RLRE Consulting Engineers

Special Resourced Provision Building

William Hulme's Grammar School

DRAINAGE STRATEGY REPORT

SPECIAL RESOURCED PROVISION BUILDING

WILLIAM HULME'S GRAMMMAR SCHOOL

DRAINAGE STRATEGY REPORT

For

United Learning

DATE: 11th July 2024

REV: P03

P22-639

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Executive Summary

Client	United Learning
Planning Authority	Manchester City Council
Lead Local Flood Authority (LLFA)	Manchester City Council
Local Sewerage Undertaker	United Utilities (UU)
Location	National GR: SJ 836942 Located off Spring Bridge Rd in Old Trafford, Manchester. Postcode: M16 8PR
Site area	Circa 0.56ha split over 3 areas
Current land use	William Hulme's Grammar School – Existing buildings, hardstanding and grassed playing fields
Development proposal	Erection of new Specialist Resource Provision (SRP) building, removal of 2No. existing and construction of 4 No. new MUGA's
Existing surface water drainage	Existing private surface water sewers present within the school grounds. United Utilities Combined water sewer present in Spring Bridge Rd
Existing foul water drainage	Existing private surface water sewers present within the school grounds. United Utilities Combined water sewer present in Spring Bridge Rd
Greenfield runoff rates	QBar calculated using IH124 method at: 1.40l/s for the SRP Building and Parking Area 0.90l/s North MUGA, 0.1.1l/s South MUGA
Climate change allowance	45% Climate Change allowance for 100 year event
Proposed surface water strategy	A gravity drainage system is proposed to collect the rainwater from building roofs, and from external paved areas, and to discharge to an existing private SW sewer withing the wider Grammar school development before ultimately out falling to the existing combined UU sewer within Spring Bridge Rd. Using permeable paving and traditional pipework.

	Proposed drainage network designed for storms up to and including 1:100 year plus 45% climate change events.
Proposed foul water strategy	A gravity drainage system is proposed to drain the SRP building of anticipated foul flows. The outfall will connect into the existing private FW sewer withing the wider Grammar school development before ultimately out falling to the existing combined UU sewer within Spring Bridge Road.

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Appendix I - Pre-Development Enquiry

1 Introduction

1.1 Terms of Reference

1.1.1 Rodgers Leask Ltd has been commissioned by United Learning to undertake a Drainage Strategy in support of the construction of a Special Resourced Provision Building (SRP), and 2 Multi-Use Games Areas (MUGAs) at William Hulme's Grammar School (WHGS), Manchester.

1.1.2 The new facilities will allow for the expansion of the teaching and care capabilities at the school, which will fall within the school's site boundary. A plan of the new facilities has been attached in **Appendix A.**

1.1.3 This report has been produced on behalf of the client and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of Rodgers Leask Ltd.

1.2 Documents Reviewed

1.2.1 Topographical Survey undertaken by Cryfield Survey Ltd, dated Oct 2022.

1.2.2 British Geological Survey, accessed 27th March 2024.

1.2.3 Environment Agency website, accessed 31th March 2025.

1.2.4 Phase 1 Geo-Environmental Desk Study undertaken by Rodgers Leask, dated July 2024

1.2.5 Desk Study & Phase 1 Risk Assessment undertaken by Geo-Historic Ground Investigations Ltd, dated April 2015.

1.2.6 Local Flood Risk Management Strategy – Manchester City Council, dated March 2014.

2 Background Information

2.1 Site Location, Description and Details

2.1.1 Figure 2.1 below indicates the location of the site.

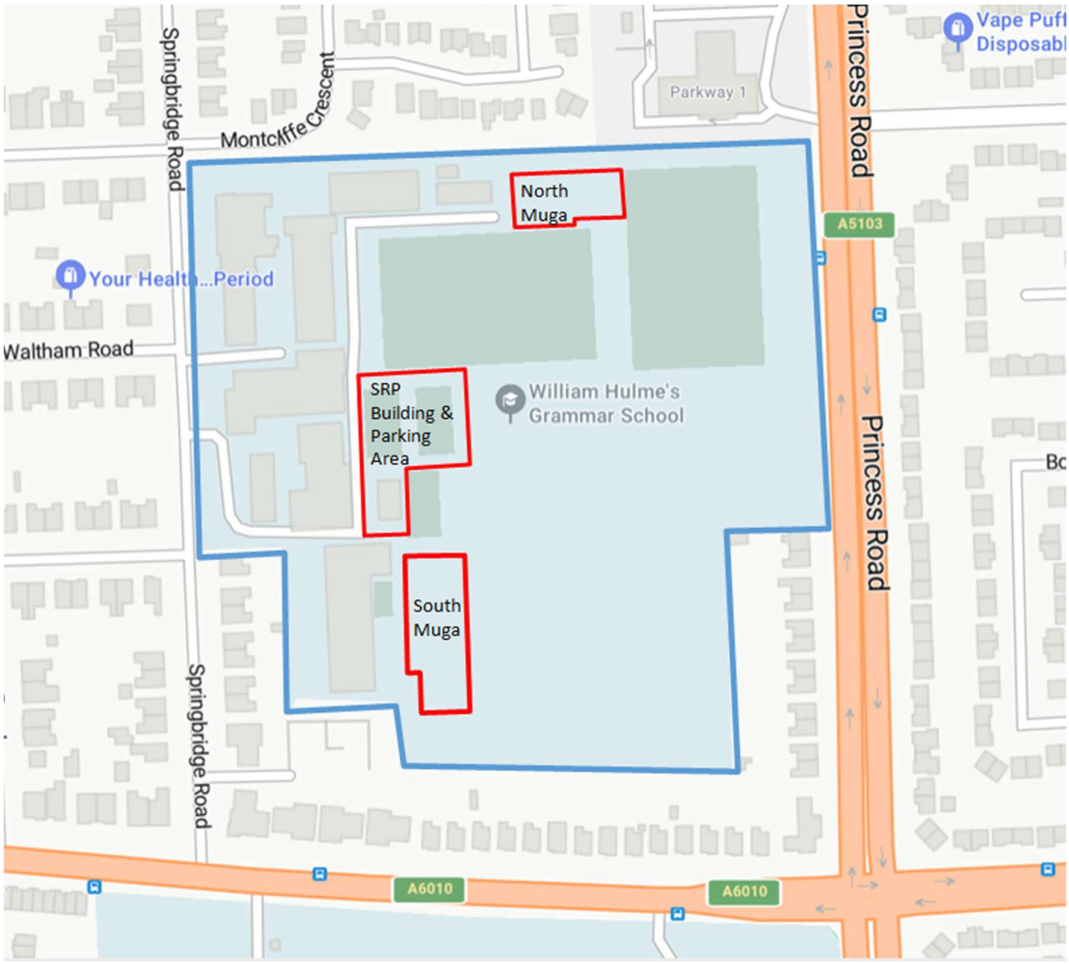


Figure 2.1 -William Hulme Grammar School - Site Layout

2.1.2 WHGS is located off Princess Road (A5103) to the south of Old Trafford, Manchester; centred at OS: 383665 Easting 394281 Northing and with the postcode of M16 8PR.

2.1.3 The redevelopment of the site consists of: A new single story Special Resourced Provision Building (SRP) centrally in the grounds is built consisting of:

- Secondary Group Rooms;
- 2 Primary Group Rooms;
- A Life Skills Room;
- A Therapy Room;
- A Sensory Room;
- A Quiet Room;
- Associated spaces such as toilets and storage.

2.1.4 As part of the development proposals, there will be a 17-space car park, including 2 disabled spaces. The existing Resourced Provision temporary building will be removed, and the car park will be provided in its place.

2.1.5 The 2 No. new Multi-Use Games Areas [MUGAs] are located to north and to south of the proposed SRP building. These are referred to as MUGA North and MUGA South. 2 existing MUGA courts will be lost due to the construction of the SRP building.

2.1.6 WHGS is bounded by residential properties to the north, by Princess Road (A5103) and residential properties to the east, by residential properties to the south and Spring Bridge Road to the west.

2.1.7 The site is currently occupied by the existing school buildings, car parking, all weather pitches, muti-use games areas and grass playing fields.

2.1.8 Access to the site is taken from Spring Bridge Road to the west and Montcliffe Cresent to the north via existing site entrances.

2.1.9 A topographical survey of the site is included in **Appendix B**. The site is generally flat, with a high point of 32.19mAOD in the west and a low point of 31.64mAOD to the north.

2.2 Ground Conditions

2.2.1 A historic Phase 1 Site Investigation written by Geo-Historic Ground Investigation Ltd for the primary school built on the WHGS grounds. Summarises the ground to be Superficial strata of till, overlying Bedrock strata of the Chester Pebble Bed Formation.

2.2.2 The Phase 1 Geo-environmental Desk Study written by Rodgers Leask finds similar.

2.2.3 Additionally, 4 No trial holes were undertaken by Murray Rix to support the build of the primary school building, typically these found the ground to comprise of 200 mm of topsoil over Clay like made ground.

2.2.4 Based on the above with the historical physical trial holes indicating deposits of made ground and the superficial strata noted as till it is there therefore

considered that that it is unlikely that the ground is suitable to accommodate infiltration. Due to the variable permeability generally encountered in till and the found clay nature of the ground within the trial holes.

2.3 Existing Surface Water Drainage

2.3.1 The site is located within the catchment area of the River Irwell / Manchester Shipping Canal which is located approximately 3.10km north-west of the site.

2.3.2 The nearest watercourse (Platt Booke) is located approximately 460m South of the site.

2.3.3 Existing private surface water sewers are identified within the school grounds. Theses sewers appear to discharge into the existing United Utilities combined water sewer within Spring Bridge Road.

2.3.4 The existing all weather sport pitch appears to have a perimeter land drain that disposes of surface water through the use of a soakaway chamber within the grass pitches. At the time of survey this chamber was recorded as flooded indicating its poor operational effectiveness.

2.3.5 As such it is proposed that the proposed surface water is discharged to the existing surface water networks at a restricted greenfield rate.

2.4 Existing Foul Water Drainage

2.4.1 Similarly, there are several existing private foul and combined water sewers running through the school grounds, discharging to the United Utilities sewer within Spring Bridge Road.

2.4.2 As such it is intended that the SRP building connects on to the existing network at a suitable location.

2.5 Flood Risk

2.5.1 The school is located within Flood Zone 1 where flooding from rivers and sea is very unlikely. Whereby there is a less than 0.1 percent (1 in 1000) chance of flooding occurring from a fluvial source. **Appendix C** contains a copy of the Environment Agencies' Flood Map for Planning.

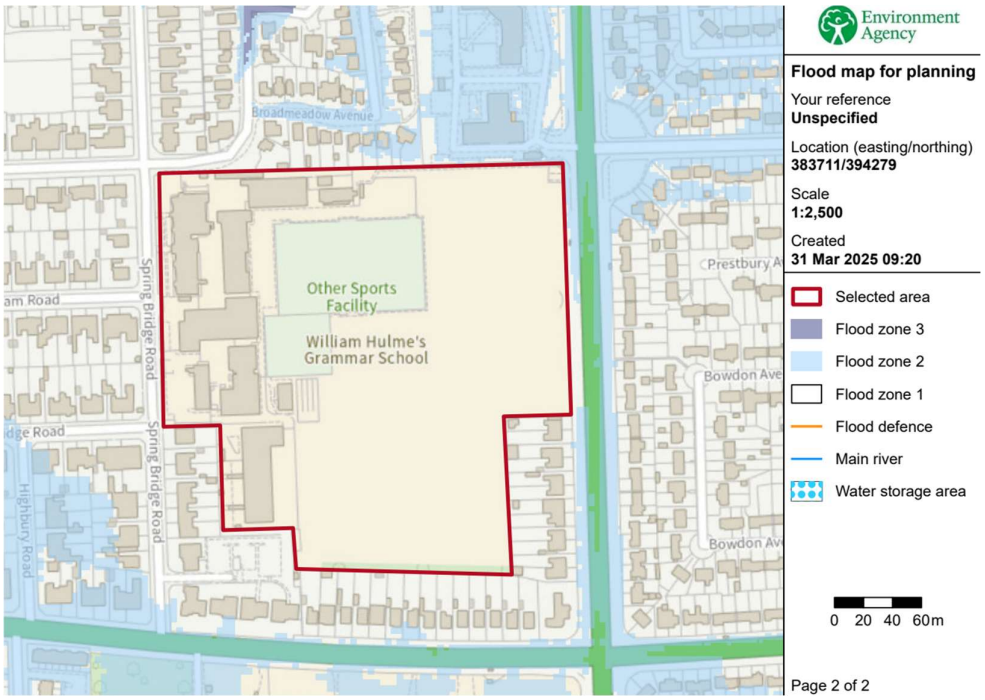


Figure 4.1 – EA Flood Map for Planning (accessed 31st March 2025)

2.5.2 As the application area is less than 1 HA and the school grounds are located within flood zone 1 it has been determined that a full site-specific flood risk assessment is not required.

3 Surface Water Drainage Strategy

3.1 Hierarchy of Drainage

3.1.1 As stated in the National Planning Practice Guidance (NPPG), the aim should be to discharge surface water runoff as high up the drainage hierarchy as reasonably practicable, to that effect the hierarchy has been considered in order:

- To penetrate into the ground via infiltration
- To discharge into a surface water body
- To a surface water, highway drain or another drainage system
- To a combined surface water sewer system

3.1.2 As discussed in section 2.2 it is anticipated that infiltration would not be suitable as the primary means of disposal of surface water runoff.

3.1.3 The nearest watercourse (Platt Brook) is located approximately 460m south of the site. A direct connection would require crossing an existing highway and likely 3rd party land. It is considered not to be a reasonably practical method of surface water disposal.

3.1.4 A review of United Utilities (UU) sewer records indicate no surface water, highway drains or other drainage systems within the nearby vicinity. A copy of UU sewer record is contained within **Appendix D**.

3.1.5 A review of United Utilities (UU) sewer records indicates an existing 225mm public combined sewer (CWS) within Spring Bridge Road flowing north-south along the western site boundary.

3.1.6 A topographical survey carried out by Cryfield Survey Ltd identified existing private SW sewers within the wider school site. It is assumed that the sewers discharge to the UU public 225mm CW sewer within Spring Bridge Road.

3.1.7 It is proposed to discharge surface water flows generated from the development into the existing on-site network which is assumed to connect to the UU combined sewer within Spring Bridge Road. A copy of the drainage strategy drawing has been included within **Appendix E.**

3.2 Pre-development Surface Water Runoff Rates

3.2.1 As the majority of the SRP building and parking area and 4 No. MUGAs proposed will be built over grassed playing fields. As to comply with Manchester City Council Core Strategy policy EN14 The proposed surface water drainage strategy has been developed on the basis of Greenfield runoff rates will be utilised.

