

Project No: 2024.188

Project: The Growing House
Higher Lane
Longridge
Preston
PR3 2YX

Subject: Flood Risk Assessment and Drainage Strategy
for Planning Purposes

Date: September 2024



**GRAHAM SCHOFIELD
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1.0 INTRODUCTION

1.1 Scope of Project

It is proposed to develop a greenfield site off Higher Lane, Longridge, Preston PR3 2YX which will comprise a single new build residential property with an extended entrance drive and external permeable and impermeable surfacing. The proposals are as shown on the accompanying Architects drawings numbered 01003 and 01004. The location of the land subject to the planning application is identified on the Location Plan.

1.2 Sources of Information

In April 2015, the National Policy for Technical Requirements for Drainage were reinforced as part of the Planning Policy 25 to reflect flooding problems which several parts of the country had experienced in recent years leading up to the introduction of the new legislation.

In general terms, sites in excess of 1.0 Ha in area, or within known areas of risk of flooding, require both a Flood Risk Assessment and an appropriate drainage strategy.

The proposed development site has an area of exactly 0.16 Ha and lies within Flood Zone 1 of the Environment Agencies Flood Zone maps, therefore a Flood Risk Assessment is not necessary.

A Drainage Strategy will therefore be carried out using the following information:

- United Utilities Sewer Records – **Appendix ‘A’**
- Location Plan – **Appendix ‘B’**
- Drawing No. 2024.188.001 Site Topography – **Appendix ‘C’**
- Jackson-Crane Architecture Drawing Numbers 01003 and 01004 – **Appendix ‘D’**

Directors: I.Schofield BSc (Hons) MSc, C Eng, MI Struct E ❖ M.O’Sullivan MSc, I Eng, IMI Struct E. AMICE
Consultant: G. Schofield C Eng, MI Struct E, MICE, MIEI

- Drawing Number 2024.188.002 Indicative Drainage Layout – **Appendix ‘E’**
- HR Wallingford Quick Storage Estimation – **Appendix ‘F’**

1.3 Policy Content

A high-level assessment has concluded the site to be of low risk. However, in accordance with “Technical Guidance to the National Planning Policy Framework” the application of a sustainable drainage system shall be adopted to reduce the overall level of flood risk in the area and beyond.

At present, the area of the proposed development site is predominantly agricultural land and therefore considered to be permeable. The proposed development will largely be covered with ‘formal’ surfacing consisting, buildings, external pathways, soft and hard landscaping resulting in a 75/25 split between impermeable and permeable areas. As such, a sustainable drainage solution will be proposed with allowance made for 40% climate change and 10% for urban creep.

2.0 EXISTING SITE DESCRIPTION AND LOCATION

2.1 Site Description

- 2.1.1 The site is located off Higher Lane, Longridge, Preston PR3 2YX
- 2.1.2 The proposed development site is bound by land, to all sides, also owned by the Applicant that consists of agricultural land in its entirety.
- 2.1.3 The proposed development will briefly comprise, a single substantial new build residential property, access drive, rewilding of a strip of land adjacent to the existing woodland, restoration to rich hay meadow and additional tree planting.
- 2.1.4 The proposed site development area for the house and garden is 0.16 Hectares and lies within Flood Zone 1.

2.2 Topography

- 2.2.1 A “walk over” survey has been carried out to compliment our drawing number 2024.188.001 showing the LiDAR contours superimposed onto the Ordnance Survey Open Rivers record for the site. The above information confirms the site to be falling from the northeast corner to the southwest corner with a level difference of approximately 25m.

2.3 Hydrological Setting

- 2.3.1 Ordnance survey mapping and our walk over survey indicates the closest watercourse to the site is Cowley Brook which is classified as an Ordinary Watercourse and forms the western boundary of the site.
- 2.3.2 The site has previously been used for Agricultural purposes and as such has a traditional network of field ditches which discharge into Cowley Brook.

2.4 Geology and Hydrogeology

- 2.4.1 A site specific Site Investigation has not been carried out. However, reference to the British Geological Survey map for the area indicates the drift deposits to be Aluvium comprising clays, silts sand and gravels overlying the solid deposits of sandstone.
- 2.4.2 The drift and solid geology are designated as Secondary Aquifers of medium vulnerability.

3.0 FLOOD RISK

- 3.1 The Environment Agency Flood maps indicate the site to be located entirely within Flood Zone 1, land assessed as having less than a 1 in 1000 annual probability of river or sea flooding i.e. 0.1% Annual Exceedance Probability, in any one year.
- 3.2 Cowley Brook is located on the western boundary of the site. The flood mapping indicates the absence of any localised flooding.
- 3.3 Beyond the ditches outlined in section 2.3.2 there are no reservoirs, canals, ponds or other artificial watercourses or water bodies in the vicinity of the site.

4.0 SURFACE WATER MANAGEMENT

- 4.1 Preliminary drainage calculations for returns of 1 in 100 years plus 40% climate change & 10% for urban creep, together with a proposed site drainage plan and accompanying details, have been prepared by Graham Schofield Associates which is summarised below and included in **Appendices ‘E’ & ‘F’**.

- An assessment for the disposal of the surface water drainage was carried out in accordance with the preferred hierarchy thus: -
 - i. To soakaway – dependent upon site substrata.
 - ii. Nearest Watercourse.

