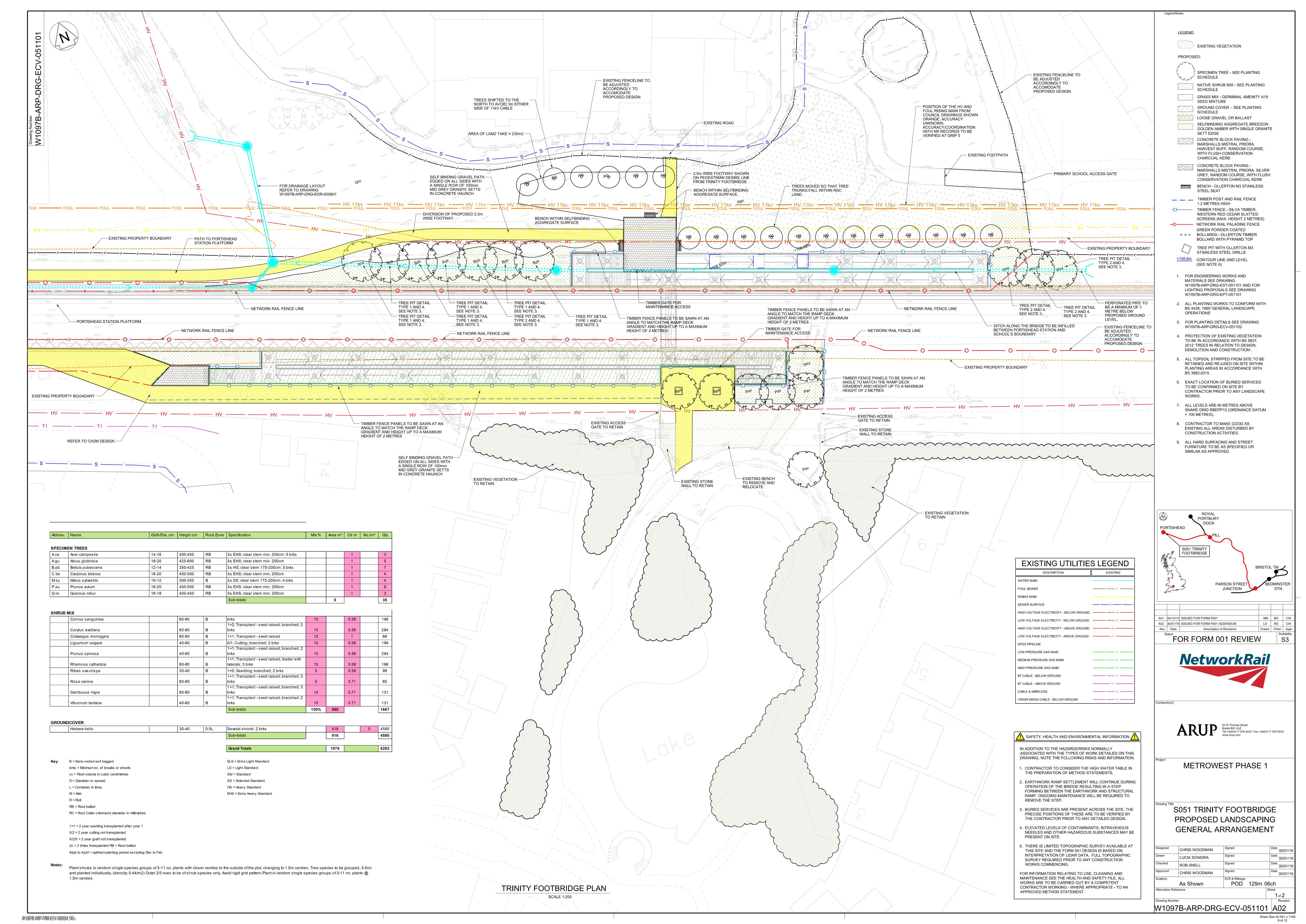
I have considered the submission and confirm that this is approved subject to the comments given below being addressed within the Detailed Design.