The rate calculated using the UK SuDS website ran by HR Wallingford, using the IH124 method. The calculations have been undertaken for the respective proposed developable areas, Special Resource Provision (SRP) Building, parking area, Northern MUGA and Southern MUGA. A full copy of calculations can be found within **Appendix F** and a summary can be seen in **Table 4.1** below.

	Measured Area (ha)		QBar*	1 in 1 Year	1 in 30 Year	1 in 100 Year
SRP Building	0.1903	Discharge Rate (l/s)	**1.1 (1.16)**	1.01	1.97	2.74
Parking Area	0.0430	Discharge Rate (l/s)	**0.3 (0.26)**	0.23	0.44	0.54
North MUGA	0.1419	Discharge Rate (l/s)	**0.9 (0.86)**	0.75	1.47	1.80
South MUGA	0.1923	Discharge Rate (l/s)	**1.1 (1.17)**	1.02	1.99	2.43
Total	1.5334		**3.1 (3.19)**	2.78	5.43	6.97

Table 4.1 – Greenfield Runoff Rates *Note QBar figures have been rounded to 1 decimal place for use in modelling software

3.3 Design Considerations

3.3.1 Given the educational use of the SRP building a greater than 50-year design life is considered applicable. As such the Upper end allowance of 45% climate change allowance has been applied to the 100-year storm event.

3.4 Description of Proposed SuDS

3.4.1 It is proposed to drain the SRP building and parking area drainage catchments via Tanked permeable paving, lined filter drain, below ground attenuation tank and below ground pipe network before discharging into existing private surface water sewers. A vortex flow control devices will attenuate flows to a combined restricted rate of 1.4l/s (1.1l/s + 0.3l/s) prior to discharging into the existing (on site) surface water sewer.

3.4.2 It is proposed to drain the North MUGA via permeable paving with a preparatory cellular sub-base system and below ground gravity pipe network before discharging into existing private SWS. A vortex flow control devices will restrict flows to 0.9l/s prior to discharging into an existing (on site) sewer.

3.4.3 It is proposed to drain the South MUGA via permeable paving with a preparatory system and below ground gravity pipe network before discharging into existing private SWS. The Geo-cellular sub-base system has been designed to a 95% voids ratio. A vortex flow control devices will restrict flows to 1.1l/s prior to discharging into an existing (on site) surface water sewer.

3.5 Water Quantity

3.5.1 The proposed surface water system has been designed to incorporate sufficient attenuation storage to ensure that there is no flooding for return periods up to and including the 1 in 100 year +45% climate change storm event whilst restricting flows to Greenfield runoff rates.

3.5.2 Surface water modelling has been undertaken to determine the quantity of required attenuation for the proposed development. A copy of the drainage strategy drawings has been included within **Appendix E** and supporting calculations in **Appendix G.**

3.6 Pollution Hazard and SuDS Mitigation Indices

3.6.1 As a means of analysing whether the SuDS measures proposed for the site will provide an adequate amount of water treatment to the surface water runoff the Cira SuDS manual specifies a simple index approach. This approach gives different land uses certain pollution hazard indices (Table 26.2 Cira Manual), while SuDS features are given mitigation indices (Table 26.3 Cira Manual). Whereby the SuDS mitigation indices are greater than or equal to the pollution hazard indices, the water treatment within the system is deemed to be adequate.

3.6.2 The **roof structure and parking area**, of the Special Resource Provision (SRP) building is a low-risk area, with a worst-case pollution hazard indices of:

- 0.5 for total suspended solids (TTS)
- 0.4 for metals, and
- 0.4 for hydrocarbons

3.6.3 The roof structure, surrounding area and parking area will drain to a filter drain and tanked permeable paving system as such the mitigation indices are set out in **Table 4.3** below:

	Mitigation Indices		
Types of SuDS component	TSS	Metals	Hydrocarbons
Filter Drain	0.4	0.4	0.5
Permeable Paving	0.7	0.6	0.7
Required mitigation indices	0.5	0.4	0.4
Pass / Fail	**PASS**	**PASS**	**PASS**

Table 4.3 – SuDS Mitigation Index for the SRP building

3.6.4 Similarly, the **MUGA's** are considered to be a low-risk area, with a with a pollution hazard indices of:

- 0.3 for total suspended solids (TTS)
- 0.2 for metals, and
- 0.05 for hydrocarbons

3.6.5 The north & south MUGAs are proposed to drain by permeable paving as such the mitigation indices are set out in **Table 4.4** below:

	Mitigation Indices		
Types of SuDS component	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Required mitigation indices	0.3	0.2	0.05
Pass / Fail	**PASS**	**PASS**	**PASS**

Table 4.4 – SuDS Mitigation Index for the SRP building

3.6.6 As all the treatment combinations provide mitigation indices greater than the hazard indices, it is proposed that by adhering to the SuDS strategy as outlined above, the necessary treatment would be provided to allow compliance with the Cira C753 guidance.

3.7 Exceedance Flows

3.7.1 The SRP building FFL will be set to a minimum of 150 mm above proposed ground levels to provide resilience to surface water flooding.

3.7.2 The effects of flooding caused by extreme rainfall events beyond those that have been reasonably allowed for, or caused by a blockage, will be mitigated by creating falls away from the build as to direct surface water away.

3.8 Pre-Development Enquiry

3.8.1 A predevelopment enquiry has been submitted to United Utilities, a summary of the application and response from UU confirming no objection is attached within **Appendix I**

4 Surface Water Drainage Maintenance

4.1 Adoption and Responsibilities

4.1.1 It is proposed for onsite surface water drainage to remain private, unless otherwise agreement between UU, the LLFA and the client.

4.1.2 The proposed surface water drainage area will remain private and maintained by the school.

4.2 Maintenance and Requirements

4.2.1 Proposed SuDS features will be managed in accordance with a detailed management plan overarching the operation and regular maintenance of SuDS features based upon the Cira C753 – Part D Guidance. General requirements for management of SuDS features is outlined below:

Operation and Maintenance Requirements for Permeable Pavements		
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 reduce frequency as required, based on site-specific observations of clogging or manufacture's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is the most likely to collect the most sediment.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weeds or management using appropriate weed killer applied directly into the weeds by an applicator rather than a spray.	As required – once per a year on less frequently used pavements.
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving.	As required.
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing materials.	As required.
	Rehabilitation of surface and upper substructure by remedial sweeping.	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection.	Monthly for three months after instillation.
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action.	Three-monthly, 48 hours after large storms in first six months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers.	Annually.

Operation and Maintenance Requirements Filter Drain		
Maintenance Schedule	**Required Action**	**Typical Frequency**
Regular Inspections	Remove litter and debris from filter drain surface, access chamber and pre-treatment devices	Monthly (as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural design	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly or as required
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly or as required
	Clear perforated pipework of blockages	As required

Operation and Maintenance Requirements for Inlets, Outlets, Controls and Inspection Chambers		
Maintenance Schedule	**Required Action**	**Typical Frequency**
Regular Inspections	Inspect surface structures, removing obstructions and silt as necessary. Check there is no physical damage.	Monthly and after severe storms
	Remove cover and inspect, ensuring that water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt.	Annually after leaf fall in autumn.
Occasional maintenance	Check topsoil levels are 20 mm above edges of baskets and chambers to avoid mower damage.	As necessary
Remedial Actions	Repair physical damage if necessary	As Required

Operation and Maintenance Requirements for Below Ground Attenuation Storage Tanks		
Maintenance Schedule	**Required Action**	**Typical Frequency**
Regular Inspections	Inspect and identify 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
	For systems where rainfall infiltrates into the tank from above, check surface or filter for blockage by sediment, algae or other matter, remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to sense 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 year or as required

5 Foul Water Drainage Strategy

5.1 Pre-Development Foul Water Regime

5.1.1 The wider site is currently occupied by existing school buildings and outbuildings and as such there is existing foul water sewers on site.

5.2 Proposed Developed Site Foul Water Strategy

5.2.1 Only the new SRP building requires Foul Water drainage.

5.2.2 A review of the topographical survey indicates existing private foul water sewers (FWS) within the wider Grammar School site. It is assumed existing FW flows generated the Grammar School development discharge to the UU public 225mm CW sewer within Spring Bridge Road whereby the downstream pipe route and connection are to be proven by additional survey.

5.2.3 It is proposed the SRP building site will drain via gravity to existing private foul water sewer within the school boundary before discharging to the UU public CW sewer along Spring Bridge Road via gravity.

5.2.4 A copy of the drainage strategy drawings (Drawing No. 22639-RLL-24-XX-DR-C-2100, 22639-RLL-24-XX-DR-C-2101) has been included within **Appendix E.**

5.3 Adoption and Responsibilities

5.3.1 It is assumed that the onsite foul drainage will remain private, unless otherwise agreement between UU, the LLFA and the client.

5.3.2 At the time of writing the report, no developer enquiry has been submitted to United Utilities (UU).

5.4 Pre-Development Enquiry

5.4.1 A predevelopment enquiry has been submitted to United Utilities, a summary of the application and response from UU confirming no objection is attached within **Appendix I**

6 Conclusion

6.1.1 The proposed surface water drainage system has been designed in accordance with drainage hierarchy and the Manchester City Council Developer Design Guidance.

6.1.2 Surface water run-off from the proposed development will be restricted to greenfield run-off rates through the use of attenuation storage and vortex flow control devices. Surface water flows generated from the proposed development will connect to the existing on-site private network, before discharging to the United Utilities Combined Water sewer within Spring Bridge Road.

6.1.3 The foul water flows generated from the proposed development will drain through an private network, before discharging to the United Utilities Combined Water sewer within Spring Bridge Road

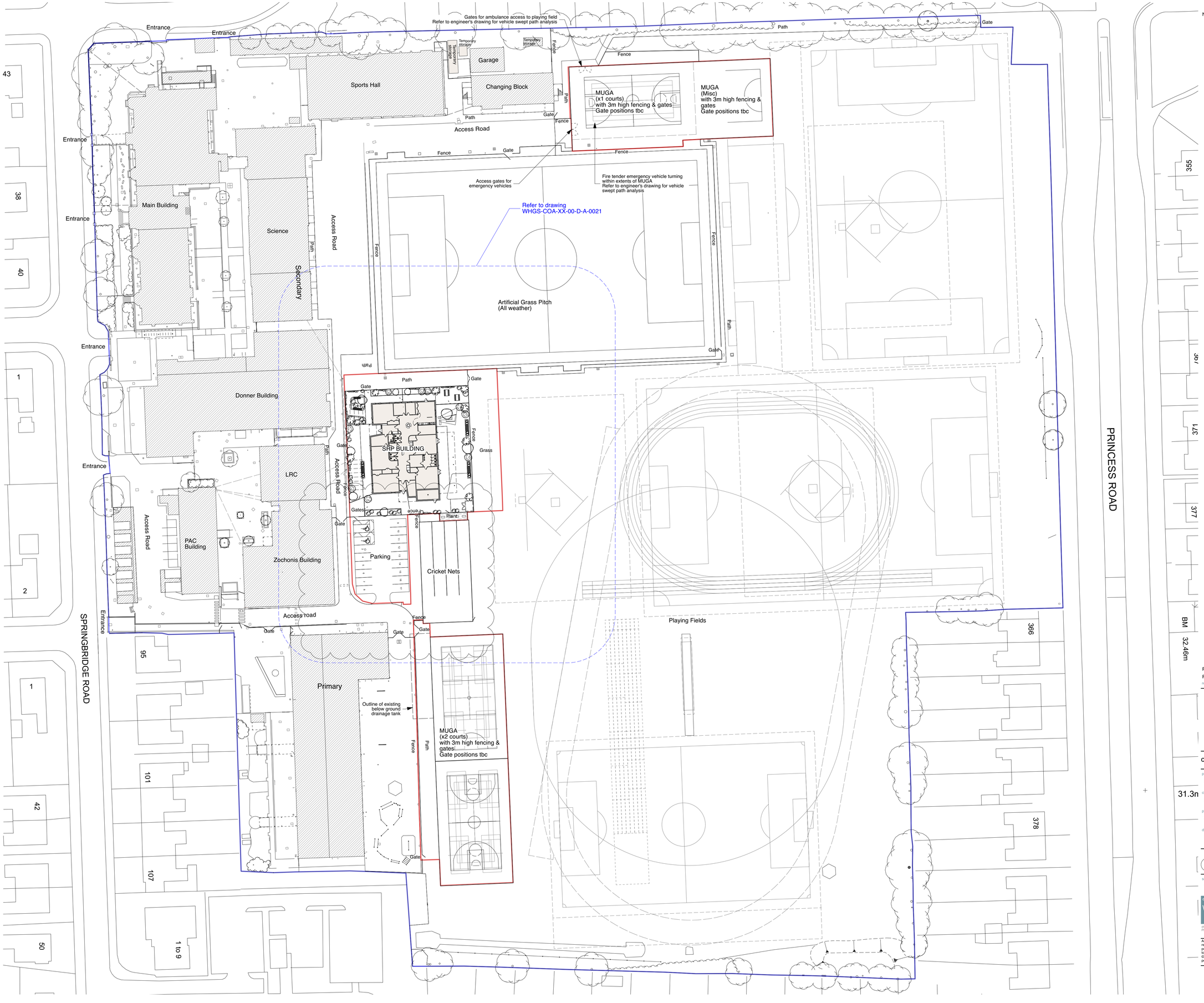
6.1.4 This drainage strategy report confirms that the proposed development will deal with drainage in a sustainable manner, without increasing the flood risk to the development site or the wider downstream catchment.

Disclaimer

We would like to note that all comments made in this report are based on the sources stated in section 1.2. This report and its recommendations are intended for the use by United Learning for the above site only.