- iii. Designed to sustainable drainage standards for brownfield site with attenuation to limit the rate of discharge.
- 4.2 Sub surface ground conditions comprise Aluvium deposits which are highly unlikely to sustain any long-term effective soakaway system of surface water drainage.
- 4.3 Cowley Brook is the nearest natural watercourse and forms the western site boundary.
- 4.4 It is intended that the surface water runoff from the proposed buildings, yard area and upper access road will be collected by rainwater pipes and gullies before being discharged into a traditional network of manholes and underground drainage pipes. Attenuation storage is to be provided upstream of a flow-controlled manhole prior to discharge at a flow rate to mimic the existing green field run-off rate into Cowley Brook. Cowley Brook is an Ordinary Water Course and an application for consent to discharge will be required from the Local Flood Authority.
- 4.5 It is proposed to drain the existing length of access road, up to the property by cambering the finished levels so that surface water runoff discharges into the soft verges to either side.
- 4.6 The area covered by the building, and external hard and soft landscaping of 0.16 hectares will result in a QBAR of 1.6 litre/sec and a subsequent storage requirement of 78 m³ to satisfy a 1 in 100-year return and allowance for 40% climate change and an urban creep factor of 1.1.

5.0 FOUL DRAINAGE

- 5.1 The foul drainage from the house shall be collected via. traditional pipework and collected and treated by a proprietary Package Sewage Treatment Plant (probably a single bio-disc unit) appropriately sized and combined with the restricted flow from the surface water system before discharge into Cowley Brook. The aforementioned application for discharge into Cowley Brook will include the combined surface and treated water.

Appendix 'A'

United Utilities Water Sewer Records

Directors: I.Schofield BSc (Hons) MSc, C Eng, MI Struct E ❖ M.O'Sullivan MSc, I Eng, IMI Struct E. AMICE
Consultant: G. Schofield C Eng, MI Struct E, MICE, MIEI

Graham Schofield Associates

Suite 3 Balfour Court
off Hough Lane, Leyland
Preston,
PR25 2TF

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: 2024.188
Our Ref: UUPS-ORD-598854
Date: 09/09/2024

Dear Sirs

Location: COWLEY BROOK COTTAGE HIGHER ROAD, LONGRIDGE, PRESTON, PR3 2YX

I acknowledge with thanks your request dated 05/09/2024 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,



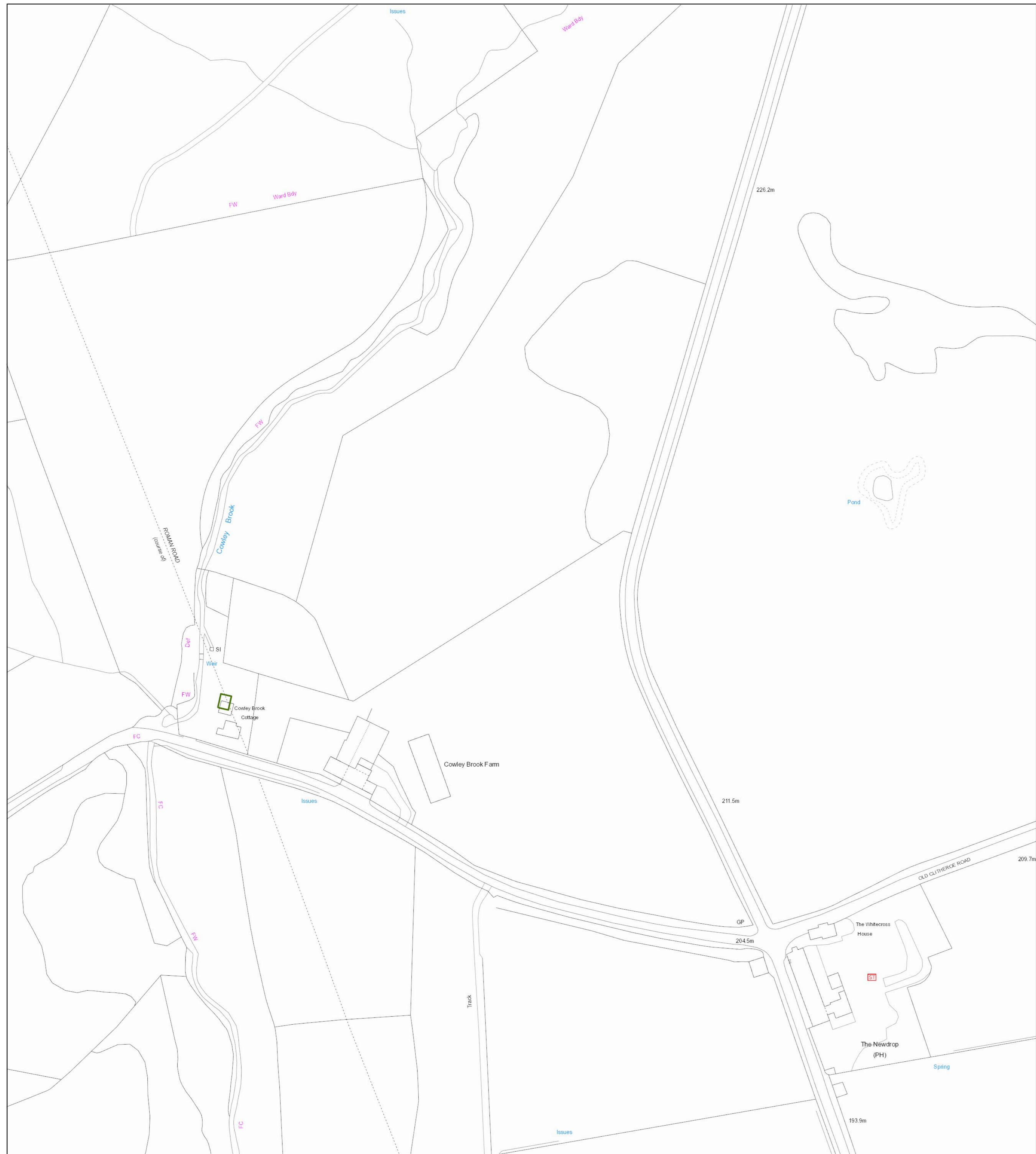
Karen McCormack
Property Searches Manager

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.



