



Redwood SEN Hub

Rochdale

Drainage Statement

316553-HAH-XX-XX-R-C-00001

June 2026

Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
01	June 2026	Planning	MS	SZ
02	July 2026	Update to Planning	MS	SZ

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1.0 Introduction

This Drainage Statement accompanies the full planning application submitted by Rochdale Borough Council (RBC) ('the Applicant') who is seeking detailed planning permission ("the application") for the Redwood SEN development ('the site').

The development comprises of construction of a new SEN secondary school for 150 students and staff, with a new access road and associated facilities.

This report outlines the relevant development policies and the proposed drainage strategy. It evaluates the suitability of Sustainable Drainage Systems (SuDS) and water quality measures, while comparing existing surface water runoff against proposed discharge rates to determine required attenuation volumes.

2.0 Site Information

2.1 Existing Site Information

The site is in Rochdale Borough Council, approximately 7 km southwest of Rochdale city center. It covers an area of 3.24 hectares and is a greenfield site.

The site is bordered by:

- Fields and dwellings to the east,
- Trees to the south,
- The Edgar Wood Academy to the west,
- Whittle Brook to the north.

The topographical survey shows levels ranging from 103.8 mAoD at its lowest point in the northwest, along Heywood Old Road, to 115.5 mAoD at its highest point in the southwest. The site levels generally increase from west to east, with some depressions found in the north-central area of the site.

Refer to Appendix A for the topographical survey of the site and surroundings.

2.2 Existing Drainage and Utilities

A review of the available information has been carried out to identify existing drainage and determine potential points of connection. These include:

- United Utilities drainage records
- Topographical and utility survey

A review of the United Utilities record drawing indicates the presence of the following infrastructure:

- A 300mm foul sewer running to the south-east of the site, on Assumption Road.
- A 300mm surface water sewer to the south-east of the site, on Assumption Road.
- A 300mm combined water sewer to the south-east of the site, on Martindale Crescent.

The topographical and utility surveys confirm the presence of:

- An unknown diameter surface water sewer on Heywood Old Road, to the north of the site.

In addition, the utility survey confirms the absence of below-ground drainage within the site boundary. This aligns with the site's status as a greenfield location, where no existing infrastructure is anticipated.

Refer to Appendix A for the topographical and utility survey.

Refer to Appendix B for the United Utilities sewer record map.

Based on record information from the Edgar Wood Academy, a 33kv cable is expected to run from west to east, to the south of the site. Following conversation with Electricity North West (ENWL), the cable is confirmed to be out of commission and therefore redundant.

3.0 Development Proposals

The development proposal entails the construction of a new Special Educational Needs (SEN) school, including an access road, car parking, and landscaping. The facility is expected to accommodate approximately 150 individuals, comprising both staff and learners.



Figure 1 – Proposed development layout

4.0 Policies and guidance

This section outlines the regulatory framework and planning guidance relevant to the proposed development situated in the southern portion of the Rochdale borough.

4.1 National Standards

The development is governed by several key national planning frameworks and standards:

National Planning Policy Framework (NPPF): National policy dictates that new developments must avoid increased vulnerability to climate change impacts. Planning authorities expect proposals to demonstrate how energy consumption is minimised through landform, layout, and landscaping, while ensuring that risks are managed through suitable adaptation measures, including green infrastructure.

National Standards for Sustainable Drainage Systems (SuDS): All drainage schemes must comply with national standards for SuDS. These standards define the sustainable drainage hierarchy and require strategies for foul and surface water management to follow specific national guidance.

National Planning Practice Guidance on Flood Risk and Coastal Change: Site-specific Flood Risk Assessments (FRAs) are required for all development proposals, with stricter requirements (all sites over 0.5 ha) in designated Critical Drainage Areas (CDAs). This guidance also states SuDS should discharge surface water according to the following hierarchy:

1. Infiltration into the ground;
2. To a surface water body;
3. To a surface water drain;
4. To a combined sewer.

4.2 Local Policies

Rochdale Metropolitan Borough Council has established comprehensive local policies through its Local Development Framework:

Policy S4 - Managing Water Resources and Flood Risk: This policy requires an integrated water management approach. It demands full regard for the advice of the Environment Agency and the priorities set out in the Rochdale Flood Risk Management Strategy and the Irwell Catchment Plan, such as:

- Using the planning and development process to actively manage and reduce flood risk,
- Collaborating with United Utilities and the Environment Agency to align infrastructure investment and flood management efforts,
- Promoting resilience measures at the individual business and property level to mitigate the impact of flooding,
- Ensuring that effective flood risk management within the Rochdale district provides wider benefits for downstream districts, such as Bury, Manchester, and Salford,
- Using Sustainable Drainage Systems (SuDS) that address the four pillars of design: water quantity, water quality, amenity, and biodiversity,

Core Strategy Policy G1 (Tackling and Adapting to Climate Change): This policy mandates the incorporation of Sustainable Drainage Systems (SuDS) to ensure that run-off rates on

greenfield sites are not increased and on brownfield sites are reduced. It also encourages the removal of covered or culverted sections of waterways where possible.

Climate Change Adaptation Supplementary Planning Document (SPD): This document provides detailed guidance on eight adaptation headings, including rainwater harvesting and SuDS. It specifically requires that for non-domestic developments SuDS / attenuation be specified to ensure that the peak run-off rate from the site to a watercourse is no greater for the developed site than it was for the predeveloped site.

Urban Design Guides (SPDs): The series of design guides - including the Urban Design Guide, Residential Design Guide, and Public Realm Design Guide - emphasise that drainage solutions must be integrated into the layout from the earliest stage. These guides highlight the "four pillars" of SuDS design: water quantity, water quality, amenity, and biodiversity.

Summary

For this project, a site-specific FRA is required. Any identified flood risks must be minimised or mitigated. The proposed drainage should also aim to use SuDS, and discharge surface water run-off according to the SuDS hierarchy. If discharging to a watercourse, the discharge rate must not exceed the predevelopment greenfield run off rate.

5.0 Drainage Strategy

5.1 Foul Drainage

Based on the available information and the United Utilities asset record map, a suitable foul water connection for the site is in Assumption Road, to the south-west of the site, into the 300mm dia. United Utilities foul water sewer.

As the school is located approximately 350m from the connection point into the United Utilities asset, a pumped system is proposed to convey foul water from the site to the public sewer system. The proposed pump rate is 2.25L/s. A pre-development enquiry was submitted to United Utilities for the proposed connection. United Utilities have confirmed that there is sufficient capacity in their system for the proposed development and that the proposed point of connection is suitable.

Design of the rising main is a CDP item and outside HH scope.

A CCTV drainage survey will be conducted to confirm the exact location and depth of the United Utility sewer, to allow the detailed design of the connection to be progressed.

The drainage pipework will consist of 100mm and 150mm diameter uPVC pipes, laid within a pea gravel surround. Access and manholes will be constructed from uPVC, polypropylene, or precast concrete. The pumped main will be a 50mm uPVC pipe.

The foul water network will be designed to be self-cleansing, with a minimum flow velocity of 0.75 m/s. Gradients will not exceed 1:10 where practical, in accordance with safety standards.

All foul drainage design will be completed to an adoptable standard, as far as is feasible, in accordance with the Design and Construction Guidance (Approved version 2.2, June 2022) and current building design standards.

Refer to Appendix C for the proposed below ground drainage strategy drawings.

5.2 Surface Water Drainage

The existing site is a greenfield. The proposed hardstanding for the site is approximately 0.868ha. The greenfield runoff rate for the site has been estimated with the rural runoff tool in InfoDrainage software.

$Q_{bar} = 9.6$ litres/sec.

It is proposed to restrict the new 0.868ha of hardstanding to **9.6 litres/sec** (greenfield rate), for any storm event up to the 1in100 year storm event + 30% climate change, using a series of SuDS and flow controls manholes. The 30% climate change allowance has been chosen in line with the climate change allowances for the Irwell catchment, for a development with a lifetime between 2061 up to 2100 (accessible at the following links: [climate change allowances](#), [Irwell catchment](#)).

It is proposed to discharge at the above restricted rate into Whittle Brook via a 150mm pipe and headwall. At the point of discharge, Whittle Brook is not considered a main river. As such, it is within the responsibility of RBC. RBC, in its role of Lead Local Flood Authority, has been contacted to agree the discharge rate to Whittle Brook; they confirmed that discharging at a

greenfield rate of 9.6 should be acceptable in principle An Ordinary Watercourse Consent Application will be submitted post planning.

The drainage strategy will incorporate Sustainable Urban Drainage Systems (SuDS), such as tanked permeable paving, a detention basin, oversized pipes, filtration trenches and below ground storage in the form of geocellular crates. Refer to the next section of the report for details on the SuDS proposed.

Infiltration techniques, such as soakaways, were considered but the site investigation report suggest that the infiltration rate at the site are not suitable for infiltration.

The pipework will be designed to a minimum velocity of 1 m/s at full flow and have a roughness coefficient (ks) of 0.6 mm.

Refer to Appendix D for the surface water calculations and the correspondence with the LLFA

Refer to Appendix E for the site investigation reports, including infiltration tests results.

5.2.1 SuDS Strategy

In accordance with the National Standards for Sustainable Drainage Systems (SuDS) and National Planning Practice Guidance on Flood risk and coastal change, the disposal of surface water from the development follows a hierarchical approach to ensure sustainable water management. While the primary preference is for full infiltration, this was not considered appropriate for this site due to the findings of the site investigation. Therefore, the strategy aims to prioritize source control and attenuation followed by a controlled discharge.

The drainage design utilizes a "Treatment Train" approach, incorporating the following components in line with the hierarchy:

Permeable paving

Permeable paving has been proposed for the parking bays. Runoff water from the road and parking bays will be directed to the permeable paving, resulting in the runoff being treated, stored in the subbase and gradually released into the main drainage network of the site.

Geocellular crates

Storage tanks in the form of geocellular crates have been proposed. These SuDS have been introduced to increase the system storage capacity while keeping the system as shallow as possible to mitigate the risk of the groundwater reaching the storage layer.

Detention basin

The basin is designed to provide both volumetric storage (attenuation) for large storm events and water quality treatment via sedimentation and biological uptake, ensuring runoff is treated before reaching the discharge point.

Gravel trenches:

The location of these is at the perimeter of the building to capture and re-direct runoff from sloping surfaces.

Swale

A swale is located to the southeast of the site to capture and divert surface water runoff from the high points of the site.

SuDS proposals for this development have been designed in accordance with the SuDS Manual C753, utilizing the Simple Index approach. The Pollution Hazard characteristic has been identified as *Very Low* for the roofs and *Low* for the access road and car park (< 300 vehicles movements per day) using Table 26.2 within the SUDS Manual, with pollution indices as shown below.

Land Use	TSS (Total Suspended Solids)	Metals	Hydrocarbons
Roofs	0.2	0.2	0.05
Road / Car park	0.5	0.4	0.4

Suitable SuDS measures have therefore been chosen utilizing the mitigation indices noted within table 26.3 within the SUDS Manual. The mitigation indices for the SuDS proposed for the development are shown below.

Type of SUDS Component	TSS (Total Suspended Solids)	Metals	Hydrocarbons
Permeable paving	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Swale	0.5	0.6	0.6

The selected SuDS components have a total pollution mitigation index (for each contaminant type) that exceeds the pollution hazard index.

It should be noted that the road's longitudinal profile prevents the first section from benefiting from the treatment properties of the detention basin and permeable paving. To mitigate the risk of hydrocarbons entering the system, a retention separator is proposed to treat the runoff from this specific section of the road.

Refer to Appendix C for the proposed below ground drainage strategy drawings.

5.2.3 Maintenance

Maintenance of SuDS systems should be carried out in accordance with manufacturer's guidelines and the SuDS Manual C753. A long-term SuDS operation and maintenance strategy for the various SuDS components has been proposed within Appendix F.

It should be noted that it is best practice to carry out inspections after significant storm events during the first year of operation to ensure proper functionality of the system.

6.0 Flood Risk

A Flood Risk Assessment (FRA) for the site has been carried out by The LK Group and it has been submitted as part of the planning application.

7.0 Conclusions

Foul flows from the proposed redevelopment will be collected via below ground drainage and discharged to the United Utilities 300mm dia. foul sewer using a pumped system. A CCTV survey will be carried out at later stage to confirm location, condition and suitable connection point to the existing United Utilities drainage.

The proposal for the site is to restrict the off-site surface water discharge rate from the proposed new built to 9.6 litres/sec (greenfield rate), for all storm events up to the 1in100 AEP event + 30% allowance for climate change.

The introduction of Sustainable Drainage Systems (SuDS) such as basins, swales, permeable paving and filtration trenches will slow down the flows from the proposed development, decreasing the peak discharge rate directed into Whittle Brook, aligning with relevant standards such as the NPPF, the Planning Practice Guidance and the SuDS manual.

Appendix A

Topographical and utility survey

Appendix B

United Utilities sewer record map

Stefano Zilio

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Property Searches
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Lingley Mere Business Park
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Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: Redwood SEN
Our Ref: UUPS-ORD-715075
Date: 11/03/2026**

Dear Sirs

Location: Redwood SEN

I acknowledge with thanks your request dated 06/03/2026 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

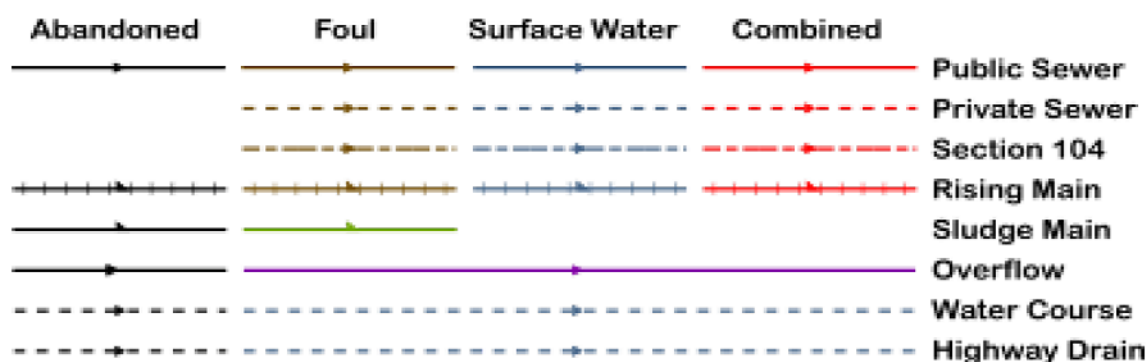
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

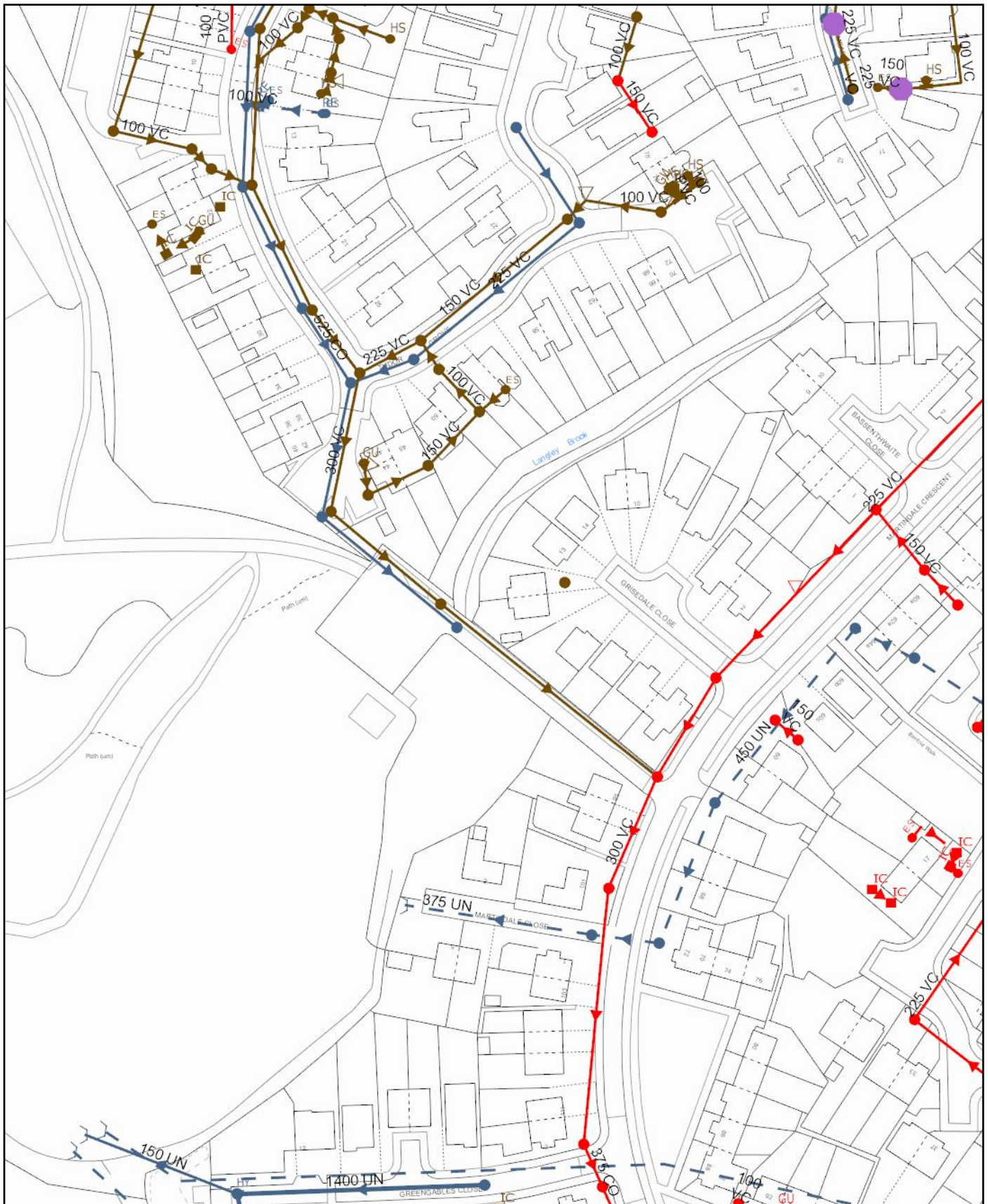
- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Wastewater Symbolology