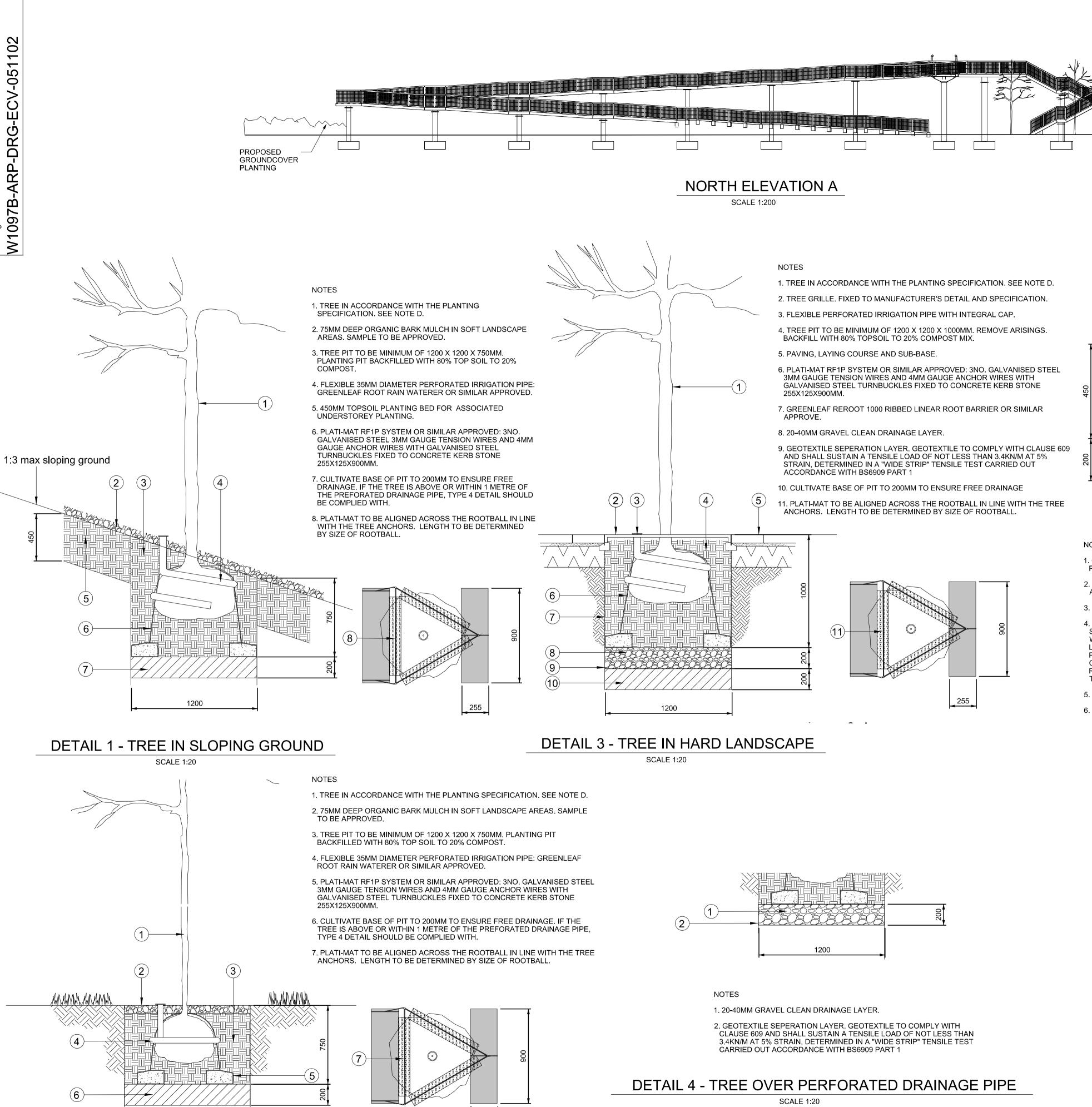
igned	Title
gneu	Title
ame	Date
Print)	
o be signed by the Asset Manager Structures	
igned	Title
ame	Date
Print)	Batte
o be signed by Asset Manager (Geotechnical)	
igned	Title
ame Print)	Date