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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LEGEND

Abandoned	Foul	Surface Water	Combined	Public Sewer
Section 104	Rising Main	Sludge Main	Overflow	Water Course
				Highway Drain

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

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

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SG Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO HorseShoe
- UN Unspecified

SEWER MATERIAL

- AC Asbestos Cement
- BR Brick
- PE Polyethylene
- RP Reinforced Plastic Matrix
- CO Concrete
- CSB Concrete Segment Bolted
- CSU Concrete Segment Unbolted
- CC Concrete Box Culverted
- PSC Plastic / Steel Composite
- GRC Glass Reinforced Plastic
- DI Ductile Iron
- PVC Polyvinyl Chloride
- CI Cast Iron
- SI Spun Iron
- ST Steel
- VC Vitrified Clay
- PP Polypropylene
- PF Pitch Fibre
- MAC Masonry, Coursed
- MAR Masonry, Random
- U Unspecified

Address or Site Reference:

COWLEY BROOK COTTAGE HIGHER ROAD,
 LONGRIDGE,
 PRESTON,
 PR3 2YX

OS sheet Number: SD6439SW
 Scale: 1:1250 Date: 09/09/2024

Sheet: 3 of 4

Printed by: Property Searches



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LEGEND

Abandoned	Foul	Surface Water	Combined	Public Sewer
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MANHOLE FUNCTION

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SEWER SHAPE

- CI Circular TR Trapezoidal
- EG Egg AR Arch
- OV Oval BA Barrel
- FT Flat Top HO HorseShoe
- RE Rectangular UN Unspecified
- SG Square

SEWER MATERIAL

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- BR Brick
- PE Polyethylene
- RP Reinforced Plastic Matrix
- CO Concrete
- CSB Concrete Segment Bolted
- CSU Concrete Segment Unbolted
- CC Concrete Box Culverted
- PSC Plastic / Steel Composite
- GRC Glass Reinforced Plastic
- DI Ductile Iron
- PVC Polyvinyl Chloride
- CI Cast Iron
- SI Spun Iron
- ST Steel
- VC Vitrified Clay
- PP Polypropylene
- PF Pitch Fibre
- MAC Masonry, Coursed
- MAR Masonry, Random
- U Unspecified

Address or Site Reference:

COWLEY BROOK COTTAGE HIGHER ROAD,
 LONGRIDGE,
 PRESTON,
 PR3 2YX

OS sheet SD6339SE
Number:
Scale: 1:1250 **Date:** 09/09/2024
Sheet: 4 of 4
Printed by: Property Searches

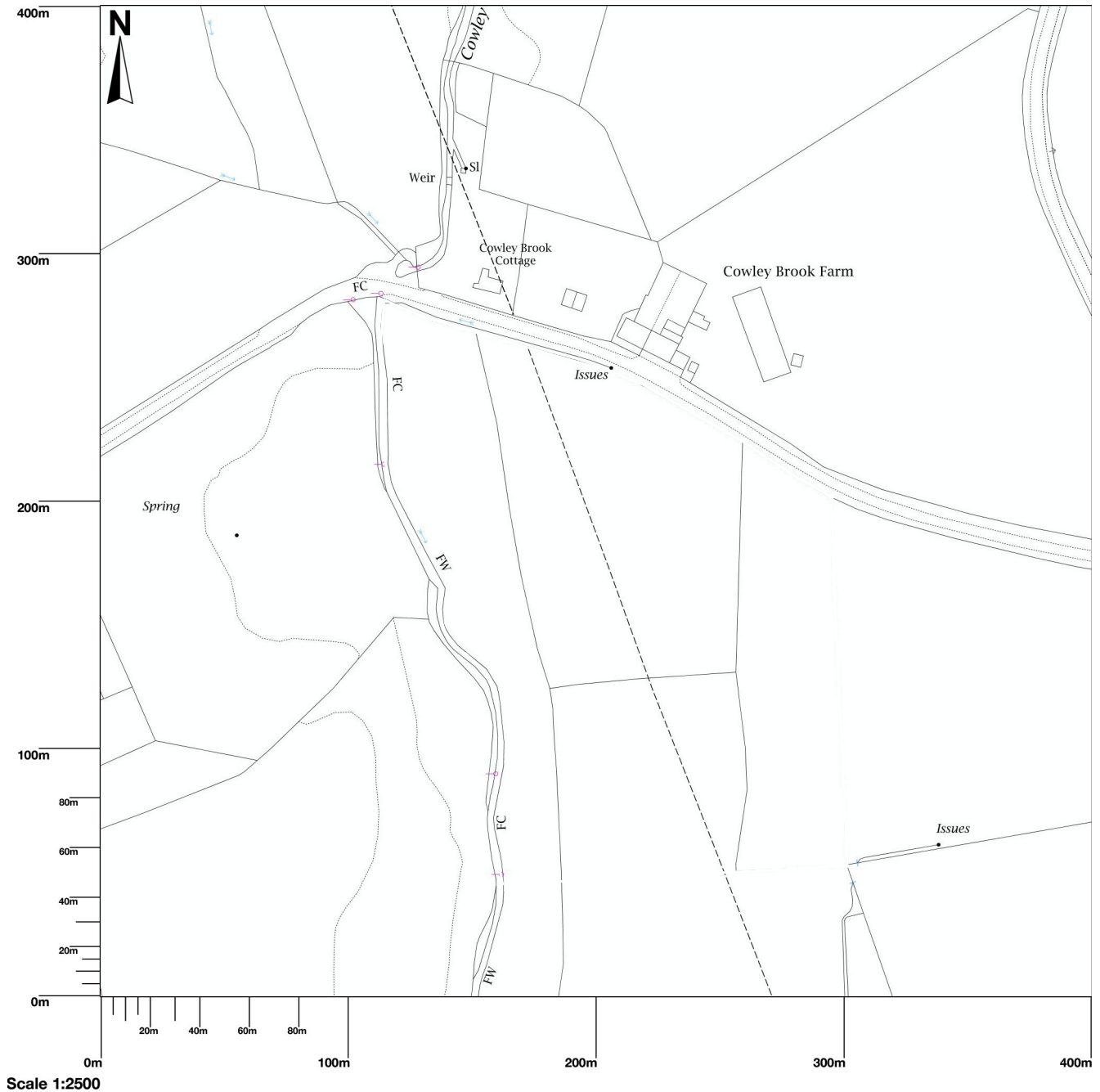
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Appendix 'B'

