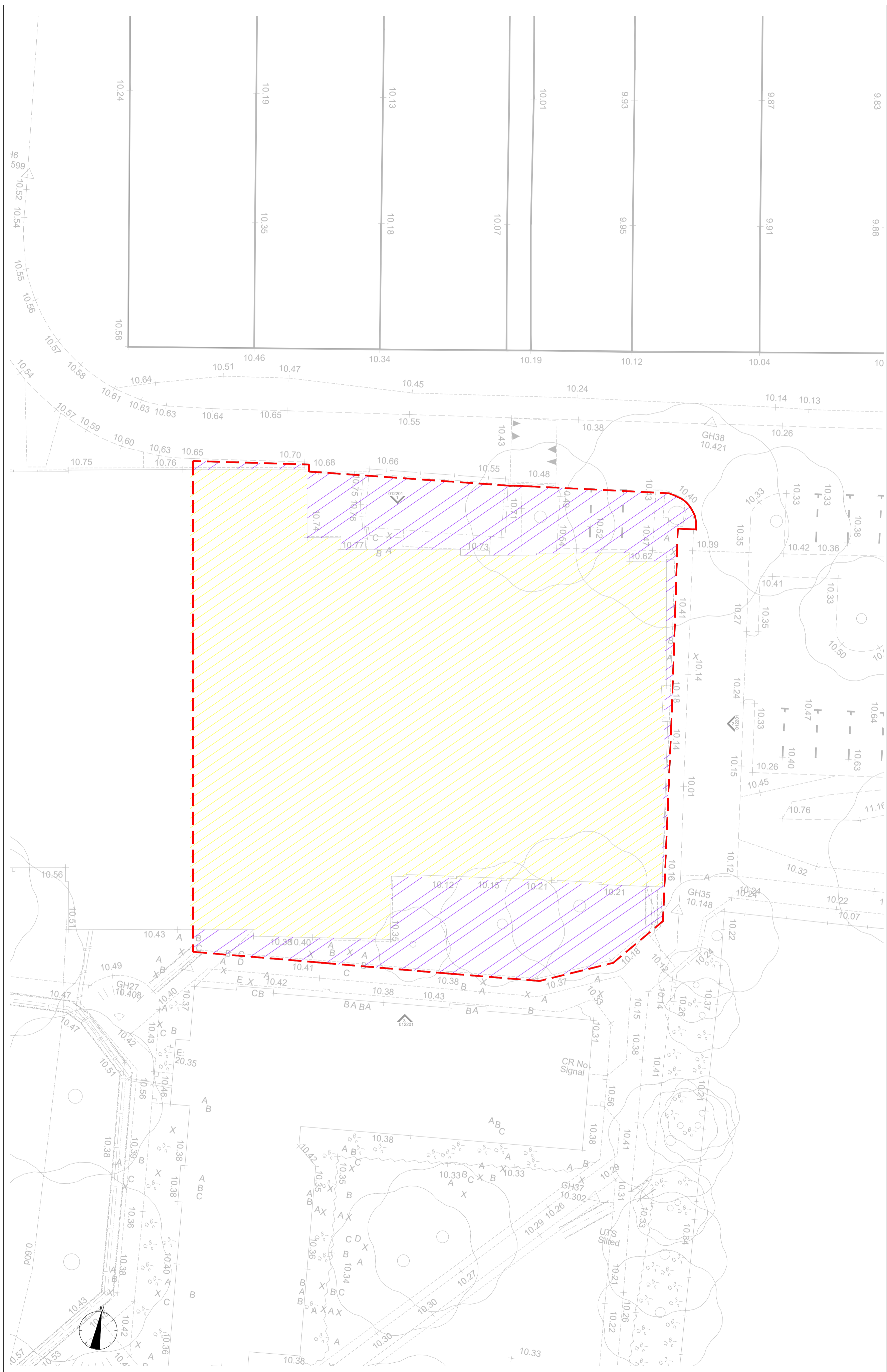
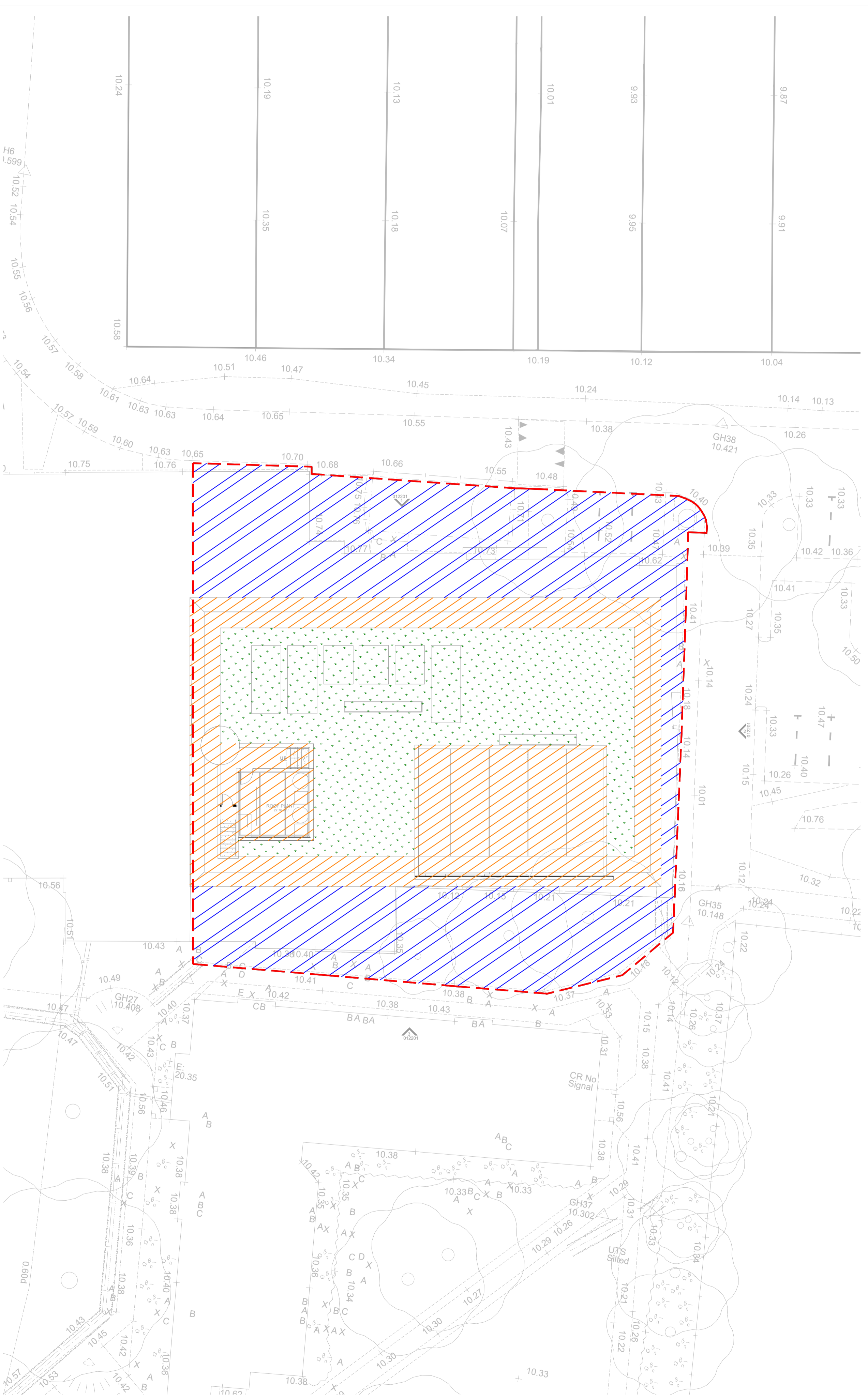


D. EXISTING AND PROPOSED AREA TAKE-OFF



EXTRACT A - EXISTING AREA TAKEOFF



EXTRACT B - PROPOSED AREA TAKEOFF

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CDM REGULATIONS 2015
 Significant or non-obvious risks and risks which are difficult to manage are identified on this drawing using the following symbol identified to the right with brief accompanying text. For further details of the risks identified by designers, reference should be made to CDM hazard register.