Appendices

Appendix A – Proposed Site Layout



NOTES

P07 19/02/2025 Updated to show new parking area.
P06 11/07/2024 Planning issue.
revisions

CoARC
COLLABORATIVE ARCHITECTURE

coarc.co.uk 0121 769 2414 studio@coarc.co.uk

project title
SPECIALLY RESOURCED PROVISION (SRP) BUILDING

client
UNITED LEARNING

project address
WILLIAM HULME'S GRAMMAR SCHOOL

drawing title
PROPOSED SITE PLAN

N
PLANNING
0 10 20 30 M

scale
1:500 @A1

date
19/02/2024

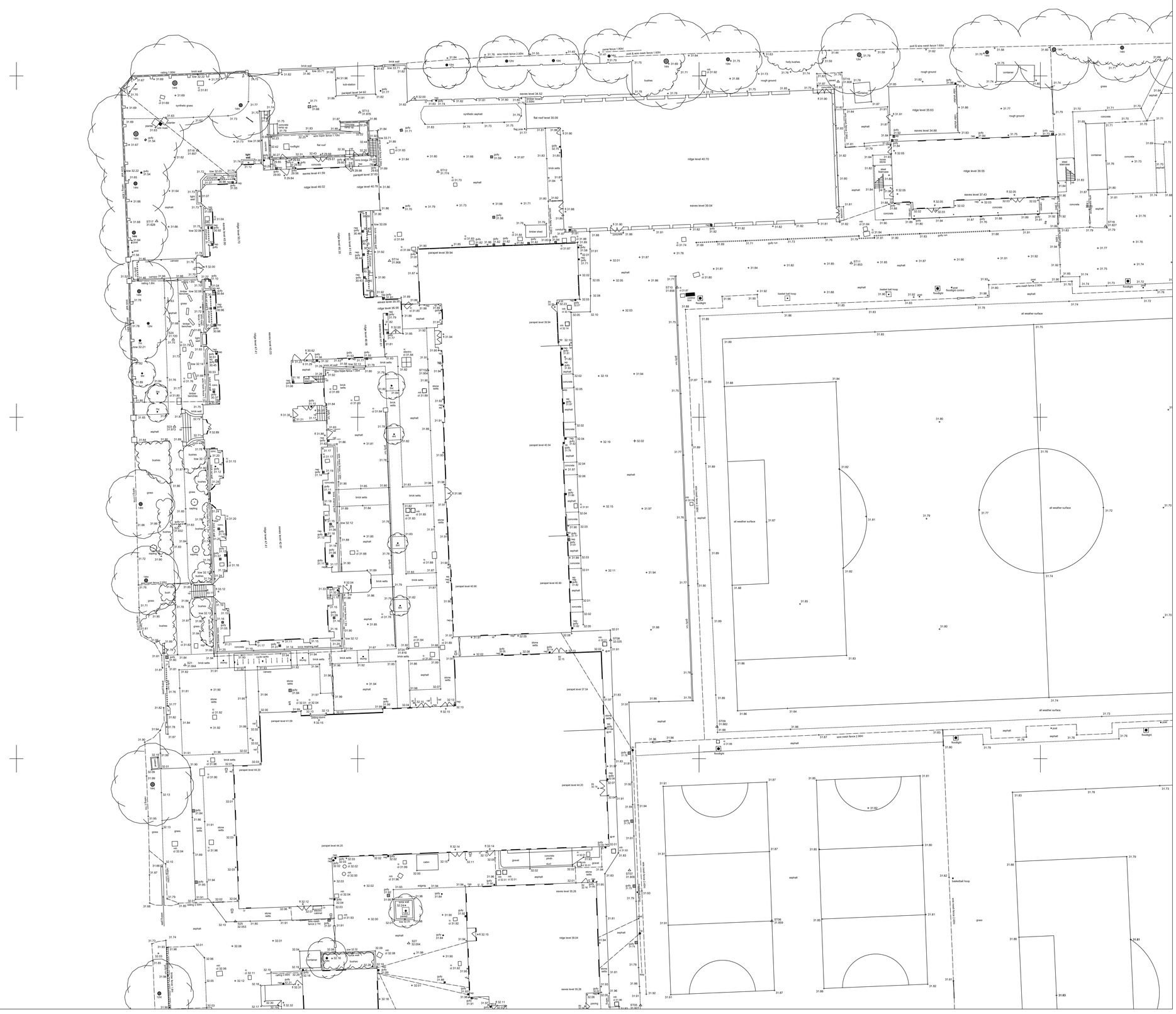
drawing no.
WHGS-COA-XX-00-D-A-0020

revision
P07

drawing no. BIM legend:
PROJECT-ORIGINATOR-FUNCTIONAL BREAKDOWN-SPATIAL BREAKDOWN-FORM-DISCIPLINE-NUMBER

All dimensions to be checked & verified on site. Dimensions structural unless noted otherwise. Drawings to be read in conjunction with specification. Any bracketed dimensions are for checking and not for setting out purposes. Any discrepancies with other project information, existing building or site features are to be reported to the Architect before commencement. Do not scale from printed drawings without checking with the architect. © CoARC Ltd. The contents of this drawing may not be reproduced in whole or in part without express permission of CoARC Ltd

Appendix B – Topographical Survey



ALL LEVELS ARE IN METRES DERIVED FROM GPS TRANSFORMATION.
GRID COORDINATES ARE ORDNANCE SURVEY OSGB36 GRID DERIVED FROM GPS TRANSFORMATION. (NO SCALE FACTOR APPLIED)

PLOT SCALE ACCURACY OF 1:200.

TREE SPECIES TO BE CONFIRMED BY AN SPECIALIST IF ESSENTIAL TO THE SURVEY.

SERVICE COVERS UNDER SRUCTURES/VEHICLES OR ONES THAT ARE BURIED MAY BE OMITTED FROM THE SURVEY. PIPE DETAILS SURVEYED FROM SURFACE ONLY. BROKEN COVERS AND COVERS WITHIN BUSY HIGHWAYS WILL NOT BE LIFTED.

OVERHEAD CABLE POSITIONS/HEIGHTS SHOULD BE TREATED AS APPROXIMATE AND ARE LIABLE TO SEASONABLE CHANGE.

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TEXT KEY –

- av - air valve
- bt - telecom
- catv - cable television
- c/b fence - closeboard fence
- c/box - control box
- cl - cover level
- cr - cable riser
- dp - depth
- ep - electric pole
- er - earthing rod
- fh - fire hydrant
- fl - floor level
- fs - fire switch
- g - gully
- gv - gas valve
- ht - height
- ic - inspection cover
- il - invert level
- ill bol - illuminated bollard
- lp - lamp post
- mh - manhole
- mkr - marker
- p & r fence - post & rail fence
- re - rodding eye
- rs - road sign
- rwp - rain water pipe
- sl - spot light
- sv - stop valve
- svp - soil vent pipe
- tbm - temporary bench mark
- thl - threshold level
- tl - traffic light
- toc - top of cap
- top - top of pipe
- tot - top of tank
- tp - telecom pole
- u/s - underside
- ult - unable to lift
- vp - vent pipe
- wfc - water filled chamber
- wm - water meter
- wo - wash out
- wp - waste pipe

STATION SCHEDULE

ID	EASTINGS	NORTHINGS	LEVEL	TYPE
ST01	383659.738	394197.863	31.795	PK Nail
ST02	383657.364	394228.114	31.899	PK Nail
ST03	383616.792	394228.965	31.981	PK Nail
ST04	383642.381	394236.645	31.736	PK Nail
ST05	383641.425	394263.878	31.927	PK Nail
ST06	383660.672	394276.231	31.859	PK Nail
ST07	383639.809	394283.660	31.809	PK Nail
ST08	383637.046	394317.375	32.025	PK Nail
ST09	383652.628	394304.688	31.882	PK Nail
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REV B - EXTRA AREA ADDED MAY 2024

PROJECT
WILLIAM HULME GRAMMAR SCHOOL
SPRING BRIDGE ROAD, MANCHESTER, M16 8PR

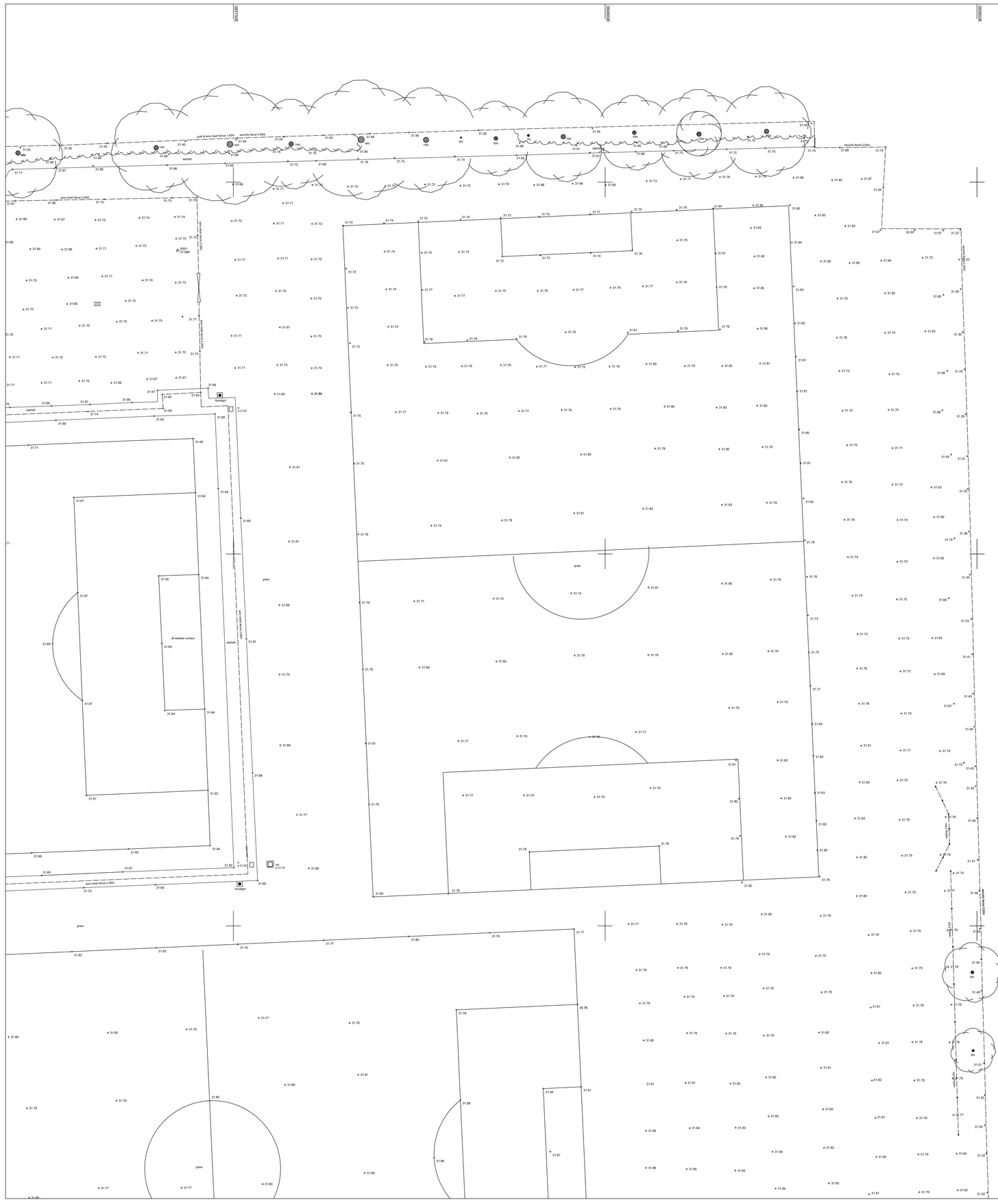
DRAWING TITLE
TOPOGRAPHICAL SURVEY

CLIENT
COARC

SURVEY DATE	SHEET SIZE	SURVEYOR	CHECKED
APRIL 2024	A0	JH	VCB

DRAWING NUMBER	SCALE
1157-1 REV B	1:200

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bt - telecom	re - rodding eye
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cl - cover level	sv - stop valve
cr - cable riser	svp - soil vent pipe
dp - depth	tbm - temporary bench mark
ep - electric pole	thl - threshold level
er - earthing rod	tl - traffic light
fh - fire hydrant	toc - top of cap
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g - gully	tp - telecom pole
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ic - inspection cover	vp - vent pipe
il - invert level	wfc - water filled chamber
ill bol - illuminated bollard	wm - water meter
lp - lamp post	wo - wash out
mh - manhole	wp - waste pipe
mkr - marker	

NORTH

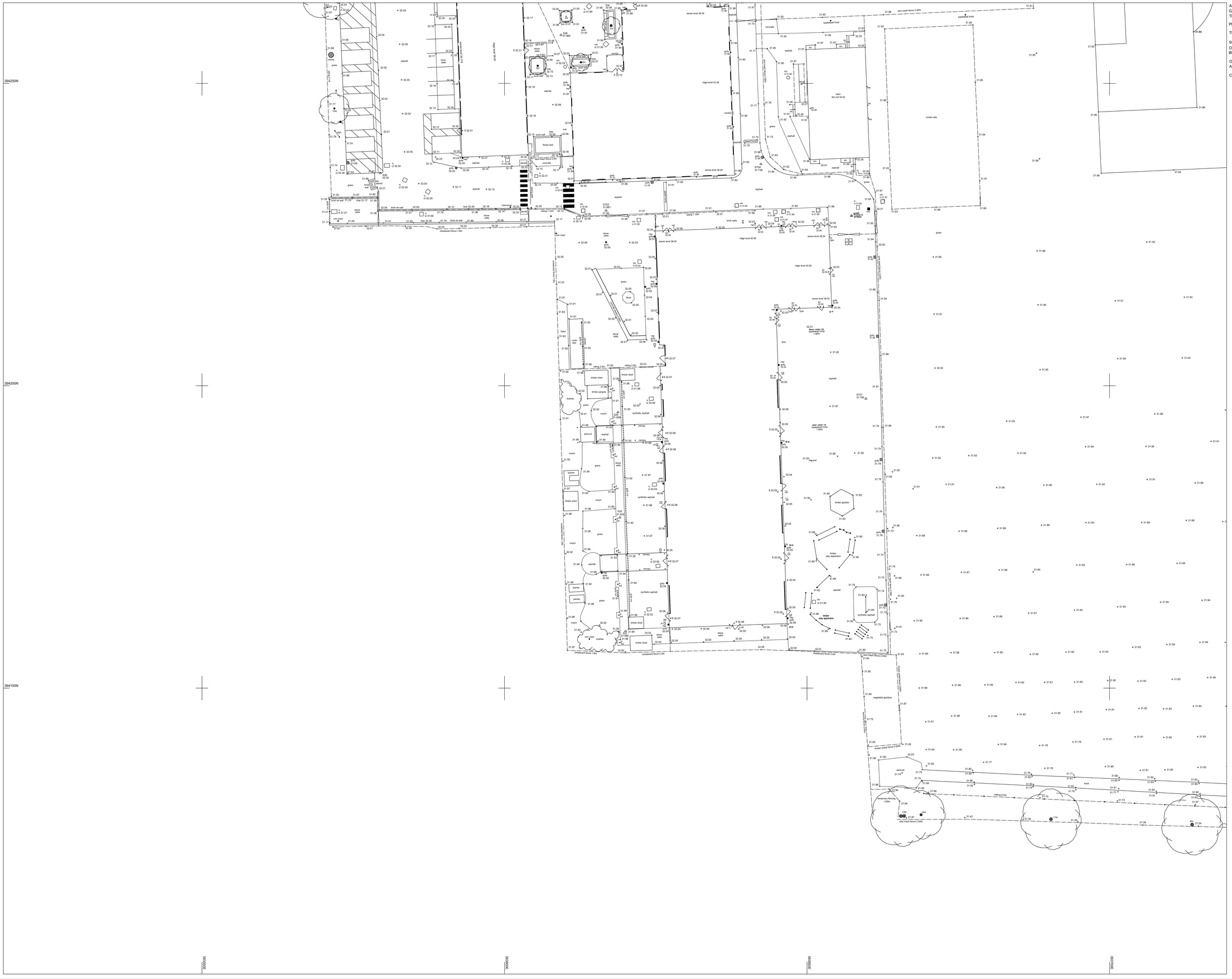
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REV B - EXTRA AREA ADDED MAY 2024