Location Plan

Higher Road, Longridge, Preston, PR3 2YX



Map area bounded by: 363932,438878 364332,439278. Produced on 24 February 2020 from the OS National Geographic Database. Reproduction in whole or part is prohibited without the prior permission of Ordnance Survey. © Crown copyright 2020. Supplied by UKPlanningMaps.com a licensed OS partner (100054135). Unique plan reference: p16buk/432909/586938

Appendix 'C'

Drawing No. 2024.188.001 Site Topography

Directors: I.Schofield BSc (Hons) MSc, C Eng, MI Struct E ❖ M.O'Sullivan MSc, I Eng, IMI Struct E. AMICE
Consultant: G. Schofield C Eng, MI Struct E, MICE, MIEI

Appendix 'D'

Jackson-Crane Architecture Drawing Nos. 01003 and 01004

Directors: I.Schofield BSc (Hons) MSc, C Eng, MI Struct E ❖ M.O'Sullivan MSc, I Eng, IMI Struct E. AMICE
Consultant: G. Schofield C Eng, MI Struct E, MICE, MIEI

Graham Schofield Associates Ltd Registered in England and Wales No. 5136112

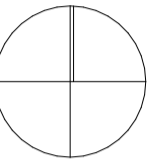


notes

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project north

N



Potential area for small car parking area for visitors to view roman road

Course of the roman road. to be verified on site by Roman Road Association

Location of natural spring. Water to be redirected to the house for irrigation of crops.

Location of a previously identified stone wall pen.

revisions

Rev	Description	Date	Initials

status Work In Progress

client Mr Neil Richards

project Higher Road, Longridge, Preston, PR3 2YX

drawing title Site Plan as Proposed

revision

drawn by DJC

approved by DJC

paper size A3

project number 20-002

scale 1:500

drawing no:

01003



Existing gate access

Existing gate access to new dwelling

Previous location of a stone walled pen

HIGHER ROAD

B D

F1

F2

F1, F2 & F3 Existing fields (65% of total site area) to be restored to a species rich hay meadow

Agricultural farm track to new dwelling

Driveway Courtyard

Gate access to hay meadow for cutting machinery

Intensive wildflower green roof from seed.

Solar panel array to first floor

Outdoor kitchen

Kitchen garden / allotment.

Stone walled 'pen' to surround residential garden. Outside the pen is restored hay meadow.

Concrete trough. Collects surface water from site. Wild can drink from trough to the south side of the ha ha.

Ha Ha to protect the garden / crops from animals

F3

B

Anticipated course of roman road. Red line denotes centre line. Grey lines denote extents.