KEY	DESCRIPTION
	Existing building area = 1100m ²
	Existing drains to ground = 360m ²
	Proposed roof area = 434m ²
	Proposed green roof area = 385m ²
	Proposed drains to ground = 641m ²
	Redline boundary area = 1460m ²

P01 First Issue	29/10/2024	TW	Pch
REV DESCRIPTION	DATE	BY	CHKD
ORIGINATOR: www.ridge.co.uk			



PROJECT NUMBER: 5025779
 CLIENT:

IN ASSOCIATION WITH:
 PROJECT: ST MARY'S UNIVERSITY - REDEVELOPMENT OF R BLOCK

TITLE: CATCHMENT AREAS PLAN

DRAWN BY: TW	CHECKED BY: Pch	APPROVED BY: Pch
SCALE @ A1: 1:200	DATE OF REVIEW: 23/08/24	
ISO 19650 STATUS: S5 - ISSUED FOR ACCEPTANCE BY THE CLIENT		
DRAWING No:	PROJECT:	ORG: FUNCTION: SPATIAL: FORM: DISCIPLINE: NUMBER: REV:
	5025779	RDG XX XX D C 950002 P01

E. GREENFIELD RUNOFF CALCULATION

The Cowyards
Blenheim Park, Oxford Road
Woodstock OX20 1QR



Date 30/10/2024 13:50
File

Designed by tomwong
Checked by

Innovyze Source Control 2020.1

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	Soil	0.300
Area (ha)	0.110	Urban	0.000
SAAR (mm)	599	Region Number	Region 6