PROJECT WILLIAM HULME GRAMMAR SCHOOL SPRING BRIDGE ROAD, MANCHESTER, M16 8PR			
DRAWING TITLE TOPOGRAPHICAL SURVEY			
CLIENT COARC			
SURVEY DATE APRIL 2024	SHEET SIZE A0	SURVEYOR JH	CHECKED VCB
DRAWING NUMBER 1157-2 REV B		SCALE 1:200	

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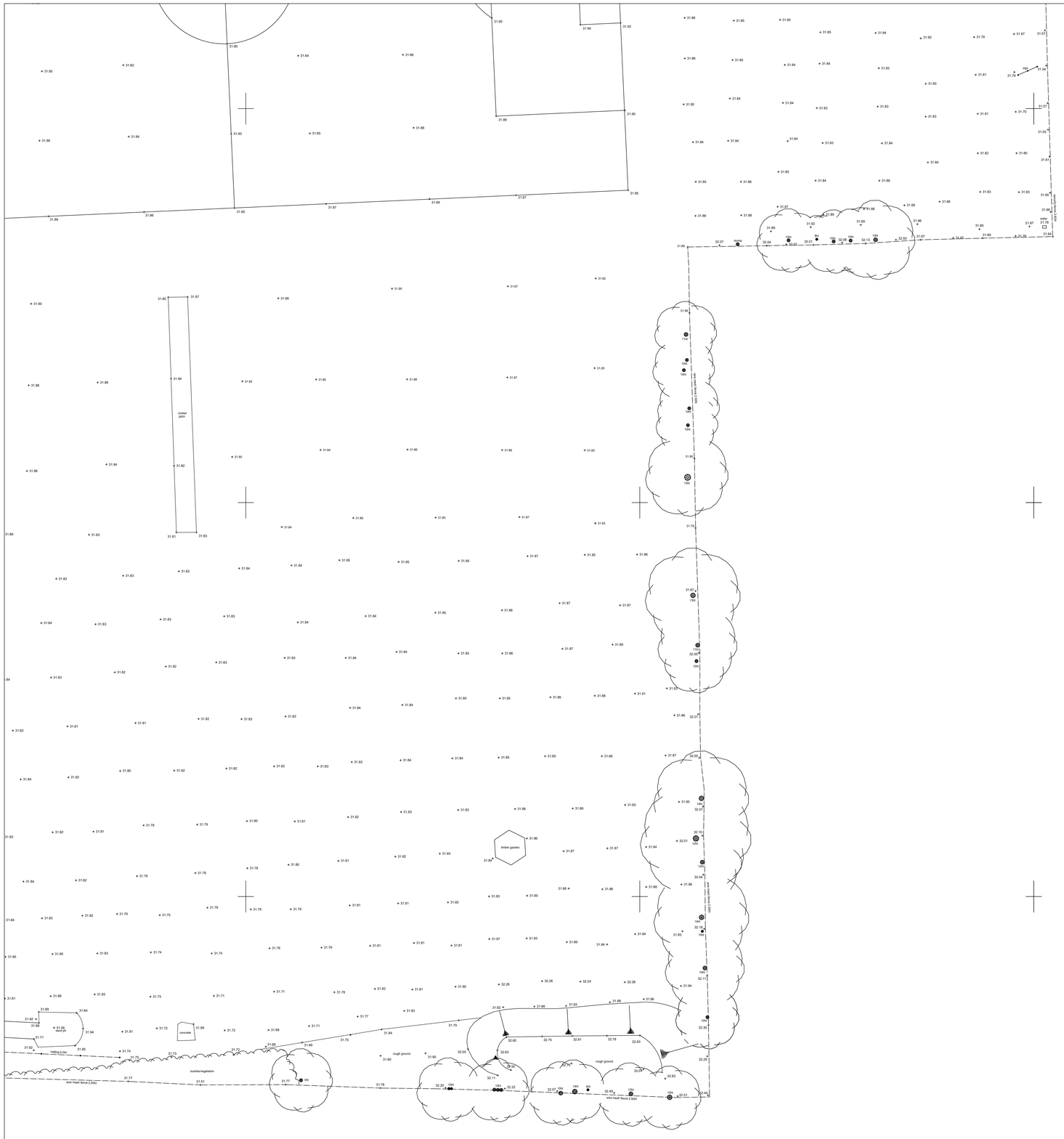
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CLIENT COARC			
SURVEY DATE APRIL 2024	SHEET SIZE A0	SURVEYOR JH	CHECKED VCB
DRAWING NUMBER 1157-3 REV B		SCALE 1:200	

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DRAWING TITLE TOPOGRAPHICAL SURVEY	
CLIENT COARC	
SURVEY DATE APRIL 2024	SHEET SIZE A0
SURVEYOR JH	CHECKED VCB
DRAWING NUMBER 1157-4 REV B	SCALE 1:200

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Appendix C – Environment Agency Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
Unspecified	**383711/394279**	**31 March 2025 09:20**

Your selected location is in flood zone 2, an area with a medium probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see https://www.gov.uk/guidance/flood-risk-assessment-standing-advice)

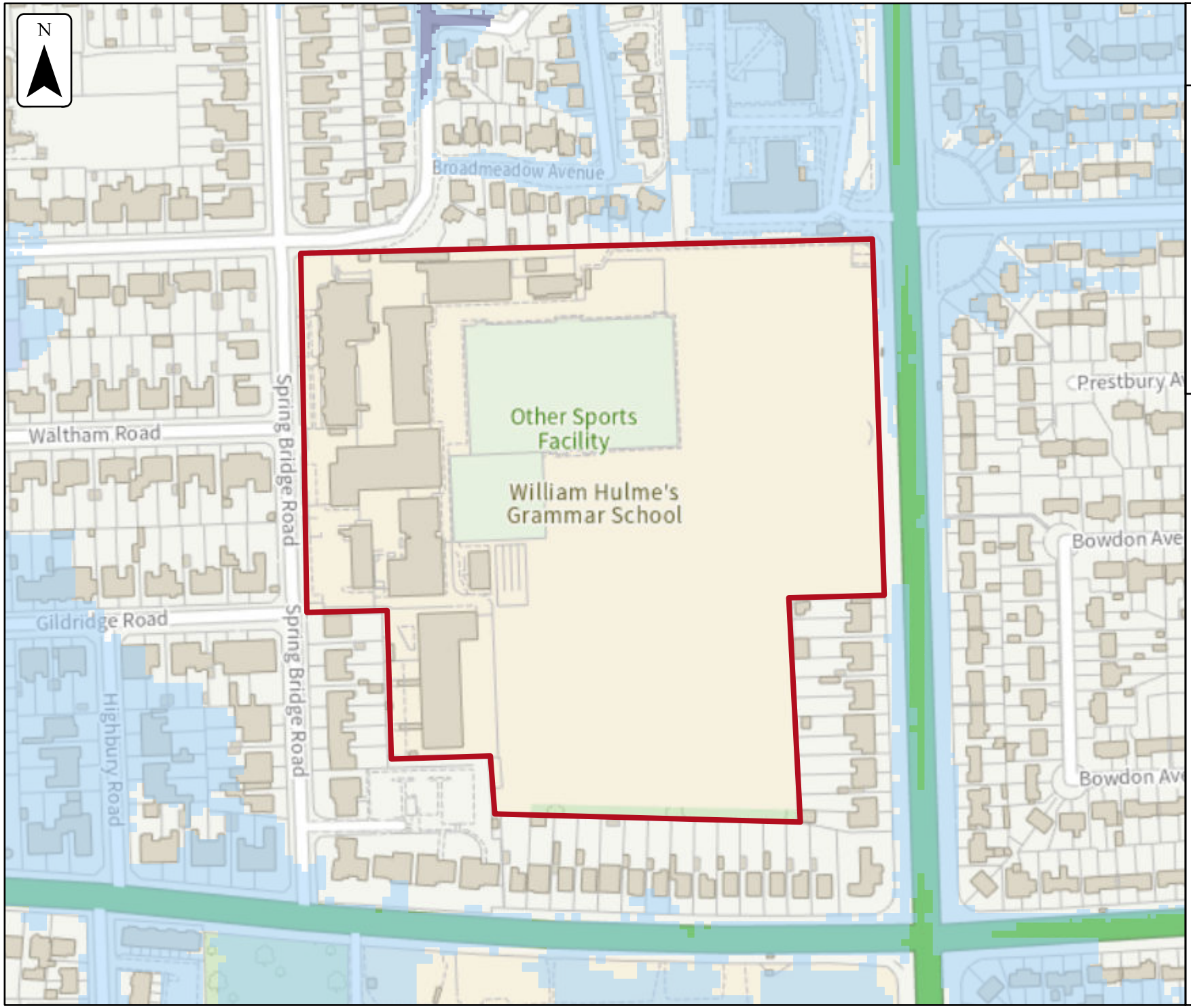
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3

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Environment Agency

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
383711/394279

Scale
1:2,500

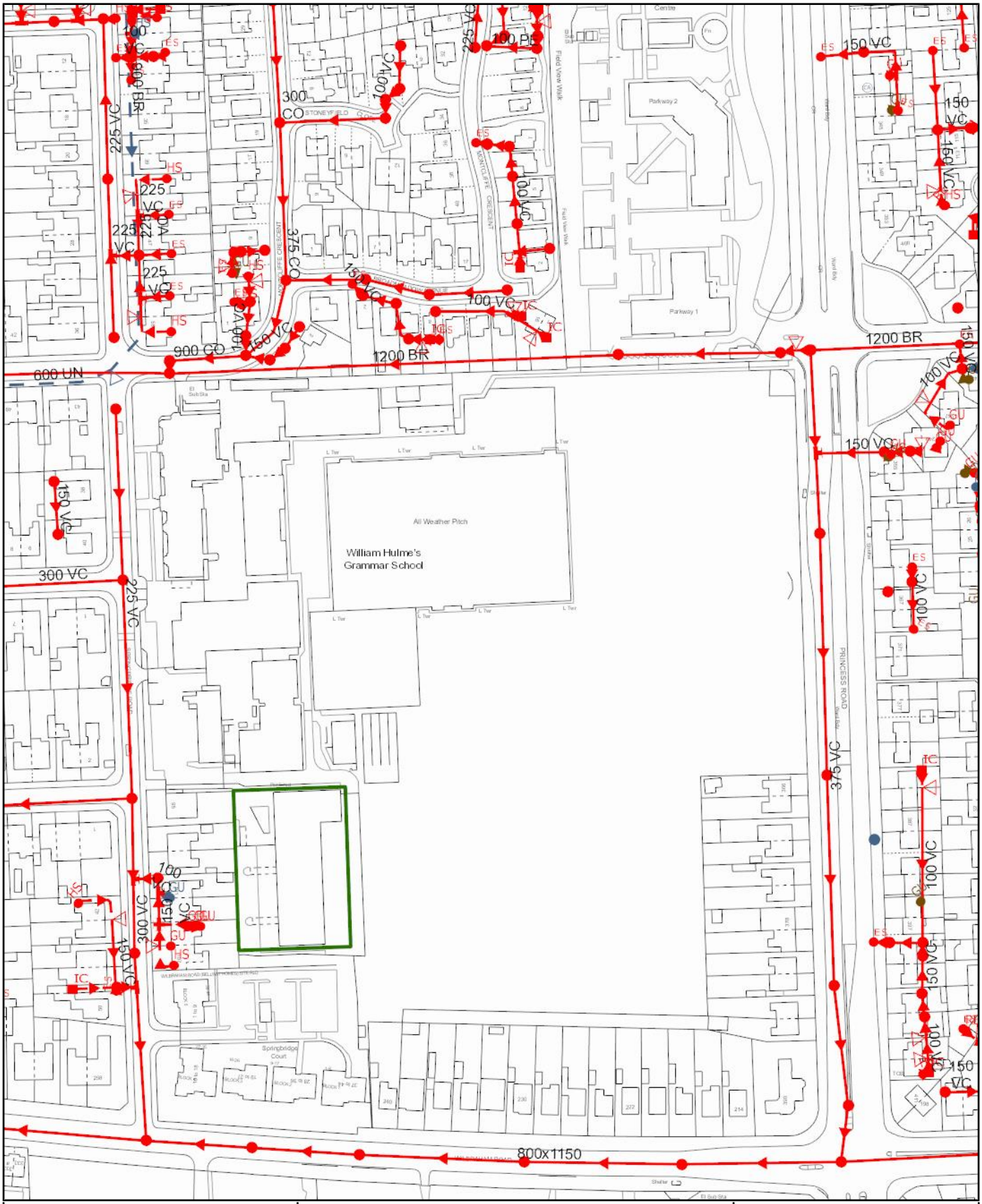
Created
31 Mar 2025 09:20

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60 m

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Appendix D – United Utilities Sewer Record Map



Scale:	1:2253	**SEWER RECORDS**	United Utilities Water for the North West
Date:	03/11/2022		
Address or Site Reference:	U0701		
Printed by:	Property Searches		