Woodland

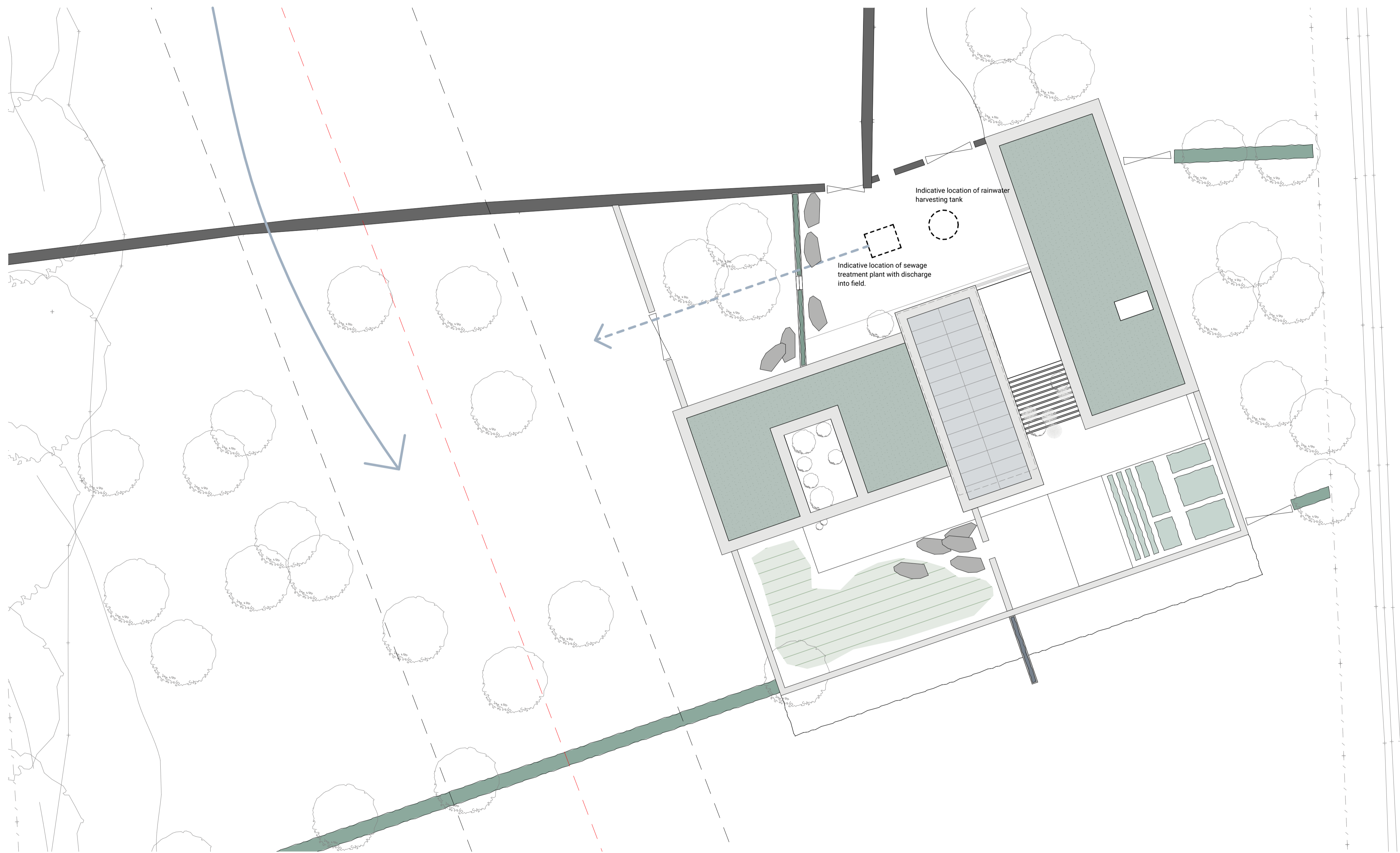
Strip of land adjacent existing woodland to be rewilded. See landscape drawings for details.

South facing informal lawn area close to the house and social spaces

notes

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project north



revisions

Rev	Description	Date	Initials

status **Planning**

client **Mr Neil Richards**

project **Higher Road, Longridge,
Preston, PR3 2YX**

drawing title **Garden Plan**

revision

drawn by **DJC**

approved by **DJC**

paper size **A1**

project number **20-002**

scale **1:200**

drawing no:

01004

Appendix 'E'

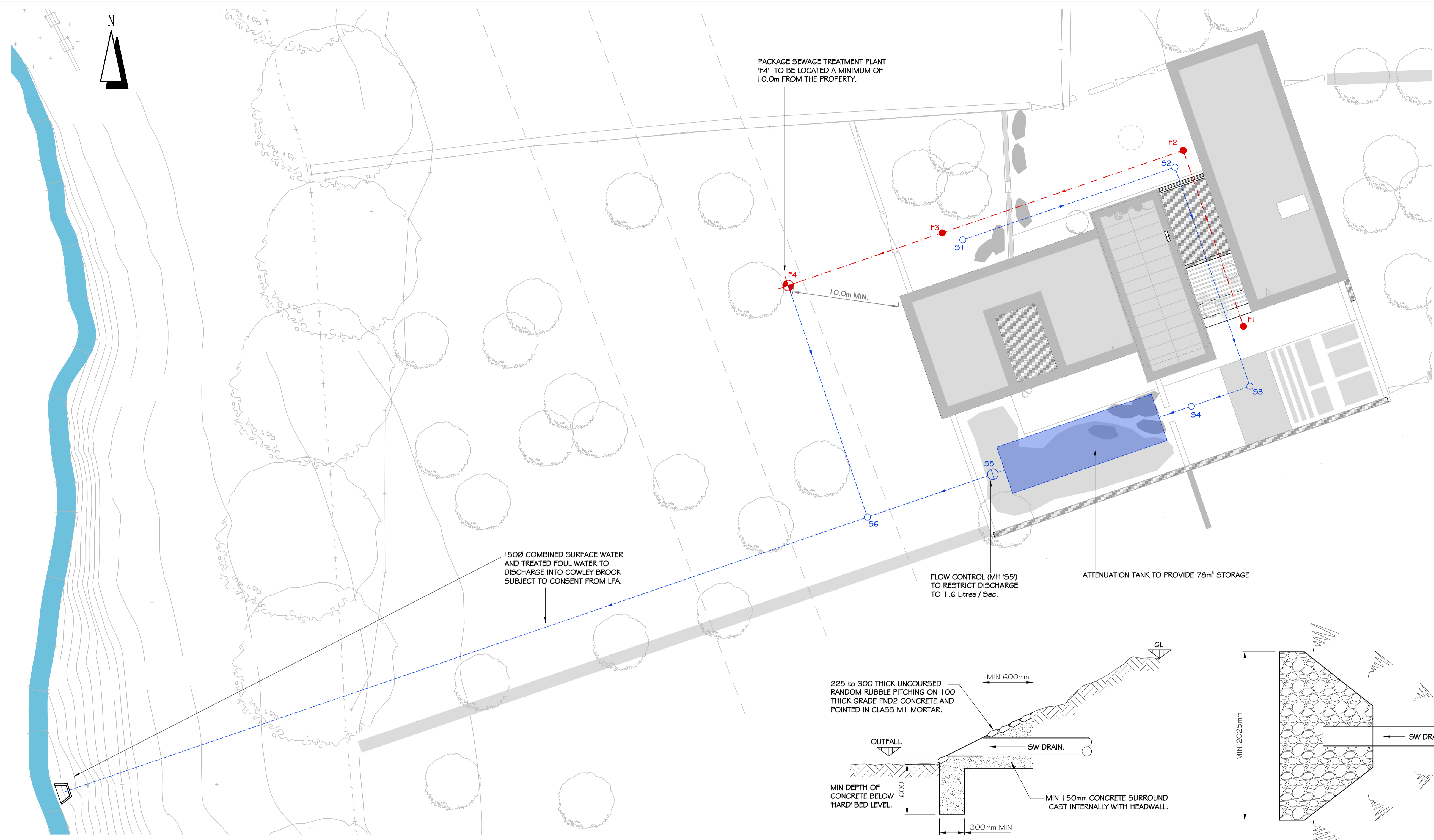
Drawing No. 2024.188.002 Indicative Drainage Layout