All point assets follow the standard colour convention: **red** – combined **brown** - foul
blue – surface water **purple** - overflow

Manhole	Side Entry Manhole
Head of System	Outfall
Extent of Survey	Screen Chamber
Rodding Eye	Inspection Chamber
Inlet	Bifurcation Chamber
Discharge Point	Lamp Hole
Vortex	T Junction / Saddle
Penstock	Catchpit
Washout Chamber	Valve Chamber
Valve	Vent Column
Air Valve	Vortex Chamber
Non Return Valve	Penstock Chamber
Soakaway	Network Storage Tank
Gully	Sewer Overflow
Cascade	Ww Treatment Works
Flow Meter	Ww Pumping Station
Hatch Box	Septic Tank
Oil Interceptor	Control Kiosk
Summit	DNM Network Monitoring Point
Drop Shaft	Change of Characteristic
Orifice Plate	



Scale: 1:1250
Date: 11/03/2026

SEWER RECORDS



Water for the North West

Address or Site Reference: Redwood SEN
Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

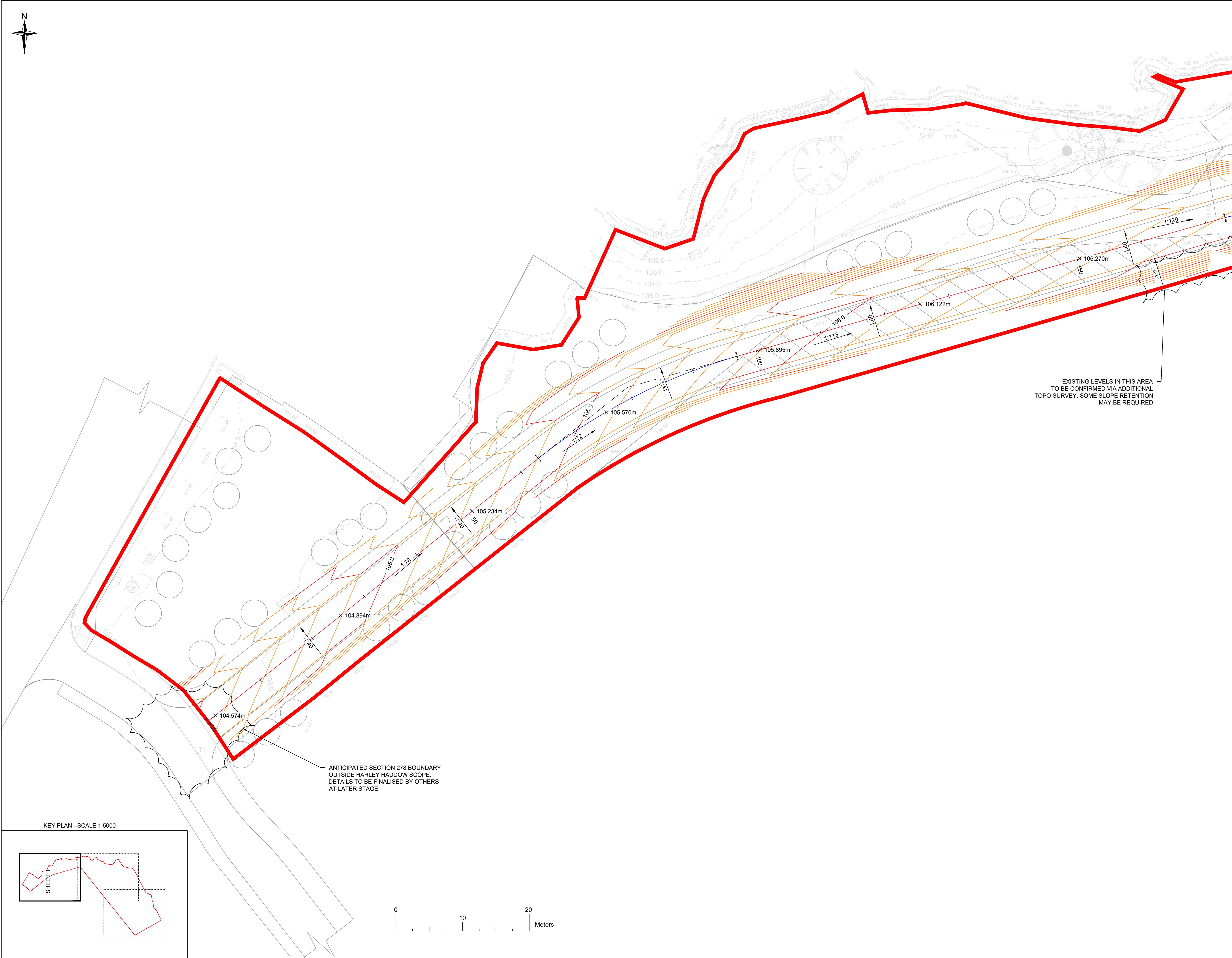
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UNITED UTILITIES ASSET OVERLAID TO SITE LAYOUT AND SURROUNDING



Appendix C

Proposed below ground drainage drawings



NOTES:

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT AND ENGINEER DRAWINGS AND SPECIFICATION NOTES.

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P05	UPDATE TO PLANNING	MS	SZ	10.07.2026
P04	STAGE 3	SZ	CB	12.06.2026
P03	FOR PLANNING	SZ	CB	12.06.2026
P02	ISSUE FOR COORDINATION	SZ	CB	14.04.2026
P01	PRELIMINARY ISSUE FOR COORDINATION	SZ	-	27.02.2026
REV	DESCRIPTION	BY	ENG	DATE

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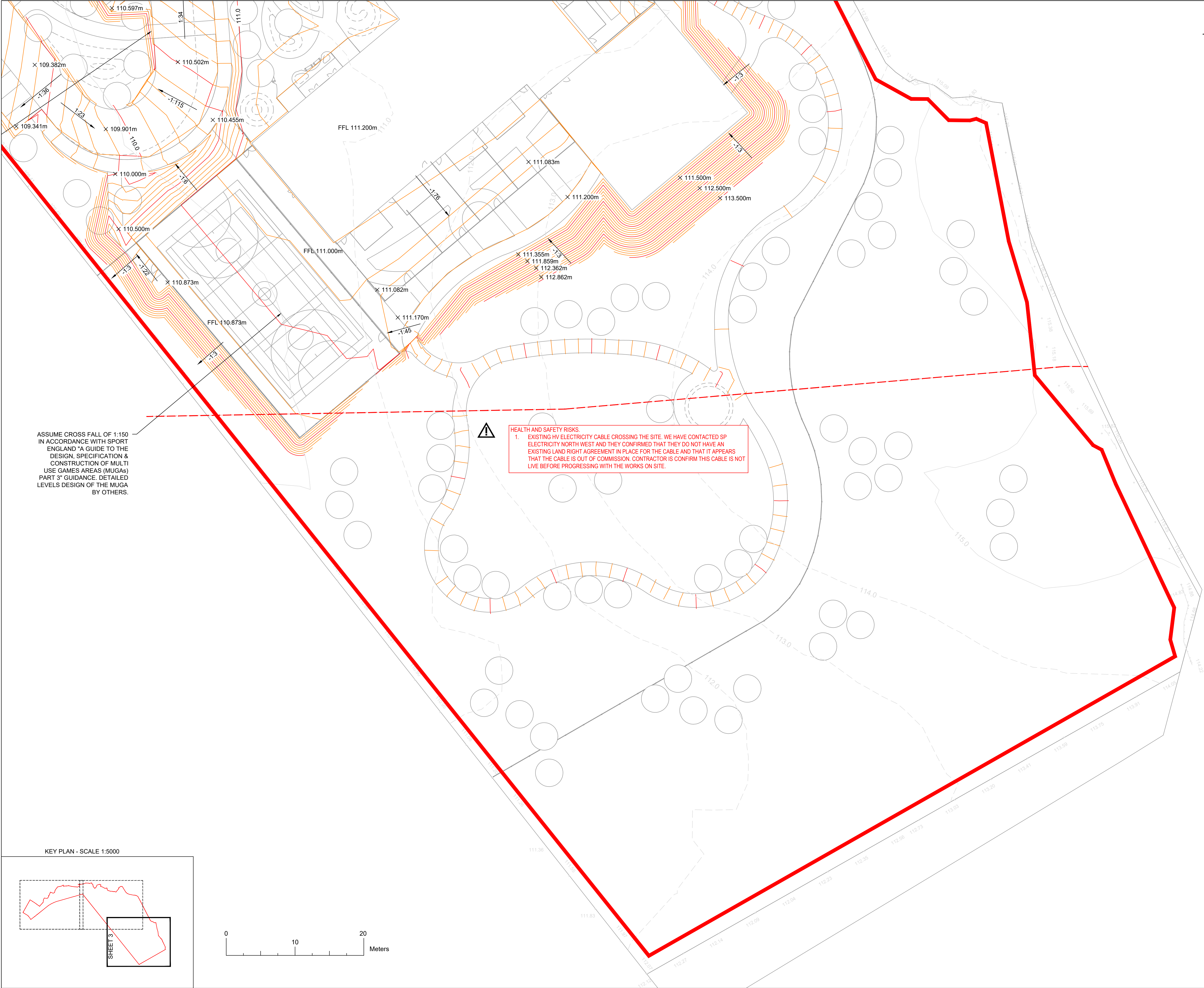
Project: 316553

**REDWOOD SEN HUB
ROCHDALE**

Drawing Title:

**PROPOSED SITE LEVELS
SHEET 1**

Scale at A1:	Date:	Technician:	Engineer:
1:250	March 2026	SZ	SZ
Drawing No:	Revision		
316553-HAH-XX-00-D-C-00100			P05

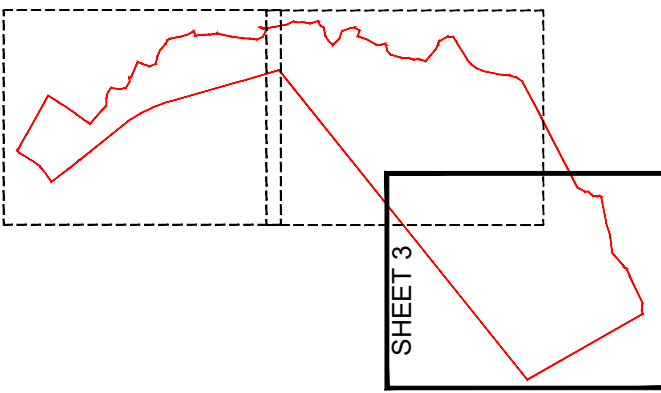


ASSUME CROSS FALL OF 1:150
IN ACCORDANCE WITH SPORT
ENGLAND 'A GUIDE TO THE
DESIGN, SPECIFICATION &
CONSTRUCTION OF MULTI
USE GAMES AREAS (MUGAs)
PART 3' GUIDANCE. DETAILED
LEVELS DESIGN OF THE MUGA
BY OTHERS.



HEALTH AND SAFETY RISKS.
1. EXISTING HV ELECTRICITY CABLE CROSSING THE SITE. WE HAVE CONTACTED SP
ELECTRICITY NORTH WEST AND THEY CONFIRMED THAT THEY DO NOT HAVE AN
EXISTING LAND RIGHT AGREEMENT IN PLACE FOR THE CABLE AND THAT IT APPEARS
THAT THE CABLE IS OUT OF COMMISSION. CONTRACTOR IS CONFIRM THIS CABLE IS NOT
LIVE BEFORE PROGRESSING WITH THE WORKS ON SITE.

KEY PLAN - SCALE 1:5000



NOTES:

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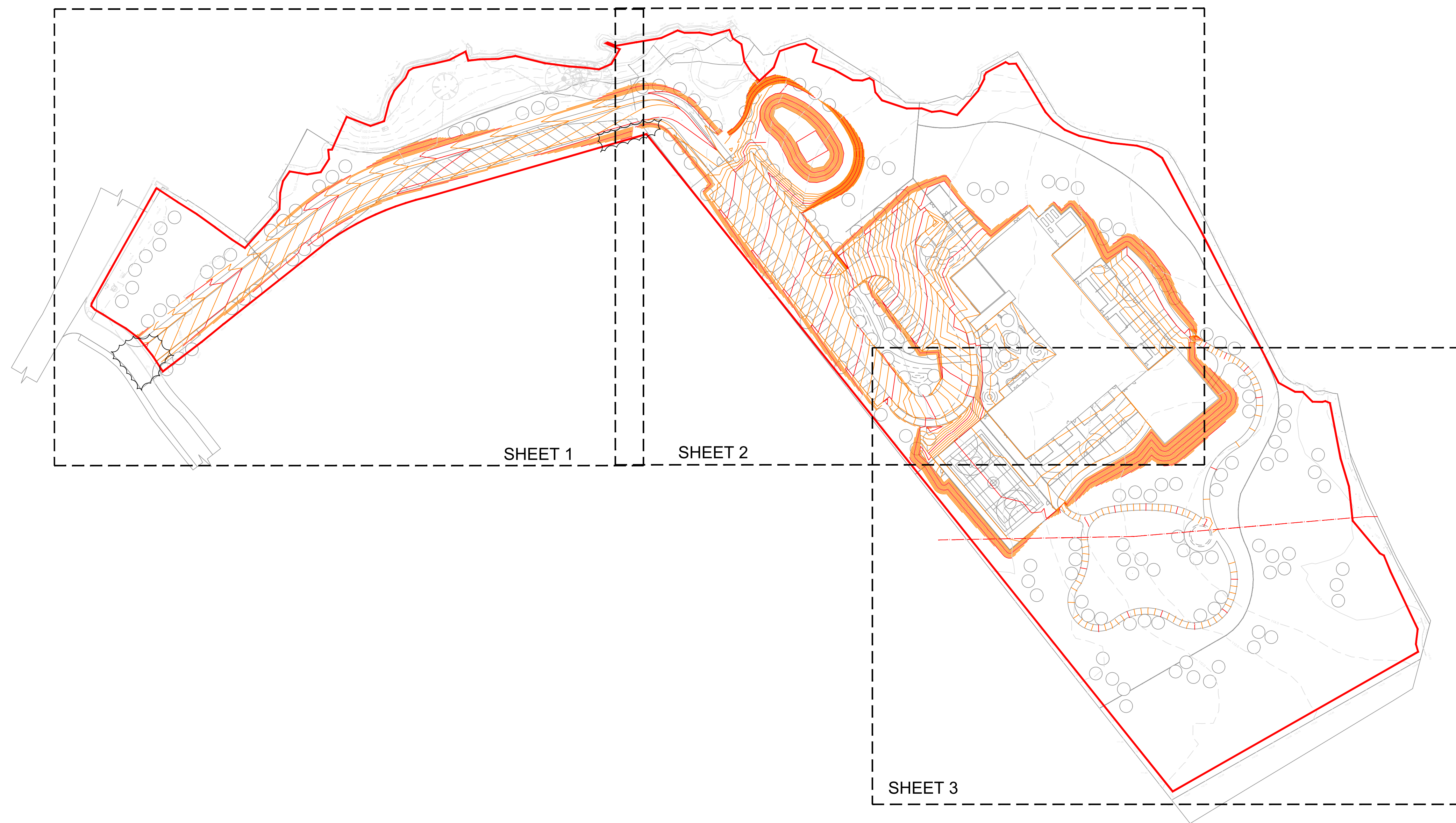
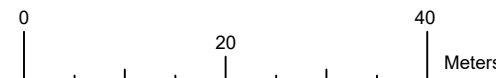
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**REDWOOD SEN HUB
ROCHDALE**

Drawing Title:
**PROPOSED SITE LEVELS
SHEET 3**

Scale at A1: 1:250	Date: March 2026	Technician: SZ	Engineer: SZ
Drawing No: 316553-HAH-XX-00-D-C-00102	Revision P05		