To be signed by Asset Manager (Buildings)

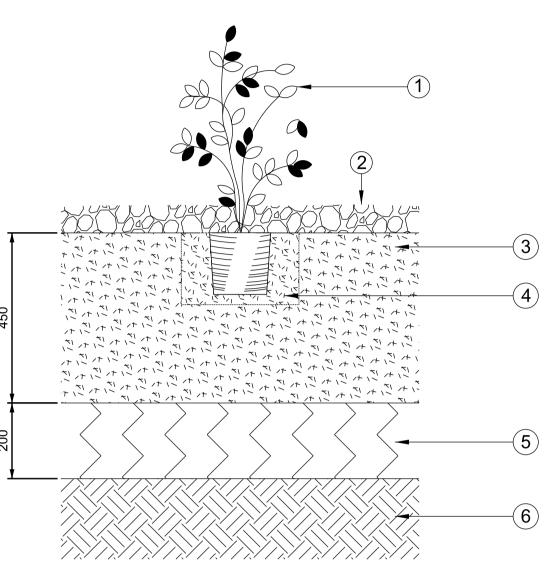
# Appendix A

Drawings





255



## NOTES

- 1. ORNAMENTAL SHRUB OR GROUNDCOVER PLANT IN ACCORDANCE WITH THE PLANTING SCHEDULE. SEE NOTE D.
- 2. 75MM DEEP ORGANIC BARK MULCH IN SOFT LANDSCAPE AREAS. SAMPLE TO BE APPROVED.
- 3. 450MM TOPSOIL PLANTING BED.

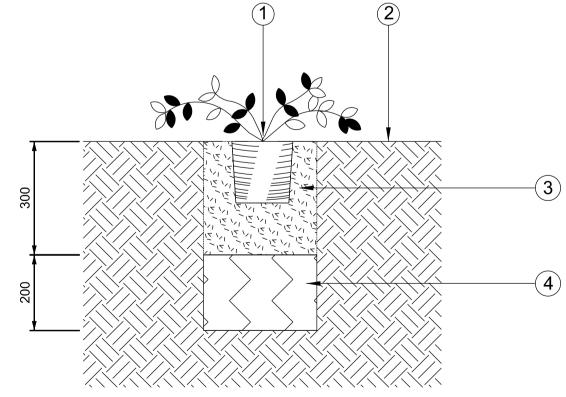
PROPOSED

**PLANTING** 

GROUNDCOVER

- 4. PLANTING PITS TO BE 150 MM WIDER THAN THE ROOT SPREAD. THE SHRUBS SHALL BE SET IN THE HOLES SO THAT THE SOIL LEVEL, AFTER SETTLEMENT, WILL BE AT THE ORIGINAL ROOT COLLAR LEVEL ON THE STEM OF THE SHRUB. LOOSEN ROOTS AT BOTTOM OF COMPOST GENTLY WITH FINGERTIPS PRIOR TO PLANTING. THE HOLES SHALL BE BACKFILLED WITH 80% TOPSOIL TO 20% COMPOST, TO HALF THEIR DEPTH AND SHALL BE FIRMED BY TREADING. THE REMAINDER OF THE TOPSOIL SHALL THEN BE RETURNED AND AGAIN FIRMED BY
- 5. EXISTING SUB GRADE TO BE RIPPED TO A DEPTH OF 200MM.
- 6. EXISTING SUB GRADE