Directors: I.Schofield BSc (Hons) MSc, C Eng, MI Struct E ❖ M.O'Sullivan MSc, I Eng, IMI Struct E. AMICE
Consultant: G. Schofield C Eng, MI Struct E, MICE, MIEI

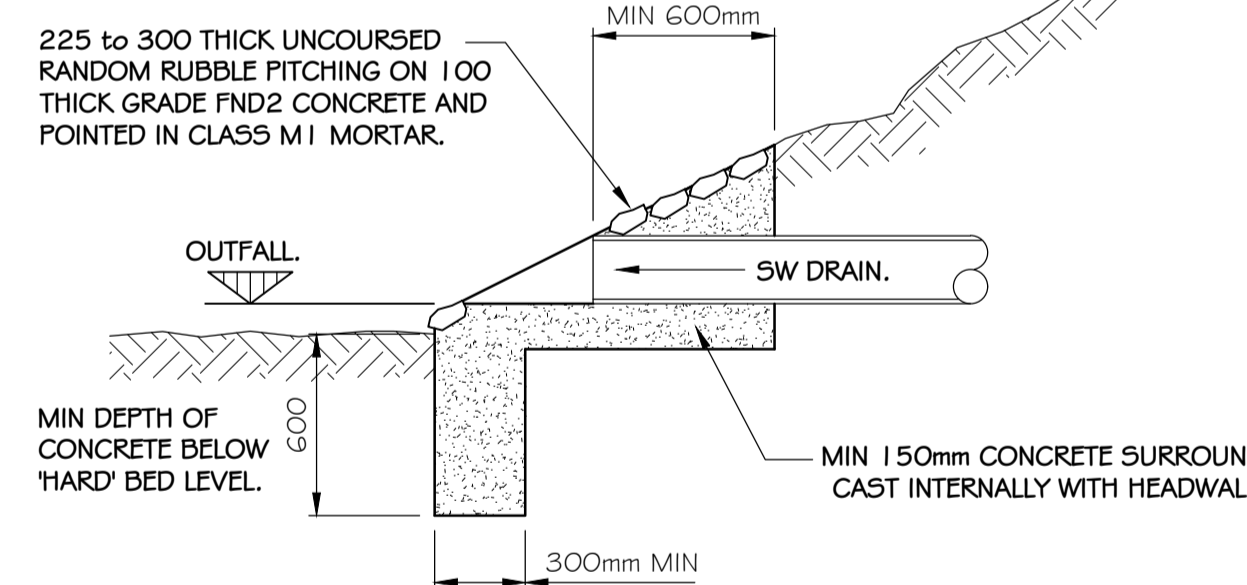
LEGEND

- PROPOSED SURFACE WATER DRAIN AND IC
- PROPOSED FOUL WATER DRAIN AND IC
- PROPOSED PACKAGE SEWAGE TREATMENT PLANT
- PROPOSED ATTENUATION TANK
- EXISTING WATER COURSE