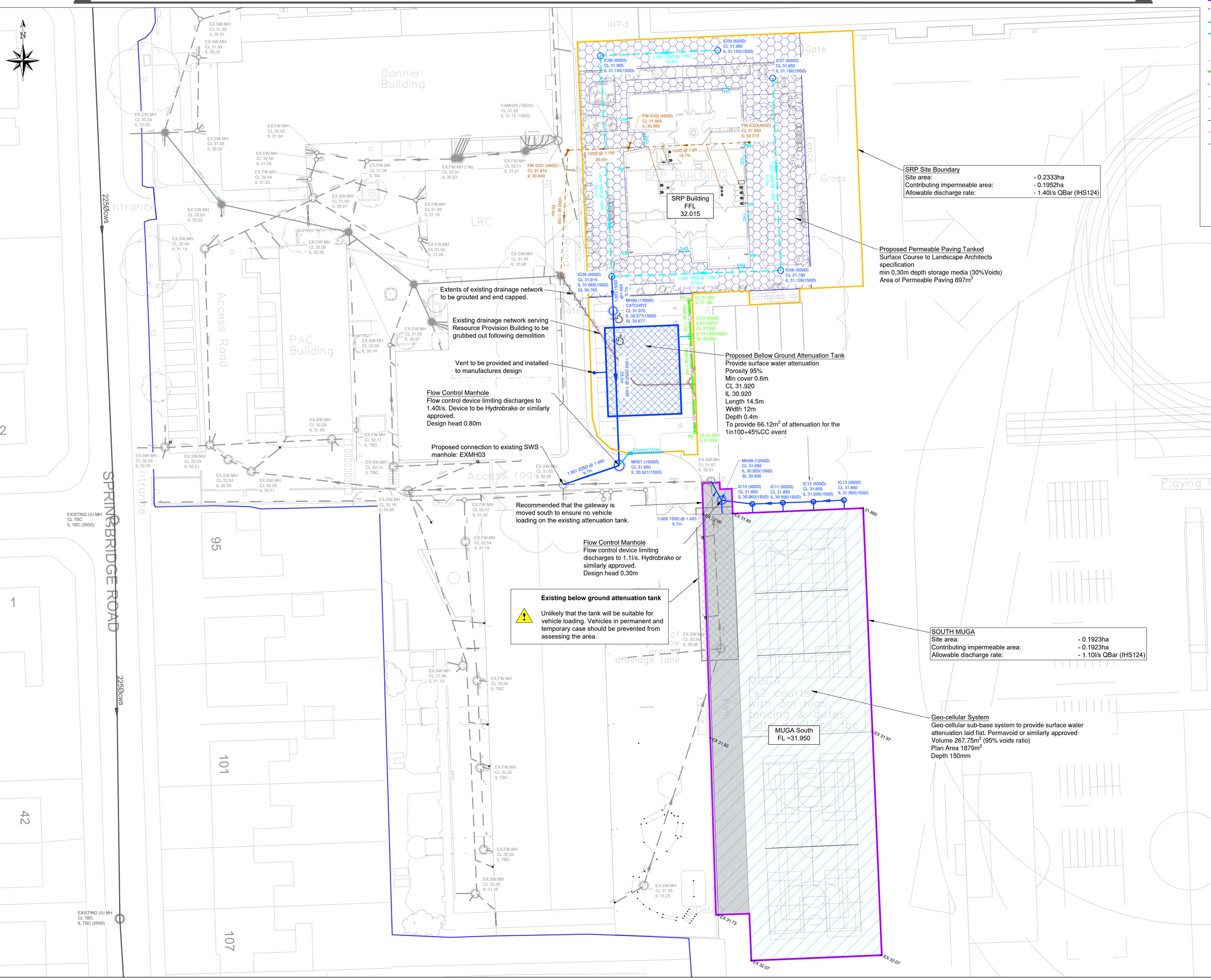
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Appendix E – Proposed Drainage Strategy

A0

See Sheet 2 - RLL Drawing 23693-RLL-24-XX-DR-C-2101



KEY:

- SRP Building & Parking Drainage Area
- North MUGA Drainage Area
- South MUGA Drainage Area
- Proposed Private Surface Water Drainage
- THD — Proposed Private Threshold Drain to architects detail
- Channel Drain — Proposed Private Channel Drain
- RWP — Rain Water Pipe to discharge to a Bottle Gully and Permavoid Rainwater Diffuser Unit
- Proposed Perforated Pipe wrapped in geotextile
- Proposed Private Lined Filter Drain
- Proposed Private Foul Water Drainage
- Existing Private Surface Water Drainage
- Existing Private Foul Water Drainage
- Existing Combined Public UU Sewer
- Existing Drainage Infrastructure to be Grubbed Out
- Existing Drainage Infrastructure to be Abandoned, Grouted and End Capped
- Proposed Permeable Paving with min 450mm deep subbase with 30% voids ratio. Tanked
- Proposed Tanked Permeable Permavoid 150mm Geo-cellular System
- Proposed Below Ground Attenuation Tank
- Existing Below Ground Attenuation Tank

GENERAL NOTES

1. DO NOT SCALE.
2. This drawing is to be read in conjunction with all other relevant drawings and details.
3. Should there be any conflict between the details indicated on this drawing and those on other drawings the Engineer should be informed PRIOR to construction on site.
4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. sinoun the Contractor commence site works prior to such approval being provided it is entirely at their own risk.
5. Sketch proposals are for illustrative purposes only and as such are subject to detailed site investigation including ground conditions, contaminants, drainage, design and planning / density negotiations..
6. All dimensions are in metres unless otherwise stated.
7. The Rodgers Leask Designer's Risk Assessment(s) for this project must be reviewed PRIOR to the commencement of any works on site.
11. Site layout shown based on CoARC Collaborative Architects Proposed site plan drawing ref WHGS-COA-XX-00-D-A-0020 Rev P07, dated 19/02/25.
12. Topographical survey shown based on Cryfield Survey Ltd drawing ref 1157-13, dated October 2022.

SPECIFICATION NOTES

1. The following types of pipe may be used unless noted or agreed otherwise;
   - Pipes up to 600mm diameter to be Structured Walled to BS EN 13476, Polypropylene to BS EN 1852 or PVC-U to BS EN 1401.
   - Pipes over 600mm diameter to be Concrete to BS 5911.
2. Both Clay and Concrete pipes shall be strength class 120 (100/150mm min crushing strength 28kN/m). Thermoplastic pipes shall have a minimum ring stiffness of SN4.
3. Pipes which run adjacent to buildings shall be installed in strict accordance with Part H, Clauses 2.23 to 2.25, Diagrams 7 and 8 are of particular relevance and shall be complied with.
4. All pipes, chambers and fittings shall be installed, bedded and backfilled in accordance with the manufacturer's instructions subject to the following minimum requirements;

Pipe Location	Cover to Crown*	Clay / Concrete Pipe Bedding	Plastic Pipe Bedding	Backfill
Roadways / Car Parking	> 0.9m < 0.9m	Class S Class 'Z' (Concrete)	Class S (S1 or S2) Class 'Z' (Concrete)	Type 1 Granular
Hard & Soft Landscaping	> 0.6m < 0.6m	Class S Class 'Z' (Concrete)	Class S (S1 or S2) Class 'Z' (Concrete)	Suitable as dug material

*The above depths are based on a private drainage network. Adoptable drainage should be installed in accordance with the requirements of the relevant statutory sewerage undertaker.

5. All pipes beneath structures to have concrete bed and surround. Where cover is less than 300mm the concrete is to be cast integrally with the floor slab.
6. The first flexible joint in pipes adjoining a manhole shall be a maximum length of 600mm from the inside face of the manhole, connecting to a rocker pipe. The length of the rocker pipe shall be as follows;

Pipe Diameter	Length of Rocker Pipe
Ø150 - Ø600mm	600mm
Ø675 - Ø750mm	1,000mm
over Ø750mm	1,250mm

7. Pipes Penetrating Walls;
   An opening is to be formed through walls to give pipes at least 50mm clearance all round. Brickwork over shall be supported by a lintel. Opening to be masked each side with rigid sheet material.Pipes embedded in walls shall have joints formed within 150mm of either wall face. Adjacent rocker pipes of max 600mm length with flexible joints shall continue the pipework.
8. All manholes and inspection chambers situated in areas subject to vehicular loading to have class D400 covers and frames to BS EN124.. Those not subject to vehicular loading to have class B125 covers and frames.
9. Drainage frames must be tied to manhole risers by use of manufacturer's ties (eg. Polypipe ref FRX500 fixing kit and FRK501 black ties.) The ground works contractor will be held fully responsible for any accidents due to incorrect fitting or failure to use the correct manufacturer's fixing equipment.
10. All drains in the vicinity of existing or proposed trees to be constructed in accordance with the requirements of NHBC Practice Note 3.
11. All drainage MH covers and frames to be orientated so that they are square and perpendicular to the block paving patterns where applicable. MH cover locations also to avoid building door opening locations where possible.
12. All surface water connections to be Ø150mm and foul connections to be Ø100mm unless noted otherwise.
13. All foul laterals to be min 1:80 gradient; surface water laterals to be min 1:100.
14. Foul pipes are to be wrapped in a suitable impermeable geotextile where they pass over surface water pipes in order to prevent any cross contamination.
15. All pipelines shall be tested both before and after backfilling, using either air test or water test, in accordance with BS EN 1610.
16. Where reinstatement of existing tarmac surfaces is required this should be completed to Specification for the Reinstatement of Openings in Highways Fourth edition

Health & Safety Information Key

- Used to provide design specific safety information that may not be obvious to a competent contractor but may be useful
- Used to restrict/prevent a possible action, e.g. stop construction traffic from entering an area
- Used to warn of significant design hazards, adding recommendations
- Used to encourage a positive action, e.g. use of robust protection for inspection chambers

Rev.	Date	Amendments	By	Chk
P04	02.04.25	Updated to include new parking area	EG	PJC
P03	11.07.24	Client name Changed	PJC	EG
P02	11.07.24	Updated to planning layout	PJC	EG
P01	21.06.24	FIRST ISSUE	EG	PJC

RLRE Consulting Engineers

Client: UNITED LEARNING

Project: SRP, WILLIAM HULME'S GRAMMAR SCHOOL MANCHESTER

Drawing Title: DRAINAGE STRATEGY SHEET 1

Status: INFORMATION

Scale	Drawn	Checked	Date
1:200 @ A0	EG	PJC	21.06.24

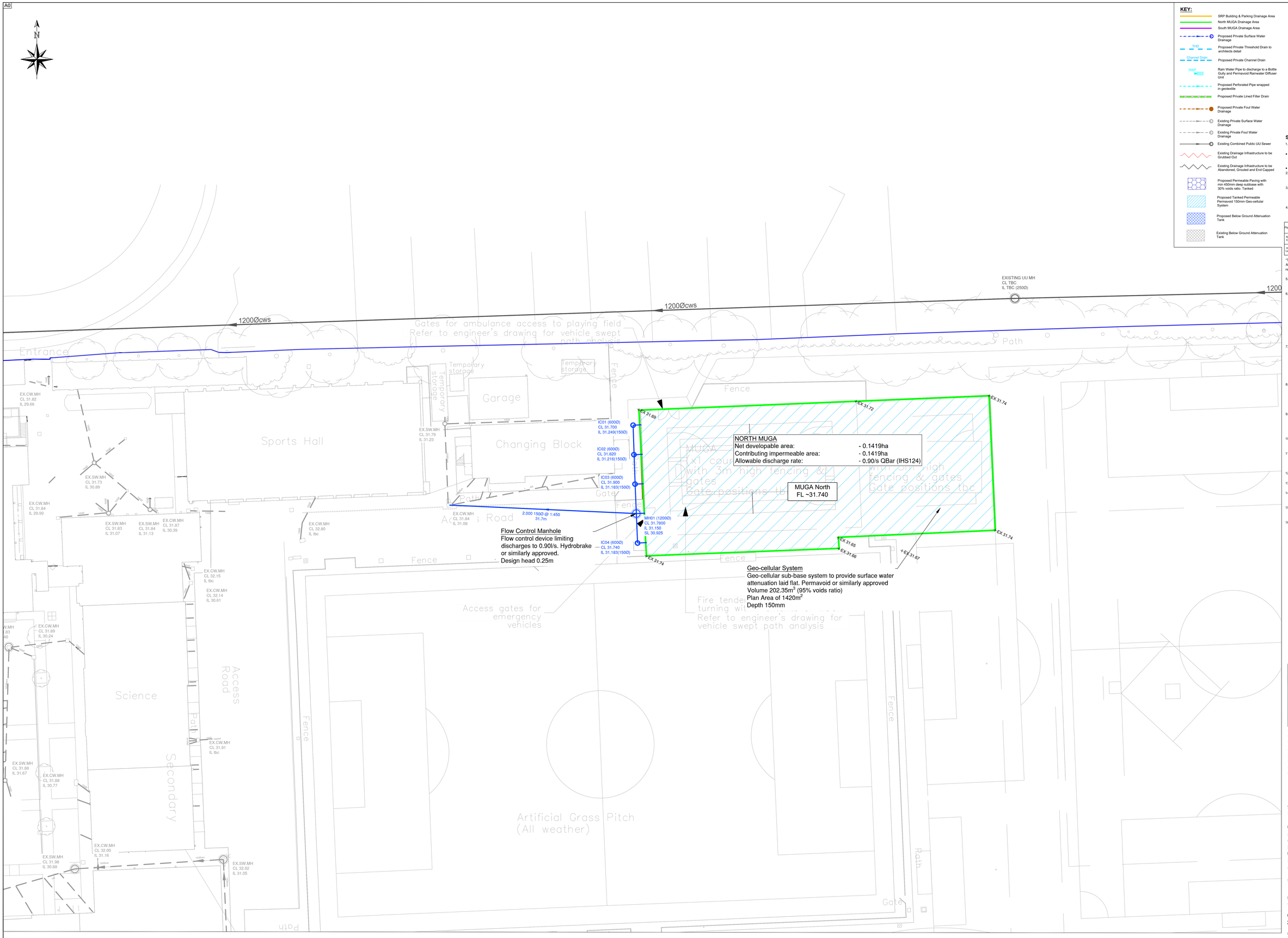
Drawing Number: 22639-RLL-24-XX-DR-C-2100 Revision: P04

BIM Drawing Reference

Scale Bar 1:200 0 2 4 6 8 10 12 14

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A0



SEE SHEET 1 - RLL DRAWING 23693-RLL-24-XX-DR-C-2100

KEY:

- SRP Building & Parking Drainage Area
- North MUGA Drainage Area
- South MUGA Drainage Area
- Proposed Private Surface Water Drainage
- THD — Proposed Private Threshold Drain to architects detail
- Channel Drain — Proposed Private Channel Drain
- RWP — Rain Water Pipe to discharge to a Bottle Gully and Permavoid Rainwater Diffuser Unit
- Proposed Perforated Pipe wrapped in geotextile
- Proposed Private Lined Filter Drain
- Proposed Private Foul Water Drainage
- Existing Private Surface Water Drainage
- Existing Private Foul Water Drainage
- Existing Combined Public UU Sewer
- Existing Drainage Infrastructure to be Grubbed Out
- Existing Drainage Infrastructure to be Abandoned, Grouted and End Capped
- Proposed Permeable Paving with min 450mm deep subbase with 30% voids ratio. Tanked
- Proposed Tanked Permeable Permavoid 150mm Geo-cellular System
- Proposed Below Ground Attenuation Tank
- Existing Below Ground Attenuation Tank

GENERAL NOTES

1. DO NOT SCALE.
2. This drawing is to be read in conjunction with all other relevant drawings and details.
3. Should there be any conflict between the details indicated on this drawing and those on other drawings the Engineer should be informed PRIOR to construction on site.
4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction, sinoun the Contractor commence site works prior to such approval being provided it is entirely at their own risk.
5. Sketch proposals are for illustrative purposes only and as such are subject to detailed site investigation including ground conditions, contaminants, drainage, design and planning / density negotiations,.
6. All dimensions are in metres unless otherwise stated.
7. The Rodgers Leask Designer's Risk Assessment(s) for this project must be reviewed PRIOR to the commencement of any works on site.
11. Site layout shown based on CoARC Collaborative Architects Proposed site plan drawing ref WHGS-COA-XX-00-D-A-0020 Rev P07, dated 19/02/25.
12. Topographical survey shown based on Cryfield Survey Ltd drawing ref 1157-13, dated October 2022.