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P05	UPDATE TO PLANNING	MS	SZ	10.07.202
P02	STAGE 3	SZ	CB	12.06.202
P01	FOR PLANNING	SZ	CB	12.06.202
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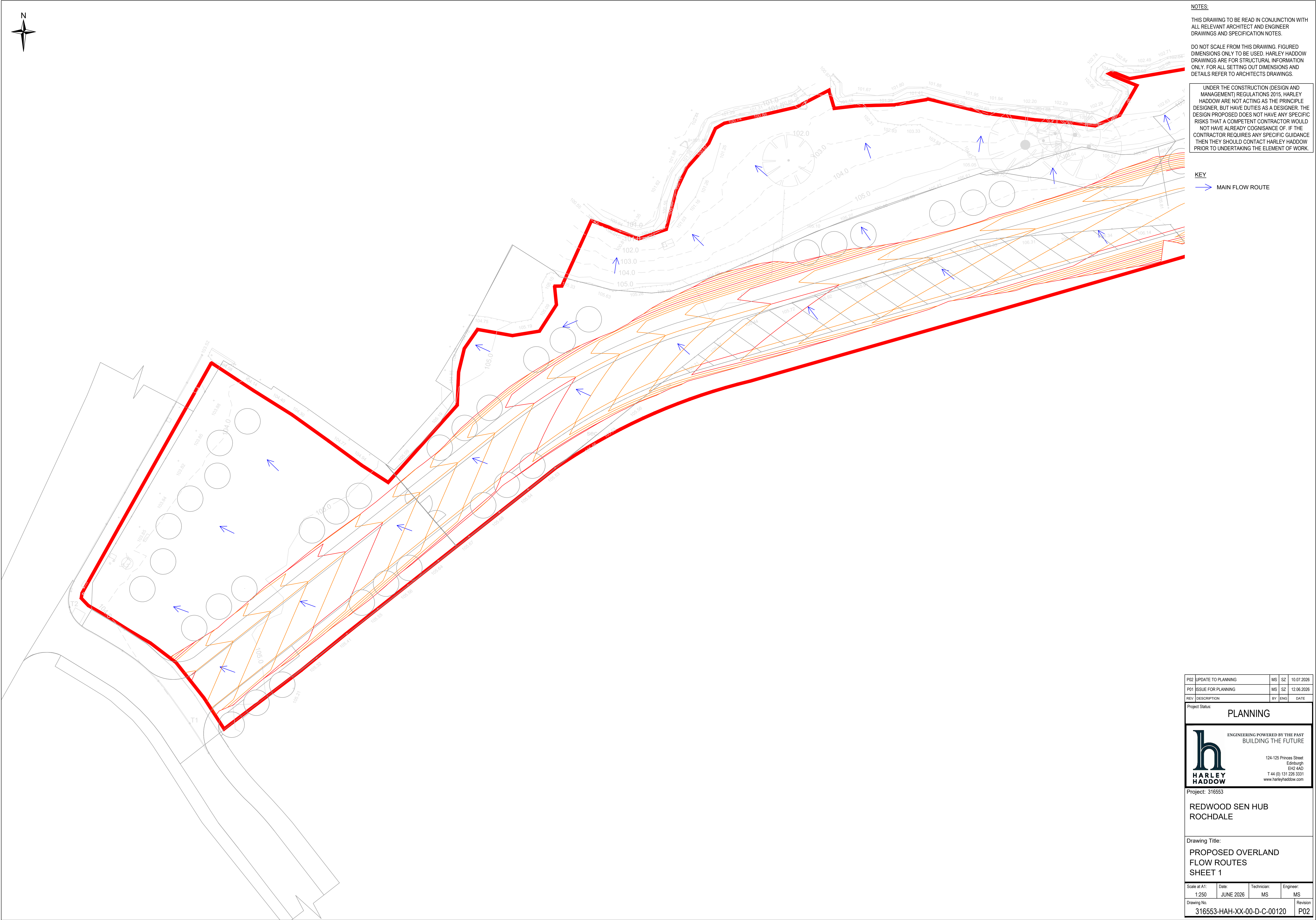
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REDWOOD SEN HUB
ROCHDALE

Drawing Title:

PROPOSED SITE LEVELS KEY PLAN

Scale at A1:	Date:	Technician:	Engineer:
1:750	June 2026	SZ	SZ
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KEY

→ MAIN FLOW ROUTE

P02	UPDATE TO PLANNING	MS	SZ	10.07.2026
P01	ISSUE FOR PLANNING	MS	SZ	12.06.2026
REV	DESCRIPTION	BY	ENG	DATE

Project Status: **PLANNING**



ENGINEERING POWERED BY THE PAST
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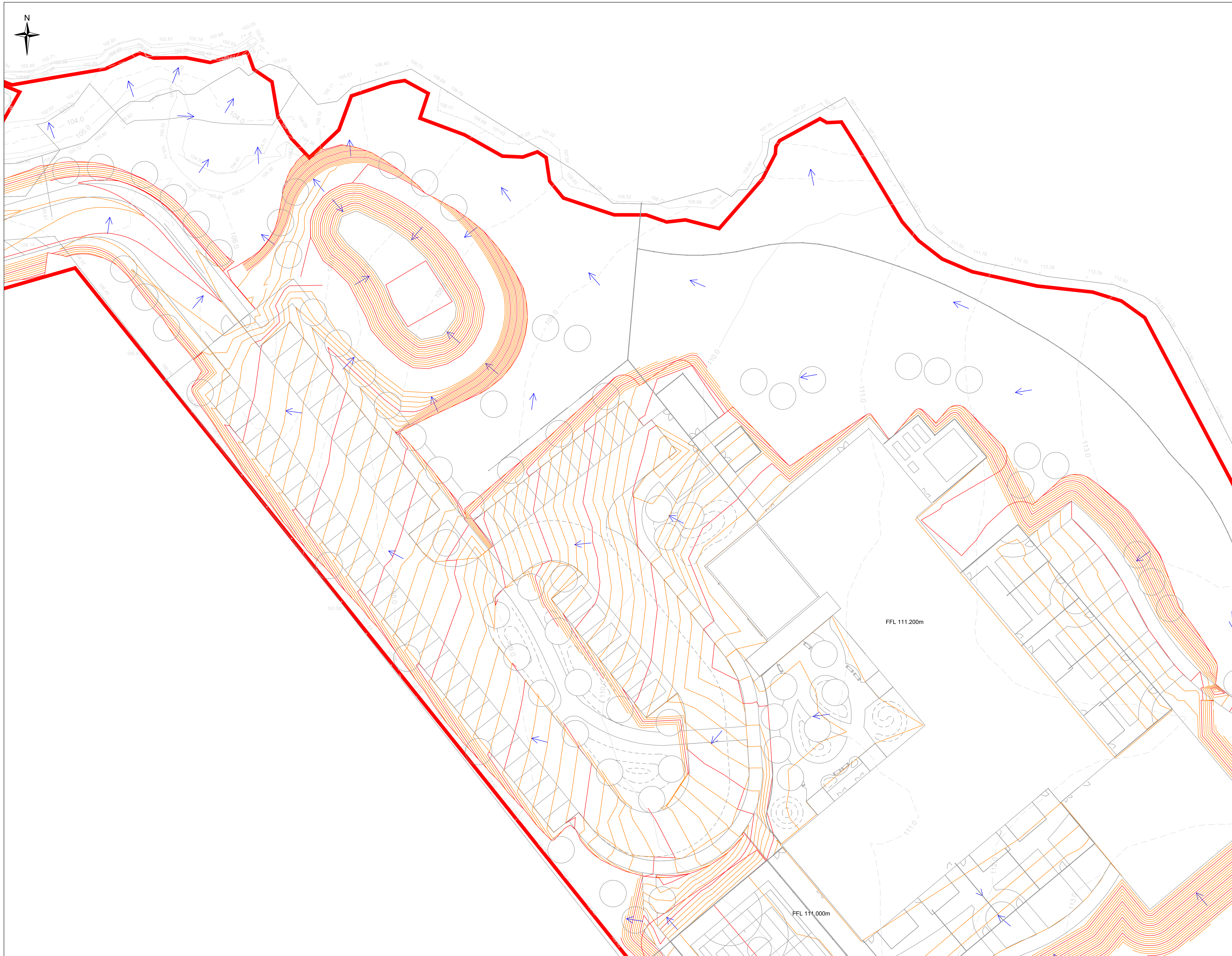
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**REDWOOD SEN HUB
ROCHDALE**

Drawing Title:
**PROPOSED OVERLAND
FLOW ROUTES
SHEET 1**

Scale at A1: 1:250	Date: JUNE 2026	Technician: MS	Engineer: MS
Drawing No: 316553-HAH-XX-00-D-C-00120	Revision P02		



NOTES:

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KEY

→ MAIN FLOW ROUTE

P02	UPDATE TO PLANNING	MS	SZ	10.07.2022
P01	ISSUE FOR PLANNING	MS	SZ	12.06.2022
REV	DESCRIPTION	BY	ENG	DATE

Project Status:

PLANNING



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BUILDING THE FUTURE

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www.harleyhaddow.com

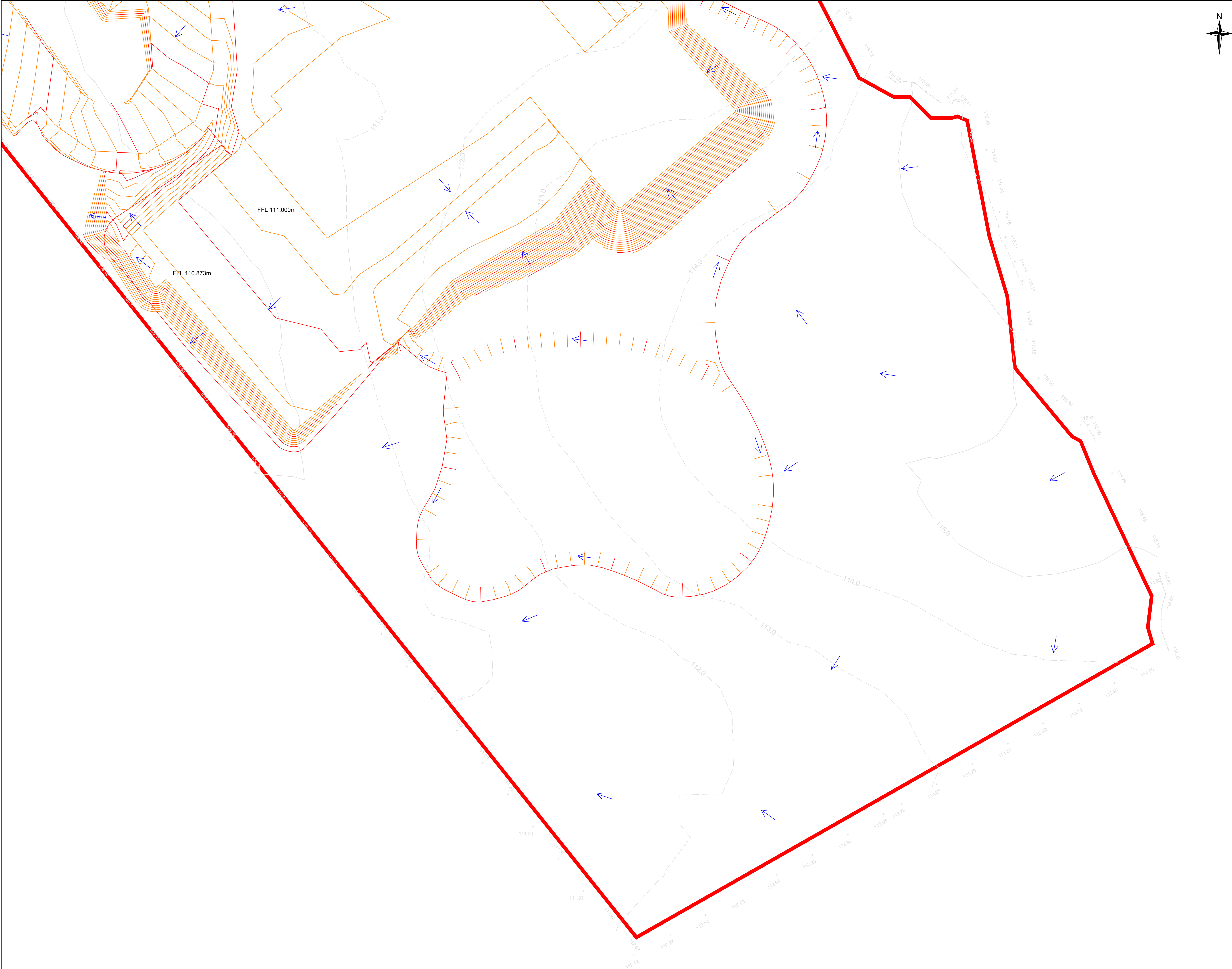
Project: 316553

REDWOOD SEN HUB
ROCHDALE

Drawing Title:

**PROPOSED OVERLAND
FLOW ROUTES
SHEET 2**

Scale at A1:	Date:	Technician:	Engineer:
1:250	JUNE 2026	MS	MS
Drawing No.			Revision
316553-HAH-XX-00-D-C-00121			P02



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→ MAIN FLOW ROUTE

P02	UPDATE TO PLANNING	MS	SZ	10.07.2026
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REV	DESCRIPTION	BY	ENG	DATE

Project Status: **PLANNING**



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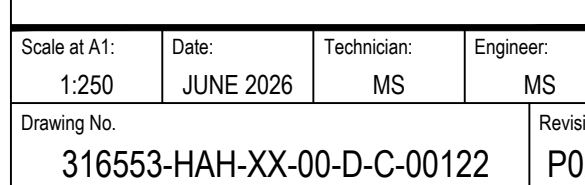
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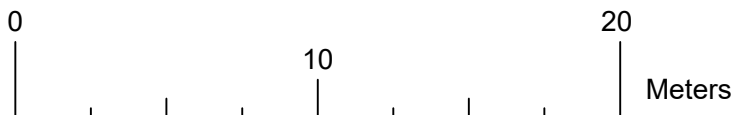
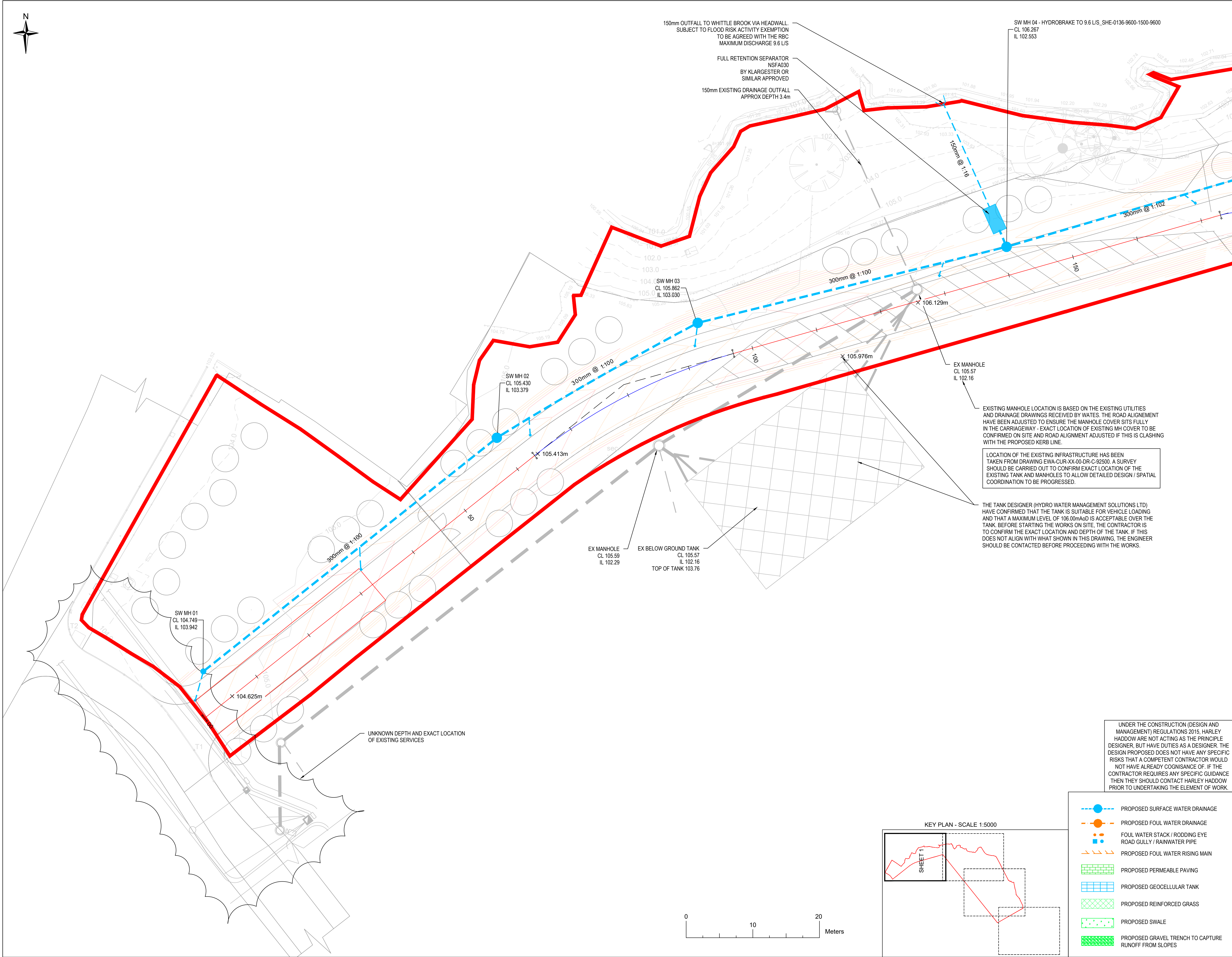
Project: 316553

**REDWOOD SEN HUB
ROCHDALE**

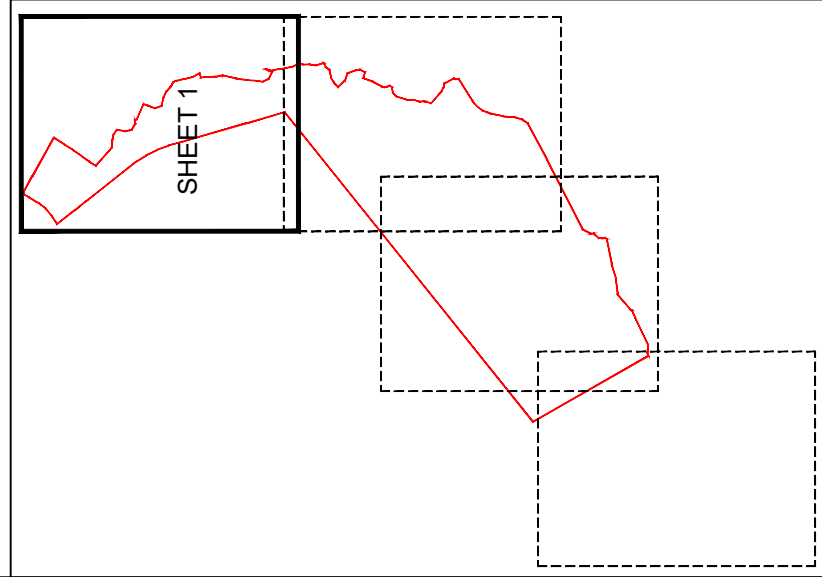
Drawing Title:
**PROPOSED OVERLAND
FLOW ROUTES
SHEET 3**