# DETAIL 5 - SHRUB PLANTING SCALE 1:10



## NOTES

- 1. GROUNDCOVER OR HERBACEOUS PLANT IN ACCORDANCE WITH THE PLANTING SCHEDULE. SEE NOTE D.
- 2. EXISTING SOIL/VEGETATED AREAS.
- 3. PLANTING PITS TO BE DUG INTO EXISTING SOIL 150MM WIDER THAN THE ROOT SPREAD AND 300MM DEEP. THE PLANTS SHALL BE SET IN THE HOLES SO THAT THE SOIL LEVEL, AFTER SETTLEMENT, WILL BE AT THE ORIGINAL ROOT COLLAR LEVEL ON THE STEM OF THE SHRUB. LOOSEN ROOTS AT BOTTOM OF COMPOST GENTLY WITH FINGERTIPS PRIOR TO PLANTING. THE HOLES SHALL BE BACKFILLED WITH 80% TOPSOIL TO 20% COMPOST TO HALF THEIR DEPTH AND SHALL BE FIRMED BY TREADING. THE REMAINDER OF THE TOPSOIL SHALL THEN BE RETURNED AND AGAIN FIRMED BY TREADING.
- 4. EXISTING SUB GRADE TO BE RIPPED TO A DEPTH OF 200MM.

# DETAIL 6 - GROUND COVER PLANTING

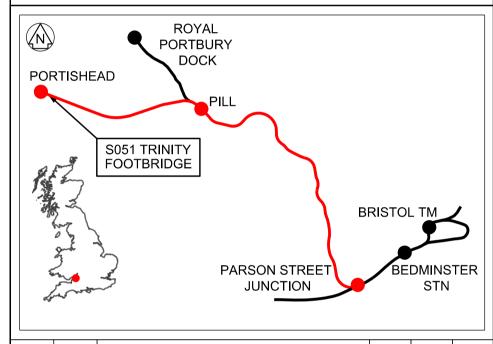
SCALE 1:10

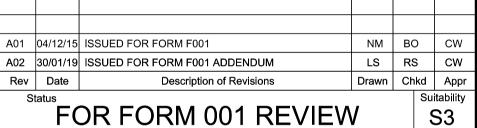
- A. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS STATED
- B. ALL LEVELS ARE IN METRES ABOVE SNAKE GRID RBEPP12 (ORDNANCE DATUM + 100 METRES).

CONTRACT DOCUMENTS.

D. REFER TO DRAWING W1097B-ARP-DRG-ECV-051102 FOR PLANTING PLAN AND SCHEDULE.

C. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE







Contractor(s)



METROWEST PHASE 1

S051 TRINITY FOOTBRIDGE
PROPOSED LANDSCAPING
GENERAL ARRANGEMENT

Alternative Re		She	
Scale(s) As Shown		ELR & Mileage POD 129m 06c	h
Approved	CHRIS WOODMAN	Signed	<sup>ate</sup> 30/01/19
Checked	ROB SNELL	Signed	<sup>ate</sup> 30/01/19
Drawn	LUCIA SONEIRA	Signed	<sup>ate</sup> 30/01/19
Designed	CHRIS WOODMAN	Signed	ate 30/01/19