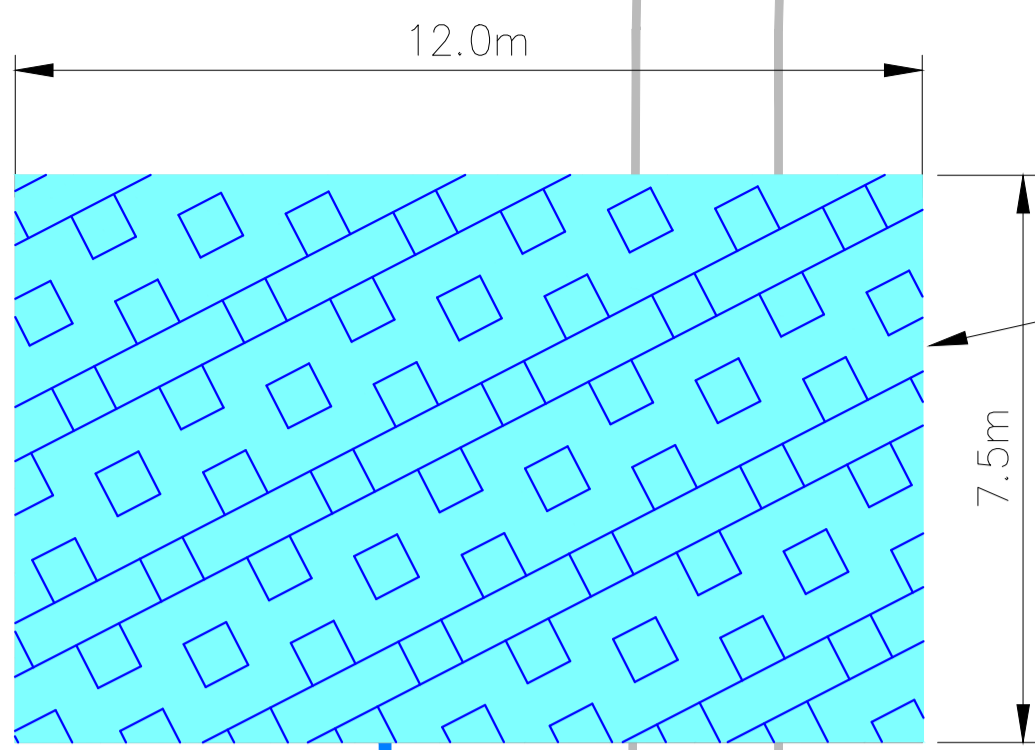
Results 1/s

QBAR Rural 0.2
QBAR Urban 0.2

Q1 year 0.1

Q1 year 0.1
Q30 years 0.4
Q100 years 0.5

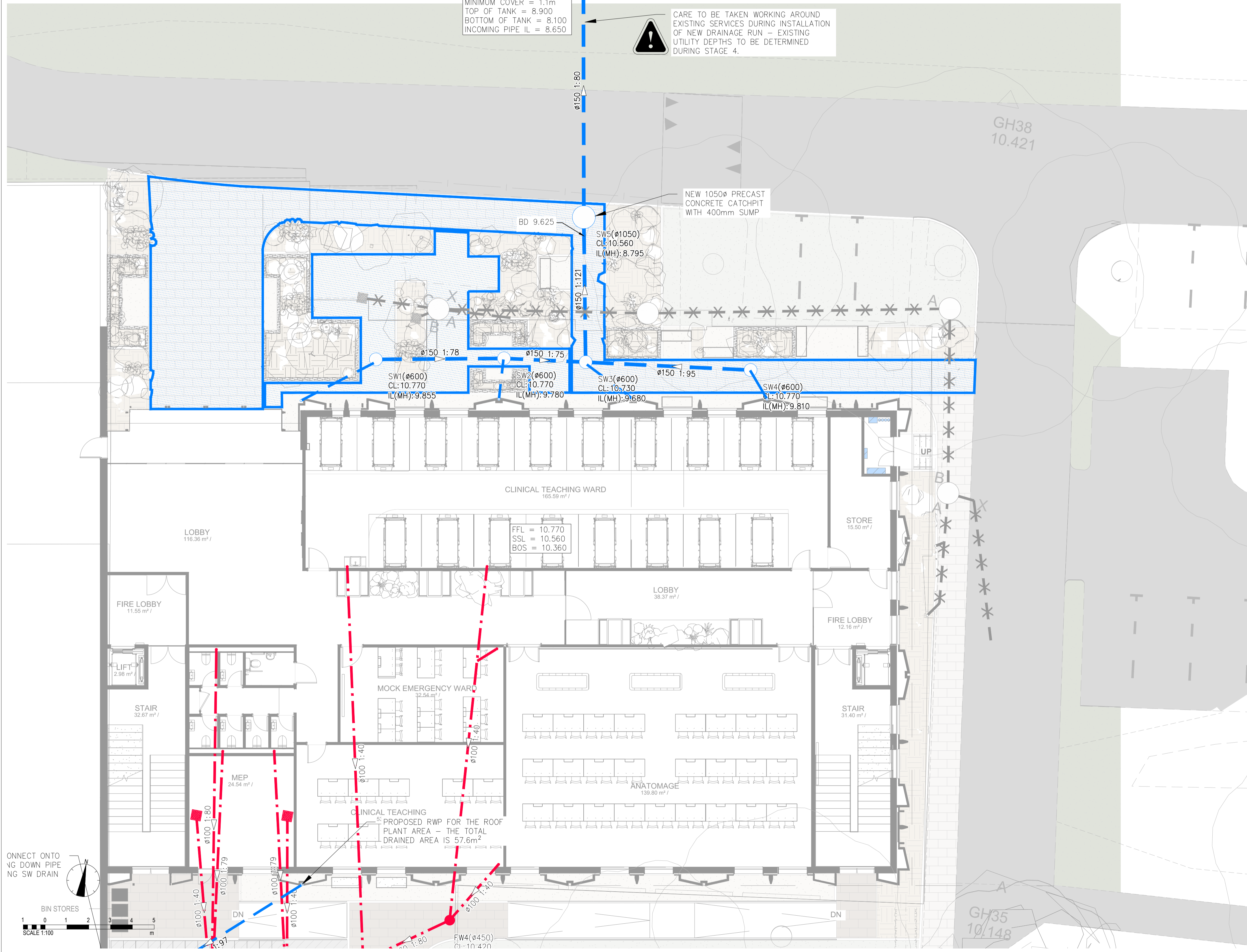
F. PROPOSED DRAINAGE LAYOUTS



BELOW GROUND GEO-CELLULAR SOAKAWAY IS SHOWN INDICATIVELY. SHAPE IS TO REFLECT THE STORAGE VOLUME SIZE NEEDED.

AREA = 90m²
 VOLUME = 69.6m³
 MINIMUM COVER = 1.1m
 TOP OF TANK = 8.900
 BOTTOM OF TANK = 8.100
 INCOMING PIPE I.L. = 8.650

CARE TO BE TAKEN WORKING AROUND EXISTING SERVICES DURING INSTALLATION OF NEW DRAINAGE RUN - EXISTING UTILITY DEPTHS TO BE DETERMINED DURING STAGE 4.



NOTES

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE CIVIL ENGINEERING SPECIFICATION, AND ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS.
- THE LOCATION AND LEVEL OF EXISTING DRAINAGE CONNECTIONS AND EXISTING SERVICES IS TO BE CHECKED PRIOR TO COMMENCEMENT OF DRAINAGE WORKS. ANY VARIANCE TO THE DETAILS ON THIS DRAWING AND THE SCHEDULE IS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- CONTRACTOR TO PROVIDE AND HAVE AN APPROVED METHOD STATEMENT PRIOR TO WORKS.
- ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM.
- ALL DRAINAGE TO BE INSTALLED IN ACCORDANCE WITH RELEVANT BUILDING REGULATION DOCUMENTS AND CURRENT SEWERS FOR ADOPTION. CONNECTIONS TO PUBLIC SEWERS ARE TO BE AGREED AND INSPECTED BY THE WATER AUTHORITY.
- ALL DRAIN AND SEWER PIPES ARE Ø100MM AND LAID SOFFIT TO SOFFIT, UNLESS SHOWN OTHERWISE.
- ALL FOUL AND SURFACE WATER DRAINAGE STACKS ARE TO HAVE ABOVE GROUND ROODING ACCESS. REFER TO ABOVE GROUND DRAINAGE LAYOUT(S) BY OTHERS.
- ALL BELOW GROUND CONNECTIONS ARE TO MATCH ABOVE GROUND OUTLET SIZE. MINIMUM Ø100MM. SVPS ARE TO PROJECT 100MM ABOVE FINISHED FLOOR LEVEL.
- ALL INTERNAL MANHOLES AND INSPECTION CHAMBERS TO HAVE DOUBLE SEALED RECESSED COVERS TO SUIT FLOOR FINISHES AS DEFINED BY THE ARCHITECT.
- ALL EXTERNAL COVERS IN NON-ASPHALT AREAS ARE TO HAVE RECESSED COVERS TO SUIT THE PAVING MATERIAL.
- ALL EXTERNAL FOUL AND COMBINED WATER MANHOLE COVERS IN FOOTPATHS AND PAVED AREAS (OTHER THAN ROADS) ARE TO BE NON-VENTILATING AND SINGLE SEALED UNLESS NOTED OTHERWISE.
- ALL MANHOLE COVERS ARE TO BE INSTALLED SQUARE TO PAVING, KERB LINES OR BUILDINGS.
- A CCTV SURVEY AND REPORT IN WINCAN FORMAT FOR ALL NEW DRAINAGE WILL BE REQUIRED PRIOR TO 'AS BUILT' DRAWING BEING ISSUED.
- THE DESIGN IS BASED ON THE INFORMATION AVAILABLE ON THE DATE OF ISSUE FROM OTHER PARTIES (EG. ARCHITECT AND M & E ENGINEER). IT IS SUBJECT TO CHANGE RESULTING FROM UPDATES TO THE AVAILABLE INFORMATION FROM OTHERS.
- THE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE NBS SPECIFICATIONS, ASSOCIATED MANHOLE SCHEDULE AND STANDARD DRAINAGE DETAIL DRAWINGS WHERE APPLICABLE.
- THE POSITIONS OF FOUL AND SURFACE WATER DRAINAGE POINTS ARE INDICATIVE ONLY. REFER TO THE ARCHITECTS DRAWINGS FOR SETTING OUT DETAILS.
- PRIVATE FOUL AND SURFACE WATER DRAINAGE IS TO BE CONSTRUCTED IN ACCORDANCE WITH BUILDING REGULATIONS PART H, BS EN752 AND BS EN12056.
- ALL SOIL CONNECTIONS UNDER BUILDINGS TO BE 100mm DIA LAID AT A MINIMUM GRADIENT OF 1:40 OR 1:80 IF THERE IS A MINIMUM OF ONE WC CONNECTION.
- IN CASES OF IN SITU CONCRETE FLOOR SLABS, DRAINS ARE TO BE CAST INTEGRAL WITH THE SLAB WHERE PIPE COVER TO THE CROWN IS LESS THAN 300mm. SEE DETAILED DRAINAGE AND STRUCTURAL DRAWINGS. CONCRETE ENCASUREMENT TO BE REINFORCED AS PER DRAINAGE DETAIL.
- BACKFILLING OF DRAIN TRENCHES ADJACENT TO BUILDING OR OTHER STRUCTURES IS TO BE IN ACCORDANCE WITH DIAGRAM 8 OF THE BUILDING REGULATIONS.
- EXISTING FOUNDATIONS AND RETAINING WALLS MUST NOT BE UNDERMINED BY NEW DRAINAGE RUNS UNLESS AGREED IN WRITING WITH THE STRUCTURAL ENGINEER. CONTRACTOR TO SUBMIT METHOD STATEMENTS AND TEMPORARY WORKS PROPOSALS TO THE STRUCTURAL ENGINEER FOR COMMENT PRIOR TO COMMENCEMENT OF WORKS.
- ALL MANHOLE COVER LEVELS SHOWN ARE APPROXIMATE AND ARE TO SUIT THE FINAL GROUND OR BUILDING LEVELS.
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CDM REGULATIONS 2015

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KEY	DESCRIPTION
	Existing foul water chamber and sewer/drain
	New foul water chamber and sewer/drain
	New surface water chamber and sewer/drain
	Existing surface water chamber and sewer/drain
	New gully
	Redundant sewer or drain
	Existing drainage channel
	New drainage channel
	New geocellular soakaway
	New permeable construction

INVERT LEVEL AT ALL FW DROP POINTS TO BE 10.160mAOD UNLESS NOTED OTHERWISE.