Scale at A1: 1:250	Date: JUNE 2026	Technician: MS	Engineer: MS
Drawing No: 316553-HAH-XX-00-D-C-00122	Revision P02		





KEY PLAN - SCALE 1:5000



- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED FOUL WATER DRAINAGE
- FOUL WATER STACK / RODDING EYE ROAD GULLY / RAINWATER PIPE
- PROPOSED FOUL WATER RISING MAIN
- PROPOSED PERMEABLE PAVING
- PROPOSED GEOCELLULAR TANK
- PROPOSED REINFORCED GRASS
- PROPOSED SWALE
- PROPOSED GRAVEL TRENCH TO CAPTURE RUNOFF FROM SLOPES

NOTES:

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 - TOPOGRAPHICAL SURVEY S250280-DR-T-001
 - SITE LAYOUT ED0064-22 - Rev F
 - EXISTING DRAINAGE DRAWING EWA-CUR-XX-00-DR-C-92500
- THE CONTRACTOR SHALL:
 - VERIFY EXISTING UTILITIES BEFORE STARTING WORKS.
 - VERIFY THE DIMENSIONS SHOWN ON THE DRAWINGS BEFORE FABRICATION, SETTING OUT OR EXCAVATION OF THE WORK, AND SHALL BE HELD RESPONSIBLE FOR ANY ERRORS OR INACCURACIES RESULTING FROM FAILURE TO DO SO.
 - CHECK AND VERIFY THE LOCATION AND LEVELS ALL EXISTING DRAINS, SEWERS, INSPECTION CHAMBERS AND MANHOLES AGAINST DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
- LOCATION OF INSPECTION CHAMBERS/MANHOLES IS INDICATIVE AND REQUIRED FURTHER COORDINATION DURING THE NEXT STAGES OF THE DESIGN.
- ALL DRAINAGE SHOULD BE STRUCTURED WALL PVC-U.
- ALL FOUL AND SURFACE WATER LATERAL DRAIN TO BE DN100 UNLESS OTHERWISE STATED. ALL STACK CONNECTIONS TO BELOW THE SLAB TO HAVE RODDABLE ACCESS ABOVE SLAB. ALL ROAD GULLIES OUTLET PIPE TO BE 150mm DIA. UNLESS OTHERWISE STATED.
- ALL INSPECTION CHAMBERS LOCATED ONTO THE PERMEABLE PAVING TO HAVE A OPEN GRATE COVER AND A 50mm ORIFICE PLATE FITTED AT OUTLET TO MAXIMIZE RETENTION INTO THE PAVING SUBBASE.
- CONTRACTOR TO PROVIDE ADEQUATE PROTECTION TO SHALLOW PIPES. PIPE PROTECTION DETAIL TO BE PROVIDED FOR PIPES WITH COVER LESS THAN 0.9m ABOVE THE CROWN OF THE PIPE FOR ROADS AND 0.6m FOR SOFT AND PEDESTRIAN AREAS.
- ROCKER PIPES ARE TO BE PROVIDED AT ALL CONCRETE CASSED INTERFACES.
- ALL PROPRIETARY PRODUCTS / SYSTEMS TO BE VERIFIED BY THE MANUFACTURER AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION / DETAILS.
- ALL DRAINAGE TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH BS EN 12056-1:2000, BS EN 752:2017, AND BS EN 1810:2015.
- ALLOWANCE SHOULD BE MADE FOR PROVIDING A SUITABLE BEDDING AND COVER TO EXISTING SERVICES UNDER THE PROPOSED ROADS, FOOTWAYS AND SOFT LANDSCAPING, IF NECESSARY.
- WHERE COVERS AND INSPECTION CHAMBERS AND MANHOLES THAT WERE FORMERLY LOCATED IN THE FOOTWAY OR ISLANDS OR SOFT LANDSCAPE ARE LOCATED WITHIN NEW AREAS OF CARRIAGEWAY OR PARKING BAYS, RE-BUILDING AND/OR STRENGTHENING WORKS AND REPLACEMENT OF COVERS SHOULD BE UNDERTAKEN TO SUIT THE CARRIAGEWAY LOADING.
- EXISTING MANHOLE AND INSPECTION CHAMBER COVERS SHALL BE RAISED OR LOWERED TO BE FLUSH WITH PROPOSED ROAD AND FOOTWAY LEVELS.
- THRUST BLOCS TO BE BUILT AT ALL THE FOUL WATER RISING MAIN SHARP CHANGE IN DIRECTION.
- PIPE BEDDING TYPE:
 - WHERE COVER TO CROWN OF PIPE IS LESS THAN 900mm IN TRAFFICKED AREAS OR LESS THAN 600mm IN NON-TRAFFICKED AREAS - BED AND SURROUND CLASS Z.
 - WHERE COVER TO CROWN OF PIPE IS GREATER THAN 900mm IN TRAFFICKED AREAS OR GREATER THAN 600mm IN NON-TRAFFICKED AREAS - BED AND SURROUND CLASS S.

P04	UPDATE TO PLANNING	MS	SZ	10.07.2026
P03	STAGE 3	SZ	CB	12.06.2026
P02	FOR PLANNING	SZ	CB	12.06.2026
P01	PRELIMINARY ISSUE FOR COORDINATION	SZ	CB	06.03.2026
REV	DESCRIPTION	BY	ENG	DATE

Project Status:

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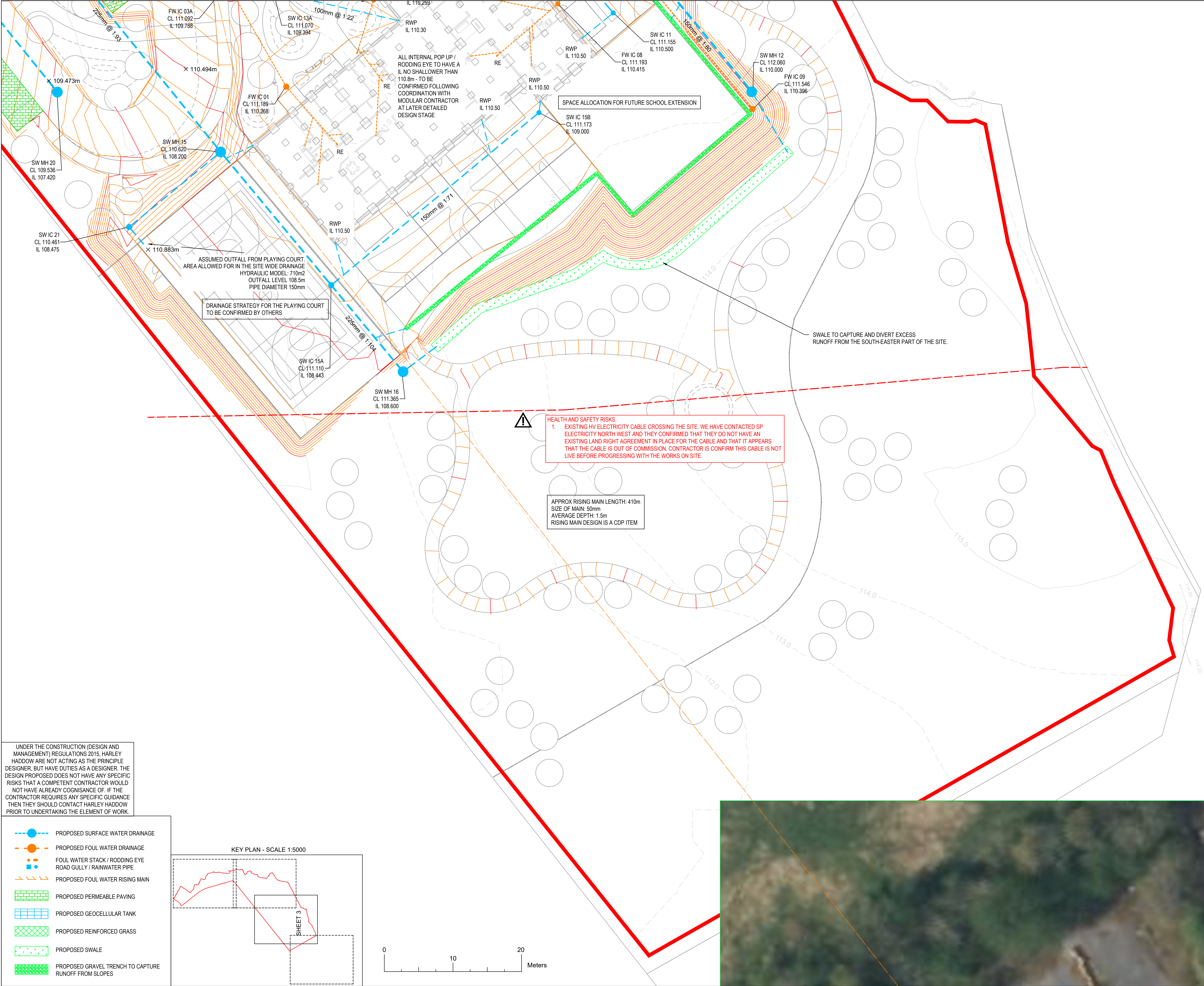
Project: 316553

**REDWOOD SEN HUB
ROCHDALE**

Drawing Title:

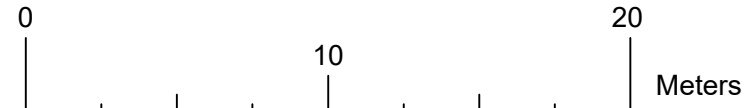
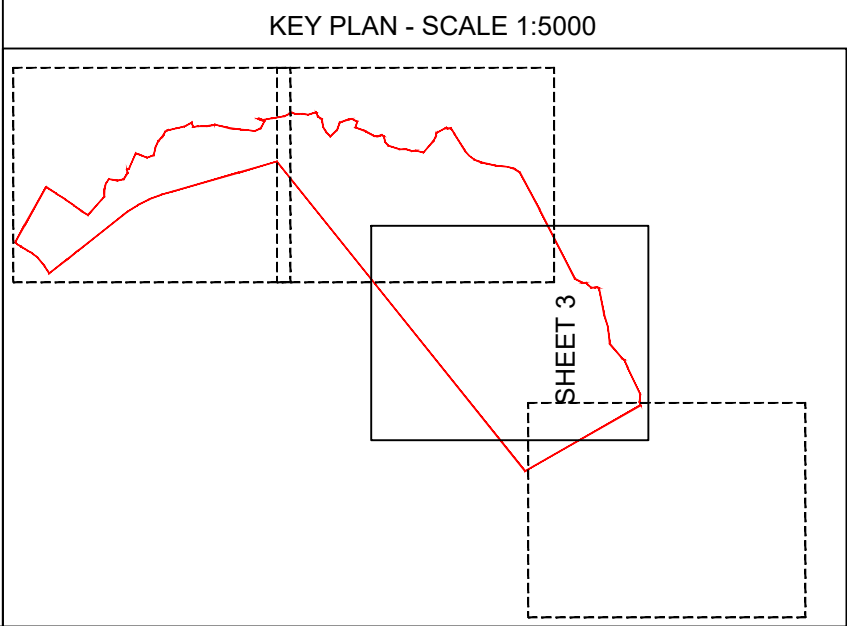
**PROPOSED BELOW GROUND
DRAINAGE - SHEET 1**

Scale at A1:	Date:	Technician:	Engineer:
1:250	MARCH 2026	SZ	SZ
Drawing No:	Revision		
316553-HAH-XX-00-D-C-00200			P04



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- THIS DRAWING IS BASED ON:
 - TOPOGRAPHICAL SURVEY S260280-DR-T-001
 - SITE LAYOUT ED0064-22 - Rev F
 - EXISTING DRAINAGE DRAWING EWA-CUR-XX-00-DR-C-92500
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 - WHERE COVER TO CROWN OF PIPE IS GREATER THAN 900mm IN TRAFFICKED AREAS OR GREATER THAN 600mm IN NON-TRAFFICKED AREAS - BED AND SURROUND CLASS S.

P04	UPDATE TO PLANNING	MS	SZ	10.07.2026
P03	STAGE 3	SZ	CB	12.06.2026
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REV	DESCRIPTION	BY	ENG	DATE

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Project: 316553

**REDWOOD SEN HUB
ROCHDALE**

Drawing Title:

**PROPOSED BELOW GROUND
DRAINAGE - SHEET 3**

Scale at A1:	Date:	Technician:	Engineer:
1:250	MARCH 2026	SZ	SZ
Drawing No:			Revision
316553-HAH-XX-00-D-C-00202			P04



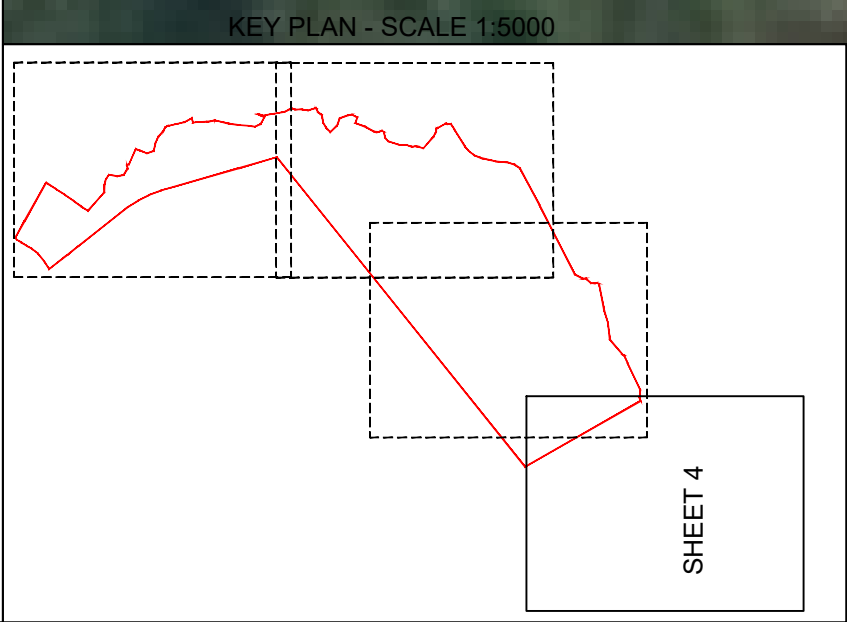
APPROX RISING MAIN LENGTH: 410m
SIZE OF MAIN: 50mm
AVERAGE DEPTH: 1.5m
RISING MAIN DESIGN IS A CDP ITEM

ADDITIONAL TOPOGRAPHICAL SURVEY WILL BE REQUIRED AT THE NEXT DESIGN STAGE TO CONFIRM EXISTING LEVELS ALONG THE PROPOSED FOUL WATER RISING MAIN ROUTE.

CONNECTION POINT AND DISCHARGE RATE
OF 2.5LITRE/SEC HAS BEEN CONFIRMED WITH UNITED UTILITIES
VIA PRE-DEVELOPMENT ENQUIRY

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RUNOFF FROM SLOPES



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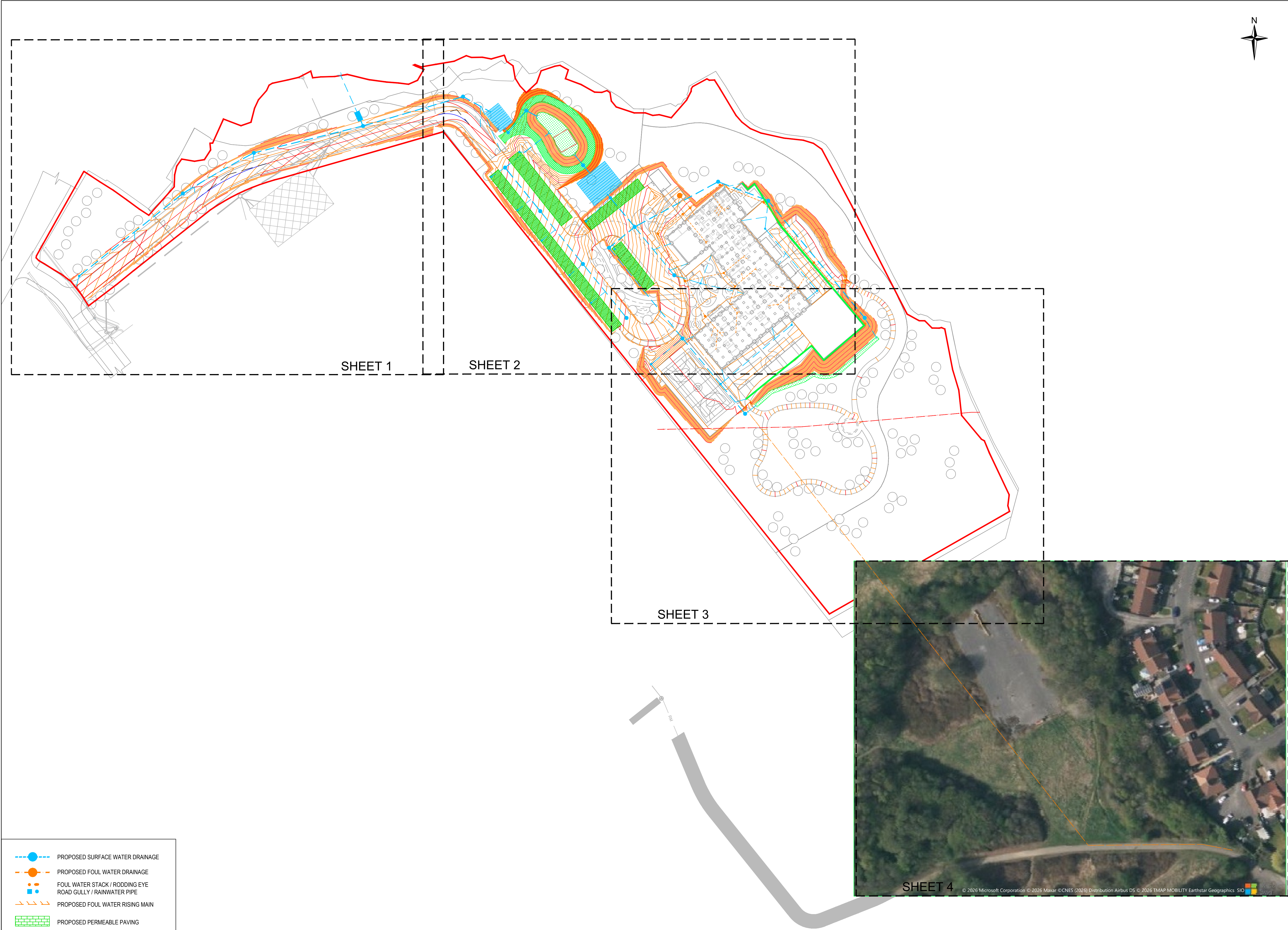
Project: 316553