SPECIFICATION NOTES

1. The following types of pipe may be used unless noted or agreed otherwise;
   - Pipes up to 600mm diameter to be Structured Walled to BS EN 13476, Polypropylene to BS EN 1852 or PVC-U to BS EN 1401.
   - Pipes over 600mm diameter to be Concrete to BS 5911.
2. Both Clay and Concrete pipes shall be strength class 120 (100/150mm min crushing strength 28kN/m). Thermoplastic pipes shall have a minimum ring stiffness of SN4.
3. Pipes which run adjacent to buildings shall be installed in strict accordance with Part H, Clauses 2.23 to 2.25, Diagrams 7 and 8 are of particular relevance and shall be complied with.
4. All pipes, chambers and fittings shall be installed, bedded and backfilled in accordance with the manufacturer's instructions subject to the following minimum requirements;

Pipe Location	Cover to Crown*	Clay / Concrete Pipe Bedding	Plastic Pipe Bedding	Backfill
Roadways / Car Parking	+ 0.9m + 0.9m	Class S Class 'Z' (Concrete)	Class B (S1 or S2) Class 'Z' (Concrete)	Type 1 Granular
Hard & Soft Landscaping	+ 0.6m + 0.6m	Class S Class 'Z' (Concrete)	Class B (S1 or S2) Class 'Z' (Concrete)	Suitable as dug material

*The above depths are based on a private drainage network. Adoptable drainage should be installed in accordance with the requirements of the relevant statutory sewerage undertaker.

5. All pipes beneath structures to have concrete bed and surround. Where cover is less than 300mm the concrete is to be cast integrally with the floor slab.
6. The first flexible joint in pipes adjoining a manhole shall be a maximum length of 600mm from the inside face of the manhole, connecting to a rocker pipe. The length of the rocker pipe shall be as follows;

Pipe Diameter	Length of Rocker Pipe
Ø150 - Ø600mm	600mm
Ø675 - Ø750mm	1,000mm
over Ø750mm	1,250mm

7. Pipes Penetrating Walls;
   An opening is to be formed through walls to give pipes at least 50mm clearance all round. Brickwork over shall be supported by a lintel. Opening to be masked each side with rigid sheet material.Pipes embedded in walls shall have joints formed within 150mm of either wall face. Adjacent rocker pipes of max 600mm length with flexible joints shall continue the pipework.
8. All manholes and inspection chambers situated in areas subject to vehicular loading to have class D400 covers and frames to BS EN124. Et600 covers and frames to be provided within service yard areas subject to forklift loading. Those not subject to vehicular loading to have class B125 covers and frames.
9. Drainage frames must be tied to manhole risers by use of manufacturer's ties (eg. Polypipe ref FRK500 fixing kit and FRK501 black ties.) The ground works contractor will be held fully responsible for any accidents due to incorrect fitting or failure to use the correct manufacturer's fixing equipment.
10. All drains in the vicinity of existing or proposed trees to be constructed in accordance with the requirements of NHBC Practice Note 3.
11. All drainage MH covers and frames to be orientated so that they are square and perpendicular to the block paving patterns where applicable. MH cover locations also to avoid building door opening locations where possible.
12. All surface water connections to be Ø150mm and foul connections to be Ø100mm unless noted otherwise.
13. All foul laterals to be min 1:80 gradient; surface water laterals to be min 1:100.
14. Foul pipes are to be wrapped in a suitable impermeable geotextile where they pass over surface water pipes in order to prevent any cross contamination.
15. All pipelines shall be tested both before and after backfilling, using either air test or water test, in accordance with BS EN 1610.
16. Where reinstatement of existing tarmac surfaces is required this should be completed to Specification for the Reinstatement of Openings in Highways Fourth edition

Health & Safety Information Key

- Used to provide design specific safety information that may not be obvious to a competent contractor but may be useful
- Used to restrict/prevent a possible action, e.g. stop construction traffic from entering an area
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Rev.	Date	Amendments	By	Chk
P04	02.04.25	Updated to include new parking area	EG	PJC
P03	11.07.24	Client name Changed	PJC	EG
P02	11.07.24	Updated to planning layout	PJC	EG
P01	21.06.24	FIRST ISSUE	EG	PJC

RLRE Consulting Engineers

Client
UNITED LEARNING

Project
SRP, WILLIAM HULME'S GRAMMAR SCHOOL MANCHESTER

Drawing Title
DRAINAGE STRATEGY SHEET 2

Status
INFORMATION

Scale	Drawn	Checked	Date
1:200 @ A0	EG	PJC	21.06.24

Drawing Number: 22639-RLL-24-XX-DR-C-2101
Revision: P04

BIM Drawing Reference

Scale Bar
1:200 2 4 6 8 10 12 14

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Appendix F – Greenfield Runoff Rate Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Peter Collier
Site name:	SRP Building
Site location:	William Hulme Grammar School

This is an estimation of the greenfield runoff rates that are used 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). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.44472° N
Longitude:	2.2474° W
Reference:	1514707987
Date:	Jul 10 2024 17:50

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	0.1903

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	853	853
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):	1.16	1.16
1 in 1 year (l/s):	1.01	1.01
1 in 30 years (l/s):	1.97	1.97
1 in 100 year (l/s):	2.41	2.41
1 in 200 years (l/s):	2.74	2.74

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Peter Collier
Site name:	North MUGAs
Site location:	William Hulme Grammar School

This is an estimation of the greenfield runoff rates that are used 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). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.44597° N
Longitude:	2.24663° W
Reference:	1035485264
Date:	Jul 10 2024 17:52

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	0.1419

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	853	853
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):	0.86	0.86
1 in 1 year (l/s):	0.75	0.75
1 in 30 years (l/s):	1.47	1.47
1 in 100 year (l/s):	1.8	1.8
1 in 200 years (l/s):	2.05	2.05

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Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Peter Collier
Site name:	South MUGAs
Site location:	William Hulme Grammar School

This is an estimation of the greenfield runoff rates that are used 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). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.44426° N
Longitude:	2.24725° W
Reference:	2346750175
Date:	Jul 10 2024 17:52

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	0.1923

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	853	853
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):	1.17	1.17
1 in 1 year (l/s):	1.02	1.02
1 in 30 years (l/s):	1.99	1.99
1 in 100 year (l/s):	2.43	2.43
1 in 200 years (l/s):	2.77	2.77

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Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

This is an estimation of the greenfield runoff rates that are used 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). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	01/04/2025
Calculated by	Elliot Goodey
Reference	
Model version	0.6.5

Location

Site name	Parking Area
Site location	William Hulme Grammar School



Site easting	383710
Site northing	394277

Site details

Total site area (ha)	0.0430 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	853 mm		853
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		4
SPR	0.47		0.47
QBar (IH124) (l/s)	0.26 l/s		

Growth curve factors

	My value		Map value
Hydrological region	10		10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	IH124
Flow rate 1 year (l/s)	0.23 l/s
Flow rate 2 year (l/s)	0.24 l/s
Flow rate 10 years (l/s)	0.36 l/s
Flow rate 30 years (l/s)	0.44 l/s
Flow rate 100 years (l/s)	0.54 l/s
Flow rate 200 years (l/s)	0.62 l/s

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (0.6.5) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Appendix G – Drainage Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.900
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
MH01	0.142	5.00	31.740	1200	383725.912	394372.626	0.590
EX.CW.MH			31.840	1200	383642.665	394370.499	0.875
MH06	0.043	5.00	31.970	1350	383646.546	394258.334	0.993
MH07			31.850	1500	383647.524	394233.035	0.929
EX.SW.MH 03			31.850	1200	383638.367	394229.923	0.950
MH08	0.192	5.00	31.950	1200	383667.616	394227.823	1.027
EX.SW.MH			31.870	1200	383662.550	394230.458	0.955
IC09		5.00	31.850	600	383663.647	394300.980	0.662
IC08	0.019	5.00	31.905	600	383644.446	394300.081	0.760
IC05	0.062	5.00	31.815	600	383646.302	394263.985	0.750
IC06	0.062	5.00	31.790	600	383673.935	394264.940	0.664
IC07		5.00	31.850	600	383672.617	394296.432	0.654

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.007	IC07	IC06	31.520	0.600	31.196	31.126	0.070	450.0	150	6.12	50.0
1.006	IC06	IC05	27.649	0.600	31.126	31.065	0.061	450.0	150	7.11	50.0
1.005	IC09	IC08	19.222	0.600	31.188	31.145	0.043	450.0	150	5.69	50.0
1.004	IC08	IC05	36.144	0.600	31.145	31.065	0.080	450.0	150	6.97	50.0
1.003	IC05	MH06	5.656	0.600	31.065	31.052	0.013	450.0	150	7.31	50.0
1.000-	MH06	MH07	25.318	0.600	30.977	30.921	0.056	450.0	225	8.00	50.0
1.001-	MH07	EX.SW.MH 03	9.671	0.600	30.921	30.900	0.021	460.5	225	8.27	50.0
2.000-	MH01	EX.CW.MH	83.276	0.600	31.150	30.965	0.185	450.0	150	7.97	50.0
3.000	MH08	EX.SW.MH	3.540	0.600	30.923	30.915	0.008	450.0	150	5.13	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.007	0.467	8.3	0.0	0.504	0.514	0.000	0.0	0	0.000
1.006	0.467	8.3	11.2	0.514	0.600	0.062	0.0	150	0.476
1.005	0.467	8.3	0.0	0.512	0.610	0.000	0.0	0	0.000
1.004	0.467	8.3	3.4	0.610	0.600	0.019	0.0	68	0.447
1.003	0.467	8.3	25.8	0.600	0.768	0.143	0.0	150	0.476
1.000-	0.610	24.2	33.6	0.768	0.704	0.186	0.0	225	0.621
1.001-	0.603	24.0	33.6	0.704	0.725	0.186	0.0	225	0.614
2.000-	0.467	8.3	25.7	0.440	0.725	0.142	0.0	150	0.476
3.000	0.467	8.3	34.7	0.877	0.805	0.192	0.0	150	0.476

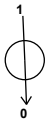
Flow+ v11.1 Copyright © 1988-2025 Causeway Technologies Ltd

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.007	31.520	450.0	150	Circular	31.850	31.196	0.504	31.790	31.126	0.514
1.006	27.649	450.0	150	Circular	31.790	31.126	0.514	31.815	31.065	0.600
1.005	19.222	450.0	150	Circular	31.850	31.188	0.512	31.905	31.145	0.610
1.004	36.144	450.0	150	Circular	31.905	31.145	0.610	31.815	31.065	0.600
1.003	5.656	450.0	150	Circular	31.815	31.065	0.600	31.970	31.052	0.768
1.000-	25.318	450.0	225	Circular	31.970	30.977	0.768	31.850	30.921	0.704
1.001-	9.671	460.5	225	Circular	31.850	30.921	0.704	31.850	30.900	0.725
2.000-	83.276	450.0	150	Circular	31.740	31.150	0.440	31.840	30.965	0.725
3.000	3.540	450.0	150	Circular	31.950	30.923	0.877	31.870	30.915	0.805

Link	US Node	Dia (mm)	DS Node	Dia (mm)
1.007	IC07	600	IC06	600
1.006	IC06	600	IC05	600
1.005	IC09	600	IC08	600
1.004	IC08	600	IC05	600
1.003	IC05	600	MH06	1350
1.000-	MH06	1350	MH07	1500
1.001-	MH07	1500	EX.SW.MH 03	1200
2.000-	MH01	1200	EX.CW.MH	1200
3.000	MH08	1200	EX.SW.MH	1200

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MH01	383725.912	394372.626	31.740	0.590	1200				
						0	2.000-	31.150	150
EX.CW.MH	383642.665	394370.499	31.840	0.875	1200	1	2.000-	30.965	150
									
MH06	383646.546	394258.334	31.970	0.993	1350	 1	1.003	31.052	150
						0	1.000-	30.977	225
MH07	383647.524	394233.035	31.850	0.929	1500	 1	1.000-	30.921	225
						0	1.001-	30.921	225
EX.SW.MH 03	383638.367	394229.923	31.850	0.950	1200	1	1.001-	30.900	225
									
MH08	383667.616	394227.823	31.950	1.027	1200				
						0	3.000	30.923	150

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
EX.SW.MH	383662.550	394230.458	31.870	0.955	1200	1	3.000	30.915	150
IC09	383663.647	394300.980	31.850	0.662	600	0	1.005	31.188	150
IC08	383644.446	394300.081	31.905	0.760	600	1	1.005	31.145	150
						0	1.004	31.145	150
IC05	383646.302	394263.985	31.815	0.750	600	1	1.006	31.065	150
						2	1.004	31.065	150
						0	1.003	31.065	150
IC06	383673.935	394264.940	31.790	0.664	600	1	1.007	31.126	150
						0	1.006	31.126	150
IC07	383672.617	394296.432	31.850	0.654	600	0	1.007	31.196	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	45	0	0

Node MH07 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	30.921	Product Number	CTL-SHE-0059-1400-0800-1400
Design Depth (m)	0.800	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.4	Min Node Diameter (mm)	1200

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Node MH01 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	31.150	Product Number	CTL-SHE-0054-9000-0250-9000
Design Depth (m)	0.250	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.9	Min Node Diameter (mm)	1200

Node MH08 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	30.923	Product Number	CTL-SHE-0059-1100-0300-1100
Design Depth (m)	0.300	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.1	Min Node Diameter (mm)	1200

Node MH01 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.150	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.150
Safety Factor	2.0	Width (m)	24.070	Inf Depth (m)	
Porosity	0.95	Length (m)	59.000		

Node MH08 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	30.923	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.150
Safety Factor	2.0	Width (m)	25.700	Inf Depth (m)	
Porosity	0.95	Length (m)	73.200		

Node MH07 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	30.921
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	174.0	0.0	0.400	174.0	0.0	0.401	0.0	0.0

Node IC08 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.145	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.300
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	19.303		

Node IC06 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.126	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.300
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	34.344		

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Node IC05 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.065	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.300
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	36.188		

