

Project No. & Name:	10939 – Loreto College New Build Probation land	Prepared by:	Checked by:	Rev:	Date:
Document Ref:	LCNP-WML-00-XX-RP-D-052	Daniel Baker	Loughlin O’Gorman	P04	September 2025

Background

1. The below Drainage Strategy Report has been created by WML to support and inform detailed Planning Conditions for Loreto College Expansion, located at the junction of Moss Lane (B5219) & Chichester Rd S.
2. The proposed scheme involves the development of a new three-storey educational building located on the south eastern corner of the land adjacent to the Chichester Road South and Moss Lane East Road junction.
3. The location of the new building has been determined, to a degree, due to the presence of the Corn Brook Culvert which extends roughly north-east to south-west across the central site area. External areas are to comprise hardstanding for access, with car parks to the north-western and north-eastern corners of the site. These will be interspersed with pedestrian walkways and general soft landscaping.

Surface Water Drainage Strategy

4. Reference should be made to the Flood Risk Assessment – WML Consulting, April 2023, Phase 1: Desk Top Study Report – WML Consulting, February 2023 and Phase 2: Ground Investigation Report – WML Consulting, April 2023.
5. The proposed drainage strategy for this site will incorporate the principles of, and where appropriate demonstrate compliance with the NPPF and the SUDS manual.
6. The proposed drainage system should be designed in accordance with BS EN 7524 and Building Regulations Part H (2010). Approved Document H indicates the following hierarchy for the disposal of surface water drainage from the new development sites, firstly discharge via infiltration, secondly discharge via watercourse and lastly discharge to sewer.
7. These options are discussed in further detail below.
8. **Surface water discharge via infiltration:** A review of the Phase 2: Ground Investigation Report by WML Consulting has confirmed that ground conditions on the site comprise made ground underlain by glacial deposits to a depth of circa 11mbgl and weathered sandstone of the Chester Pebble Bed Formation to a maximum depth of 12mbgl. These ground conditions are considered suitable for some infiltration techniques; however, it is noted that special consideration should be given to areas of deeper made ground and proximity with the existing brick surface water culvert.
9. **Surface water discharge via watercourse:** A review of the Ordnance Survey mapping around the site has confirmed the presence of Corn Brook Culvert which passes through the site and is understood to follow the line of the original watercourse.
10. A survey of the existing culvert undertaken by Malcolm Hughes Chartered Land Surveyors, April 2023, confirmed the route of the 3.7m x 1.45m Corn Brook Culvert as it passes through the site at a depth of approximately 2.5mbgl. A copy of the survey drawings can be found appended to this report.
11. **Surface water discharge via public sewer:** A review of the United Utilities (UU) public sewer records indicate that there are existing combined water sewers located within the adjacent Chichester Rd (south) and Moss Lane (west).
12. Further to the above, a GPR Survey undertaken by Survey Operations Ltd, March 2022 confirmed an existing combined outfall from the current site to the existing UU sewer located beneath Moss Lane (west).

Surface Water Drainage Proposals

13. Reference should be made to WML drawing LCNP-WML-00-FN-DR-D-5200.
14. In consideration of the above drainage hierarchy, the surface water proposals outlined within this report are based upon disposal of all surface water from the proposed development via a combination of both infiltration and a connection to the existing Corn Brook Culvert.
15. As noted within section 8, the findings of the Phase 2 Ground Investigation Report suggested that infiltration might be a viable solution for this development, however careful consideration should be given to presence of varying depths of made ground and the proximity to the existing surface water culvert.
16. It is understood that Corn Brook Culvert is of brick construction and therefore concentrated infiltration techniques such as cellular soakaways in the vicinity of the existing culvert could result in a weakening/wash out of the existing mortar or softening of the adjacent ground which could ultimately lead to structural failure.
17. It is therefore proposed to incorporate infiltration for new areas of hardstanding only i.e., footpaths where a permeable construction can be utilised to disperse of captured surface water runoff over a larger area and mitigate any risk associated with the structure of the existing culvert.
18. The permeable paving construction will include a stone sub-base layer which will act as storage for the captured surface water runoff prior to its percolation into the sub-strata.
19. In the absence of site-specific percolation test results, a nominal infiltration rate of 1×10^{-6} m/s has been utilised to determine the depth of sub-base required to store and disperse captured surface water runoff for all storm durations up to and including the critical 100-year event plus a 40% climate change allowance.
20. The intention is to dispose of surface water runoff from the remainder of the site (new building roof & retained hardstanding) via a new piped connection to the existing culvert.
21. The site is currently developed and comprises an existing structure along with a mixture of hardstanding (to be retained – i.e., access road, car parks & footpath) interspersed with areas of soft landscaping. The site is classified as a 'Brownfield' site; thus, any new development requires a minimum 50% reduction in surface water runoff rate leaving the development site as outlined within the SFRA.
22. An existing site runoff calculation has been undertaken using a rainfall intensity of 50mm/hr and has resulted in a flow rate of 100.9 l/s, which after the 50% reduction would leave an allowable discharge rate of 55 l/s.
23. It is understood that LLFA policy is that any new development should aim to discharge surface water runoff at Greenfield runoff rates therefore a further assessment has been undertaken using MicroDrainage software which concluded the following flow rates;

Return Period	Flow (l/s)
1 in 1 year	1.4
1 in 30 year	2.7
1 in 100 year	3.3

24. A copy of the MicroDrainage calculations can be found appended to this report.
25. It should be noted that the above greenfield flow rates exclude the areas of proposed infiltration described in the above sections.
26. The proposals for the new development intend to discharge all remaining surface water runoff from the site at the above Greenfield runoff rates for all critical storm durations up to and including the critical 100-year event plus a 40% climate change allowance.
27. It is proposed to collect roof water via a traditional roof drainage system and discharge via a new below ground drainage network located around the building footprint.
28. Surface water runoff from external areas of retained hardstanding will be captured via a combination existing gullies and new channel drains. Where existing gullies and the associated below ground pipework/infrastructure can be retained/reused, they will be connected into the new below ground drainage system for disposal along with the roof water via the same new connection to Corn Brook Culvert.

29. The exception to the above is the eastern access road and footpath adjacent to the existing college building, which will be drained as per the current arrangement and therefore these areas have been excluded from the proposed drainage design.
30. A below ground cellular attenuation tank has been incorporated within the drainage network to provide storage for all captured surface water runoff (excluding infiltration areas) where it can be then released via a flow chamber at a controlled/restricted flow rate to suit the allowable Greenfield flow rates noted above.
31. Given the limited area of retained hardstanding (car parking) and the relatively low anticipated vehicular movements across the site it is considered that the water quality being discharged to Corn Brook Culvert is acceptable, however the drainage proposals do include pollution/treatment controls and are discussed later in this report.