**REDWOOD SEN HUB
ROCHDALE**

Drawing Title:

**PROPOSED BELOW GROUND
DRAINAGE - SHEET 4**

Scale at A1:	Date:	Technician:	Engineer:
1:250	MARCH 2026	SZ	SZ
Drawing No:	Revision		
316553-HAH-XX-00-D-C-00203	P04		



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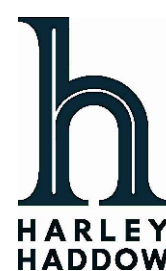
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 - 3.2. SITE LAYOUT ED0064-22 - Rev F
 - 3.3. EXISTING DRAINAGE DRAWING EWA-CUR-XX-00-DR-C-92500
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8. ALL INSPECTION CHAMBERS LOCATED ONTO THE PERMEABLE PAVING TO HAVE A OPEN GRATE COVER AND A 50mm ORIFICE PLATE FITTED AT OUTLET TO MAXIMIZE RETENTION INTO THE PAVING SUBBASE.
9. CONTRACTOR TO PROVIDE ADEQUATE PROTECTION TO SHALLOW PIPES. PIPE PROTECTION DETAIL TO BE PROVIDED FOR PIPES WITH COVER LESS THAN 0.9m ABOVE THE CROWN OF THE PIPE FOR ROADS AND 0.6m FOR SOFT AND PEDESTRIAN AREAS.
10. ROCKER PIPES ARE TO BE PROVIDED AT ALL CONCRETE CASED INTERFACES.
11. ALL PROPRIETARY PRODUCTS / SYSTEMS TO BE VERIFIED BY THE MANUFACTURER AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION / DETAILS.
12. ALL DRAINAGE TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH BS EN 12056-1:2000, BS EN 752:2017, AND BS EN 1610:2015.
13. ALLOWANCE SHOULD BE MADE FOR PROVIDING A SUITABLE BEDDING AND COVER TO EXISTING SERVICES UNDER THE PROPOSED ROADS, FOOTWAYS AND SOFT LANDSCAPING, IF NECESSARY.
14. WHERE COVERS AND INSPECTION CHAMBERS AND MANHOLES THAT WERE FORMERLY LOCATED IN THE FOOTWAY OR ISLANDS OR SOFT LANDSCAPE ARE LOCATED WITHIN NEW AREAS OF CARRIAGEWAY OR PARKING BAYS, RE-BUILDING AND/OR STRENGTHENING WORKS AND REPLACEMENT OF COVERS SHOULD BE UNDERTAKEN TO SUIT THE CARRIAGEWAY LOADING.
15. EXISTING MANHOLE AND INSPECTION CHAMBER COVERS SHALL BE RAISED OR LOWERED TO BE FLUSH WITH PROPOSED ROAD AND FOOTWAY LEVELS.
16. THRUST BLOCS TO BE BUILT AT ALL THE FOUL WATER RISING MAIN SHARP CHANGE IN DIRECTION.
17. PIPE BEDDING TYPE:
 - A. WHERE COVER TO CROWN OF PIPE IS LESS THAN 900mm IN TRAFFICKED AREAS OR LESS THAN 600mm IN NON-TRAFFICKED AREAS - BED AND SURROUND CLASS 2.
 - B. WHERE COVER TO CROWN OF PIPE IS GREATER THAN 900mm IN TRAFFICKED AREAS OR GREATER THAN 600mm IN NON-TRAFFICKED AREAS - BED AND SURROUND CLASS S.

P03	UPDATE TO PLANNING	MS	SZ	10.07.2026
P02	STAGE 3	SZ	CB	12.06.2026
P01	FOR PLANNING	SZ	CB	12.06.2026
REV	DESCRIPTION	BY	ENG	DATE

Project Status:

PLANNING



HARLEY HADDOW

ENGINEERING POWERED BY THE PAST
BUILDING THE FUTURE

124-125 Pinces Street
Edinburgh
EH2 4AD
T:44 (0) 131 226 3331
www.harleyhaddow.com

Project: 316553

REDWOOD SEN HUB
ROCHDALE

Drawing Title:

PROPOSED BELOW GROUND
DRAINAGE - KEY PLAN

Scale at A1:	Date:	Technician:	Engineer:
1:250	JUNE 2026	SZ	SZ
Drawing No.			Revision
316553-HAH-XX-00-D-C-00204			P03

Appendix D

Surface water calculations and correspondence with United Utilities

UK and Ireland Rural Runoff Calculator

ICP SUDS / IH 124	ADAS 345	FEH	ReFH2	Greenfield Volume
-------------------	----------	-----	-------	-------------------

Site Location

GB 385335 407523 SD 85335 07523

...

Version

2022

Point

Area (ha)

0.868

SAAR (mm)

1161.0

Map

SPRHOST

0.45

URBEXT

2000

0.0000

Median Annual Flood (QMED)

BFIHOST

0.600

FARL

1.000

Calculate

Results

QMED Rural (L/s)

9.6

QMED Urban (L/s)

9.6

OK

Cancel

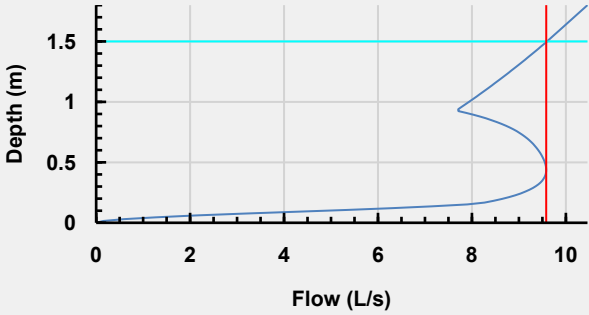
1.0 <= SAAR (mm) <= 100000.0

Help

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Junctions Storm Phase: Phase	Company Address:		

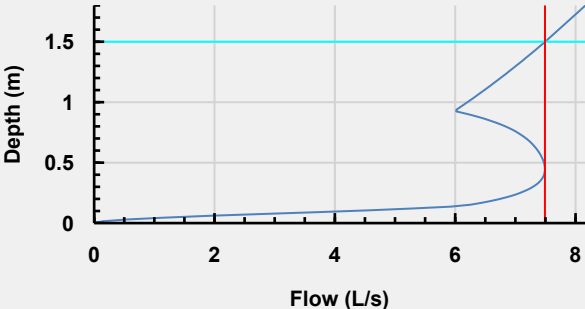


Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW MH 14	Outlet (1)	Pipe (1)	Free Discharge
SW MH 05	Outlet	Pipe (14)	Free Discharge
SW MH 17	Outlet (1)	Pipe (12)	Free Discharge
SW MH 20	Outlet	Pipe (2)	Free Discharge
SW MH 12	Outlet	Pipe (8)	Free Discharge
SW MH 08	Outlet	Pipe (5)	Free Discharge
SW MH 13	Outlet	Pipe (13)	Free Discharge
SW MH 16	Outlet	Pipe (11)	Free Discharge
SW MH 15	Outlet	Pipe (3)	Free Discharge
SW MH 11	Outlet	Pipe (9)	Free Discharge
SW MH 10	Outlet	Pipe	Free Discharge
SW MH 09 - CATCHPIT	Outlet	Pipe (4)	Free Discharge
SW MH 04 - HYDROBRAKE	Outlet	Pipe (30)	Hydro-Brake®
	Invert Level (m)	102.553	
	Design Depth (m)	1.500	
	Design Flow (L/s)	9.6	
	Objective	Minimise Upstream Storage Requirements	
	Application	Surface Water Only	
	Sump Available	☒	
	Unit Reference	SHE-0136-9600-1500-9600	
			
SW MH 01	Outlet	Pipe (31)	Free Discharge
	Outlet (1)	Pipe (7)	Hydro-Brake®

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Junctions Storm Phase: Phase	Company Address:		



Junction	Outlet Name	Outgoing Connection	Outlet Type
SW MH 06 - HYDROBRAKE	Invert Level (m)	105.500	
	Design Depth (m)	1.500	
	Design Flow (L/s)	7.5	
	Objective	Minimise Upstream Storage Requirements	
	Application	Surface Water Only	
	Sump Available	☒	
	Unit Reference	SHE-0120-7500-1500-7500	
			
IC (3)	Outlet	Pipe (17)	Orifice
	Diameter (m)	0.050	
	Coefficient of Discharge	0.600	
	Invert Level (m)	108.119	
Simple Junction (1)	Outlet	Pipe (2) (1)	Free Discharge
IC (2)	Outlet	Pipe (19)	Orifice
	Diameter (m)	0.050	
	Coefficient of Discharge	0.600	
	Invert Level (m)	107.663	
SW MH 19	Outlet	Pipe (10)	Free Discharge
IC (1)	Outlet	Pipe (21)	Free Discharge
SW MH 18	Outlet	Pipe (26)	Free Discharge
IC	Outlet	Pipe (25)	Free Discharge
SW MH 07	Outlet	Pipe (6)	Orifice
	Diameter (m)	0.150	
	Coefficient of Discharge	0.600	
	Invert Level (m)	105.600	
	Outlet (1)	Pipe (27)	
	Diameter (m)	0.150	
	Coefficient of Discharge	0.600	
	Invert Level (m)	106.500	
SW MH 03	Outlet	Pipe (32)	Free Discharge
SW MH 02	Outlet	Pipe (31) (1)	Free Discharge
Manhole	Outlet	Pipe (29)	Free Discharge

Project: Redwood SEN	Date: 12/06/2026			
	Designed by: SZ	Checked by: CB	Approved By: CB	
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:			



Pond

Type : Pond

Dimensions

Exceedance Level (m)	107.000
Depth (m)	1.500
Base Level (m)	105.500
Freeboard (mm)	300
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.252
Total Volume (m³)	308.459

Depth (m)	Area (m²)	Volume (m³)
0.000	155.00	0.000
1.500	445.00	431.315

Advanced

Perimeter	Circular
Length (m)	31.778
Friction Scheme	Manning's n
n	0.03

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		





Porous Paving

Type : Porous Paving

Dimensions

Exceedance Level (m)	108.970
Depth (m)	0.560
Base Level (m)	108.410
Paving Layer Depth (mm)	210
Membrane Percolation (m/hr)	500.0
Porosity (%)	30
Length (m)	16.766
Long. Slope (1:X)	200.00
Width (m)	4.666
Total Volume (m³)	8.306

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	100
No. of Barrels	1
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Advanced

Conductivity (m/hr)	300.0
---------------------	-------



Porous Paving (1)

Type : Porous Paving

Dimensions

Exceedance Level (m)	108.468
Depth (m)	0.560
Base Level (m)	107.908
Paving Layer Depth (mm)	210
Membrane Percolation (m/hr)	500.0
Porosity (%)	30
Length (m)	14.004
Long. Slope (1:X)	200.00
Width (m)	4.628
Total Volume (m³)	6.882

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	100
No. of Barrels	1
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Advanced

Conductivity (m/hr)	300.0
---------------------	-------

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		





Porous Paving (3)

Type : Porous Paving

Dimensions

Exceedance Level (m)	107.587
Depth (m)	0.560
Base Level (m)	107.027
Paving Layer Depth (mm)	210
Membrane Percolation (m/hr)	500.0
Porosity (%)	30
Length (m)	28.280
Long. Slope (1:X)	200.00
Width (m)	4.586
Total Volume (m³)	13.773

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	100
No. of Barrels	1
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Advanced

Conductivity (m/hr)	300.0
---------------------	-------



Porous Paving (2)

Type : Porous Paving

Dimensions

Exceedance Level (m)	109.112
Depth (m)	0.560
Base Level (m)	108.552
Paving Layer Depth (mm)	210
Membrane Percolation (m/hr)	300.0
Porosity (%)	30
Length (m)	26.223
Long. Slope (1:X)	200.00
Width (m)	4.824
Total Volume (m³)	13.427

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	100
No. of Barrels	1
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Advanced

Conductivity (m/hr)	500.0
---------------------	-------

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		





Porous Paving (5)

Type : Porous Paving

Dimensions

Exceedance Level (m)	109.796
Depth (m)	0.560
Base Level (m)	109.236
Paving Layer Depth (mm)	210
Membrane Percolation (m/hr)	500.0
Porosity (%)	30
Length (m)	22.769
Long. Slope (1:X)	200.00
Width (m)	5.918
Total Volume (m³)	14.273

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	100
No. of Barrels	1
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Advanced

Conductivity (m/hr)	300.0
---------------------	-------

Project: Redwood SEN	Date: 12/06/2026			
	Designed by: SZ	Checked by: CB	Approved By: CB	
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:			



Cellular Storage

Type : Cellular Storage

Dimensions

Exceedance Level (m)	107.934
Depth (m)	1.200
Base Level (m)	105.700
Number of Crates Long	12
Number of Crates Wide	30
Number of Crates High	3
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	206.234



Cellular Storage (2)

Type : Cellular Storage

Dimensions

Exceedance Level (m)	104.899
Depth (m)	1.200
Base Level (m)	103.100
Number of Crates Long	13
Number of Crates Wide	11
Number of Crates High	3
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	82.109

Project: Redwood SEN		Date: 12/06/2026			
		Designed by: SZ	Checked by: CB		Approved By: CB
Report Details: Type: Inflow Summary Storm Phase: Phase		Company Address:			

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	SW MH 02		Time of Concentration	0.028	100	0	100	0.028
Catchment Area (1)	SW MH 04 - HYDROBRAKE		Time of Concentration	0.052	100	0	100	0.052
Playground	SW MH 16		Time of Concentration	0.058	100	0	100	0.058
Playground (1)	SW MH 11		Time of Concentration	0.041	100	0	100	0.041
Road	SW MH 17		Time of Concentration	0.023	100	0	100	0.023
Road (1)	Porous Paving (3)		Time of Concentration	0.048	100	0	100	0.048
Road (2)	Porous Paving (1)		Time of Concentration	0.020	100	0	100	0.020
Road (3)	SW MH 20		Time of Concentration	0.031	100	0	100	0.031
Road (4)	Porous Paving (5)		Time of Concentration	0.052	100	0	100	0.052
Road (5)	Porous Paving (2)		Time of Concentration	0.058	100	0	100	0.058
Road (6)	SW MH 01		Time of Concentration	0.038	100	0	100	0.038
Road (7)	SW MH 03		Time of Concentration	0.048	100	0	100	0.048
Road (8)	SW MH 17		Time of Concentration	0.027	100	0	100	0.027
Road (9)	Porous Paving		Time of Concentration	0.019	100	0	100	0.019
Roof	SW MH 11		Time of Concentration	0.061	100	0	100	0.061
Roof (1)	SW MH 15		Time of Concentration	0.054	100	0	100	0.054
Roof (2)	SW MH 12		Time of Concentration	0.046	100	0	100	0.046
Roof (3)	SW MH 13		Time of Concentration	0.068	100	0	100	0.068
Roof (4)	SW MH 10		Time of Concentration	0.027	100	0	100	0.027

Project: Redwood SEN		Date: 12/06/2026			
		Designed by: SZ	Checked by: CB	Approved By: CB	
Report Details: Type: Inflow Summary Storm Phase: Phase		Company Address:			

Tennis court	SW MH 16		Time of Concentrati on	0.071	100	0	100	0.071
TOTAL		0.0		0.868				0.868

Project: Redwood SEN	Date: 12/06/2026			
	Designed by: SZ	Checked by: CB	Approved By: CB	
Report Details: Type: Outfall Details Storm Phase: Phase	Company Address:			

Outfalls

Outfall	Outfall Type	Gated	Fixed Surcharged Level (m)	Level Curve
Headwall	Free Discharge			

Project: Redwood SEN	Date: 12/06/2026			
	Designed by: SZ	Checked by: CB	Approved By: CB	
Report Title: Rainfall Analysis Criteria	Company Address:			

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH	Type: FEH
Site Location	GB 385335 407523 SD 85335 07523
Rainfall Version	2022
Summer	☒
Winter	☒

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000
30.0	30.000
100.0	30.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		





FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW MH 14	FEH: 2 years: +0 %: 15 mins: Summer	109.597	107.593	107.707	0.114	29.6	0.128	0.000	28.9	14.871	OK
SW MH 05	FEH: 2 years: +0 %: 180 mins: Summer	106.226	102.987	103.220	0.233	9.1	0.264	0.000	9.3	117.583	OK
SW MH 17	FEH: 2 years: +0 %: 30 mins: Summer	107.043	105.750	105.834	0.084	14.6	0.095	0.000	14.5	16.029	OK
SW MH 20	FEH: 2 years: +0 %: 15 mins: Summer	109.589	107.420	107.471	0.051	5.9	0.058	0.000	5.7	2.549	OK
SW MH 12	FEH: 2 years: +0 %: 15 mins: Summer	112.091	110.000	110.055	0.055	8.8	0.062	0.000	8.1	3.788	OK
SW MH 08	FEH: 2 years: +0 %: 15 mins: Summer	109.215	106.420	106.629	0.209	67.5	0.236	0.000	66.6	41.536	OK
SW MH 13	FEH: 2 years: +0 %: 15 mins: Summer	111.010	107.700	107.775	0.075	12.8	0.084	0.000	12.4	5.475	OK
SW MH 16	FEH: 2 years: +0 %: 15 mins: Summer	111.317	108.600	108.706	0.106	24.3	0.120	0.000	23.4	10.533	OK
SW MH 15	FEH: 2 years: +0 %: 15 mins: Summer	110.484	108.200	108.326	0.126	33.6	0.142	0.000	29.6	14.907	OK
SW MH 11	FEH: 2 years: +0 %: 15 mins: Summer	111.424	109.366	109.438	0.073	27.3	0.082	0.000	26.0	12.107	OK
SW MH 10	FEH: 2 years: +0 %: 15 mins: Summer	110.952	108.600	108.680	0.080	31.1	0.090	0.000	29.9	14.317	OK
SW MH 09 - CATCHPIT	FEH: 2 years: +0 %: 15 mins: Summer	110.263	107.376	107.561	0.185	72.6	0.209	0.000	65.4	37.795	OK
SW MH 04 - HYDROB RAKE	FEH: 2 years: +0 %: 30 mins: Winter	106.144	102.553	103.110	0.557	18.6	0.630	0.000	9.6	26.007	Surcharged
Headwall	FEH: 2 years: +0 %: 180 mins: Winter	101.799	101.450	101.502	0.052	9.6	0.000	0.000	9.6	150.440	Flood Risk
SW MH 01	FEH: 2 years: +0 %: 15 mins: Summer	104.662	103.900	103.950	0.050	7.2	0.057	0.000	6.8	3.123	OK
SW MH 06 - HYDROB RAKE	FEH: 2 years: +0 %: 360 mins: Summer	107.000	105.438	105.891	0.453	7.4	0.512	0.000	7.4	187.830	Surcharged
IC (3)	FEH: 2 years: +0 %: 180 mins: Summer	109.060	108.119	108.505	0.387	0.8	0.109	0.000	0.8	3.368	Surcharged

Project: Redwood SEN		Date: 12/06/2026				
		Designed by: SZ	Checked by: CB	Approved By: CB		
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address:				

Simple Junction (1)	FEH: 2 years: +0 %: 15 mins: Summer		107.2 50	107.3 01	0.051	5.7			5.4	2.545	OK
IC (2)	FEH: 2 years: +0 %: 30 mins: Summer	108.5 63	107.6 63	107.8 27	0.164	2.0	0.046	0.000	1.9	2.073	Surcharg ed
SW MH 19	FEH: 2 years: +0 %: 15 mins: Summer	108.6 78	106.1 00	106.1 50	0.050	5.9	0.057	0.000	5.5	3.887	OK
IC (1)	FEH: 2 years: +0 %: 60 mins: Summer	107.6 92	106.8 20	106.8 53	0.033	3.9	0.009	0.000	3.9	6.466	OK
SW MH 18	FEH: 2 years: +0 %: 60 mins: Summer	107.7 71	105.8 20	105.9 05	0.085	8.7	0.096	0.000	8.4	14.672	OK
IC	FEH: 2 years: +0 %: 60 mins: Summer	109.8 72	108.5 56	108.5 92	0.036	4.1	0.010	0.000	4.1	7.049	OK
SW MH 07	FEH: 2 years: +0 %: 60 mins: Summer	107.0 00	105.6 00	105.8 98	0.298	20.5	0.336	0.000	20.5	61.601	Surcharg ed
SW MH 03	FEH: 2 years: +0 %: 15 mins: Summer	105.4 82	103.1 30	103.2 11	0.081	20.1	0.092	0.000	18.1	9.254	OK
SW MH 02	FEH: 2 years: +0 %: 15 mins: Summer	105.2 05	103.4 91	103.5 55	0.064	12.1	0.072	0.000	11.1	5.390	OK
Manhole	FEH: 2 years: +0 %: 360 mins: Summer	105.9 75	103.2 00	103.2 48	0.048	7.4	0.054	0.000	7.8	187.796	OK

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		





FEH: 30 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW MH 14	FEH: 30 years: +30 %: 15 mins: Summer	109.597	107.593	108.234	0.641	71.7	0.725	0.000	66.1	42.575	Surcharged
SW MH 05	FEH: 30 years: +30 %: 15 mins: Summer	106.226	102.987	103.453	0.466	27.4	0.527	0.000	9.7	22.851	Surcharged
SW MH 17	FEH: 30 years: +30 %: 15 mins: Summer	107.043	105.750	105.923	0.173	47.1	0.196	0.000	44.8	30.847	OK
SW MH 20	FEH: 30 years: +30 %: 15 mins: Summer	109.589	107.420	107.511	0.091	16.8	0.103	0.000	16.4	7.276	OK
SW MH 12	FEH: 30 years: +30 %: 15 mins: Summer	112.091	110.000	110.094	0.094	25.0	0.106	0.000	23.6	10.831	OK
SW MH 08	FEH: 30 years: +30 %: 15 mins: Summer	109.215	106.420	106.939	0.519	191.1	0.587	0.000	189.3	116.477	Surcharged
SW MH 13	FEH: 30 years: +30 %: 15 mins: Summer	111.010	107.700	108.273	0.573	36.5	0.648	0.000	30.8	15.707	Surcharged
SW MH 16	FEH: 30 years: +30 %: 15 mins: Summer	111.317	108.600	109.679	1.079	69.4	1.220	0.000	55.0	29.984	Surcharged
SW MH 15	FEH: 30 years: +30 %: 15 mins: Summer	110.484	108.200	109.242	1.042	84.2	1.178	0.000	71.7	42.611	Surcharged
SW MH 11	FEH: 30 years: +30 %: 15 mins: Summer	111.424	109.366	109.498	0.132	78.5	0.150	0.000	75.4	34.608	OK
SW MH 10	FEH: 30 years: +30 %: 15 mins: Summer	110.952	108.600	108.742	0.142	90.0	0.161	0.000	88.2	40.828	OK
SW MH 09 - CATCHPIT	FEH: 30 years: +30 %: 15 mins: Summer	110.263	107.376	108.159	0.783	191.3	0.886	0.000	184.4	107.344	Surcharged
SW MH 04 - HYDROB RAKE	FEH: 30 years: +30 %: 240 mins: Summer	106.144	102.553	103.831	1.278	21.8	1.446	0.000	9.6	235.278	Surcharged
Headwall	FEH: 30 years: +30 %: 600 mins: Summer	101.799	101.450	101.502	0.052	9.6	0.000	0.000	9.6	537.214	Flood Risk
SW MH 01	FEH: 30 years: +30 %: 15 mins: Summer	104.662	103.900	103.986	0.086	20.6	0.097	0.000	19.8	8.926	OK
SW MH 06 - HYDROB RAKE	FEH: 30 years: +30 %: 30 mins: Summer	107.000	105.438	106.027	0.589	7.6	0.667	0.000	7.5	18.837	Surcharged
IC (3)	FEH: 30 years: +30 %: 60 mins: Summer	109.060	108.119	108.609	0.491	1.8	0.139	0.000	1.8	6.512	Surcharged

Project: Redwood SEN		Date: 12/06/2026			
		Designed by: SZ	Checked by: CB	Approved By: CB	
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address:			

Simple Junction (1)	FEH: 30 years: +30 %: 15 mins: Summer		107.2 50	107.3 41	0.091	16.4			15.7	8.549	OK
IC (2)	FEH: 30 years: +30 %: 30 mins: Summer	108.5 63	107.6 63	108.0 52	0.389	3.6	0.110	0.000	3.1	6.173	Surcharg ed
SW MH 19	FEH: 30 years: +30 %: 15 mins: Summer	108.6 78	106.1 00	106.1 91	0.091	18.0	0.103	0.000	17.3	12.126	OK
IC (1)	FEH: 30 years: +30 %: 60 mins: Summer	107.6 92	106.8 20	106.8 68	0.048	7.5	0.014	0.000	7.5	19.320	OK
SW MH 18	FEH: 30 years: +30 %: 30 mins: Summer	107.7 71	105.8 20	106.0 29	0.209	22.7	0.236	0.000	22.4	32.126	OK
IC	FEH: 30 years: +30 %: 60 mins: Summer	109.8 72	108.5 56	108.6 10	0.054	8.0	0.015	0.000	8.0	21.055	OK
SW MH 07	FEH: 30 years: +30 %: 30 mins: Summer	107.0 00	105.6 00	106.3 27	0.727	32.6	0.822	0.000	32.1	77.134	Surcharg ed
SW MH 03	FEH: 30 years: +30 %: 30 mins: Summer	105.4 82	103.1 30	103.5 22	0.392	41.5	0.444	0.000	41.2	32.484	Surcharg ed
SW MH 02	FEH: 30 years: +30 %: 30 mins: Summer	105.2 05	103.4 91	103.5 83	0.092	24.0	0.104	0.000	24.1	20.781	OK
Manhole	FEH: 30 years: +30 %: 960 mins: Winter	105.9 75	103.2 00	103.8 23	0.623	7.5	0.705	0.000	7.9	598.985	Surcharg ed

Project: Redwood SEN	Date: 12/06/2026		
	Designed by: SZ	Checked by: CB	Approved By: CB
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		





FEH: 100 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW MH 14	FEH: 100 years: +30 %: 15 mins: Summer	109.597	107.593	108.595	1.002	89.1	1.133	0.000	84.4	53.594	Surcharged
SW MH 05	FEH: 100 years: +30 %: 600 mins: Winter	106.226	102.987	104.068	1.081	9.0	1.222	0.000	9.3	439.033	Surcharged
SW MH 17	FEH: 100 years: +30 %: 15 mins: Summer	107.043	105.750	105.960	0.210	58.1	0.238	0.000	54.9	37.427	OK
SW MH 20	FEH: 100 years: +30 %: 15 mins: Summer	109.589	107.420	107.525	0.105	21.1	0.118	0.000	20.6	9.151	OK
SW MH 12	FEH: 100 years: +30 %: 15 mins: Summer	112.091	110.000	110.107	0.107	31.5	0.120	0.000	29.8	13.628	OK
SW MH 08	FEH: 100 years: +30 %: 15 mins: Summer	109.215	106.420	107.066	0.646	235.2	0.731	0.000	233.5	145.184	Surcharged
SW MH 13	FEH: 100 years: +30 %: 15 mins: Summer	111.010	107.700	108.659	0.959	45.9	1.085	0.000	40.1	19.771	Surcharged
SW MH 16	FEH: 100 years: +30 %: 15 mins: Summer	111.317	108.600	110.661	2.061	87.2	2.331	0.000	68.5	37.707	Surcharged
SW MH 15	FEH: 100 years: +30 %: 15 mins: Summer	110.484	108.200	110.048	1.848	105.2	2.090	0.000	89.1	53.636	Surcharged
SW MH 11	FEH: 100 years: +30 %: 15 mins: Summer	111.424	109.366	109.518	0.152	98.8	0.172	0.000	95.6	43.519	OK
SW MH 10	FEH: 100 years: +30 %: 15 mins: Winter	110.952	108.600	108.759	0.159	106.7	0.179	0.000	103.7	51.356	OK
SW MH 09 - CATCHPIT	FEH: 100 years: +30 %: 15 mins: Summer	110.263	107.376	108.474	1.098	231.7	1.242	0.000	227.5	134.418	Surcharged
SW MH 04 - HYDROB RAKE	FEH: 100 years: +30 %: 240 mins: Winter	106.144	102.553	104.059	1.507	19.0	1.704	0.000	9.6	256.467	Surcharged
Headwall	FEH: 100 years: +30 %: 720 mins: Summer	101.799	101.450	101.502	0.052	9.6	0.000	0.000	9.6	678.114	Flood Risk
SW MH 01	FEH: 100 years: +30 %: 15 mins: Summer	104.662	103.900	103.994	0.094	25.9	0.106	0.000	25.1	11.218	OK
SW MH 06 - HYDROB RAKE	FEH: 100 years: +30 %: 30 mins: Summer	107.000	105.438	106.124	0.686	7.7	0.776	0.000	7.5	19.456	Surcharged
IC (3)	FEH: 100 years: +30 %: 60 mins: Summer	109.060	108.119	108.662	0.544	2.1	0.154	0.000	2.1	8.489	Surcharged

Project: Redwood SEN		Date: 12/06/2026			
		Designed by: SZ	Checked by: CB	Approved By: CB	
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address:			

Simple Junction (1)	FEH: 100 years: +30 %: 15 mins: Summer		107.250	107.354	0.104	20.6			19.8	10.731	OK
IC (2)	FEH: 100 years: +30 %: 60 mins: Summer	108.563	107.663	108.107	0.444	3.4	0.126	0.000	3.3	10.590	Surcharged
SW MH 19	FEH: 100 years: +30 %: 15 mins: Summer	108.678	106.100	106.203	0.103	22.5	0.116	0.000	21.7	14.608	OK
IC (1)	FEH: 100 years: +30 %: 60 mins: Summer	107.692	106.820	106.873	0.053	8.7	0.015	0.000	8.7	24.880	OK
SW MH 18	FEH: 100 years: +30 %: 30 mins: Summer	107.771	105.820	106.127	0.307	27.4	0.347	0.000	26.9	40.574	Surcharged
IC	FEH: 100 years: +30 %: 60 mins: Summer	109.872	108.556	108.616	0.061	9.4	0.017	0.000	9.4	27.099	OK
SW MH 07	FEH: 100 years: +30 %: 60 mins: Winter	107.000	105.600	106.639	1.039	44.4	1.175	0.000	44.3	161.233	Surcharged
SW MH 03	FEH: 100 years: +30 %: 30 mins: Summer	105.482	103.130	103.710	0.580	49.7	0.656	0.000	49.1	40.468	Surcharged
SW MH 02	FEH: 100 years: +30 %: 15 mins: Summer	105.205	103.491	103.888	0.396	44.0	0.448	0.000	27.7	19.755	Surcharged
Manhole	FEH: 100 years: +30 %: 1440 mins: Winter	105.975	103.200	103.961	0.761	7.5	0.861	0.000	8.0	869.397	Surcharged

Project: Redwood SEN		Date: 12/06/2026			
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Designed by: SZ	Checked by: CB		Approved By: CB
		Company Address:			



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank
By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Porous Paving	FEH: 2 years: +0 %: 180 mins: Summer	108.519	108.507	0.025	0.097	1.4	1.372	0.000	0.000	0.8	3.955	83.486	OK
Porous Paving (1)	FEH: 2 years: +0 %: 30 mins: Summer	108.012	107.967	0.034	0.059	2.5	0.910	0.000	0.000	2.0	2.089	86.780	OK
Porous Paving (3)	FEH: 2 years: +0 %: 60 mins: Summer	107.212	107.122	0.043	0.094	5.4	2.647	0.000	0.000	3.9	6.476	80.781	OK
Porous Paving (2)	FEH: 2 years: +0 %: 30 mins: Summer	108.734	108.651	0.051	0.099	7.3	3.048	0.000	0.000	4.4	5.924	77.299	OK
Porous Paving (5)	FEH: 2 years: +0 %: 60 mins: Summer	109.395	109.330	0.045	0.095	5.8	2.908	0.000	0.000	4.1	7.058	79.625	OK
Cellular Storage	FEH: 2 years: +0 %: 180 mins: Summer	105.924	105.924	0.223	0.223	37.8	38.219	0.000	0.000	17.0	114.621	81.468	OK
Pond	FEH: 2 years: +0 %: 360 mins: Summer	105.892	105.892	0.392	0.392	20.0	72.373	0.000	0.000	7.4	188.002	76.537	OK
Cellular Storage (2)	FEH: 2 years: +0 %: 360 mins: Summer	103.239	103.239	0.139	0.139	7.8	9.415	0.000	0.000	8.7	186.742	88.533	OK

Project: Redwood SEN		Date: 12/06/2026			
		Designed by: SZ	Checked by: CB		Approved By: CB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address:			



**FEH: 30 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank
By: Max. Resident Volume**

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Porous Paving	FEH: 30 years: +30 %: 60 mins: Summer	108.626	108.619	0.132	0.209	6.2	4.016	0.000	0.000	1.9	7.000	51.654	OK
Porous Paving (1)	FEH: 30 years: +30 %: 30 mins: Summer	108.099	108.081	0.121	0.173	7.4	2.889	0.000	0.000	3.6	6.201	58.027	OK
Porous Paving (3)	FEH: 30 years: +30 %: 60 mins: Summer	107.372	107.208	0.203	0.180	15.7	8.407	0.000	0.000	7.5	19.332	38.957	OK
Porous Paving (2)	FEH: 30 years: +30 %: 60 mins: Summer	108.957	108.776	0.274	0.224	19.1	10.452	0.000	0.000	8.7	23.613	22.154	OK
Porous Paving (5)	FEH: 30 years: +30 %: 60 mins: Summer	109.577	109.431	0.227	0.195	17.1	9.409	0.000	0.000	8.0	21.067	34.077	OK
Cellular Storage	FEH: 30 years: +30 %: 180 mins: Summer	106.478	106.478	0.778	0.778	90.2	133.112	0.000	0.000	26.9	200.952	35.456	OK
Pond	FEH: 30 years: +30 %: 360 mins: Winter	106.400	106.400	0.900	0.900	30.4	205.805	0.000	0.000	7.6	271.046	33.279	OK
Cellular Storage (2)	FEH: 30 years: +30 %: 360 mins: Winter	103.869	103.869	0.769	0.769	10.1	52.248	0.000	0.000	8.4	242.023	36.368	OK