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	MH01	1110	31.181	0.031	1.4	37.3471	0.0000	OK
15 minute summer	EX.CW.MH	1	30.965	0.000	0.0	0.0000	0.0000	OK
15 minute summer	MH06	10	31.135	0.158	7.3	0.2265	0.0000	OK
600 minute summer	MH07	450	31.063	0.142	4.1	24.8880	0.0000	OK
15 minute summer	EX.SW.MH 03	1	30.900	0.000	0.5	0.0000	0.0000	OK
1440 minute winter	MH08	1200	30.957	0.034	2.0	51.7544	0.0000	OK
15 minute summer	EX.SW.MH	1	30.915	0.000	0.1	0.0000	0.0000	OK
15 minute summer	IC09	1	31.188	0.000	0.0	0.0000	0.0000	OK
120 minute summer	IC08	74	31.174	0.029	1.5	1.6020	0.0000	OK
180 minute summer	IC05	116	31.140	0.075	6.3	7.9242	0.0000	OK
120 minute summer	IC06	74	31.181	0.055	5.0	4.9307	0.0000	OK
15 minute summer	IC07	1	31.196	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	MH01	Hydro-Brake®	EX.CW.MH	0.3				18.0
15 minute summer	MH06	1.000-	MH07	8.5	1.007	0.352	0.3795	
600 minute summer	MH07	Hydro-Brake®	EX.SW.MH 03	1.3				41.2
1440 minute winter	MH08	Hydro-Brake®	EX.SW.MH	0.4				22.4
15 minute summer	IC09	1.005	IC08	0.0	0.000	0.000	0.0147	
120 minute summer	IC08	1.004	IC05	0.7	0.137	0.080	0.1919	
180 minute summer	IC05	1.003	MH06	4.3	0.565	0.524	0.0433	
120 minute summer	IC06	1.006	IC05	2.4	0.365	0.296	0.1943	
15 minute summer	IC07	1.007	IC06	0.0	0.000	0.000	0.0651	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	MH01	1020	31.204	0.054	4.2	69.4734	0.0000	OK
15 minute summer	EX.CW.MH	1	30.965	0.000	0.2	0.0000	0.0000	OK
600 minute summer	MH06	465	31.188	0.211	8.6	0.3013	0.0000	OK
600 minute summer	MH07	465	31.187	0.266	8.5	46.8119	0.0000	SURCHARGED
15 minute summer	EX.SW.MH 03	1	30.900	0.000	1.3	0.0000	0.0000	OK
1440 minute summer	MH08	1050	30.982	0.059	5.6	96.0678	0.0000	OK
15 minute summer	EX.SW.MH	1	30.915	0.000	0.2	0.0000	0.0000	OK
60 minute summer	IC09	45	31.204	0.016	0.1	0.0045	0.0000	OK
60 minute summer	IC08	45	31.203	0.058	5.5	3.3451	0.0000	OK
60 minute summer	IC05	43	31.202	0.137	24.7	14.6827	0.0000	OK
60 minute summer	IC06	40	31.239	0.113	17.9	10.2962	0.0000	OK
60 minute summer	IC07	39	31.239	0.043	0.5	0.0122	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	MH01	Hydro-Brake®	EX.CW.MH	0.7				40.3
600 minute summer	MH06	1.000-	MH07	8.5	0.419	0.350	0.9928	
600 minute summer	MH07	Hydro-Brake®	EX.SW.MH 03	1.4				51.5
1440 minute summer	MH08	Hydro-Brake®	EX.SW.MH	0.9				50.3
60 minute summer	IC09	1.005	IC08	-0.1	-0.051	-0.014	0.0706	
60 minute summer	IC08	1.004	IC05	2.2	0.212	0.271	0.4187	
60 minute summer	IC05	1.003	MH06	11.6	0.778	1.405	0.0829	
60 minute summer	IC06	1.006	IC05	6.7	0.473	0.816	0.4280	
60 minute summer	IC07	1.007	IC06	-0.5	-0.090	-0.064	0.2890	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	MH01	1350	31.254	0.104	5.3	135.9310	0.0000	OK
15 minute summer	EX.CW.MH	1	30.965	0.000	0.5	0.0000	0.0000	OK
960 minute winter	MH06	915	31.549	0.572	6.3	0.8190	0.0000	SURCHARGED
960 minute winter	MH07	915	31.549	0.628	6.2	70.7968	0.0000	SURCHARGED
15 minute summer	EX.SW.MH 03	1	30.900	0.000	1.4	0.0000	0.0000	OK
1440 minute summer	MH08	1290	31.035	0.112	10.6	189.0064	0.0000	OK
15 minute summer	EX.SW.MH	1	30.915	0.000	0.6	0.0000	0.0000	OK
960 minute winter	IC09	915	31.550	0.362	0.1	0.1023	0.0000	SURCHARGED
960 minute winter	IC08	915	31.550	0.405	1.2	17.4583	0.0000	SURCHARGED
960 minute winter	IC05	915	31.550	0.485	6.0	32.5437	0.0000	FLOOD RISK
960 minute winter	IC06	915	31.550	0.424	3.1	28.9735	0.0000	FLOOD RISK
960 minute winter	IC07	915	31.550	0.354	0.1	0.1001	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	MH01	Hydro-Brake®	EX.CW.MH	0.9				59.6
960 minute winter	MH06	1.000-	MH07	6.2	0.441	0.256	1.0069	
960 minute winter	MH07	Hydro-Brake®	EX.SW.MH 03	1.4				75.6
1440 minute summer	MH08	Hydro-Brake®	EX.SW.MH	1.1				71.8
960 minute winter	IC09	1.005	IC08	-0.1	-0.014	-0.017	0.3384	
960 minute winter	IC08	1.004	IC05	1.1	0.116	0.128	0.6363	
960 minute winter	IC05	1.003	MH06	4.6	0.568	0.556	0.0996	
960 minute winter	IC06	1.006	IC05	2.5	0.293	0.303	0.4868	
960 minute winter	IC07	1.007	IC06	0.1	-0.013	0.008	0.5549	

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Appendix H – Northwest SuDS Proforma

NORTH WEST SuDS PRO-FORMA TEMPLATE

Document Change Log		
Version	**Date Agreed**	**Changes made**
Version 1	April 2020	Initial version issued
Version 2	July 2020	• Page 1 – 'Guidance to support you' section – word 'approved' changed to 'appropriate' • Section 5 – Box 4 'Evidence Required' - word 'approved' changed to 'appropriate' • Section 5 – Box 9 'Summarise how storage will be provided for 1 in 100 year (plus climate change) event on site' - word 'approved' changed to 'appropriate'
Version 3	August 2020	• Front sheet and Document Change Log added • Page 1 – Para 1 Footnote – words 'of 0.5 hectares' removed
Version 4	July 2021	• Front page amended and branding removed. • Section 1 - Previously Developed/ Brownfield Site – words *'then one of the approaches outlined in Section 24.5 of The SuDS Manual (C753) should be adopted'* removed. • Section 7b – Hierarchy Level 2 – Note wording amended from '*Where third party land is cited as a barrier, you should provide visibility of discussions held to date with the riparian landowner of the waterbody*' to '*Where discharge of any element in the hierarchy is discounted, an applicant should provide justification. If the reasoning for discounting a discharge of surface water to watercourse relates to issues associated with third party land or the securing of any other required consent, it may be necessary for the applicant to provide evidence to the local planning authority to support their proposed approach'*
Version 5	May 2022	• Pro-forma guidance updated to take account of the new climate change allowances published on 10 May 2022. There is no change to the pro-forma itself.

Website: [The Flood Hub]

This website is an online resource which has been funded by the North West Regional Flood and Coastal Committee as a one stop shop for flood advice and information across the North West.

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[PLEASE ADD LOCAL AUTHORITY LOGO TO THIS PAGE]

[*LOCAL AUTHORITY*] SuDS PRO-FORMA

This Pro-forma is endorsed by the North West Regional Flood and Coastal Committee, including representatives from Lead Local Flood Authorities, Highway Authorities, United Utilities and the Environment Agency

[Amend as appropriate]

Version 5: May 2022

NORTH WEST SuDS PRO-FORMA

This pro-forma is a requirement for any planning application for major development[1].

It supports applicants in summarising and confirming how surface water from a development will be managed sustainably under current and future conditions.

Your sustainable drainage system should be designed in accordance with **CIRIA The SuDS Manual C753** and any necessary adoption standards.

HOW TO COMPLETE

Blue Box	Instruction/ Question
Orange Box	Evidence Required
White Box	To be completed by Developer / Consultant

1. Complete ALL white boxes
2. Submit this pro-forma to the Local Planning Authority, along with:

- Sustainable Drainage Strategy
- Site Specific Flood Risk Assessment (if required)
- Minimum supporting evidence, as indicated in orange boxes of this pro-forma.

GUIDANCE TO SUPPORT YOU

The pro-forma should be completed in conjunction with 'Completing your SuDS Pro Forma Guide.'

The pro-forma can be completed using freely available tools such as **Tools for Sustainable Drainage Systems** or appropriate industry standard surface water management design software.

[1] *as defined in Section 2 of **Statutory Instrument 2015 No. 595** or on sites in Critical Drainage Areas.*

SECTION 1. APPLICATION & DEVELOPMENT DETAILS

Planning Application Reference *(if available)*	
State type of planning application *i.e. Pre-application, Outline, Full, Hybrid, Reserved Matters* *Information only required if drainage is to be considered as part of reserved matters application*	Full
Developer(s) Name:	United Learning
Consultant(s) Name:	Rodgers Leask
Development Address *(including postcode)*	Spring Bridge Rd, Manchester M16 8PR
Development Grid Reference *(Eastings/Northings)*	383665 Easting 394281 Northing
Total Development Site Area (Ha)	
Drained Area (Ha)* of Development	1.5334
Please indicate the flood zone that your development is in. Tick all that apply. *Based on the Environment Agency Flood Map for Planning and the relevant Local Authority Strategic Flood Risk Assessment (to identify Flood Zones 3a/3b).*	Flood Zone 1 ☒ Flood Zone 2 ☐ Flood Zone 3a ☐ Flood Zone 3b ☐
What is the surface water risk of the site? Tick all that apply. *Based on the Environment Agency Surface Water Flood Map.*	High ☐ Medium ☐ Low ☒
Have you submitted a Site Specific Flood Risk Assessment (FRA)? *See separate guidance notes for clarification on when a FRA is required*	Yes ☐ No ☒
Have you submitted a Sustainable Drainage Strategy?	Yes ☒ No ☐
Does your drainage proposal provide multi-functional benefits via SuDS?	Yes ☒ No ☐
Expected Lifetime of Development *(years)* *Refer to Planning Practice Guidance "Flood Risk and Coastal Change" Paragraph 026*	50 years

Development Type:		**State Proposed Number of Units**
Greenfield Site • *Site is wholly undeveloped, and a new drainage system will be installed*	☐	
Previously Developed/ Brownfield Site • *Site is already developed, and the entirety of the existing surface water drainage system will be used to serve the new development (evidence must be provided to prove existing surface water drainage system is reusable);* ***OR*** • *Where records of the previously developed system are not available so that the hydraulic characteristics of the system cannot be determined or where the drainage system is not in reasonable working order i.e. broken, blocked or no longer operational for other reasons.*	☒	Site is previously developed however strategy has been derived as greenfield to ensure suitable rates

		for conection to CW sewer
Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 1.	Refer to report text	

SECTION 2: IMPERMEABLE AREA AND EXISTING DRAINAGE

	Existing (E)	Proposed (P)	Change (P – E)
State Impermeable Area (Ha)		1.5334	1.5334 No existing impermeable area has been accounted for as none of the area of use are positively drained
Evidence Required: Plans showing development layout of site with existing and proposed impermeable areas.			☒

Are there existing sewers, watercourses, water bodies, highway drains, soakaways or filter drains on the site?	Yes ☒ No ☐ Don't Know ☐
Evidence Required: Plan(s) showing existing layout to include all: • Watercourses, open and culverted • Water bodies – ponds, swales etc. • Sewers, including manholes • Highway drains, include manholes, gullies etc. • Infiltration features - soakaways, filter drains etc.	☒

Drainage Design *Outline planning applications should be able to demonstrate that a suitable drainage system is achievable.* *All other type of planning application should provide full details or reference to previous planning application where drainage details have been submitted or approved.*	
Select which design approach you are taking to manage water quality *(refer to Section 3.3 SuDS Manual)* **Approach 1 – Volume control / Long Term Storage (Technical Standards S2/3, S4/5)** • *The attenuated runoff volume for the 1 in 100 year 6 hour event (plus climate change allowance) is limited to the greenfield runoff volume for the 1 in 100 year 6 hour event, with any additional runoff volume utilising long term storage and either infiltrated or released at 2 l/s/ha* • *The discharge rate for the critical duration 1 in 1 year event is restricted to the 1 in 1 year greenfield runoff rate* • *The discharge rate for the critical duration 1 in 100 year event (plus climate change allowance) is restricted to the 1 in 100 year greenfield runoff rate* **Approach 2 – Qbar (Technical Standards S6)** • *Justification has been provided that the provision of volume control/long term storage is not appropriate and an attenuation only approach is proposed. All events up to the critical duration 1 in 100 year event (plus climate change allowance) are limited to Qbar (1 in 2 year greenfield rate) or 2 l/s/ha, whichever is greater.*	☐ ☒
Evidence Required: Plans showing: • Existing flow routes and flood risks	☒

• Modified flow routes • Contributing and impermeable areas • Current (if any) and proposed 'source control' and 'management train' locations of sustainable drainage components (C753 Chapter 7) • Details of drainage ownership • Details of exceedance routes (Technical Standards S9) • Topographic survey • Locations and number of existing and proposed discharge points *Note consideration should be given to manage surface water from both impermeable and permeable surfaces (including gardens and verges) likely to enter the drainage system.*	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 2.	

SECTION 3: PEAK RUNOFF RATES – TECHNICAL STANDARDS S2, S3 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	**Existing Rate (l/s)**	**Greenfield Rate (l/s)**	**Proposed Rate (l/s)** *Previously developed sites - In line with S3 should be equivalent to Greenfield runoff rates – discuss with LLFA if this is not achievable pre-application*
Qbar *(Approach 2)*		3.45	3.45
1 in 1 Year Event *(Approach 1)*		3.01	
1 in 30 Year Event		5.87	
1 in 100 Year Event* *(Approach 1)*		7.51	
** Total discharge at the 1 in 100 year rate should be restricted to the greenfield runoff volume for the 1 in 100 Year 6 hour event with additional volumes (long-term storage volume) released at a rate no greater than 2 l/s/ha where infiltration is not possible. The climate change allowance should only be applied to the proposed rate and not the existing or greenfield rate.*			

Evidence Required: Methodology used to calculate peak runoff rate clearly stated and justified.	☐
Impermeable areas plan, supported by topographical survey confirming positive drainage.	☒
Hydraulic calculations and details of software used.	☒

State the hydraulic method used in your calculations *(Refer to Table 24.1 of The SuDS Manual)*	IH124

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 3.	See Appendix F

SECTION 4: DISCHARGE VOLUME – TECHNICAL STANDARDS S4, S5 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Volume (m^3)	Greenfield Volume (m^3)	Proposed Volume (m^3)
1 in 100 Year 6 Hour Event *(Approach 1)*			
Does the below statement apply to your development proposal? Long term storage is not achievable on this site and, in accordance with S6 of the Non Statutory Technical Standards for SuDS, the surface water discharge rates for events up to and including the 1 in 100 year critical event are limited to Qbar (Approach 2)			Yes ☒ No ☐
Evidence Required: Approach to managing the quantity of surface water leaving the site clearly stated and justified			☒
Methodology used to calculate discharge volume clearly stated and justified.			☒
Hydraulic calculations and details of software used.			☒

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 4.	See report text

SECTION 5: STORAGE – TECHNICAL STANDARDS S7 AND S8

State climate change allowance used (%)	45%
State housing density (houses per ha)	N/A
State urban creep allowance used (%)	N/A
Evidence Required: State / used in appropriate industry standard surface water management design software.	☒

State storage volume required (m^3) *(excluding non-void spaces)* *Must include an allowance for climate change and urban creep*	Refer to Drawings in appendix E
Have you incorporated interception into your design? *(Refer to Chapter 24 of The SuDS Manual C753)* *Where possible, infiltration or other techniques are to be used to try and achieve zero discharge to receiving waters for rainfall depths up to 5mm.*	Yes ☐ No ☒
Evidence Required: Drainage plans showing location of attenuation and all flow control devices and supporting calculations.	☒

Summarise how storage will be provided for 1 in 30 year event on site. *Storage must be designed to ensure that at no flooding occurs onsite in a 1 in 30 year event except in designed areas **and** no flooding occurs offsite in a 1 in 100 year (plus climate change allowance) event.*	
Summarise how storage will be provided for 1 in 100 year (plus climate change) event on site. *Where storage above the 1 in 30 year rainfall event is provided in designated areas designed to accommodate excess surface water volumes, plans showing storage locations and surface water depths and supported by calculations used in appropriate industry standard surface water management design software. It is important to run a range of duration events to ensure the worst case condition is found for each drainage element on the site*	
Evidence Required: Plans showing size and location of storage and supporting calculations. Where there is controlled flooding, extents and depths must be indicated.	☒

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 5.	