EXISTING UTILITIES NOT SHOWN FOR CLARITY - REFER TO UTILITIES SURVEY

P02	Drainage revised to suit the update in architect's layout.	29/10/2024	TW	PCh
P01	First issue	23/08/2024	TW	PCh
REV	DESCRIPTION	DATE	BY	CHKD

ORIGINATOR: www.ridge.co.uk



PROJECT NUMBER: 5025779



IN ASSOCIATION WITH:

PROJECT:
 ST MARY'S UNIVERSITY - REDEVELOPMENT OF R BLOCK

TITLE:
 BELOW GROUND DRAINAGE GENERAL ARRANGEMENT SHEET 1

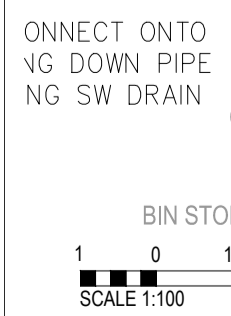
DRAWN BY: TW CHECKED BY: PCh APPROVED BY: PCh

SCALE @ A1: 1:100 DATE OF REVIEW: 23/08/24

ISO 19650 STATUS:

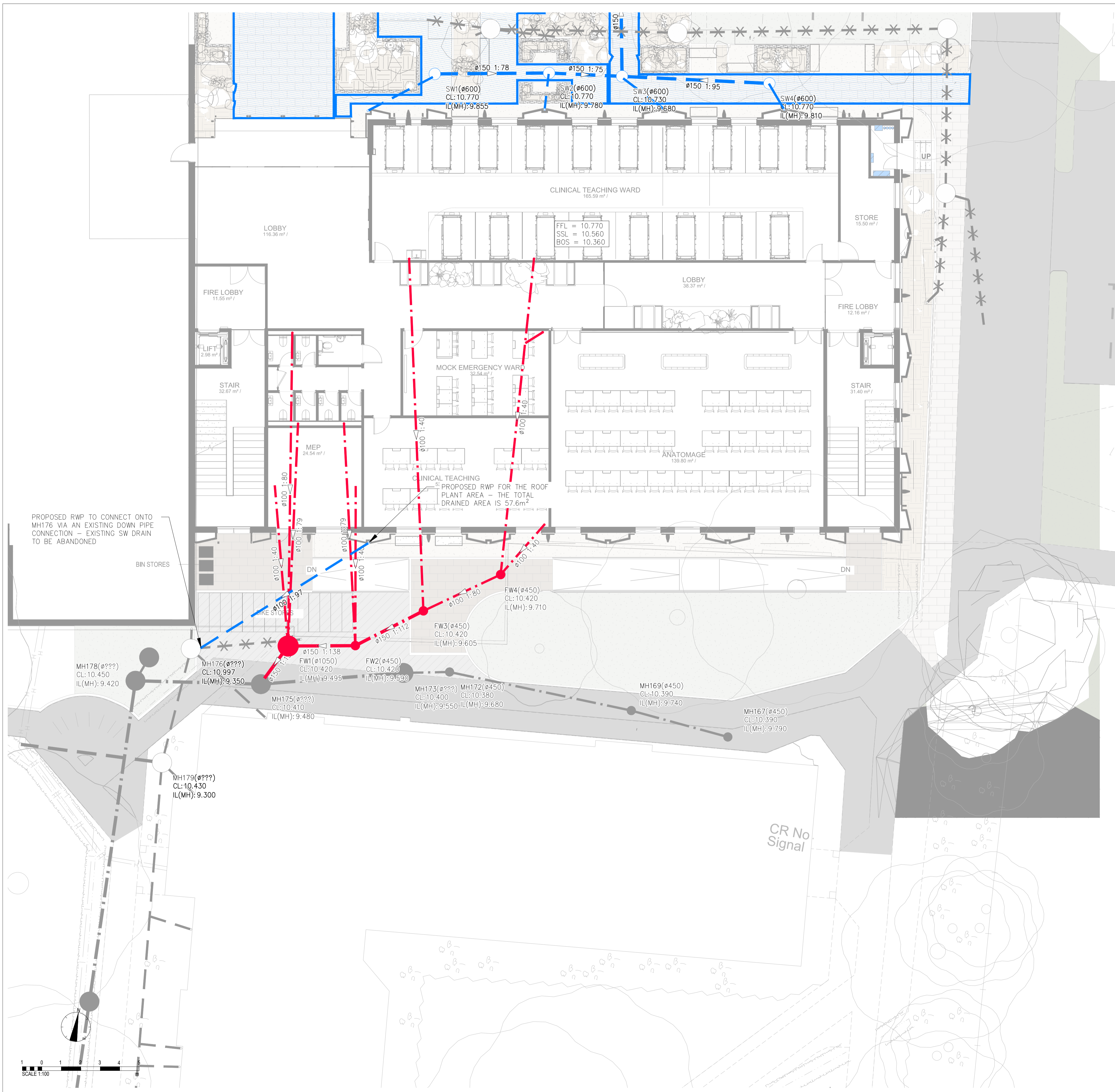
SS - ISSUED FOR ACCEPTANCE BY THE CLIENT

DRAWING No:	PROJECT:	ORG:	FUNCTION:	SPATIAL:	FORM:	DISCIPLINE:	NUMBER:	REV:
	5025779	RDG	XX	XX	D	C	110001	P02



CONNECT ONTO VC DOWN PIPE NG SW DRAIN

SCALE 1:100



- NOTES**
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 - ALL BELOW GROUND CONNECTIONS ARE TO MATCH ABOVE GROUND OUTLET SIZE. MINIMUM 100MM. SVPS ARE TO PROJECT 100MM ABOVE FINISHED FLOOR LEVEL.
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 - IN CASES OF IN SITU CONCRETE FLOOR SLABS, DRAINS ARE TO BE CAST INTEGRAL WITH THE SLAB WHERE PIPE COVER TO THE CROWN IS LESS THAN 300mm. SEE DETAILED DRAINAGE AND STRUCTURAL DRAWINGS. CONCRETE ENCASUREMENT TO BE REINFORCED AS PER DRAINAGE DETAIL.
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	Existing foul water chamber and sewer/drain
	New foul water chamber and sewer/drain
	New surface water chamber and sewer/drain
	Existing surface water chamber and sewer/drain
	New gully
	Redundant sewer or drain
	Existing drainage channel
	New drainage channel
	New geocellular soakaway
	New permeable construction

INVERT LEVEL AT ALL FW DROP POINTS TO BE 10.16m AOD UNLESS NOTED OTHERWISE.