rawing Number

W1097B-ARP-DRG-ECV-051102 A02

W1097B-ARR-FRM-ECV-000024 A01

1200

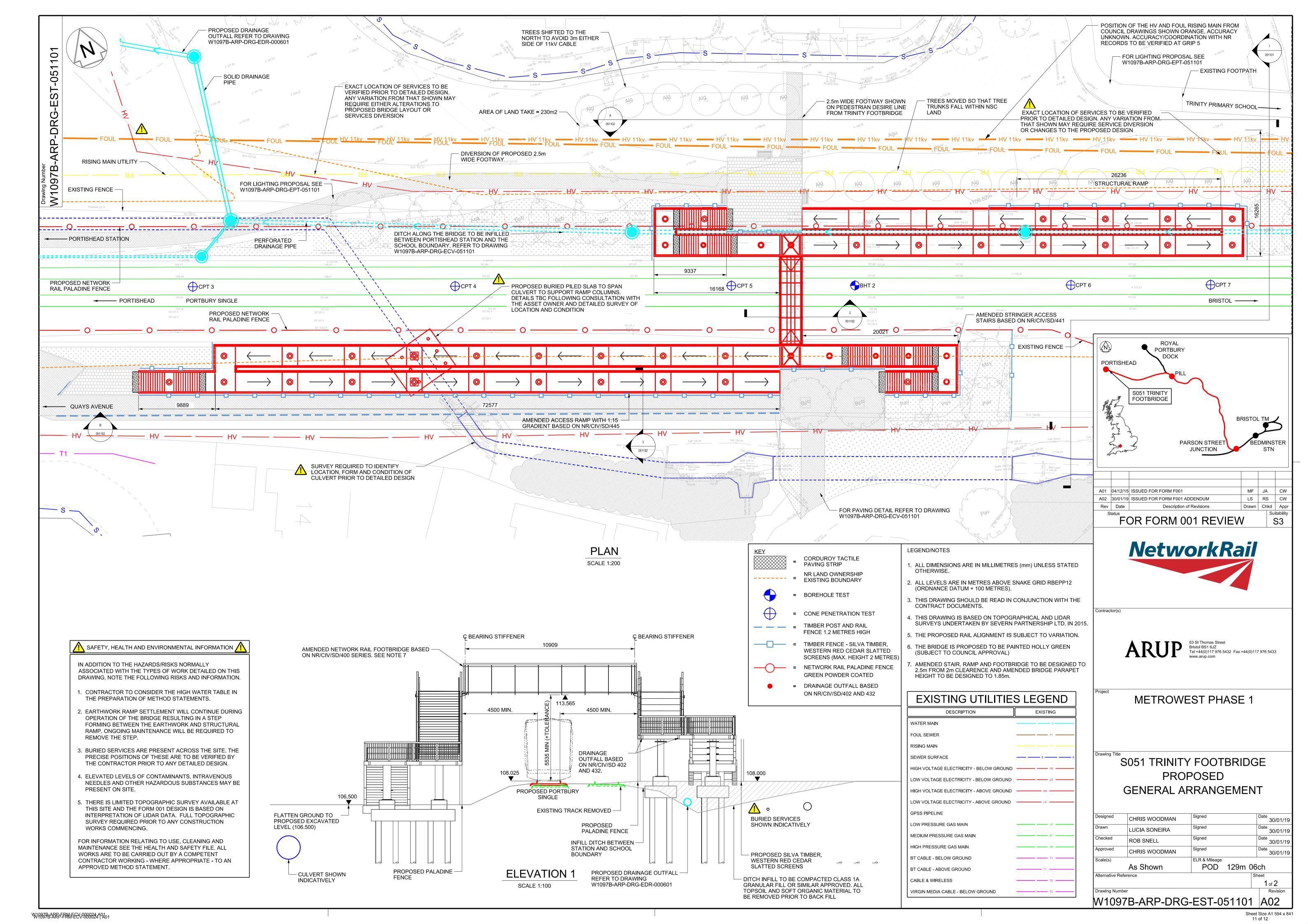
SCALE 1:20

DETAIL 2 - TREE IN LEVELLED SOFT LANDSCAPE

Sheet Size A1 594 x 841

10 of 12

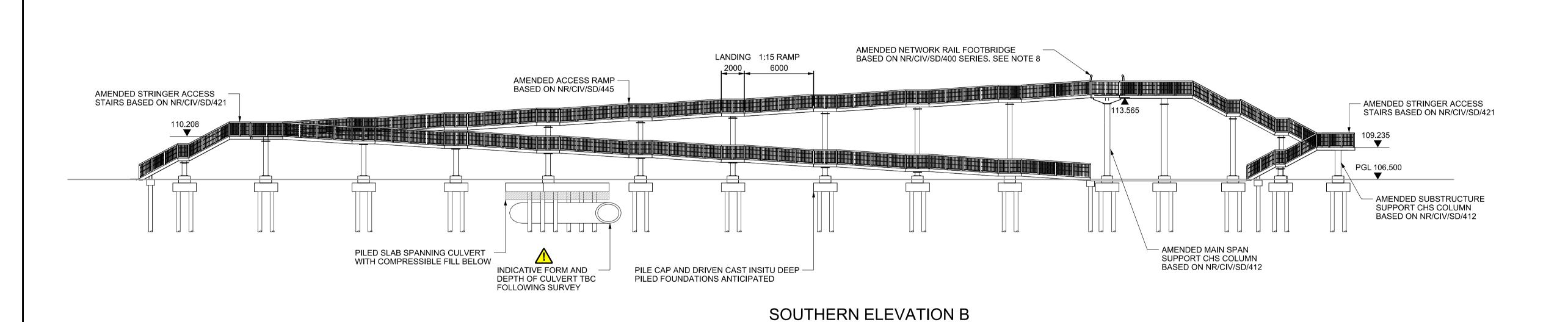
2 of 2



# NORTHERN ELEVATION A

SCALE 1:200

SCALE 1:200

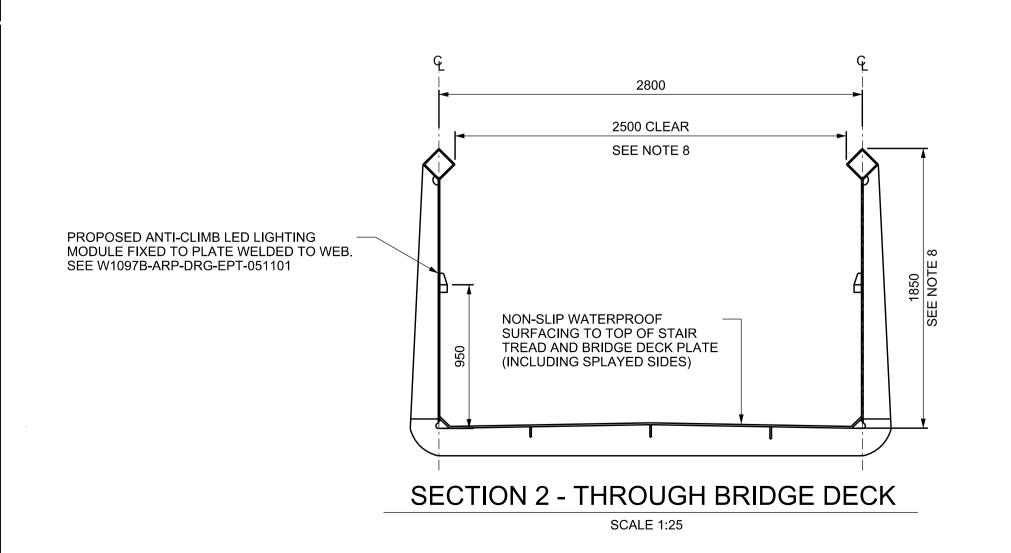


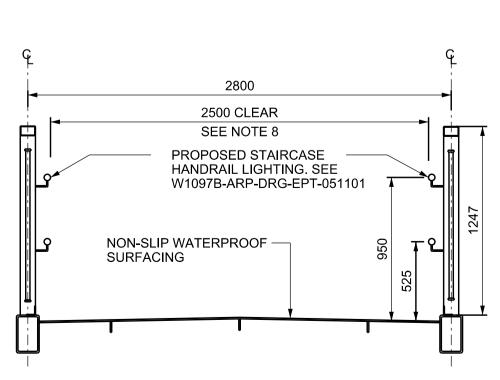
IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING RISKS AND INFORMATION.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

- CONTRACTOR TO CONSIDER THE HIGH WATER TABLE IN THE PREPARATION OF METHOD STATEMENTS.
- 2. EARTHWORK RAMP SETTLEMENT WILL CONTINUE DURING OPERATION OF THE BRIDGE RESULTING IN A STEP FORMING BETWEEN THE EARTHWORK AND STRUCTURAL RAMP. ONGOING MAINTENANCE WILL BE REQUIRED TO REMOVE THE STEP.
- 3. BURIED SERVICES ARE PRESENT ACROSS THE SITE. THE PRECISE POSITIONS OF THESE ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY DETAILED DESIGN.
- 4. ELEVATED LEVELS OF CONTAMINANTS, INTRAVENOUS NEEDLES AND OTHER HAZARDOUS SUBSTANCES MAY BE PRESENT ON SITE.
- 5. THERE IS LIMITED TOPOGRAPHIC SURVEY AVAILABLE AT THIS SITE AND THE FORM 001 DESIGN IS BASED ON INTERPRETATION OF LIDAR DATA. FULL TOPOGRAPHIC SURVEY REQUIRED PRIOR TO ANY CONSTRUCTION WORKS COMMENCING.