Waste Water Drainage Strategy

32. As noted in sections 11 & 12, it is understood that there are existing United Utilities combined sewers located within the adjacent road network and that an existing combined outfall serving the current site is situated to the south of the new building.
33. It is therefore proposed to collect waste water from the proposed development via traditional soil stacks & SVPs prior and discharge via a new below ground drainage system prior to reusing the existing outfall to the public sewerage network located to the south, subject to UU approval.

Residual Flood Risk Mitigation

34. As identified with the Flood Risk Assessment (FRA) – WML Consulting, April 2023, there is a low residual risk of flooding from all sources with the exception of flooding from Corn Brook Culvert which is considered as having a medium residual flood risk.
35. The FRA includes a series of modelled flood scenarios provided by the Environment Agency which offer a theoretical flood water level at 4 node points across/adjacent to the development site.
36. The most notable flood water levels are shown at node 2 located on the junction of Chichester Rd (south) and Moss Ln (west) which recorded the following levels;
 - 33.010m AOD during a simulated 0.1% probability (1:1000-year event) + 30% climate change allowance.
 - 32.630m AOD during a simulated 1% probability (1:100-year event) + 75% climate change allowance.
37. The FRA noted that the higher figure of 33.010 was the result of an extreme event with an annual exceedance probability (AEP) of 0.1%.
38. Given that there are no historic records of flooding in the vicinity of the proposed development it is considered that the following flood risk mitigation measures will be based upon the more probable flood water level of 32.630 which has an AEP of 1% i.e., a 10x greater chance of occurring in a given year.
39. In accordance with the recommendations outlined within the FRA it is proposed to set the new building's finished floor level (FFL) at 32.930m AOD which provides a 300mm freeboard above the theoretical flood water level noted above.
40. In addition, it is proposed to also contour external ground levels as such to direct any overland flow routes resulting from extreme rainfall away from the new building.
41. Given the above it is considered that the mitigation of residual risk identified within the FRA has been satisfied and that the finished floor level of 32.930 shown on WML drawing 10939-WML-ZZ-XX-DR-C-1001 is acceptable with regards to flood risk.
42. It is understood that during exceedance events, parts of the site may still have the potential to flood until such a time that the proposed drainage system has the capacity to accept the additional flows. Whilst the flooded areas pose no increased risk to the building or the safe access/egress of people to and from the site, in the very unlikely event of a sudden breach and no early warnings being received, it may not be possible to evacuate all occupants from the building in sufficient time as flood waters could prove problematic for certain individuals to pass through.
43. Should this unlikely scenario occur, the developer should have a sufficient action plan in place to move vulnerable individuals to a place of safety (i.e., an upper floor) and provide essential survival items (i.e., food and blankets), until such a time as emergency services are able to attend or the flood water has retreated/the drainage system has the capacity to accept the additional flows.
44. Finally, it is important to ensure that the aforementioned areas don't raise the risk of flooding to third party land.
45. Reference should be made to the Exceedance Flow Plan within the WML Surface Water Calculation document 10939-WML-00-XX-CA-C-0001 in Appendix 02.
46. The Exceedance Flow Plan identities demonstrates that exceedance flood routes will be directed to the adjacent highways, therefore it is considered that the risk of increasing the flood risk to third party land during exceedance events can be classified as very low.

SUDs Review

47. In accordance with current policies and guidelines, SUDs techniques have been considered for the development site's drainage proposals. The suitability of various SUDs techniques has been reviewed and are discussed below.
48. Storing water for later use could be a viable option for this site. Blue/green roof systems were considered as part of the design for the building however as the retail building is a lightweight long span building, the implications of including a green or blue roof system would add significant embodied carbon to the supporting structure & building foundations.
49. Given the above, the incorporation of blue/green roof systems within the drainage proposals for this site was considered not to be a sustainable solution, however the addition of a rainwater harvesting tank could allow captured rainwater to be reused for onsite operations such as cistern flushes etc. and should be discussed with the client during detailed design.
50. Above ground SUDs features such as storage basins and swales were deliberated during the drainage design for this site, however due to the limited area of soft landscaping available across the development to implement such features especially given the proximity to existing structures such as Corn Brook Culvert, they have been considered to be not a practical solution for this project.
51. Permeable paving construction has been incorporated within the drainage proposals for new external hardstanding areas across the site (footpaths), which will provide both an element of storage and treatment of captured surface water runoff.
52. The porous paving construction was considered for all areas of external parking/access roads, however due to the large areas of retained hardstanding (car parks) and the it was considered that also retaining the existing drainage arrangement currently serving these specific areas would be the most efficient/practical solution.
53. The quality of surface water runoff prior to discharge from the site should also be considered when reviewing potential SUDs options for the development works and this is reviewed in further detail below.

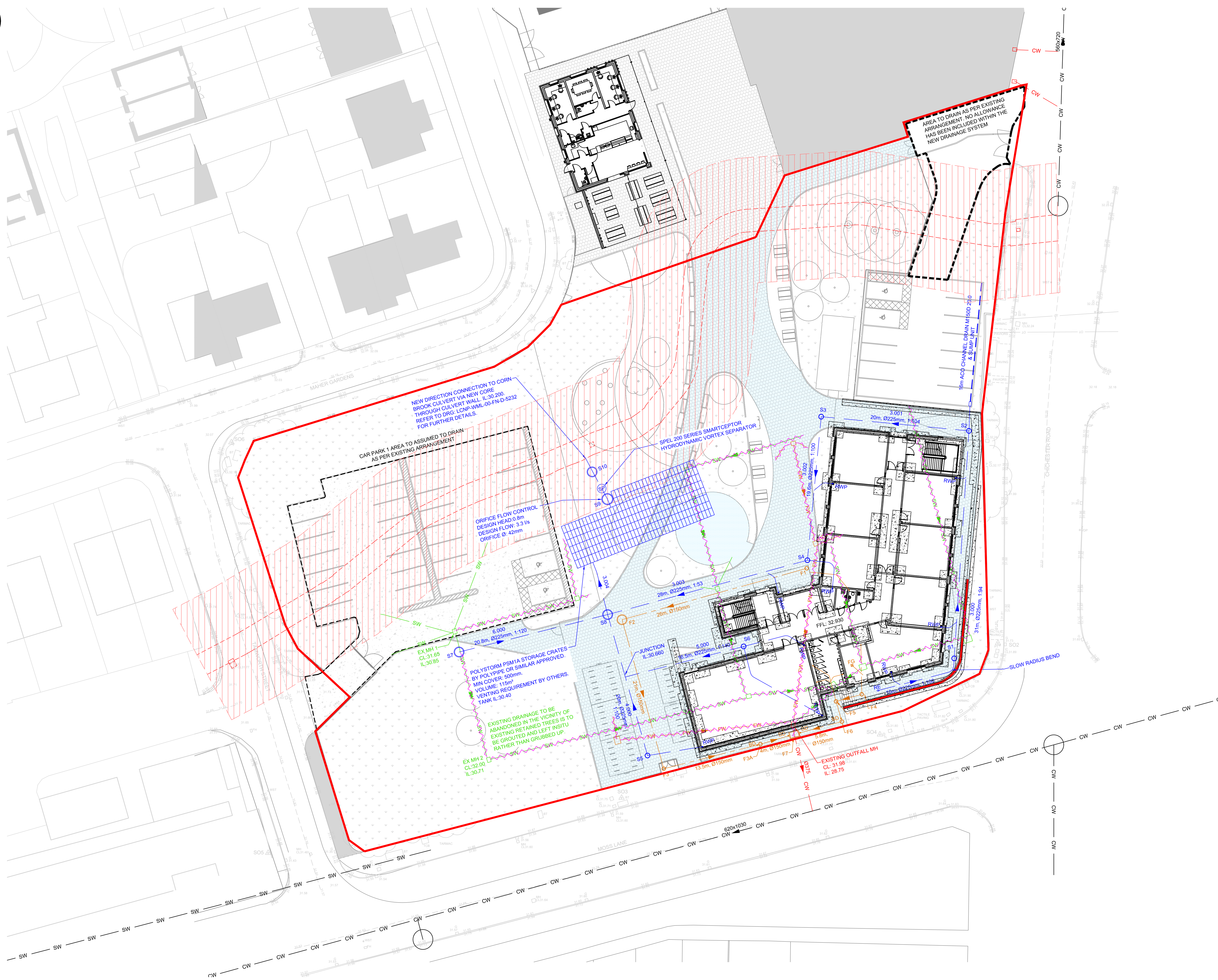
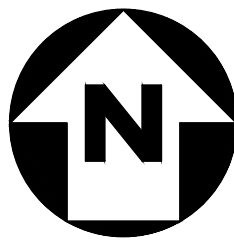
Water Treatment