EXISTING UTILITIES NOT SHOWN FOR CLARITY - REFER TO UTILITIES SURVEY

P02	Drainage revised to suit the update in architect's layout.	29/10/2024	TW	PCh
P01	First issue	23/08/2024	TW	PCh
REV	DESCRIPTION	DATE	BY	CHKD

ORIGINATOR: www.ridge.co.uk



PROJECT NUMBER: 5025779

CLIENT:

IN ASSOCIATION WITH:

PROJECT: ST MARY'S UNIVERSITY - REDEVELOPMENT OF R BLOCK

TITLE: BELOW GROUND DRAINAGE GENERAL ARRANGEMENT SHEET 2

DRAWN BY: TW CHECKED BY: PCh APPROVED BY: PCh

SCALE @ A1: 1:100 DATE OF REVIEW: 23/08/24

ISO 19650 STATUS: S5 - ISSUED FOR ACCEPTANCE BY THE CLIENT

DRAWING No:

PROJECT:	ORG:	FUNCTION:	SPATIAL:	FORM:	DISCIPLINE:	NUMBER:	REV:
5025779	RDG	XX	XX	D	C	110002	P02

NOTES

1. THE MANHOLE SCHEDULE IS TO BE READ IN CONJUNCTION WITH THE BELOW GROUND DRAINAGE SPECIFICATION, BELOW GROUND TYPICAL DRAINAGE DETAIL DRAWINGS AND THE BELOW GROUND DRAINAGE GENERAL ARRANGEMENT DRAWINGS.
2. ALL COVER LEVELS SHOWN ARE APPROXIMATE AND ARE TO SUIT THE FINAL GROUND OR BUILDING LEVELS.
3. ALL INTERNAL MANHOLE COVERS ARE TO BE NON-VENTILATING AND DOUBLE SEALED.
4. ALL EXTERNAL FOUL AND SURFACE WATER MANHOLE COVERS IN FOOTPATHS AND PAVED AREAS (OTHER THAN ROADS) ARE TO BE NON-VENTILATING AND SINGLE SEALED UNLESS NOTED OTHERWISE.
5. ALL MANHOLE COVERS ARE TO BE INSTALLED SQUARE TO PAVING, KERB LINES OR BUILDINGS.
6. ALL COVERS ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF BUILDING REGULATIONS.
7. FOR ADOPTED DRAINAGE, MANHOLE COVERS ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE DCS OR SPECIFIC WATER AUTHORITY REQUIREMENT.
8. INSPECTION CHAMBERS ARE TO HAVE A REDUCED ACCESS PIECE WHEN THE DEPTH IS GREATER THAN 1.2m TO THE BASE OF THE CHAMBER.

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CDM REGULATIONS 2015

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Proposed Fw - Manhole Schedule													
Chamber No.	Coordinates (m)	Chamber Size (mm)	Chamber Material	Cover Size and Duty	Approx. Cover Level (mAOD)	Invert Level (m)	Chamber Depth	Pipe in No, Diameter (mm), Invert Level (mAOD)	Pipe out No, Diameter (mm), Invert Level (mAOD)	Pipe Material	Pipe out Length (m)	Pipe out Gradient (1 in X)	Comments
FW1	E: 515838.630 N: 171924.233	ø1050	Precast concrete	B125 750x675mm	10.420	9.495	0.93m	2.002, ø150 From FW2, IL: 9.545	2.003, ø150 To , IL: 9.495	Plastic	2.0	1:137	
FW2	E: 515842.018 N: 171924.872	ø450	Plastic	B125 450ø or 450x450	10.420	9.590	0.83m	2.001, ø150 From FW3, IL: 9.570	2.002, ø150 To FW1, IL: 9.570	Plastic	3.4	1:138	
FW3	E: 515845.130 N: 171927.254	ø450	Plastic	B125 450ø or 450x450	10.420	9.605	0.82m	2.000, ø100 From FW4, IL: 9.655	2.001, ø150 To FW2, IL: 9.605	Plastic	3.9	1:112	
FW4	E: 515848.693 N: 171929.802	ø450	Plastic	B125 450ø or 450x450	10.420	9.710	0.71m		2.000, ø100 To FW3, IL: 9.710	Plastic	4.4	1:80	

Proposed Sw - Manhole Schedule													
Chamber No.	Coordinates (m)	Chamber Size (mm)	Chamber Material	Cover Size and Duty	Approx. Cover Level (mAOD)	Invert Level (m)	Chamber Depth	Pipe in No, Diameter (mm), Invert Level (mAOD)	Pipe out No, Diameter (mm), Invert Level (mAOD)	Pipe Material	Pipe out Length (m)	Pipe out Gradient (1 in X)	Comments
SW1	E: 515840.738 N: 171954.457	ø600	Plastic	B125 600ø or 600x600	10.770	9.855	0.91m		1.000, ø150 To SW2, IL: 9.855	Plastic	5.9	1:78	
SW2	E: 515846.498 N: 171955.559	ø600	Plastic	B125 600ø or 600x600	10.770	9.780	0.99m	1.000, ø150 From SW1, IL: 9.780	1.001, ø150 To SW3, IL: 9.780	Plastic	3.7	1:75	
SW3	E: 515850.211 N: 171956.065	ø600	Plastic	B125 600ø or 600x600	10.730	9.680	1.05m	1.001, ø150 From SW2, IL: 9.730 1.002, ø150 From SW4, IL: 9.730	1.003, ø150 To SW5, IL: 9.680	Plastic	6.6	1:121	
SW4	E: 515857.706 N: 171957.069	ø600	Plastic	B125 600ø or 600x600	10.770	9.810	0.96m		1.002, ø150 To SW3, IL: 9.810	Plastic	7.6	1:95	
SW5	E: 515848.932 N: 171962.582	ø1050	Precast concrete	B125 750x675mm	10.560	8.795	1.76m	1.003, ø150 From SW3, IL: 9.625	1.004, ø150 To , IL: 8.795	Plastic	11.6	1:80	Catchpit 400mm Sump

P02	Drainage revised to suit the update in architect's layout.	30/10/2024	TW	PCh
P01	First issue	23/08/2024	TW	PCh
REV	DESCRIPTION	DATE	BY	CHKD
ORIGINATOR: www.ridge.co.uk				



PROJECT NUMBER:	5025779
CLIENT:	
IN ASSOCIATION WITH:	
PROJECT:	ST MARY'S UNIVERSITY - REDEVELOPMENT OF R BLOCK
TITLE:	PROPOSED BELOW GROUND DRAINAGE MANHOLE SCHEDULE
DRAWN BY:	TW
CHECKED BY:	PCh
APPROVED BY:	PCh
SCALE @ A1:	1:100
DATE OF REVIEW:	23/08/24
ISO 19650 STATUS:	SS - ISSUED FOR ACCEPTANCE BY THE CLIENT
DRAWING No:	
PROJECT:	5025779
ORG:	RDG
FUNCTION:	XX
SPATIAL:	XX
FORM:	D
DISCIPLINE:	C
NUMBER:	110003
REV:	P02

G. PROPOSED SURFACE WATER CALCULATIONS

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Junctions Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Sump Depth (m)	Chamber Shape
SW1	Manhole	515840.738	171954.457	10.770	0.865	9.905	0.000	Circular
SW2	Manhole	515846.498	171955.559	10.770	0.990	9.780	0.000	Circular
SW3	Manhole	515850.211	171956.065	10.730	1.050	9.680	0.000	Circular
SW4	Manhole	515857.709	171957.075	10.770	0.960	9.810	0.000	Circular
SW5	Manhole	515848.932	171962.582	10.350	1.955	8.395	0.400	Circular