FOR INFORMATION RELATING TO USE, CLEANING AND MAINTENANCE SEE THE HEALTH AND SAFETY FILE. ALL WORKS ARE TO BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING - WHERE APPROPRIATE - TO AN APPROVED METHOD STATEMENT.





SECTION 3 - THROUGH RAMP

SCALE 1:25

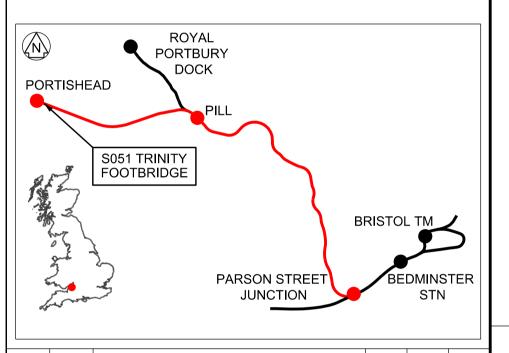
Legend/No

- ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS STATED OTHERWISE.
- 2. ALL LEVELS ARE IN METRES ABOVE SNAKE GRID RBEPP12 (ORDNANCE DATUM + 100 METRES).
- 3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE
- CONTRACT DOCUMENTS.

  4. THIS DRAWING IS BASED ON TOPOGRAPHICAL AND LIDAR SURVEYS
- 5. THE PROPOSED RAIL ALIGNMENT IS SUBJECT TO VARIATION.

UNDERTAKEN BY SEVERN PARTNERSHIP LTD. IN 2015.

- 6. THE BRIDGE IS PROPOSED TO BE PAINTED HOLLY GREEN (SUBJECT TO COUNCIL APPROVAL)
- 7. APPROACH EMBANKMENT WILL SETTLE (POTENTIALLY UP TO 300mm). CONSTRUCTION PHASING AND METHODOLOGY SHOULD BE DESIGNED TO ENSURE THAT THE MAJORITY OF THIS MOVEMENT IS COMPLETE PRIOR TO CONSTRUCTION OF THE CONNECTING BRIDGE RAMPS. THIS COULD ENTAIL SURCHARGING FOR A PERIOD OF TIME PRIOR TO BRIDGE CONSTRUCTION (INSTALLATION OF BAND DRAINS COULD SPEED UP THIS PROCESS). NOTE THAT SOME ONGOING CREEP MOVEMENT WILL STILL OCCUR DURING THE STRUCTURES DESIGN LIFE.
- 8. AMENDED STAIR, RAMP AND FOOTBRIDGE TO BE DESIGNED TO 2.5m FROM 2m CLEARENCE AND AMENDED BRIDGE PARAPET HEIGHT TO BE DESIGNED TO 1.85m.



A01	04/12/15	2/15 ISSUED FOR FORM F001				CW
A02	30/01/19	ISSUED FOR FORM F001 ADDENDUM	LS	RS	3	CW
Rev	Date	Description of Revisions	Drawn	Ch	kd	Appr
Status					Sui	tability
FOR FORM 001 REVIEW					5	S3



Contractor(s)



**METROWEST PHASE 1** 

S051 TRINITY FOOTBRIDGE
PROPOSED
GENERAL ARRANGEMENT

Designed	CHRIS WOODMAN	Signed	Date 30/01/19
Drawn	LUCIA SONEIRA	Signed	Date 30/01/19
Checked	ROB SNELL	Signed	Date 30/01/19
Approved	CHRIS WOODMAN	Signed	Date 30/01/19
Scale(s)		ELR & Mileage	
As Shown		POD 129m (	)6ch

As Shown POD 129m 06ch

Alternative Reference Sheet
2 of 2

Drawing Number Revisi

W109757ABREFF14FGEC006662491A01

### Network Rail

### **MetroWest Phase 1**

## Avon Road Underbridge, Form F001

W1097B-ARP-FRM-ECV-000016

A01 | 12 January 2016

ELR: POD

Chainage: 126m 29ch

This report takes into account the particular instructions and requirements of our client.