54. As discussed within the above strategies, due to the limited potential for vehicle movements across the site it is considered that the water quality being discharged to Corn Brook Culvert is acceptable, however the drainage proposals include pollution/treatment controls to promote improvements in water quality leaving the site.
55. From table 26.2 of the SUDs manual, the proposed roof area is deemed to have a "low" pollution hazard level. i.e. TSS = 0.3, Metals = 0.2, Hydrocarbons = 0.05.
56. Whilst also from table 26.2 of the SUDs manual, the proposed, car park and access areas are deemed to have either a "medium" pollution hazard level. i.e., TSS = 0.7, Metals = 0.6, Hydrocarbons = 0.7.
57. Given the above it is considered that the following treatment stages will be incorporated for this project;
58. Unfortunately due to the site limitations it has not been possible to incorporate traditional SUDs treatment features (as discussed in the above SUDs review) and therefore it has been necessary to incorporate alternative proprietary systems to ensure water quality is achieved.
59. Gully traps, sump units and catch pits have been incorporated within the drainage proposals to remove contaminants/pollutants from all surface water runoff prior to disposal from the site.
60. In addition to the above a downstream defender has also been integrated into the drainage network prior the final connection with the Corn Brook Culvert to remove any remaining sediments and oils etc. that have not already been captured by the above.
61. Finally, the permeable paving sub-base incorporates a stone filtration layer which will provide mitigation indices of TSS = 0.4, Metals = 0.4, Hydrocarbons = 0.4. Though these figures are halved in line with the guidance provided in the SUDs manual.

Maintenance Plan

62. It is understood that the new drainage network will be privately owned and maintained by the client or an appointed maintenance company on their behalf and will not be offered up for adoption by United Utilities.
63. The proposed drainage system has been designed in accordance with the current standards and guidelines to achieve a minimum self-cleansing velocity, however excessive debris in the system could still result in loss of performance.
64. The proposed drainage design will consists of traditional manholes, pipes and channels.
65. It is proposed to check the underground drainage system and lift manhole/inspection chamber covers to ensure that the pipework associated with each chamber is operating correctly twice yearly and ensure drainage channels are free from debris.
66. Any problems encountered should be investigated by CCTV survey if required and any remedial works necessary carried out in a timely manner.
67. It is recommended that the biannual inspections take place in spring and autumn where there is additional risk of blockage from debris associated with fallen leaves etc.
68. Attenuation has been provided in the form of a below ground storage crate system. A recommended maintenance schedule, checklist and a preferred cleaning procedure should be included from the supplier in the O&M Manual however it is anticipated that this should include twice yearly checking that the upstream manholes are free from debris and ensure that no sediment is being passed into the storage crates.
69. Flow restriction has been achieved through the incorporation of an orifice plate flow control. A recommended maintenance schedule, checklist and a preferred cleaning procedure should be included from the supplier in the O&M Manual however it is anticipated that this should include twice yearly checking that the upstream manholes are free from debris.
70. Lastly, permeable paving construction has been incorporated within the drainage proposals for this site. It is proposed to check and clean the permeable surfaces regularly to ensure that surface water runoff is not prevented from draining into the sub-base layer, especially during the autumn period where a build-up leaves could occur and result in a loss of performance.

**Proposed Drainage GA
LCNP-WML-00-FN-DR-D-5200**



LEGEND

— SW — SW — SW —	EXISTING ADOPTED SURFACE WATER SEWER
— CW — CW — CW —	EXISTING ADOPTED COMBINED WATER SEWER
— SW — SW — SW —	EXISTING PRIVATE SURFACE WATER DRAIN
— CW — CW — CW —	EXISTING PRIVATE FOUL WATER DRAIN
— SW — SW — SW —	EXISTING PRIVATE COMBINED WATER DRAIN
— SW — SW — SW —	EXISTING PRIVATE DRAINAGE TO BE REMOVED
— SW — SW — SW —	EXISTING SURFACE WATER CULVERT
— SW — SW — SW —	EXISTING SURFACE WATER CULVERT - 7m EASEMENT
— SW — SW — SW —	PROPOSED PRIVATE SURFACE WATER SEWER
— SW — SW — SW —	PROPOSED PRIVATE WASTE WATER SEWER
— SW — SW — SW —	PROPOSED ATTENUATION TANK
— SW — SW — SW —	PROPOSED PERMEABLE SURFACING
— SW — SW — SW —	DENOTES RETAINING WALL
— SW — SW — SW —	SITE BOUNDARY

DRAINAGE NOTES

REFERENCE SHOULD BE MADE TO THE DRAINAGE STRATEGY DOCUMENT REF: 10539-WML-00-XX-RP-C-0001.

THE EXISTING DRAINAGE SHOWN ON THIS DRAWING IS BASED UPON THE UNITED UTILITIES LAUSHEVER RECORDS AND EXISTING DRAINAGE SITE PLAN PRODUCED FOR THE ADJACENT DEVELOPMENT WORKS AT TAINWORTH STREET.

THE LOCATION OF THE EXISTING SURFACE WATER CULVERT IS SHOWN INDICATIVE ONLY AND IS BASED UPON SURVEY INFORMATION UNDERTAKEN BY MALCOLM HUGHES CHARTERED SURVEYORS- APRIL 2023.