SECTION 6: WATER QUALITY PROTECTION

Contaminated surface water run-off can have negative impacts on the quality of receiving water bodies. The potential level of contamination will influence final the design of an appropriate treatment train as part of your sustainable drainage system.

Is the proposal site known to be or potentially contaminated?	Yes ☐ No☒
• *If the site is contaminated, it should be demonstrated that the sustainable drainage system will not increase the risk of pollution to controlled waters though the mobilisation of contaminants and/or creation of new pollution pathways.*	

Confirm the *Pollution Hazard Level* of the proposed development - Tick ALL that apply

Refer to Pollution Hazard Indices for different Land Use Classifications in Table 26.2 of The SuDS Manual C753 for further guidance.

Pollution Hazard Level *Tick ALL that apply*		**Surface water run-off from the proposed development will drain from:**
VERY LOW	☐	• Residential roofs
LOW	☒	• Other roofs (typically commercial/industrial roofs) • Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, home-zones and general access roads) • Non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day
MEDIUM	☐	• Commercial yard and delivery areas • Non-residential car parking with frequent change (e.g. hospitals, retail) • All roads except low traffic roads and trunk roads/motorways[2]
HIGH	☐	• Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites) • Sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured • Industrial sites • Trunk roads and motorways[1]

If the development's Pollution Hazard Level is 'Very Low' or 'Low', has the sustainable drainage design been risk assessed and appropriate mitigation measures included?	Yes ☒ No☐
• *If the proposed development has a very low or low polluting potential, you should design your sustainable drainage system to include an appropriate treatment train in accordance with The SuDS Manual (C753).*	

If the development's Pollution Hazard Level is 'Medium' or 'High', is the application supported by a detailed water quality risk assessment?	Yes ☐ No☐
• *If the proposed development has a high polluting potential, a detailed risk assessment will be required to identify an appropriate SuDS treatment train and ensure compliance with Paragraph 170 of the National Planning Policy Framework.* • *If the proposed development has a medium polluting potential, a detailed risk assessment may be required depending on the nature, scale and location of the development.*	

Has pre-application advice on water quality been obtained from the Environment Agency?	Yes ☐ No☒
If YES, provide details:	

[2] Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 6.	See section 4.7 of the report

SECTION 7: DETAILS OF YOUR SUSTAINABLE DRAINAGE SYSTEM

a) Function of your Sustainable Drainage System

Do your proposals store rainwater for later use (as a resource)?	Yes ☐ No ☒
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	

Do your proposals promote source control to manage rainfall close to where it falls? (e.g. promoting natural losses through soakage, infiltration and evapotranspiration)	Yes ☐ No ☒
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7a.	See section 4.5 of report

b) Hierarchy of Drainage Options – Planning Practice Guidance

The proposed method of discharge are set out within order of priority. Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

Proposed method of surface water discharge		**Is this proposed?**	
Hierarchy Level 1: Into the ground (via infiltration)		Yes ☐ No ☒	
If YES - Evidence Required		**If NO – Evidence Required** **Tick ALL that apply**	
☐	**A.** Completed Infiltration Checklist from The SuDS Manual (C753) Appendix B *An editable version of this form is available on SusDrain website.*	☐	A. Site investigation to demonstrate that the ground is not free draining. Test results to be provided in accordance with: • The methodology within BRE 365 (2016), ***OR*** • Falling head permeability tests BS EN ISO 22282-2: 2012
☒	**B.** British Geological Survey (BGS) Infiltration SuDS Map	☐	B. NOTE: where an applicant is unable to access a site to undertake testing, e.g. where unable to access a site for an outline application, they can submit a *SuDS GeoReport or similar.*
☐	**C.** Infiltration testing to BRE 365 (2016) or falling head permeability tests to BS EN ISO 2228-2: 2012 ***(optional for outline)***	☐	C. Evidence to confirm that infiltration to ground would result in a risk of deterioration to ground water quality.
☒	'Plan B' sustainable drainage plan and statement of approach with an alternative discharge method, in case infiltration proposals are proven not feasible upon	☒	D. Geotechnical advice from a competent person* which determines that infiltration of water to ground would pose an unacceptable risk of geohazards to the site and/or local area.

	further site specific ground investigation e.g. to consider seasonal variations to groundwater.		**Note: Competent person may include a Chartered Engineer, Chartered Geologists, Registered Ground Engineering Professionals (RoGEP).*

Proposed method of surface water discharge		**Is this proposed?**	
Hierarchy Level 2: To a surface water body *(select type)* ***NOTE:*** *Consent from LLFA or Permit from Environment Agency may be required – refer to guidance*		Yes ☐ No ☒ N/A ☐	
		☐ Main river ☐ Ordinary watercourse	☐ Canal ☐ Other water body
If YES - Evidence Required		**If NO – Evidence Required** **Tick ALL that apply**	
☐	Surface water body / watercourse survey and report	☐ ☐	Plan showing nearby watercourses and waterbodies **AND** Statement providing justification in your Sustainable Drainage Strategy ***Note:*** *Where discharge of any element in the hierarchy is discounted, an applicant should provide justification. If the reasoning for discounting a discharge of surface water to watercourse relates to issues associated with third party land or the securing of any other required consent, it may be necessary for the applicant to provide evidence to the local planning authority to support their proposed approach.*

Proposed method of surface water discharge		**Is this proposed?**	
Hierarchy Level 3: To a surface water sewer or highway drain *(select type)*		Yes ☐ No ☒ N/A ☐	
		☐ Surface water sewer	☐ Highway drain
If YES - Evidence Required		**If NO – Evidence Required** **Tick ALL that apply**	
☐	Written correspondence from Water and Sewerage Company/ Highway Authority regarding proposed connection.	☒ ☒	Plan showing nearby sewers and highway drains **AND** Statement providing justification in your Sustainable Drainage Strategy

Proposed method of surface water discharge		**Is this proposed?**
Hierarchy Level 4: To combined sewer		Yes ☒ No ☐ N/A ☐
If YES - Evidence Required		**If NO – Evidence Required**
☒	Written correspondence from Water and Sewerage Company	N/A

No response received to date

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7b.	See appendix I for UU PDE response

c) Proposed SuDS Component Types

	Tick ALL that apply				
Within property boundary	☐ Rainwater harvesting	☐ Green/ blue roofs	☐ Pervious pavements *[**Type:** A ☐ B ☐ C ☒]*	☐ Soakaway	☐ Bio retention systems

	Tick ALL that apply				
Within development site boundary *(not property)*	☐ Infiltration system *[**Type:** ☐ Surface level ☐ Below ground]*		☐ Filter strips	☒ Filter drains	☐ Swales
	☐ Bio retention system	☐ Detention basins	☐ Ponds and wetlands	☐ Attenuation tanks/ Oversized pipes	☒ Other (state below)
	If 'Other' please state: Pervious pavements Type C				

Off site *(not within the boundary of the proposed development)*	***Please state:***

I confirm that the above selected components have been designed in accordance with The SuDS Manual (C753).	I confirm ☒
I confirm that the management of flows resulting from rainfall in excess of a 1 in 100 year plus climate change rainfall event, and their exceedance route(s), has been fully considered in order to minimise the risks to people, property (new and existing) and infrastructure.	I confirm ☒

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7c.	See RLL Drainage Strategy Report 22639-RLL-24-XX-RP-C-2060

SECTION 8: OPERATION AND MAINTENANCE – TECHNICAL STANDARD S12 AND NATIONAL PLANNING POLICY FRAMEWORK

The applicant is responsible to ensure that ALL components selected in Section 7 can be maintained for the design life of the development. This information is required so the Local Planning Authority can ensure the maintenance and management of the sustainable drainage system. The Local Planning Authority will discuss how this will be secured (e.g. via planning condition or planning obligation).

	Information Provided?
Management Plan	Yes ☐ No ☒
Evidence Required: **Plan/ drawing provided to show the position of the different SuDS components with:** • Key included to identify any of the adopting bodies that you will be offering your sustainable drainage components for adoption *(relates to maintenance and management arrangements below).* • Plan/ drawing to identify any areas where certain activities are prohibited, detailing reasons why. **Action plan for accidental pollutant spillages.**	☐ ☐

	Information Provided?
Maintenance Schedule	Yes ☒ No ☐
Evidence Required: A copy of the maintenance schedule including: 1. **Proactive and preventative maintenance** Detailing regular, occasional and remedial maintenance activities including recommendations for inspection and monitoring. This should include recommended frequencies, advice on plant/ machinery required and an explanation of the objectives for the maintenance proposed and potential implications of not meeting them. 2. **Reactive and corrective maintenance** (e.g. product repair and replacement). Including advice on excavations, or similar works, in locations that could affect the SuDS components/ adjacent structures.	☒

	Information Provided?
Maintenance and Management Arrangements	Yes ☒ No ☐
Evidence Required: Evidence of formal agreement with the party responsible for undertaking maintenance. Please select any of the adopting bodies that you will be offering your sustainable drainage components for adoption. Tick all that apply. ☐ **Water and Sewerage Company** *Section 104 agreement (Water Industry Act 1991)* ☐ **Highway Authority** *Section 278/38 agreement (Highways Act 1980)* ☐ **Local Authority Public Open Space** *[Refer to Local Authority Policy]* Please select the arrangement(s) for all non-adopted sustainable drainage components. Tick all that apply. ☐ **Management Company** ☒ **Property Owner** *(for SuDS components within property boundary only)* ☐ **Other** (please state)	☒

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 8.	See section 5.1 of report

DECLARATION AND SUBMISSION

This pro-forma has been completed using evidence from information which has been submitted with the planning application.

The information submitted in the Sustainable Drainage Strategy and site-specific Flood Risk Assessment (FRA), where submitted, is proportionate to the site conditions, flood risks and magnitude of development and I agree that this information can be used as evidence to this sustainable drainage approach.

Submitter Details			
Completed by	Elliot Goodey	**Email Address**	Elliot.goodey@rodgersleask.co.uk
		Telephone Number(s)	01512459423
Signed off by		**Accreditation(s) and/or Qualification(s) of Signatory**	MSc, BEng (Hons)
Date *(dd/mm/yyyy)*	01/04/25	**Company**	Rodgers Leask

Client Details			
Name	Herpreet K Rayet-Boughey	**Company**	United Learning

Appendix I – UU Pre-Development Enquiry

Elliot Goodey

From: seweradoptions@uuplc.co.uk
Sent: 03 July 2024 11:58
To: Elliot Goodey
Subject: RE: REF - 05961399 - Wastewater Pre-Development Enquiry - William Hulme Grammar School Submission

ALERT: External email. Check the address. Think before you click links and attachments.

Good Morning Elliot,

As these 2 connections will be made to your existing private network, a PDE is not required for this.

United Utilities have no objection to your proposal

Kind Regards

United Utilities
Water for the North West

Lewis Barr
Assistant Developer Engineer
Developer Services & Metering
Customer Services
01925 429064
unitedutilities.com

If you have received a great service today why not tell us?
Visit: http://unitedutilities.thewowawards.co.uk/nominate

---------- Original Message ----------
From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]
Sent: 03/07/2024 11:14
To: elliot.goodey@rodgersleask.co.uk
Subject: REF - 05961399 - Wastewater Pre-Development Enquiry - William Hulme Grammar School Submission

Good Morning

PRE DEVELOPMENT APPLICATION AT: William Hulmes Grammar School– UU Ref 05961399

Please accept this email as receipt of your application received on 1 July 2024 for the above development. This has now been logged on our system and the job reference is 05961399 we would ask that you quote this reference in all future correspondence.

I have reviewed your application (and attachments) and can confirm this is suitable to be passed to our assistant

engineer Lewis Barr for technical assessment. You will receive their response on or before 15 July 2024.

Kind regards

Jayne Guest
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 0345 072 6067 option 4
unitedutilities.com

If you feel you have received a good service from myself, please can you take two minutes to fill in the survey below. This will be much appreciated

Visit: *https://unitedutilities.thewowawards.co.uk/nominate*

---------- Original Message ----------
From: [donotreply@uu-web.co.uk]
Sent: 01/07/2024 10:17
To: seweradoptions@uuplc.co.uk; webmaster@uuplc.co.uk
Subject: Wastewater Pre-Development Enquiry Submission

Question	Answer
Section 1 - Your Details	
Developer/Consultant/Land owner/Other	Consultant
Name	Elliot Goodey
Company Name	Rodgers Leaks
Address	Suite 6C Second Floor Helix Edmund Street Liverpool
Contact Number	01512454999
Email Address	elliot.goodey@rodgersleask.co.uk
Section 2 - Development Details	
Do you intend to offer any of the sewers for adoption by United Utilities under S104?	No
Site Address	William Hulme's Grammar School Spring Bridge Road Manchester M16 8PR

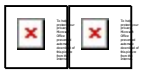
Question	Answer
Site Postcode	#Development postcode#
Site Name	William Hulme Grammar School
Grid Reference Number	SJ 836942
Development Type	Commercial
Approx. Number Units	1
Total Site Area (hectares)	0.5388
Does this site have planning permission?	No
Planning Reference Number	
Council Area	Manchester District Council
Have you approached us about this site previously?	No
If yes, please provide reference number	
Is the development part of a larger site that will be developed in phases?	No
Location Plan	22639-RLL-24-XX-SK-C-2050(P01).pdf

Section 3: Previous Land Use

Please confirm what the land was previously used for:	Greenfield
Brownfield evidence of positive drainage to the public sewer	

Section 4 - Drainage Strategy

Foul connection: How are you proposing to drain foul flows from the site?	Via an existing connection to the public sewer
Via an existing connection to the public sewer?	No
Surface water connection: How are you proposing to drain your site, following the surface water hierarchy, as outlined in National Planning Policy Guidance?	Combined sewer
SuDS: Have SuDS features been considered in the surface water drainage strategy?	Yes



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