Name	Diameter (m)	Lock
SW1	0.600	None
SW2	0.600	None
SW3	0.600	None
SW4	0.600	None
SW5	1.050	None

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



Cellular Storage

Type : Cellular Storage

Dimensions

Exceedance Level (m)	10.100
Depth (m)	0.800
Base Level (m)	8.100
Number of Crates Long	12
Number of Crates Wide	15
Number of Crates High	2
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	69.600

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	1.004
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.02063
Side Infiltration Rate (m/hr)	0.02063
Safety Factor	2.0

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Connections Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Height (mm)	Upstream Cover Level (m)
1.000	5.865	Pipe	46.917		0.6	150		10.770
1.001	3.747	Pipe	74.938		0.6	150		10.770
1.002	7.566	Pipe	94.573		0.6	150		10.770
1.003	6.641	Pipe	120.751		0.6	150		10.730
1.004	14.085	Pipe	97.138		0.6	150		10.350

Name	Upstream Invert Level (m)	Downstream Cover Level (m)	Downstream Invert Level (m)	Lock	Min. Cover Depth (m)
1.000	9.905	10.770	9.780	All	0.000
1.001	9.780	10.730	9.730	All	0.000
1.002	9.810	10.730	9.730	All	0.000
1.003	9.680	10.350	9.625	All	0.000
1.004	8.795	10.100	8.650	All	0.000

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	SW1		Time of Concentration	0.019	100	0	100	0.019
Catchment Area (1)	SW2		Time of Concentration	0.019	100	0	100	0.019
Catchment Area (2)	SW3		Time of Concentration	0.019	100	0	100	0.019
Catchment Area (3)	SW4		Time of Concentration	0.019	100	0	100	0.019
TOTAL		0.0		0.076				0.076

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Rainfall Analysis Criteria	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



Runoff Type	Dynamic
Output Interval (mins)	1
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Prefill Manhole Sumps	<input type="checkbox"/>
Perform No Discharge Analysis	<input type="checkbox"/>

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 1 years: +0 %: 15 mins: Winter	0.02	2.7	1.237
Catchment Area (1)	FSR: 1 years: +0 %: 15 mins: Winter	0.02	2.7	1.237
Catchment Area (2)	FSR: 1 years: +0 %: 15 mins: Winter	0.02	2.7	1.237
Catchment Area (3)	FSR: 1 years: +0 %: 15 mins: Winter	0.02	2.7	1.237

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 30 years: +0 %: 15 mins: Winter	0.02	6.6	3.033
Catchment Area (1)	FSR: 30 years: +0 %: 15 mins: Winter	0.02	6.6	3.033
Catchment Area (2)	FSR: 30 years: +0 %: 15 mins: Winter	0.02	6.6	3.033
Catchment Area (3)	FSR: 30 years: +0 %: 15 mins: Winter	0.02	6.6	3.033

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m ³)
Catchment Area	FSR: 100 years: +0 %: 15 mins: Winter	0.02	8.5	3.938
Catchment Area (1)	FSR: 100 years: +0 %: 15 mins: Winter	0.02	8.5	3.938
Catchment Area (2)	FSR: 100 years: +0 %: 15 mins: Winter	0.02	8.5	3.938
Catchment Area (3)	FSR: 100 years: +0 %: 15 mins: Winter	0.02	8.5	3.938

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +40 %: 15 mins: Winter	0.02	11.9	5.512
Catchment Area (1)	FSR: 100 years: +40 %: 15 mins: Winter	0.02	11.9	5.512
Catchment Area (2)	FSR: 100 years: +40 %: 15 mins: Winter	0.02	11.9	5.512
Catchment Area (3)	FSR: 100 years: +40 %: 15 mins: Winter	0.02	11.9	5.512

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW1	FSR: 1 years: +0 %: 15 mins: Winter	10.770	9.905	9.938	0.033	2.7	0.009	0.000	2.7	1.236	OK
SW2	FSR: 1 years: +0 %: 15 mins: Winter	10.770	9.780	9.837	0.057	5.3	0.016	0.000	5.3	2.472	OK
SW3	FSR: 1 years: +0 %: 15 mins: Winter	10.730	9.680	9.777	0.097	10.6	0.027	0.000	10.5	4.942	OK
SW4	FSR: 1 years: +0 %: 15 mins: Winter	10.770	9.810	9.850	0.040	2.7	0.011	0.000	2.7	1.236	OK
SW5	FSR: 1 years: +0 %: 15 mins: Winter	10.350	8.395	8.882	0.487	10.5	0.422	0.000	10.5	4.472	OK

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m ³)	Max. Flooded Volume (m ³)	Max. Outflow (L/s)	Total Discharge Volume (m ³)	Status
SW1	FSR: 30 years: +0 %: 15 mins: Winter	10.770	9.905	9.980	0.075	6.6	0.021	0.000	6.3	3.032	OK
SW2	FSR: 30 years: +0 %: 15 mins: Winter	10.770	9.780	9.974	0.194	12.5	0.055	0.000	12.5	6.063	Surcharged
SW3	FSR: 30 years: +0 %: 15 mins: Winter	10.730	9.680	9.944	0.264	24.9	0.075	0.000	24.9	12.127	Surcharged
SW4	FSR: 30 years: +0 %: 15 mins: Winter	10.770	9.810	9.956	0.146	6.6	0.041	0.000	6.2	3.031	OK
SW5	FSR: 30 years: +0 %: 15 mins: Winter	10.350	8.395	9.103	0.708	24.9	0.613	0.000	24.6	11.657	Surcharged

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m ³)	Max. Flooded Volume (m ³)	Max. Outflow (L/s)	Total Discharge Volume (m ³)	Status
SW1	FSR: 100 years: +0 %: 15 mins: Winter	10.770	9.905	10.118	0.213	8.5	0.060	0.000	7.8	3.936	Surcharged
SW2	FSR: 100 years: +0 %: 15 mins: Winter	10.770	9.780	10.102	0.322	15.8	0.091	0.000	15.6	7.872	Surcharged
SW3	FSR: 100 years: +0 %: 15 mins: Winter	10.730	9.680	10.054	0.374	31.5	0.106	0.000	31.3	15.746	Surcharged
SW4	FSR: 100 years: +0 %: 15 mins: Winter	10.770	9.810	10.074	0.264	8.5	0.075	0.000	7.8	3.936	Surcharged
SW5	FSR: 100 years: +0 %: 15 mins: Winter	10.350	8.395	9.287	0.892	31.3	0.772	0.000	30.9	15.277	Surcharged

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth


Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m ³)	Max. Flooded Volume (m ³)	Max. Outflow (L/s)	Total Discharge Volume (m ³)	Status
SW1	FSR: 100 years: +40 %: 15 mins: Winter	10.770	9.905	10.388	0.483	11.9	0.137	0.000	10.6	5.510	Surcharged
SW2	FSR: 100 years: +40 %: 15 mins: Winter	10.770	9.780	10.360	0.580	21.8	0.164	0.000	21.1	11.019	Surcharged
SW3	FSR: 100 years: +40 %: 15 mins: Winter	10.730	9.680	10.276	0.596	43.0	0.169	0.000	42.4	22.043	Surcharged
SW4	FSR: 100 years: +40 %: 15 mins: Winter	10.770	9.810	10.311	0.501	11.9	0.142	0.000	10.7	5.509	Surcharged
SW5	FSR: 100 years: +40 %: 15 mins: Winter	10.350	8.395	9.663	1.268	42.4	1.098	0.000	41.9	21.574	Surcharged