ALL DRAINAGE LEVELS SHOWN ARE FOR INFORMATION PURPOSES ONLY AND ARE BASED UPON THE EXISTING TOPOGRAPHICAL SURVEY AND PROPOSED FINISHED LEVELS PROVIDED BY 10 ARCHITECTS.

THE ARCHITECT IS RESPONSIBLE FOR CONFIRMING ALL MANHOLE COVER LEVELS PRIOR TO CONSTRUCTION.

THE PROPOSED DRAINAGE DESIGN INFORMATION SHOWN ON THIS DRAWING IS FOR INFORMATION PURPOSES ONLY AND IS SUBJECT TO DETAILED DESIGN.

RAIN WATER PIPES AND SLAB PENETRATIONS ARE SHOWN INDICATIVE ONLY. ARCHITECT/MEP ENGINEER IS TO CONFIRM FINAL SETTING OUT INFORMATION PRIOR TO CONSTRUCTION.

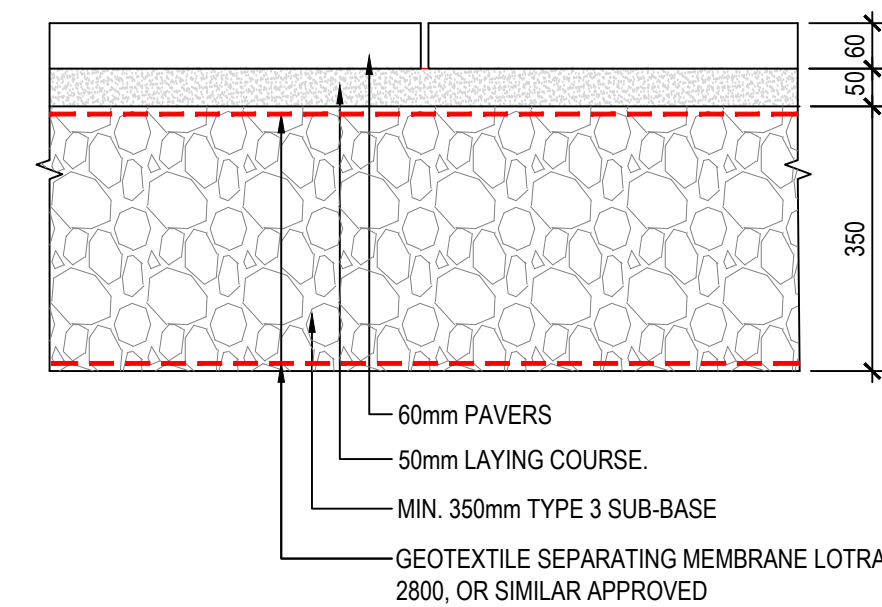
(BD) DENOTES EXTERNAL BACKDROP

(CP) DENOTES 'CATCH PIT' WITH 500mm DEEP SUMP BELOW OUTGOING INVERT LEVEL

(FC) DENOTES FLOW CONTROL CHAMBER

(PVD) DENOTES PERMAVOID DIFFUSER UNITS

(VC) DENOTES VENTED COVER



ALL WORKS TO BE IN ACCORDANCE WITH BST533-3 GENERALLY.

PAVER: THICKNESS 60mm

MATERIAL: AS SPECIFIED BY ARCHITECT

LAYING COURSE: THICKNESS 50mm

MATERIAL: IN ACCORDANCE WITH Q241455A

ROADBASE: NON REQUIRED

MATERIAL: NA

GRANULAR SUB-BASE AS SECTION Q20 OF WML SPECIFICATION THICKNESS 350 mm (SHW803 TYPE 3 GSB - MINIMUM 30% VOID RATIO).

JOINTING: NARROW JOINTS TO ARCHITECTS DETAIL

MATERIAL: IN ACCORDANCE WITH Q24510A

LAYING PATTERN: AS SPECIFIED BY ARCHITECT.

ASSUMED CBR: 5% (SUBJECT TO CONFIRMATION OF CBR TESTS BY SITE INVESTIGATION SPECIALIST AFTER SITE STRIP)

ADDITIONAL FILLING REQUIRED TO RAISE SURFACE LEVEL FOLLOWING SITE STRIP TO BE IN ACCORDANCE WITH D20, (SH803 TYPE 3 GSB).

ALL MATERIAL WITHIN 450MM OF SURFACE LEVEL TO BE NON-FROST SUSCEPTIBLE. IF ENCOUNTERED NOTIFY WML. REPLACEMENT FILL TO BE GRADE #F2 OR #F3 UNLESS AGREED OTHERWISE.

TYPICAL DETAIL PERMEABLE BRICK / BLOCK PAVING TO FOOTPATHS

(SCALE 1:10)



GENERAL NOTES

DO NOT SCALE FROM THIS DRAWING WORK TO FIGURED DIMENSIONS ONLY.

NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT PRIOR PERMISSION IN WRITING.

ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.

THE CONTRACTOR SHALL INCORPORATE ALL THE REQUIREMENTS OF THE PRE-TENDER STAGE HEALTH AND SAFETY PLAN.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH WML DRAINAGE DETAIL DRAWINGS FOR DETAILS OF MATERIALS AND WORKMANSHIP REFER TO THE SPECIFICATION.

THE CONTRACTOR IS RESPONSIBLE FOR CHECKING INVERT LEVELS AND POSITIONS OF ALL EXISTING DRAINS, SEWERS, INSPECTION CHAMBERS AND MANHOLES SHOWN ON THIS DRAWING IMMEDIATELY ON SITE ESTABLISHMENT. ANY DISCREPANCIES MUST BE REPORTED TO WML CONSULTING IMMEDIATELY.

WHERE THE NEW SITE DRAINAGE CONNECTS IN TO EXISTING MANHOLES IN CARRIAGEWAYS AND/OR EXISTING ADOPTED SEWERS, THE CONTRACTOR IS RESPONSIBLE FOR ALL LIAISON WITH THE RELEVANT STATUTORY UNDERTAKER AND LOCAL AUTHORITY WITH REGARD TO ROAD CLOSURES, TRAFFIC MANAGEMENT, PERMITS TO WORK, SUBMISSION OF CONTRACTORS METHOD STATEMENTS AND RISK ASSESSMENTS AND OTHER DOCUMENTATION AND CORRESPONDENCE ASSOCIATED WITH THE SITE STAGE (PART 2) ELEMENT OF THE WORKS.

ROCKER PIPES TO BE PROVIDED AT ALL CONCRETE CASED INTERFACES.

PROVIDE ADEQUATE PROTECTION TO MAINTAIN MINIMUM COVER TO DRAINS DURING THE CONSTRUCTION PERIOD.

COVER LEVELS ON THIS DRAWING ARE FOR INFORMATION PURPOSES ONLY.

THE LAYOUT OF DRAINAGE ON THIS DRAWING IS FOR INFORMATION PURPOSES ONLY.

U.N.O SURFACE WATER DRAINAGE PIPES OVER Ø100mm TO BE TWIN WALLED STRUCTURED PLASTIC APPROVED BY THE ENGINEER.