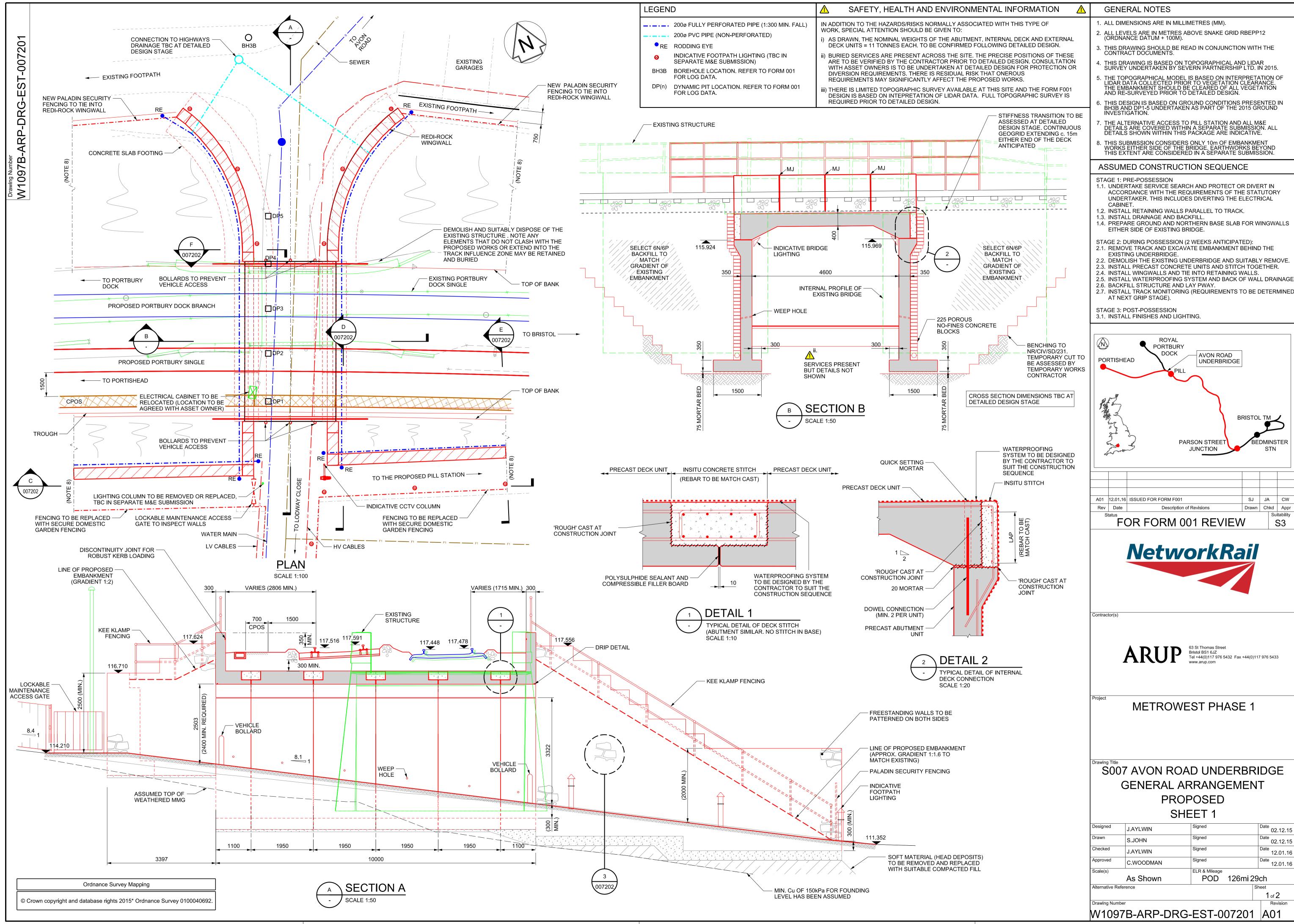
It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 243952-00



MetroWest Phase 1

Avon Road Underbridge, Form F001



W1097B-ARP-FRM-ECV-000016 | A01 | 12 January 2016