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
Cellular Storage	FSR: 1 years: +0 %: 240 mins: Winter	8.202	8.202	0.102	0.102	2.2	8.727	0.000	7.121	0.0	0.000	279	87.461

Project: St Marys University R Block Building	Date: 22/08/2024			
	Designed by: TW	Checked by: PCh	Approved By: PCh	
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH			

Status
OK

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
Cellular Storage	FSR: 30 years: +0 %: 480 mins: Winter	8.393	8.393	0.293	0.293	2.9	25.091	0.000	15.568	0.0	0.000	748	63.950

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



Status
OK

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
Cellular Storage	FSR: 100 years: +0 %: 480 mins: Winter	8.501	8.501	0.401	0.401	3.7	34.278	0.000	16.145	0.0	0.000	989	50.750

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



Status
OK

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
Cellular Storage	FSR: 100 years: +40 %: 960 mins: Winter	8.708	8.708	0.608	0.608	3.0	51.966	0.000	34.190	0.0	0.000	1406	25.336

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl, London SE1 8QH		



Status
OK

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m ³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 1 years: +0 %: 15 mins: Winter	Pipe	SW1	SW2	10.770	9.938	0.045	1.236	0.6	0.1	2.7	OK
1.001	FSR: 1 years: +0 %: 15 mins: Winter	Pipe	SW2	SW3	10.770	9.837	0.055	2.472	0.9	0.26	5.3	OK
1.002	FSR: 1 years: +0 %: 15 mins: Winter	Pipe	SW4	SW3	10.770	9.850	0.044	1.236	0.7	0.15	2.7	OK
1.003	FSR: 1 years: +0 %: 15 mins: Winter	Pipe	SW3	SW5	10.730	9.777	0.092	4.942	0.9	0.65	10.5	OK
1.004	FSR: 1 years: +0 %: 15 mins: Winter	Pipe	SW5	Cellular Storage	10.350	8.882	0.084	4.472	1.0	0.58	10.5	OK

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m ³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW1	SW2	10.770	9.980	0.134	3.032	0.6	0.24	6.3	OK
1.001	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW2	SW3	10.770	9.974	0.150	6.063	0.9	0.61	12.5	Surcharged
1.002	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW4	SW3	10.770	9.956	0.150	3.031	0.7	0.34	6.2	OK
1.003	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW3	SW5	10.730	9.944	0.150	12.127	1.4	1.55	24.9	Surcharged
1.004	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW5	Cellular Storage	10.350	9.103	0.150	11.657	1.4	1.37	24.6	Surcharged

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m ³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 100 years: +0 %: 15 mins: Winter	Pipe	SW1	SW2	10.770	10.118	0.150	3.936	0.6	0.3	7.8	Surcharged
1.001	FSR: 100 years: +0 %: 15 mins: Winter	Pipe	SW2	SW3	10.770	10.102	0.150	7.872	0.9	0.76	15.6	Surcharged
1.002	FSR: 100 years: +0 %: 15 mins: Winter	Pipe	SW4	SW3	10.770	10.074	0.150	3.936	0.7	0.43	7.8	Surcharged
1.003	FSR: 100 years: +0 %: 15 mins: Winter	Pipe	SW3	SW5	10.730	10.054	0.150	15.746	1.8	1.94	31.3	Surcharged
1.004	FSR: 100 years: +0 %: 15 mins: Winter	Pipe	SW5	Cellular Storage	10.350	9.287	0.150	15.277	1.8	1.72	30.9	Surcharged

Project: St Marys University R Block Building	Date: 22/08/2024		
	Designed by: TW	Checked by: PCh	Approved By: PCh
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Ridge & Partners LLP 3 Valentine Pl. London SE1 8QH		



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m ³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW1	SW2	10.770	10.388	0.150	5.510	0.6	0.41	10.6	Surcharged
1.001	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW2	SW3	10.770	10.360	0.150	11.019	1.2	1.03	21.1	Surcharged
1.002	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW4	SW3	10.770	10.311	0.150	5.509	0.7	0.58	10.7	Surcharged
1.003	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW3	SW5	10.730	10.276	0.150	22.043	2.4	2.63	42.4	Surcharged
1.004	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW5	Cellular Storage	10.350	9.663	0.150	21.574	2.4	2.33	41.9	Surcharged

H. SUDS PROFORMA

1. Project & Site Details	Project / Site Name (including sub-catchment / stage / phase where appropriate)	St Mary's University, Redevelopment of the R Block Building
	Address & post code	St Mary's University, Strawberry Hill Campus, Waldegrave Road, Twickenham, TW1 4SX
	OS Grid ref. (Easting, Northing)	E 515858 N 171944
	LPA reference (if applicable)	
	Brief description of proposed work	Demolition of existing R Block and the erection of a replacement teaching block (Use Class F1) to provide facilities appropriate for the operation of a new School of Medicine at the Strawberry Hill Campus, with associated landscaping
	Total site Area	1460 m ²
	Total existing impervious area	1100 m ²
	Total proposed impervious area	819 m ²
	Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No the site is not located in a surface water flood risk catchment
	Existing drainage connection type and location	Private drains to catchpit soakaways
	Designer Name	Tom Wong
	Designer Position	Civil Engineer
	Designer Company	Ridge & Partners LLP

2. Proposed Discharge Arrangements	2a. Infiltration Feasibility		
	Superficial geology classification	Kempton Park Gravel Member	
	Bedrock geology classification	London Clay Formation	
	Site infiltration rate	5.73x10 ⁻⁶ m/s	
	Depth to groundwater level	3 m below ground level	
	Is infiltration feasible?	Yes	
	2b. Drainage Hierarchy		
		<i>Feasible (Y/N)</i>	<i>Proposed (Y/N)</i>
	1 store rainwater for later use	Y	N
	2 use infiltration techniques, such as porous surfaces in non-clay areas	Y	Y
	3 attenuate rainwater in ponds or open water features for gradual release	N	N
	4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	N
	5 discharge rainwater direct to a watercourse	N	N
	6 discharge rainwater to a surface water sewer/drain	N	N
	7 discharge rainwater to the combined sewer.	N	N
2c. Proposed Discharge Details			
Proposed discharge location	Surface water from the proposed roof area drains to a geocellular soakaway located in the sports pitch to the north.		
Has the owner/regulator of the discharge location been consulted?	Yes		