U.N.O FOUL WATER DRAINAGE PIPES TO BE SUPERSLEVE VITRIFIED CLAY PIPES OR SIMILAR.

ALL COVERS AND RODDING ACCESS POINTS TO BE SEALED AND SCREWED TIGHT.

ALL INTERNAL MANHOLE COVERS TO BE DOUBLE SEALED, LOOKABLE AND RECESSED TO ACCEPT FLOOR FINISHES WHERE APPLICABLE.

SETTING OUT OF ALL INTERNAL CULLYPLUMBING CONNECTIONS TO BE CO-ORDINATED BETWEEN THE SERVICE ENGINEERS AND THE ARCHITECT.

ALL INTERNAL GULLIES, PLUMBING CONNECTIONS, SOIL STACKS, SVPS AND ALL OTHER CONNECTIONS OF FOUL AND SURFACE WATER DRAINS TO BELOW GROUND TO BE FITTED WITH ACCESSIBLE RODDING POINTS ABOVE S8/8 LEVEL.

ALL SURFACE WATER CONNECTIONS TO BE 100mm DIAMETER AT MINIMUM FALLS OF 1:80 UNLESS NOTED OTHERWISE.

ALL FOUL WATER CONNECTIONS TO BE 100mm DIAMETER AT MINIMUM FALLS OF 1:40 UNLESS NOTED OTHERWISE.

ALL CONNECTIONS TO BE MADE IN ACCORDANCE WITH STANDARD DETAIL DRAWINGS.

ALL PIPEWORK TO BE INSTALLED WITH SOFFITS LEVEL (E.G. AT CHANGES IN PIPE SIZE) U.N.O.

FOR DETAILS OF GREASE TRAP/MACERATOR REQUIREMENTS ASSOCIATED WITH KITCHENS REFER TO SERVICE ENGINEER.

ON COMPLETION OF DRAINAGE WORKS, THE NEW DRAINAGE SYSTEM IS TO BE THOROUGHLY CLEANED AND A CCTV SURVEY CARRIED OUT TO CONFIRM NO CONSTRUCTION DEBRIS OR BLOCKAGES REMAIN.

CONNECTIONS TO CARRIER DRAINS ARE TO BE 'Y' JUNCTIONS.

ALL PRIVATE DRAINAGE IS TO COMPLY WITH BS EN 752 AND BUILDING REGS. PART H.

PIPE GRADIENTS ARE INDICATIVE MINIMUMS.

SURFACE CHANNEL DRAINS TO BE ACO MULTIDRAIN OR SIMILAR.

MANHOLES:

ALL PROPOSED NEW MANHOLES TO BE PRECAST RING MANHOLES TYPE B UNLESS NOTED OTHERWISE. INTERNAL DIAMETERS OF MANHOLES TO BE 1050mm WHERE DEPTH TO PIPE SOFFIT IS LESS THAN 1.5m, AND 1200mm Ø ELSEWHERE UNLESS NOTED OTHERWISE. IC - DENOTES POLYPROPYLENE INSPECTION CHAMBER BY HEPUORTHY OR SIMILAR APPROVED INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

MANHOLE COVERS:

CARRIAGEWAYS GENERAL - EN124 CLASS D400

CARRIAGEWAYS WITHIN 0.5m OF KERB - EN124 CLASS C250

SLOW MOVING HGV (B8) - EN 124 CLASS B125 SLOW MOVING

GLV (T10), EN 124 CLASS B125 SLOW MOVING PRIVATE CARS - EN124 CLASS B125

INTERNAL - JONES OF OSWESTRY - SUPRASTEEL DOUBLE SEALED WITH NEOPRENE GASKET AND COVER GREASE OR MANHOLE APPROVED.

REFER TO ARCHITECTS DRAWINGS FOR DETAILS OF ANY MANHOLE COVERS WHICH REQUIRE INSET PANELS.

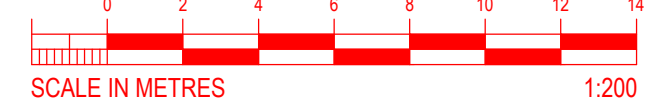
FINAL CONSTRUCTION DRAWING

WML FINAL CONSTRUCTION DRAWING INCLUDING ANY AMENDMENTS / AS-BUILT INFORMATION RECEIVED FROM THE CONTRACTOR.

SURFACE WATER MANHOLE SCHEDULE									
MH REF	COVER LEVEL	INVERT LEVEL (IN)	INVERT LEVEL (OUT)	MAIN PIPE Ø (IN)	MAIN PIPE Ø (OUT)	MH TYPE	MANHOLE Ø	COVER TYPE	COMMENTS
S1	32.780	31.883	31.883	Ø225mm	Ø225mm	PPIC	Ø600mm	B125	WAVIN 600 RANGE OR SIMILAR APPROVED.
S2	32.780	31.644	31.589	Ø150mm	Ø225mm	PPIC	Ø600mm	B125	WAVIN 600 RANGE OR SIMILAR APPROVED. INCOMING Ø150mm CHANNEL DRAIN CONNECTION.
S3	32.500	31.323	31.323	Ø225mm	Ø225mm	PPIC	Ø600mm	B125	WAVIN 600 RANGE OR SIMILAR APPROVED.
S4	32.780	31.150	31.150	Ø225mm	Ø225mm	PPIC	Ø600mm	B125	WAVIN 600 RANGE OR SIMILAR APPROVED.
S5	31.750	30.820	30.775	Ø150mm	Ø225mm	PPIC	Ø600mm	B125	WAVIN 600 RANGE OR SIMILAR APPROVED. INCOMING Ø150mm RWP CONNECTION.
S6	32.930	32.315	32.240	Ø150mm	Ø150mm	PPIC	Ø600mm	B125	WAVIN 600 RANGE OR SIMILAR APPROVED. 2No. INCOMING Ø150mm RWP CONNECTIONS
S7	31.800	30.898	30.823	Ø150mm	Ø225mm	CATCH PIT	Ø1200mm	B125	COVER & FRAME TO HAVE Ø75xØ75 CLEAR OPENING. CATCH PIT SUMP IL: 30.250.
S8	32.500	30.567	30.492	Ø225mm	Ø300mm	CATCH PIT	Ø1200mm	B125	COVER & FRAME TO HAVE Ø75xØ75 CLEAR OPENING. CATCH PIT SUMP IL: 30.000.
S9	31.800	30.380	30.380	Ø300mm	Ø150mm	FLOW CONTROL	Ø1200mm	B125	COVER & FRAME TO HAVE Ø75xØ75 CLEAR OPENING. Ø42mm ORIFICE PLATE FITTED TO OUTGOING PIPE.
SP	31.800	30.315	30.315	Ø150mm	Ø150mm	SPEL SMARTCEPTOR	1200x750	B125	SPEL 200 SERIES SMARTCEPTOR HYDRODYNAMIC VORTEX SEPARATOR.
S10	31.800	30.247	30.247	Ø150mm	Ø150mm	NON-RETURN VALVE	1050mm	B125	1.5m DEEP Ø1050mm NON-RETURN VALVE CHAMBER BY FREEFLOSH OR SIMILAR.