Project: Redwood SEN		Date: 12/06/2026			
		Designed by: SZ	Checked by: CB		Approved By: CB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address:			



**FEH: 100 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank
By: Max. Resident Volume**

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Porous Paving	FEH: 100 years: +30 %: 60 mins: Summer	108.686	108.676	0.192	0.266	7.9	5.394	0.000	0.000	2.3	9.000	35.061	OK
Porous Paving (1)	FEH: 100 years: +30 %: 60 mins: Summer	108.165	108.143	0.187	0.234	8.5	4.137	0.000	0.000	3.7	10.599	39.896	OK
Porous Paving (3)	FEH: 100 years: +30 %: 60 mins: Summer	107.460	107.260	0.291	0.232	20.2	11.350	0.000	0.000	8.7	24.893	17.592	OK
Porous Paving (2)	FEH: 100 years: +30 %: 60 mins: Summer	109.031	108.854	0.348	0.302	24.6	14.080	1.270	0.000	10.5	30.397	-4.864	Flood
Porous Paving (5)	FEH: 100 years: +30 %: 60 mins: Summer	109.669	109.488	0.319	0.252	22.0	12.626	0.000	0.000	9.4	27.113	11.539	OK
Cellular Storage	FEH: 100 years: +30 %: 60 mins: Winter	106.689	106.689	0.989	0.989	160.8	169.035	0.000	0.000	44.4	162.226	18.037	OK
Pond	FEH: 100 years: +30 %: 600 mins: Winter	106.637	106.637	1.137	1.137	28.7	285.229	0.000	0.000	7.6	440.321	7.531	OK
Cellular Storage (2)	FEH: 100 years: +30 %: 480 mins: Winter	104.076	104.076	0.976	0.976	10.0	66.286	0.000	0.000	8.9	341.290	19.271	OK



Outlook

RE: Pre development enquiry - Redwood SEN School, Heywood Old Road, Rochdale, OL10 2QN- UU Ref: 09464321

From seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>

Date Thu 04-Jun-26 8:50 AM

To manisha.swaminathan@harleyhaddow.com <manisha.swaminathan@harleyhaddow.com>

Cc stefano.zilio@harleyhaddow.com <stefano.zilio@harleyhaddow.com>; craig.boubert@harleyhaddow.com <craig.boubert@harleyhaddow.com>

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Morning Manisha,

Thank you for coming back to us with a pump rate.

Based on the pump rate provided, the point of connection provided is still suitable.

However, if the rate is to change please let us know.

Regards,

Mike Rimmer
Developer Engineer
Developer Services & Metering
M: 07341 686020
unitedutilities.com



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----- Original Message -----

From: Manisha Swaminathan [manisha.swaminathan@harleyhaddow.com]

Sent: 03/06/2026 11:18

To: seweradoptions@uuplc.co.uk

Cc: stefano.zilio@harleyhaddow.com; craig.boubert@harleyhaddow.com

Subject: RE: Pre development enquiry - Redwood SEN School, Heywood Old Road, Rochdale, OL10 2QN- UU Ref: 09464321

Good morning Megan,

Thank you for getting back to us on the pre-development enquiry for this project.

We are proposing to pump the foul water to the United Utilities public sewer as recommended. The proposed pump has a maximum discharge rate of 2.25L/s as noted in the '*Pre and Post Development Foul Water Discharge*' document (attached).

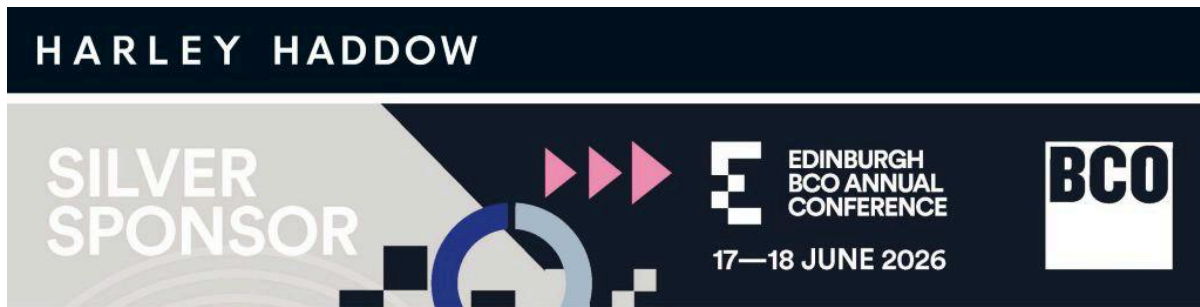
Best wishes,

Manisha



Manisha Swaminathan Project Civil Engineer

T | 0203 735 5060 Ext 4032 **W** | www.harleyhaddow.com



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From: seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>

Sent: 01 June 2026 15:07

To: Manisha Swaminathan <Manisha.Swaminathan@harleyhaddow.com>

Cc: Stefano Zilio <Stefano.Zilio@harleyhaddow.com>; Craig Boubert <Craig.Boubert@harleyhaddow.com>

Subject: RE: Pre development enquiry - Redwood SEN School, Heywood Old Road, Rochdale, OL10 2QN- UU Ref: 09464321

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Good afternoon Manisha,

PROPOSED PRE DEVELOPMENT AT Redwood SEN School UU Ref: 09464321

Thank you for your pre-development application.

Please find attached the pre-development enquiry response and guidance form.

If you require anything further, please let me know.

Kind regards,

Megan

Megan Dimeloe
Assistant Developer Engineer
Developer Services and Metering



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United Utilities Grasmere House, 2nd Floor
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

01/06/2026

Dear Manisha Swaminathan, Harley Haddow Ltd

Pre-Development Enquiry for Redwood SEN, Heywood Old Road, Birch, Middleton, Rochdale, Greater Manchester OL10 2QN

UU Reference Number: 09464321

We have assessed your application based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your strategy will need review by other authorities as part of the planning process. We advise conducting necessary site investigations to confirm viability of your proposals.

Modelled Flood Risk

[Please see the image at the end of this letter for details](#)

I can confirm that we do not have modelled flood risk within the vicinity of the proposed development.

Please note that our modelling data is indicative, and only representative of the 1:100year storm event.

[Please see **comment 2** of the attached guidance sheet](#)

Asset Protection

1. We have reviewed our records and can confirm that there does not appear to be any charted public sewers located within the boundary of the proposed development.

[Please see **comment 3** of the attached guidance sheet and **Working Near Our Pipelines Guidance document**](#)

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

If a pumped connection is proposed, please provide an indicative pump rate so that we can undertake an appropriate assessment.

Our preferred point of discharge would be to the 300mm diameter public foul within the footpath parallel to Martindale Crescent located South East of your proposed development at an unrestricted rate.

WASTEWATER PRE-DEVELOPMENT ENQUIRY

Manhole reference SD85076205, **Grid reference** 385610, 407257

[Please see the images at the end of this letter for clarification](#)

Surface Water

Follow the National Planning Policy Guidance drainage hierarchy and Provide evidence for discounting higher options before considering public sewer discharge. Consult the Lead Local Flood Authority regarding surface water concerns.

[Please see comment 4 within the guidance sheet](#)

Infiltration

[Please see comment 4 within the guidance sheet](#)

Waterbody

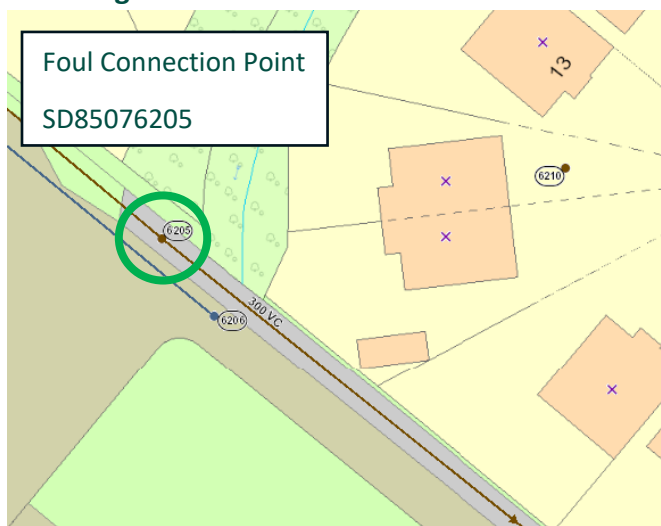
If an evidence-based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/or Environment Agency to discuss a point of discharge to the Whittle Brook located in the site boundary of the proposed site.

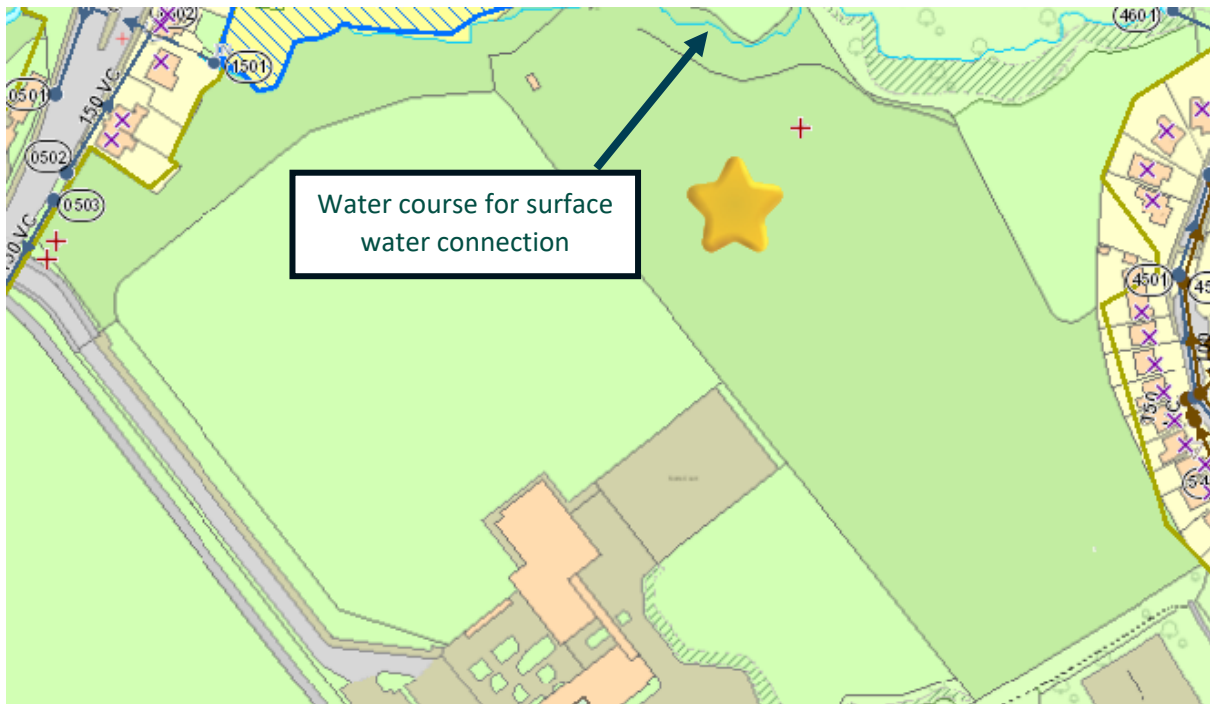
We would encourage you to engage with any third-party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

Public Sewer

No connection to the public sewer will be permitted at this time. This is because due to the presence of water course in the vicinity of the site.

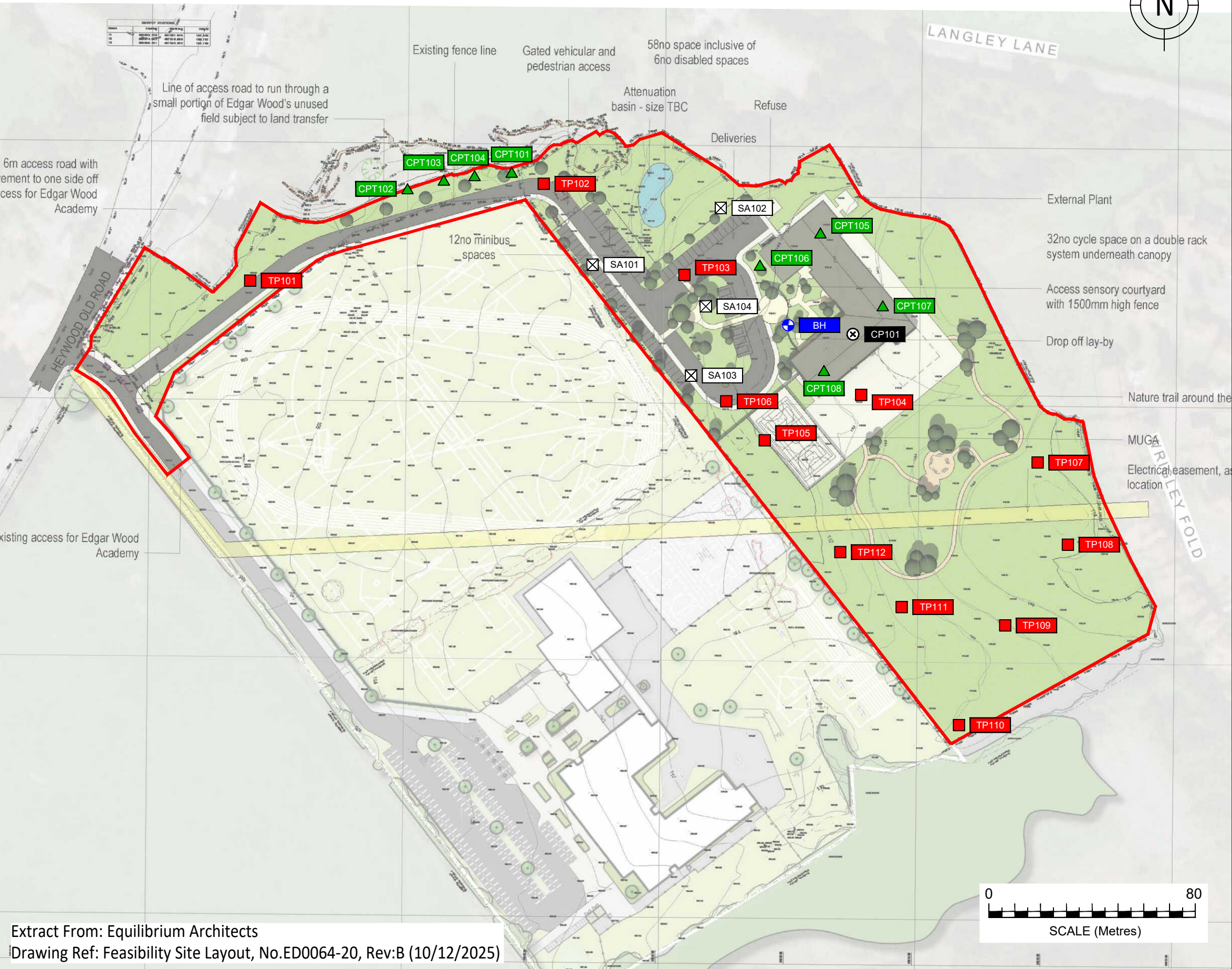
Site Images





Appendix E

Extract from the site investigation report – Infiltration tests



KEY

	Site Boundary
	Legacy Borehole (BH)
	Trial Pit (TP)
	Cable Percussive Borehole (CP)
	Cone Penetrometer Test (CPT)
	Soakaway Test (SA)

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.