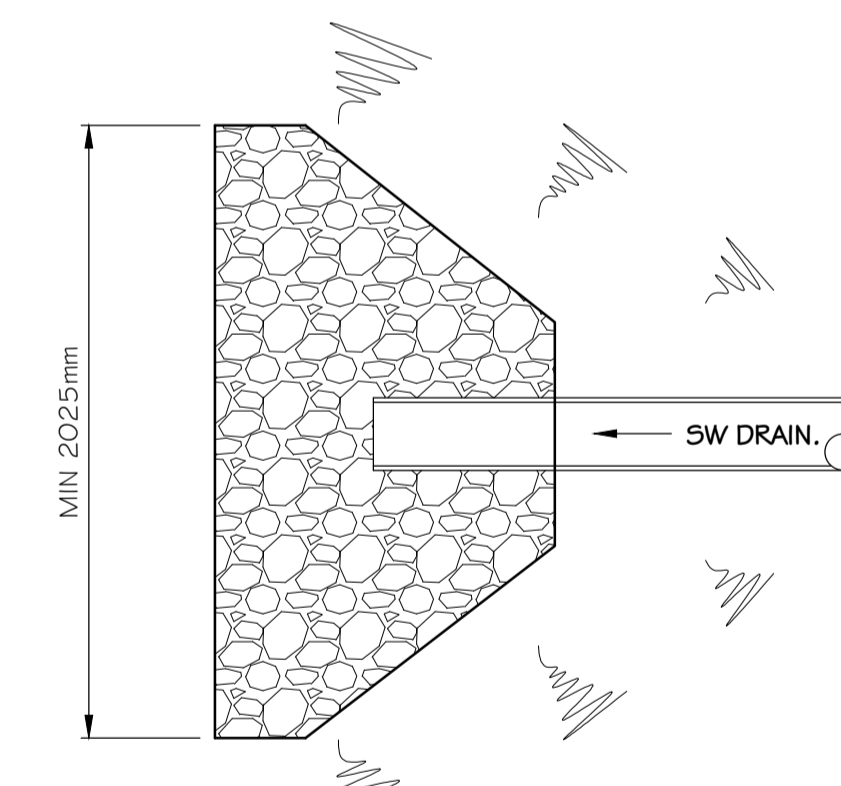
ALL PIPEWORK TO BE 100Ø MIN. U.N.O.



PLAN. 1:200



SECTION ON OUTFALL. 1:25



PLAN ON OUTFALL. 1:25

REV	DESCRIPTION	DRAWN	APPROVED	DATE

PLANNING

GRAHAM SCHOFIELD ASSOCIATES
 Consulting Civil and Structural Engineers
 Suite 3 Balfour Court,
 Leyland
 PR25 2TF
 tel: (01772) 459383
 email: reception@gsa72.co.uk