FOUL WATER MANHOLE SCHEDULE									
MH REF	COVER LEVEL	INVERT LEVEL (IN)	INVERT LEVEL (OUT)	MAIN PIPE Ø (IN)	MAIN PIPE Ø (OUT)	MH TYPE	DIAMETER	COVER TYPE	COMMENTS
F1	32.930	31.952	31.902	Ø100mm	Ø150mm	PPIC	Ø450mm	B125	WAVIN 450 RANGE OR SIMILAR APPROVED. INCOMING Ø100mm SOIL CONNECTION.
F2	32.500	31.555	31.555	Ø150mm	Ø150mm	PPIC	Ø1200mm	B125	COVER & FRAME TO HAVE Ø75xØ75 CLEAR OPENING.
F3	31.760	31.094	31.094	Ø150mm	Ø150mm	PPIC	Ø450mm	B125	WAVIN 450 RANGE OR SIMILAR APPROVED.
F3A	31.830	30.981	30.481	Ø150mm	Ø150mm	PPIC	Ø450mm	B125	WAVIN 450 RANGE OR SIMILAR APPROVED. EXTERNAL BACKDROP IL:31.000.
F4	32.780	31.449	31.599	Ø100mm	Ø150mm	PPIC	Ø450mm	B125	WAVIN 450 RANGE OR SIMILAR APPROVED. INCOMING Ø100mm SOIL CONNECTION.
F5	31.830	31.255	31.255	Ø100mm	Ø150mm	PPIC	Ø450mm	B125	WAVIN 450 RANGE OR SIMILAR APPROVED. INCOMING Ø100mm SOIL CONNECTION.
F6	31.830	30.863	30.363	Ø150mm	Ø150mm	PPIC	Ø450mm	B125	WAVIN 450 RANGE OR SIMILAR APPROVED. EXTERNAL BACKDROP IL:30.850.
F7	31.830	30.290	28.750	Ø150mm	Ø375mm	PCC	1200x750mm	B125	COVER & FRAME TO HAVE 1200x750 CLEAR OPENING. 2No. EXTERNAL BACKDROPS IL:30.250.

COORDINATES			
POINTS	EASTING	NORTHING	
SP	383285.849	395997.852	
F01	383313.857	395997.084	
F02	383288.757	395990.102	
F03	383294.429	395999.839	
F04	383321.343	395999.951	
F05	383317.849	395998.989	
F06	383318.64	395996.243	
F07	383312.165	395964.42	
F33	383307.572	395993.177	
S01	383333.903	395974.838	
S02	383335.91	396005.77	
S03	383315.822	396007.704	
S04	383313.952	395988.18	
S05	383292.22	395961.63	
S06	383305.285	395976.47	
S07	383266.606	395975.7	
S08	383286.804	395990.792	
S09	383286.775	395996.489	
S10	383284.696	396000.194	



Project	Originator	Volume	Level	Type	Role	Number	Rev
LCNP	- WML - 00 - FN - DR -	D	5200	AB2			

**Surface Water Drainage Calculations
10939-WML-00-XX-CA-C-0001**

Surface Water Drainage Calculations

For a site referred to as

Loreto College New Build Probation Land

Undertaken on behalf of

Loreto College

WML Job No: 10939

Document No: 10939-WML-ZZ-XX-CA-C-0001

Date: March 2025

Project No. & Name:	10939 – Loreto College New Build Probation Land	Status:	Prepared by:	Rev:	Date:
Document Ref:	10939-WML-ZZ-XX-CA-C-0001	Preliminary	Daniel Baker	R01	March 2025

General Notes

1. The calculations within this document have been undertaken using MicroDrainage Software version 2020.
2. This document is to be read in conjunction with the following documents;
 - a. LCNP-WML-00-FN-DR-D-5200 – Proposed Drainage GA
 - b. LCNP-WML-00-XX-RP-D-052 – Drainage Strategy Document

Summary of Results

1. The following summary demonstrates that the outgoing flow rates for the new development works are less than or equal to those of the pre-development (Greenfield) site.

Greenfield Runoff Rate* (l/s)	Proposed Site Runoff Rate – Manhole S9 (l/s)
Q1: 1.4 Q30: 2.7 Q100: 3.3	1: 1.4 30: 2.2 100+40%: 3.1

2. The following summary demonstrates that the outgoing runoff volume for the 6-hour (360 min) 1:100-year event is less than or equal the pre-development (Greenfield) site.

Greenfield Runoff Volume* (m ³)	Proposed Site Runoff Volume(m ³)
83.274	78.611

Existing Greenfield Runoff Rates

WML Consulting Ltd		Page 1
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 16/03/2023 14:21 File	Designed by DBaker Checked by	
Innovyze		Source Control 2020.1.3
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 1 Soil 0.450 Area (ha) 0.283 Urban 0.000 SAAR (mm) 860 Region Number Region 10 Results 1/s QBAR Rural 1.6 QBAR Urban 1.6 Q1 year 1.4 Q1 year 1.4 Q30 years 2.7 Q100 years 3.3		
©1982-2020 Innovyze		

Proposed Surface Water Network Calculation

WML Consulting Ltd		Page 3
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 04/03/2025 09:52	Designed by DBaker	
File 10939 - Surface Water -...	Checked by	
Innovyze	Network 2020.1.3	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	32.780	0.897	Open Manhole	600	S3.000	31.883	225			
S2	32.780	1.211	Open Manhole	600	S3.001	31.569	225	S3.000	31.569	225
S3	32.500	1.177	Open Manhole	600	S3.002	31.323	225	S3.001	31.323	225
S4	32.780	1.630	Open Manhole	600	S3.003	31.200	225	S3.002	31.150	225
S5	31.750	0.975	Open Manhole	600	S4.000	30.775	225			
S6	32.930	0.690	Open Manhole	600	S5.000	32.240	225			
S-JCT	32.260	1.600	Junction		S4.001	30.660	225	S4.000	30.660	225
								S5.000	30.660	225
S7	32.930	2.107	Open Manhole	1200	S6.000	30.823	225			
S8	32.500	2.008	Open Manhole	1200	S3.004	30.492	300	S3.003	30.617	225
								S4.001	30.567	225
								S6.000	30.567	225
S-TANK	31.800	1.400	Junction		S3.005	30.400	300	S3.004	30.400	300
S9	31.800	1.420	Open Manhole	1350	S3.006	30.380	150	S3.005	30.380	300
S-SP	31.800	1.485	Open Manhole	1200	S3.007	30.315	150	S3.006	30.315	150
S10	31.800	1.553	Open Manhole	1050	S3.008	30.247	150	S3.007	30.247	150
S10	31.660	1.460	Open Manhole	1200		OUTFALL		S3.008	30.200	150