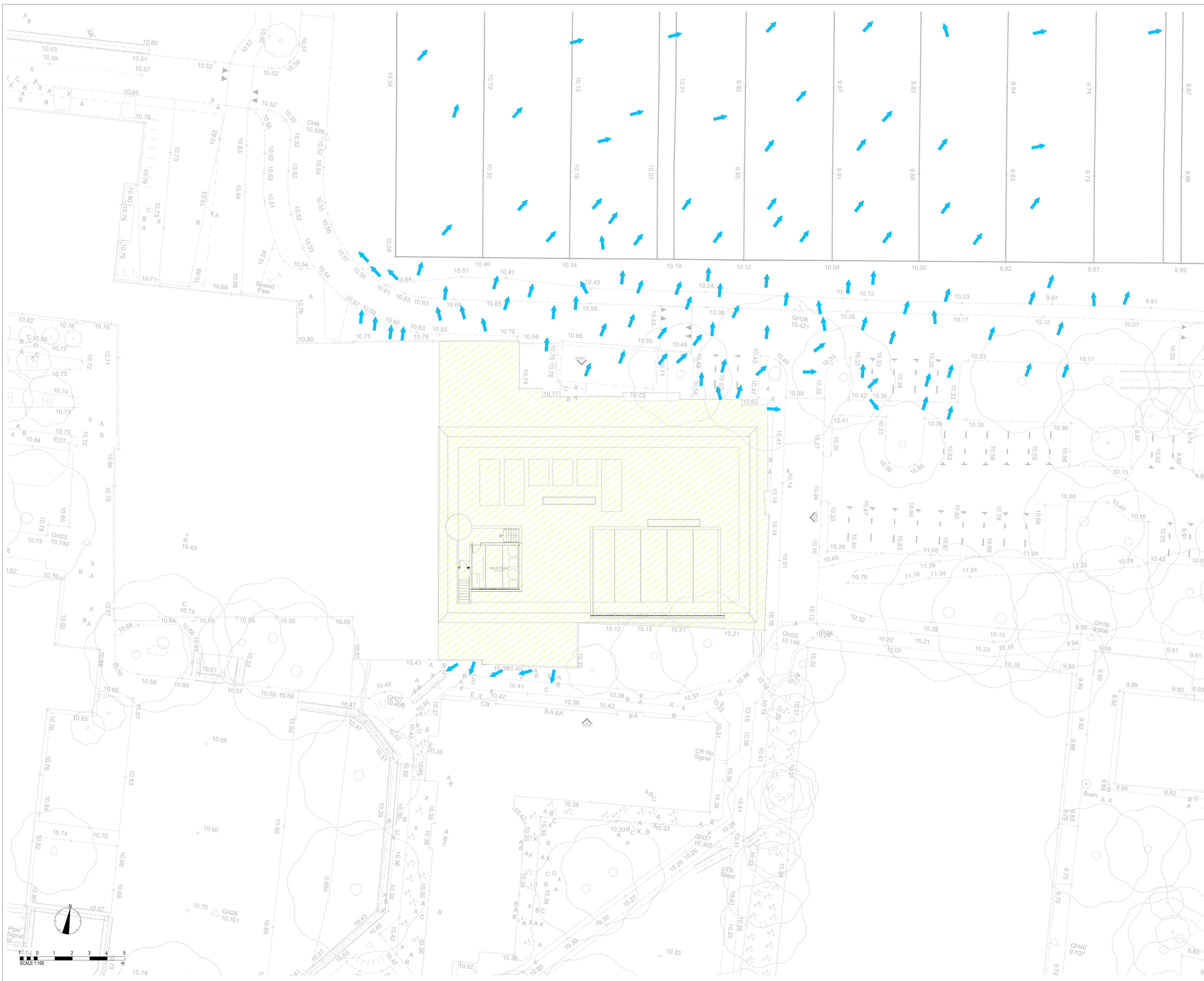
3a. Discharge Rates & Required Storage				
	Greenfield (GF) runoff rate (l/s)	Existing discharge rate (l/s)	Required storage for GF rate (m ³)	Proposed discharge rate (l/s)
Q _{bar}	0.2			
1 in 1	0.1	-	27	0
1 in 30	0.4	-	43	0
1 in 100	0.5	-	55	0
1 in 100 + CC			85	0
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Designed to infiltrate to ground		
3c. Proposed SuDS Measures				
	Catchment area (m ²)	Plan area (m ²)	Storage vol. (m ³)	
Rainwater harvesting	0		0	
Infiltration systems	819		69.6	
Green roofs	385	385	7	
Blue roofs	0	0	0	
Filter strips	0	0	0	
Filter drains	0	0	0	
Bioretention / tree pits	0	0	0	
Pervious pavements	0	0	0	
Swales	0	0	0	
Basins/ponds	0	0	0	
Attenuation tanks	0		0	
Total	0	0	0	

3. Drainage Strategy

4a. Discharge & Drainage Strategy	Page/section of drainage report
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Page 8 & Appendix B
Drainage hierarchy (2b)	Page 15-18
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Page 15-18
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Page 15-18 & Appendix G
Proposed SuDS measures & specifications (3b)	Page 15-18 & Appendix G
4b. Other Supporting Details	Page/section of drainage report
Detailed Development Layout	Page 12 & Appendix F
Detailed drainage design drawings, including exceedance flow routes	Appendix F & I
Detailed landscaping plans	Refer to Architect's Plans
Maintenance strategy	Page 20-26
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Page 15-19
b) biodiversity?	Page 15-19
c) amenity?	Page 15-19

4. Supporting Information

I. EXCEEDANCE ROUTES



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CDM REGULATIONS 2015

Significant or non-obvious risks and risks which are difficult to manage are identified on this drawing using the following symbol identified to the right with brief accompanying text. For further details of the risks identified by designers, reference should be made to CDM hazard register.



KEY	DESCRIPTION
	Surface Water Exceedance Route

P01 First Issue	30/10/2024	TW	Pch
REV DESCRIPTION	DATE	BY	CHKD
ORIGINATOR: www.ridge.co.uk			



PROJECT NUMBER: 5025779

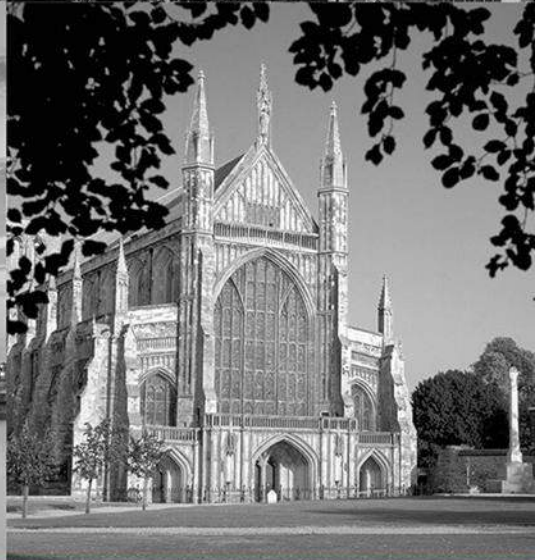
CLIENT:

IN ASSOCIATION WITH:

PROJECT: ST MARY'S UNIVERSITY - REDEVELOPMENT OF R BLOCK

TITLE: EXCEEDANCE FLOW PLAN

DRAWN BY: TW	CHECKED BY: Pch	APPROVED BY: Pch
SCALE @ A1: 1:200	DATE OF REVIEW: 23/08/24	
ISO 19650 STATUS: S5 - ISSUED FOR ACCEPTANCE BY THE CLIENT		
DRAWING No:	PROJECT: 5025779	REV: P01
ORG: RDG	FUNCTION: XX	SPATIAL: XX
FORM: D	DISCIPLINE: C	NUMBER: 950003



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