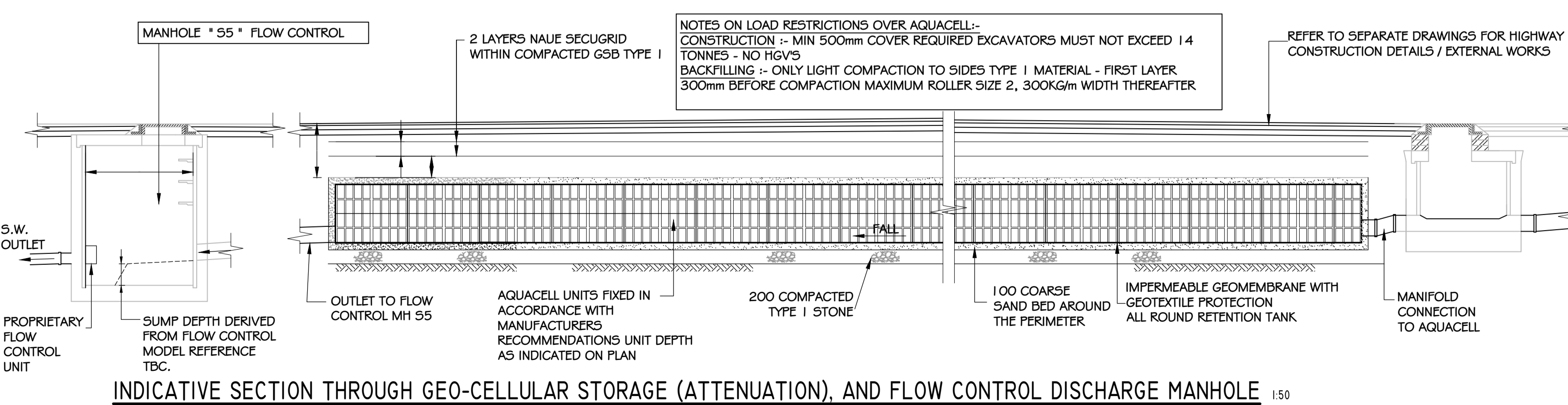


client
 MR NEIL RICHARDS

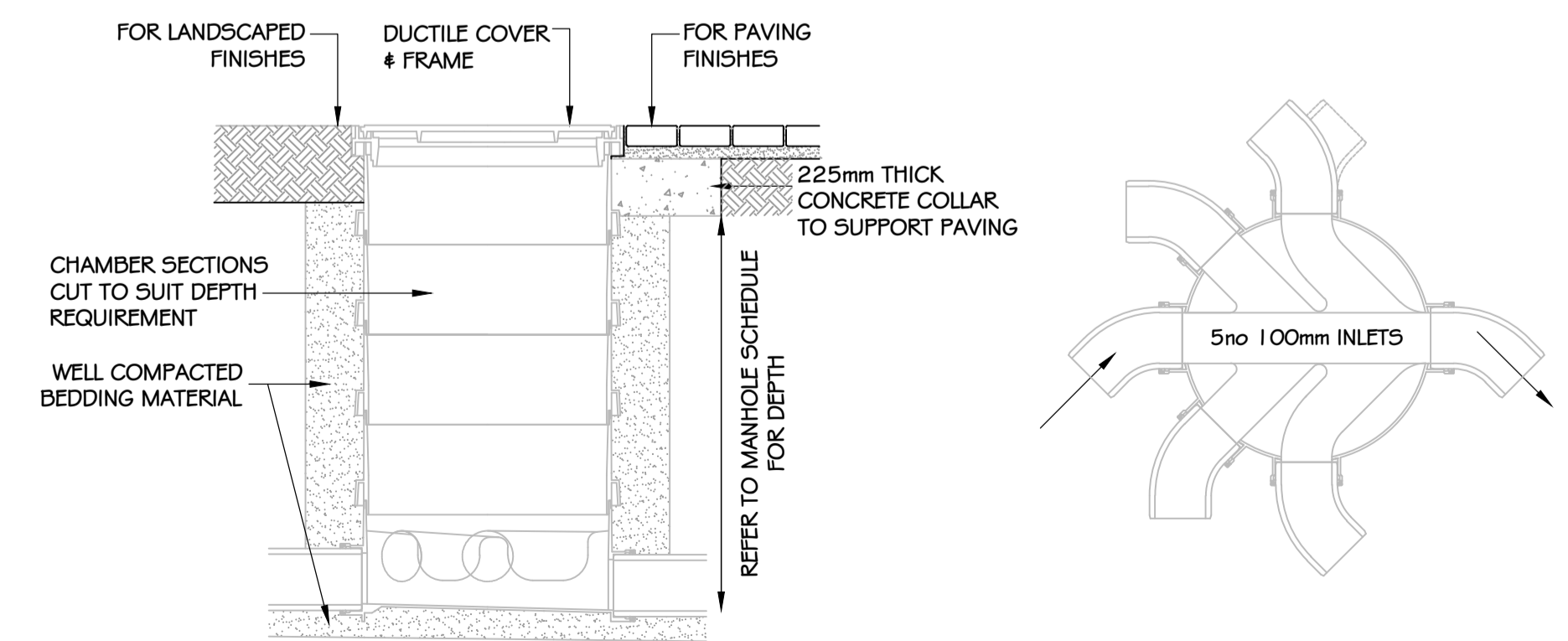
project
 THE GROWING HOUSE
 HIGHER ROAD, LONGRIDGE
 PRESTON PR3 2YX

title
 INDICATIVE DRAINAGE LAYOUT
 AND DETAILS

drawn CS	checked GS	drawing number
date 19/09/24	date 19/09/24	2024 - 188 - 002
scale 1:200 UNO	A1	



INDICATIVE SECTION THROUGH GEO-CELLULAR STORAGE (ATTENUATION), AND FLOW CONTROL DISCHARGE MANHOLE 1:50



POLYPROPYLENE INSPECTION CHAMBER 1:25

POLYPROPYLENE INSPECTION CHAMBER 940mm DEEP. CUT TO INTERMEDIATE SIZES AS REQUIRED DUCTILE IRON COVER & FRAME, SUITABLE FOR USE IN SITUATIONS WHERE WHEEL LOADS DO NOT EXCEED 1.5 TONNES. CONCRETE COLLAR FORMED INSITU MAY BE USED IN TRAFFICKED AREAS - AND ALSO WHERE SOFT GROUND FINISH SURROUNDS COVER. SEE MANHOLE SCHEDULE FOR FURTHER DETAILS.

Appendix 'F'

HR Wallingford Quick Storage Estimation

Directors: I.Schofield BSc (Hons) MSc, C Eng, MI Struct E ❖ M.O'Sullivan MSc, I Eng, IMI Struct E. AMICE
Consultant: G. Schofield C Eng, MI Struct E, MICE, MIEI

Calculated by:	Luke Edwards
Site name:	2024.188
Site location:	Higher Lane, Longridge PR3 2YX

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:	53.84613° N
Longitude:	2.54559° W
Reference:	2641897443
Date:	Sep 18 2024 11:20

Site characteristics

Total site area (ha):	0.16
Significant public open space (ha):	0
Area positively drained (ha):	0.16
Impermeable area (ha):	0.12
Percentage of drained area that is impermeable (%):	75
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	100
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	10
Compliance factor for rainwater harvesting system (%):	100
Net site area for storage volume design (ha):	0.16
Net impermeable area for storage volume design (ha):	0.13
Pervious area contribution to runoff (%):	30

Methodology

esti	IH124
Q _{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
SPR:	0.47	0.47

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	70
Rainfall 100 yrs 12 hrs:	--	100.8
FEH / FSR conversion factor:	1.2	1.2
SAAR (mm):	1306	1306
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.3	0.3
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 10 year:	1.38	1.38
Growth curve factor 30 year:	1.7	1.7

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:

Urban creep allowance factor:

Volume control approach:

Interception rainfall depth (mm):

Minimum flow rate (l/s):

Growth curve factor 100 years:

2.08

2.08

Q_{BAR} for total site area (l/s):

1.6

1.6

Q_{BAR} for net site area (l/s):

1.6

1.6

Site discharge rates

1 in 1 year (l/s):

2

2

1 in 30 years (l/s):

2.7

2.7

1 in 100 year (l/s):

3.3

3.3

Estimated storage volumes

Attenuation storage 1/100 years (m³):

71

71

Long term storage 1/100 years (m³):

7

7

Total storage 1/100 years (m³):

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