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
---------	---------------------	----------------------	--------------------------	---------------------------	----------------	----------------

S1	383333.903	395974.838	383333.903	395974.838	Required	
----	------------	------------	------------	------------	----------	---

S2	383335.910	396005.770	383335.910	396005.770	Required	
----	------------	------------	------------	------------	----------	---

S3	383315.822	396007.704	383315.822	396007.704	Required	
----	------------	------------	------------	------------	----------	---

S4	383313.952	395988.180	383313.952	395988.180	Required	
----	------------	------------	------------	------------	----------	---

S5	383292.220	395961.630	383292.220	395961.630	Required	
----	------------	------------	------------	------------	----------	---

S6	383305.285	395976.470	383305.285	395976.470	Required	
----	------------	------------	------------	------------	----------	---

WML Consulting Ltd										Page 5
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL										
Date 04/03/2025 09:52					Designed by DBaker					
File 10939 - Surface Water -...					Checked by					
Innovyze					Network 2020.1.3					
PIPELINE SCHEDULES for Storm										
Upstream Manhole										
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W	
S3.000	o	225	S1	32.780	31.883	0.672	Open Manhole		600	
S3.001	o	225	S2	32.780	31.569	0.986	Open Manhole		600	
S3.002	o	225	S3	32.500	31.323	0.952	Open Manhole		600	
S3.003	o	225	S4	32.780	31.200	1.355	Open Manhole		600	
S4.000	o	225	S5	31.750	30.775	0.750	Open Manhole		600	
S5.000	o	225	S6	32.930	32.240	0.465	Open Manhole		600	
S4.001	o	225	S-JCT	32.260	30.660	1.375	Junction			
S6.000	o	225	S7	32.930	30.823	1.882	Open Manhole		1200	
S3.004	o	300	S8	32.500	30.492	1.708	Open Manhole		1200	
S3.005	o	300	S-TANK	31.800	30.400	1.100	Junction			
S3.006	o	150	S9	31.800	30.380	1.270	Open Manhole		1350	
S3.007	o	150	S-SP	31.800	30.315	1.335	Open Manhole		1200	
S3.008	o	150	S10	31.800	30.247	1.403	Open Manhole		1050	
Downstream Manhole										
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W	
S3.000	30.997	98.7	S2	32.780	31.569	0.986	Open Manhole		600	
S3.001	20.180	82.0	S3	32.500	31.323	0.952	Open Manhole		600	
S3.002	19.613	113.4	S4	32.780	31.150	1.405	Open Manhole		600	
S3.003	28.136	48.3	S8	32.500	30.617	1.658	Open Manhole		1200	
S4.000	11.100	96.5	S-JCT	32.260	30.660	1.375	Junction			
S5.000	16.613	10.5	S-JCT	32.260	30.660	1.375	Junction			
S4.001	8.812	94.8	S8	32.500	30.567	1.708	Open Manhole		1200	
S6.000	20.830	81.4	S8	32.500	30.567	1.708	Open Manhole		1200	
S3.004	10.681	116.1	S-TANK	31.800	30.400	1.100	Junction			
S3.005	5.318	265.9	S9	31.800	30.380	1.120	Open Manhole		1350	
S3.006	1.639	25.2	S-SP	31.800	30.315	1.335	Open Manhole		1200	
S3.007	2.610	38.4	S10	31.800	30.247	1.403	Open Manhole		1050	
S3.008	2.008	42.7	S10	31.660	30.200	1.310	Open Manhole		1200	
©1982-2020 Innovyze										

WML Consulting Ltd		Page 6
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 04/03/2025 09:52 File 10939 - Surface Water -...		
Designed by DBaker Checked by		
Innovyze		Network 2020.1.3

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall C. Level Name (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S3.008	S10	31.660	30.200	0.000	1200

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha	Storage 2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.360		

©1982-2020 Innovyze

WML Consulting Ltd		Page 7
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 04/03/2025 09:52 File 10939 - Surface Water -...	Designed by DBaker Checked by	
Innovyze	Network 2020.1.3	
<u>Online Controls for Storm</u> <u>Orifice Manhole: S9, DS/PN: S3.006, Volume (m³): 2.4</u> Diameter (m) 0.042 Discharge Coefficient 0.600 Invert Level (m) 30.380 <u>Non Return Valve Manhole: S10, DS/PN: S3.008, Volume (m³): 1.4</u>		
©1982-2020 Innovyze		

WML Consulting Ltd		Page 8
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 04/03/2025 09:52 File 10939 - Surface Water -...		
Designed by DBaker Checked by		
Innovyze		Network 2020.1.3

Storage Structures for Storm

Cellular Storage Manhole: S-TANK, DS/PN: S3.005

Invert Level (m) 30.400 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	143.5	143.5	2.600	0.0	186.6
0.200	143.5	153.1	2.800	0.0	186.6
0.400	143.5	162.7	3.000	0.0	186.6
0.600	143.5	172.2	3.200	0.0	186.6
0.800	143.5	181.8	3.400	0.0	186.6
1.000	0.0	186.6	3.600	0.0	186.6
1.200	0.0	186.6	3.800	0.0	186.6
1.400	0.0	186.6	4.000	0.0	186.6
1.600	0.0	186.6	4.200	0.0	186.6
1.800	0.0	186.6	4.400	0.0	186.6
2.000	0.0	186.6	4.600	0.0	186.6
2.200	0.0	186.6	4.800	0.0	186.6
2.400	0.0	186.6	5.000	0.0	186.6

©1982-2020 Innovyze

WML Consulting Ltd

Page 9

No. 8 Oak Green

Stanley Green Business Park

Earl Rd, Cheadle Hulme, SK8 6QL

Date 04/03/2025 09:52

File 10939 - Surface Water - ...

Designed by DBaker

Checked by

Innovyze

Network 2020.1.3

Micro Drainage

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)

for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Additional Flow - % of Total Flow 0.000

Hot Start (mins) 0

MADD Factor * 10m³/ha Storage 2.000

Hot Start Level (mm) 0

Inlet Coefficient 0.800

Manhole Headloss Coeff (Global) 0.500

Flow per Person per Day (l/per/day) 0.000

Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0

Number of Storage Structures 1

Number of Online Controls 2

Number of Time/Area Diagrams 0

Number of Offline Controls 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR

Ratio R 0.360

Region England and Wales Cv (Summer) 0.750

M5-60 (mm) 18.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status OFF

DVD Status ON

Inertia Status ON

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440

Return Period(s) (years) 1, 30, 100

Climate Change (%) 0, 0, 45

US/MH

PN

Name

Storm

Return Period

Climate Change

First (X) Surge

First (Y) Flood

First (Z) Overflow

Overflow Act.