Client: Equilibrium Architects Ltd

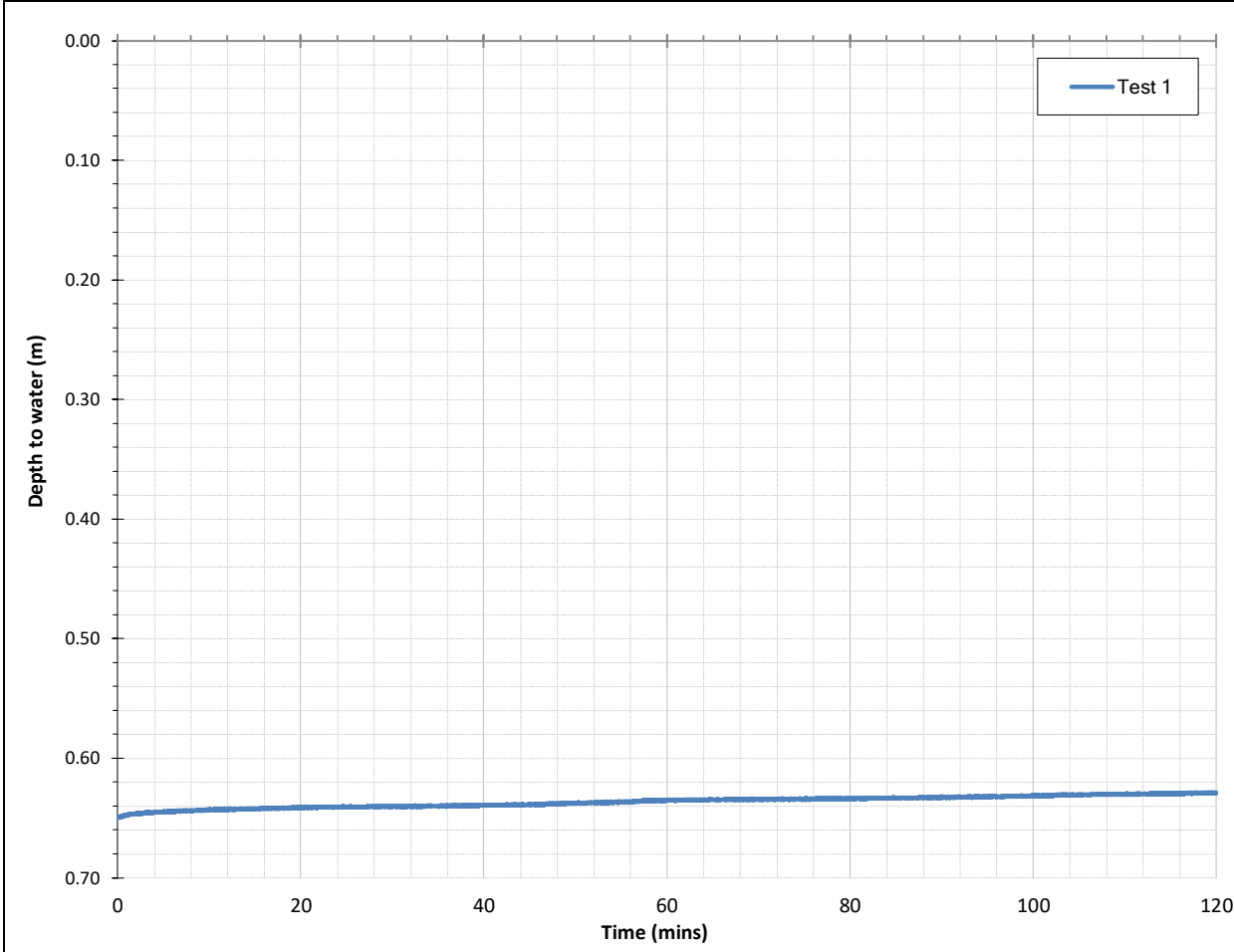
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Title: Site Investigation Location Plan

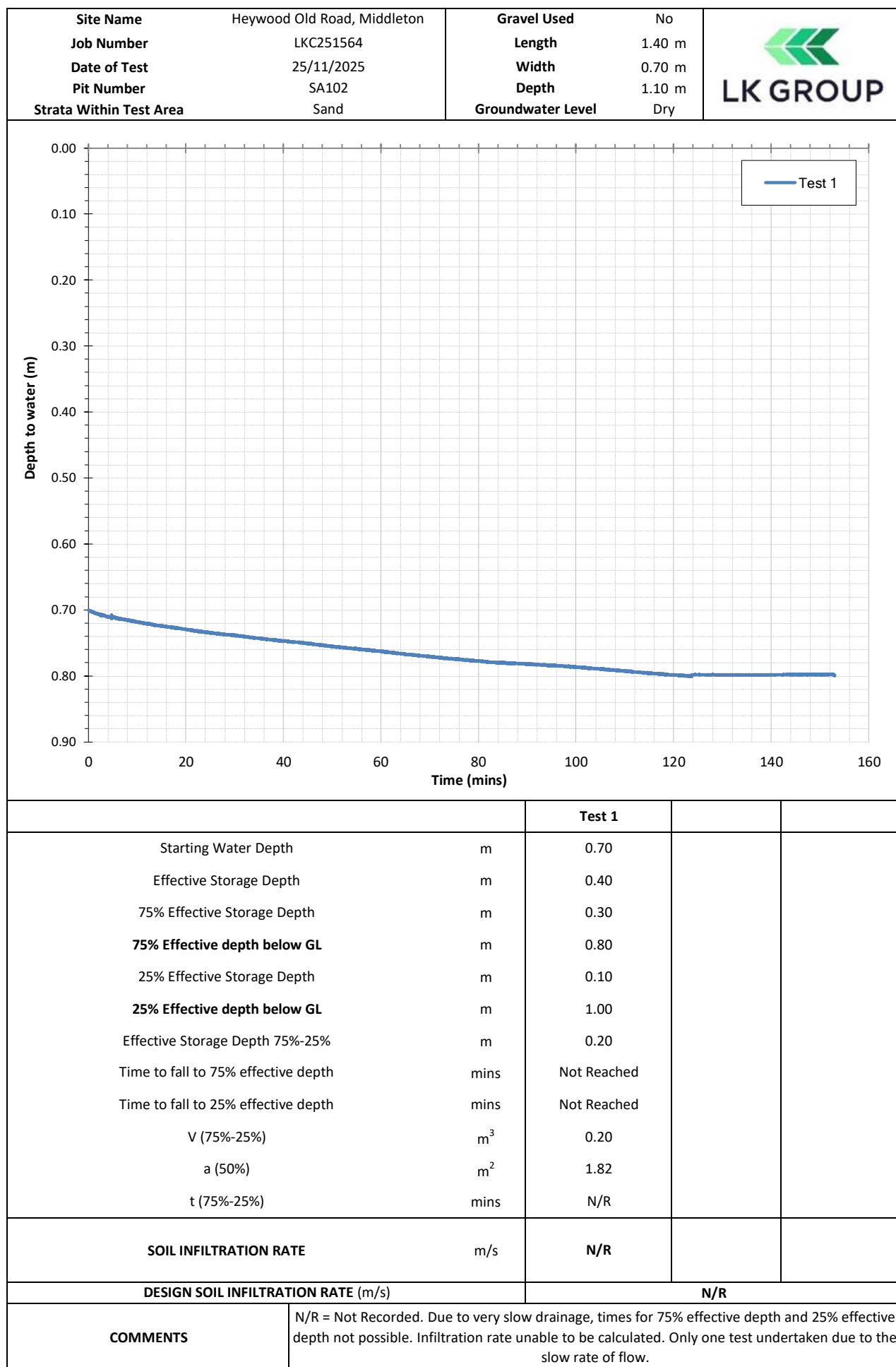
Job No.: LKC251564	Scale (See Scale Bar): See Scale Bar	Figure: 3	Revision:
Drawn By: AC	Checked By: LD	Dec 2025	

Appendix F – Soakaway Tests

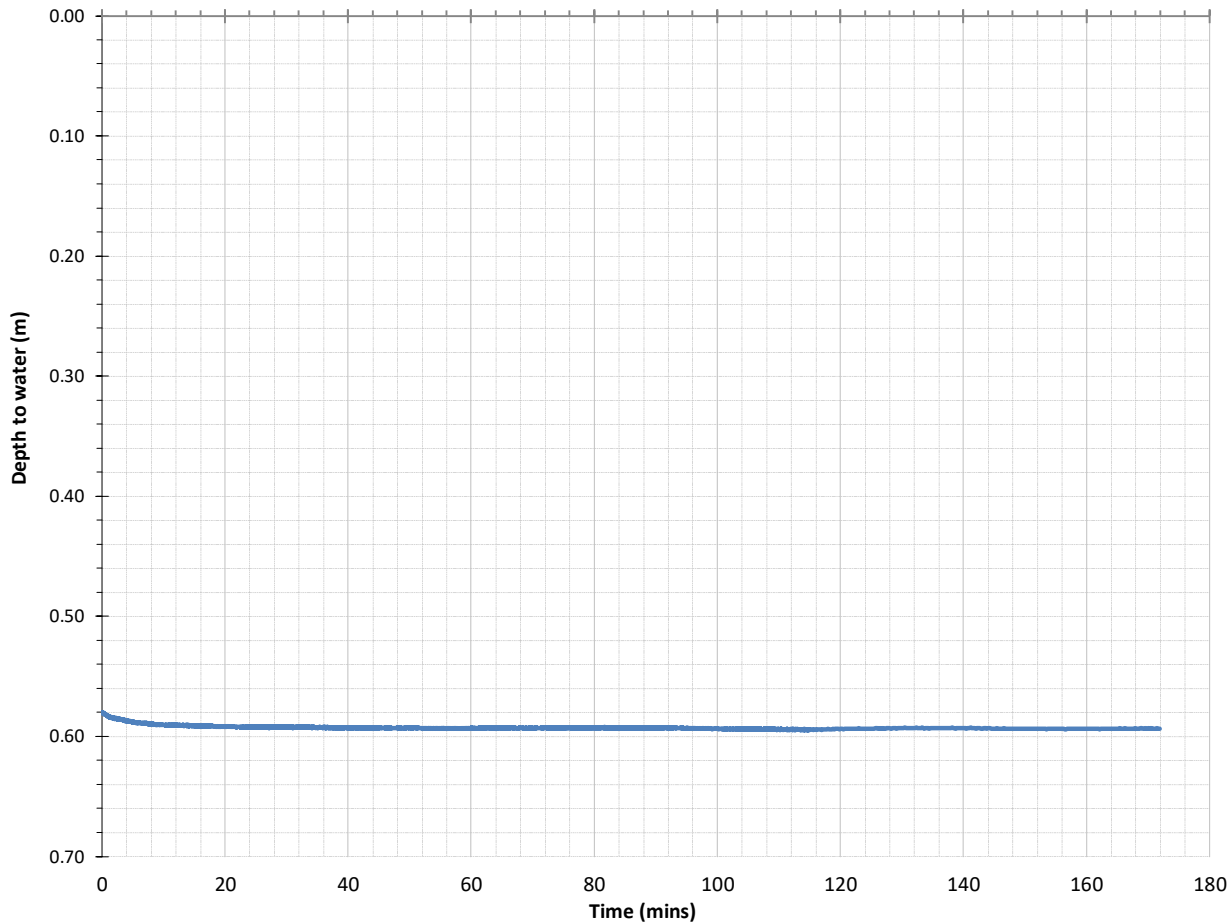
Site Name Heywood Old Road, Middleton		Gravel Used No		
Job Number LKC251564		Length 1.20 m		
Date of Test 25/11/2025		Width 0.60 m		
Pit Number SA101		Depth 1.20 m		
Strata Within Test Area Clay / Silt		Groundwater Level Dry		



		Test 1		
Starting Water Depth	m	0.64		
Effective Storage Depth	m	0.56		
75% Effective Storage Depth	m	0.42		
75% Effective depth below GL	m	0.78		
25% Effective Storage Depth	m	0.14		
25% Effective depth below GL	m	1.06		
Effective Storage Depth 75%-25%	m	0.28		
Time to fall to 75% effective depth	mins	Not Reached		
Time to fall to 25% effective depth	mins	Not Reached		
V (75%-25%)	m ³	0.20		
a (50%)	m ²	1.72		
t (75%-25%)	mins	N/R		
SOIL INFILTRATION RATE	m/s	N/R		
DESIGN SOIL INFILTRATION RATE (m/s)		N/R		
COMMENTS	N/R = Not Recorded. Due to very slow drainage, times for 75% effective depth and 25% effective depth not possible. Infiltration rate unable to be calculated. Only one test undertaken due to the slow rate of flow.			

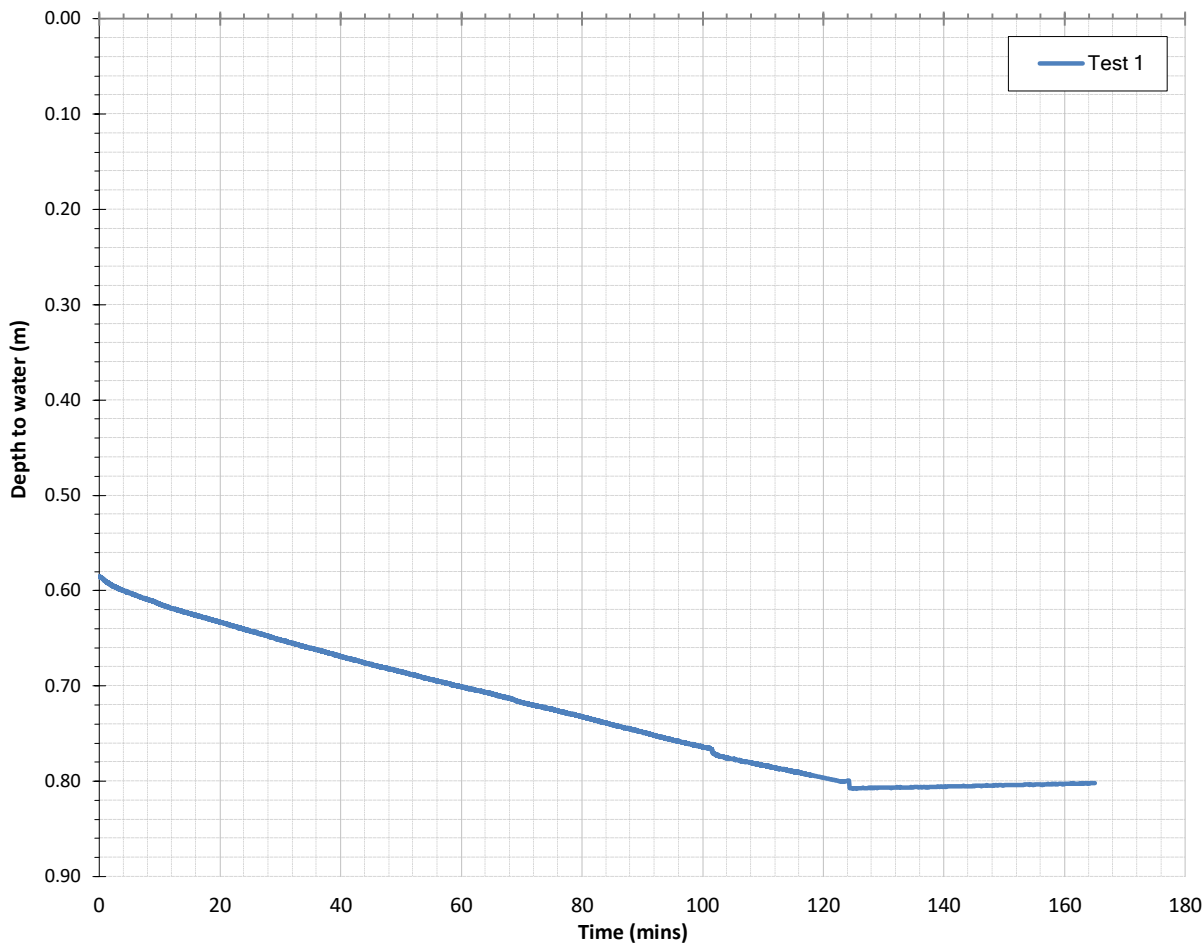


Site Name Heywood Old Road, Middleton		Gravel Used No		
Job Number LKC251564		Length 1.20 m		
Date of Test 25/11/2025		Width 0.60 m		
Pit Number SA103		Depth 1.10 m		
Strata Within Test Area Sand		Groundwater Level Dry		



		Test 1		
Starting Water Depth	m	0.58		
Effective Storage Depth	m	0.52		
75% Effective Storage Depth	m	0.39		
75% Effective depth below GL	m	0.71		
25% Effective Storage Depth	m	0.13		
25% Effective depth below GL	m	0.97		
Effective Storage Depth 75%-25%	m	0.26		
Time to fall to 75% effective depth	mins	Not Reached		
Time to fall to 25% effective depth	mins	Not Reached		
V (75%-25%)	m ³	0.19		
a (50%)	m ²	1.66		
t (75%-25%)	mins	N/R		
SOIL INFILTRATION RATE	m/s	N/R		
DESIGN SOIL INFILTRATION RATE (m/s)		N/R		
COMMENTS	N/R = Not Recorded. Due to very slow drainage, times for 75% effective depth and 25% effective depth not possible. Infiltration rate unable to be calculated. Only one test undertaken due to the slow rate of flow.			

Site Name Heywood Old Road, Middleton		Gravel Used No		
Job Number LKC251564		Length 1.20 m		
Date of Test 25/11/2025		Width 0.70 m		
Pit Number SA104		Depth 0.80 m		
Strata Within Test Area Sand		Groundwater Level Dry		



		Test 1		
Starting Water Depth	m	0.59		
Effective Storage Depth	m	0.21		
75% Effective Storage Depth	m	0.16		
75% Effective depth below GL	m	0.64		
25% Effective Storage Depth	m	0.05		
25% Effective depth below GL	m	0.75		
Effective Storage Depth 75%-25%	m	0.11		
Time to fall to 75% effective depth	mins	23.65		
Time to fall to 25% effective depth	mins	91		
V (75%-25%)	m ³	0.09		
a (50%)	m ²	1.25		
t (75%-25%)	mins	67.35		
SOIL INFILTRATION RATE	m/s	1.789E-05		
DESIGN SOIL INFILTRATION RATE (m/s)		1.79E-05		
COMMENTS	Base of test area recorded as 0.80mbgl as correlates with depth transducer placed in soakaway pit. Due to time constraints onsite, only one test was undertaken.			

Appendix F

SuDS Maintenance Schedules

Flow Control Chamber

Maintenance schedule	Required action	Frequency
Regular maintenance	Remove sediment and/or debris from vortex filter trap or catch pit.	Monthly for 3 months, then three-monthly
Remedial actions	Repair or replace damaged items	As required
Monitoring	Inspect flow control device for signs of damage or wear.	Annually

Permeable paving

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water run onto pervious surface from adjacent impermeable areas as this area is more likely to collect most sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping that has been raised to within 50 mm of the paving level due to vegetation maintenance or soil slippage	As required
	Perform remedial work on any depressions, rutting, and cracked or broken blocks that are considered detrimental to the structural performance or a hazard to users. Additionally, replace any lost jointing material.	As required

	Rehabilitate the surface and upper substructure by remedial sweeping	Every 10 to 15 years, or as needed if performance is reduced due to significant clogging.
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth. If necessary, take remedial action.	Three-monthly. 48h after large storms in first six months
	Inspect silt accumulation rates to establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Geocellular tanks

Maintenance schedule	Required action	Typical Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Detention Basin

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin.	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly

	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually
Occasional Maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial Actions	Repair erosion or other damage by re-turfing or reseed	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required