S3.000

S1

15 Winter

1

+0%

S3.001

S2

15 Winter

1

+0%

S3.002

S3

15 Winter

1

+0%

100/15 Summer

S3.003

S4

15 Winter

1

+0%

S4.000

S5

15 Winter

1

+0%

100/120 Winter

S5.000

S6

15 Winter

1

+0%

S4.001

S-JCT

15 Winter

1

+0%

S6.000

S7

15 Winter

1

+0%

100/15 Winter

S3.004

S8

15 Winter

1

+0%

100/15 Summer

S3.005

S-TANK

240 Winter

1

+0%

30/120 Summer

S3.006

S9

240 Winter

1

+0%

1/120 Winter

S3.007

S-SP

240 Winter

1

+0%

S3.008

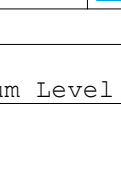
S10

240 Winter

1

+0%

©1982-2020 Innovyze

WML Consulting Ltd		Page 11
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 04/03/2025 09:52 File 10939 - Surface Water - ...		
Designed by DBaker Checked by		
Innovyze		Network 2020.1.3

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.360
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	S1	15 Winter	30	+0%				
S3.001	S2	15 Winter	30	+0%				
S3.002	S3	15 Winter	30	+0%	100/15 Summer			
S3.003	S4	15 Winter	30	+0%				
S4.000	S5	15 Winter	30	+0%	100/120 Winter			
S5.000	S6	15 Winter	30	+0%				
S4.001	S-JCT	240 Winter	30	+0%				
S6.000	S7	15 Winter	30	+0%	100/15 Winter			
S3.004	S8	240 Winter	30	+0%	100/15 Summer			
S3.005	S-TANK	240 Winter	30	+0%	30/120 Summer			
S3.006	S9	240 Winter	30	+0%	1/120 Winter			
S3.007	S-SP	240 Winter	30	+0%				
S3.008	S10	240 Winter	30	+0%				

©1982-2020 Innovyze

WML Consulting Ltd

Page 13

No. 8 Oak Green
Stanley Green Business Park
Earl Rd, Cheadle Hulme, SK8 6QL

Date 04/03/2025 09:52
File 10939 - Surface Water - ...

Innovyze

Designed by DBaker
Checked by

Network 2020.1.3

Micro
Drainage

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Additional Flow - % of Total Flow 0.000

Hot Start (mins) 0

MADD Factor * 10m³/ha Storage 2.000

Hot Start Level (mm) 0

Inlet Coefficient 0.800

Manhole Headloss Coeff (Global) 0.500

Flow per Person per Day (l/per/day) 0.000

Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0

Number of Storage Structures 1

Number of Online Controls 2

Number of Time/Area Diagrams 0

Number of Offline Controls 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

FSR

Ratio R 0.360

Region England and Wales Cv (Summer) 0.750

M5-60 (mm)

18.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)

300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status

OFF

DVD Status

ON

Inertia Status

ON

Profile(s)

Summer and Winter

Duration(s) (mins)

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

Return Period(s) (years)

1, 30, 100

Climate Change (%)

0, 0, 45

WARNING: Half Drain Time has not been calculated as the structure is too full.

US/MH

PN

Name

Storm

Return Period

Climate Change

First (X) Surchage

First (Y) Flood

First (Z) Overflow

Overflow Act.

S3.000

S1

15 Winter

100

+45%

S3.001

S2

15 Winter

100

+45%

S3.002

S3

15 Winter

100

+45%

100/15 Summer

S3.003

S4

15 Winter

100

+45%

S4.000

S5

240 Winter

100

+45%

100/120 Winter

S5.000

S6

15 Winter

100

+45%

S4.001

S-JCT

1440 Summer

100

+45%

S6.000

S7

240 Winter

100

+45%

100/15 Winter

S3.004

S8

240 Winter

100

+45%

100/15 Summer

S3.005

S-TANK

240 Winter

100

+45%

30/120 Summer

S3.006

S9

240 Winter

100

+45%

1/120 Winter

S3.007

S-SP

240 Winter

100

+45%

S3.008

S10

240 Winter

100

+45%

©1982-2020 Innovyze

Existing Greenfield Runoff Volume

WML Consulting Ltd		Page 1																										
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL																												
Date 20/10/2023 09:49 File	Designed by DBaker Checked by																											
Innovyze		Source Control 2020.1.3																										
<u>Greenfield Runoff Volume</u> FSR Data <table> <tr> <td>Return Period (years)</td> <td>100</td> </tr> <tr> <td>Storm Duration (mins)</td> <td>360</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> </tr> <tr> <td>M5-60 (mm)</td> <td>18.000</td> </tr> <tr> <td>Ratio R</td> <td>0.360</td> </tr> <tr> <td>Areal Reduction Factor</td> <td>1.00</td> </tr> <tr> <td>Area (ha)</td> <td>0.283</td> </tr> <tr> <td>SAAR (mm)</td> <td>864</td> </tr> <tr> <td>CWI</td> <td>120.442</td> </tr> <tr> <td>Urban</td> <td>0.000</td> </tr> <tr> <td>SPR</td> <td>47.000</td> </tr> </table> Results <table> <tr> <td>Percentage Runoff (%)</td> <td>49.46</td> </tr> <tr> <td>Greenfield Runoff Volume (m³)</td> <td>83.274</td> </tr> </table>			Return Period (years)	100	Storm Duration (mins)	360	Region	England and Wales	M5-60 (mm)	18.000	Ratio R	0.360	Areal Reduction Factor	1.00	Area (ha)	0.283	SAAR (mm)	864	CWI	120.442	Urban	0.000	SPR	47.000	Percentage Runoff (%)	49.46	Greenfield Runoff Volume (m³)	83.274
Return Period (years)	100																											
Storm Duration (mins)	360																											
Region	England and Wales																											
M5-60 (mm)	18.000																											
Ratio R	0.360																											
Areal Reduction Factor	1.00																											
Area (ha)	0.283																											
SAAR (mm)	864																											
CWI	120.442																											
Urban	0.000																											
SPR	47.000																											
Percentage Runoff (%)	49.46																											
Greenfield Runoff Volume (m³)	83.274																											
©1982-2020 Innovyze																												

Proposed Greenfield Runoff Volume

WML Consulting Ltd		Page 1
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 04/03/2025 10:03 File 10939 - Surface Water -...		
Designed by DBaker Checked by		
Innovyze		Network 2020.1.3

Summary Wizard of 360 minute 100 year Summer I+0% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.360
Region England and Wales	Cv (Summer)	0.750	
M5-60 (mm)	18.000 Cv (Winter)	0.840	

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	360
Return Period(s) (years)	100
Climate Change (%)	0

Pipe					
PN	US/MH Name	US/CL (m)	Discharge Vol (m³)	Flow (l/s)	Status
S3.006	S9	31.800	72.710	2.4	SURCHARGED

©1982-2020 Innovyze

WML Consulting Ltd		Page 2
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 04/03/2025 10:03 File 10939 - Surface Water -...		
Designed by DBaker Checked by		
Innovyze		Network 2020.1.3

Summary Wizard of 360 minute 100 year Winter I+0% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.360
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

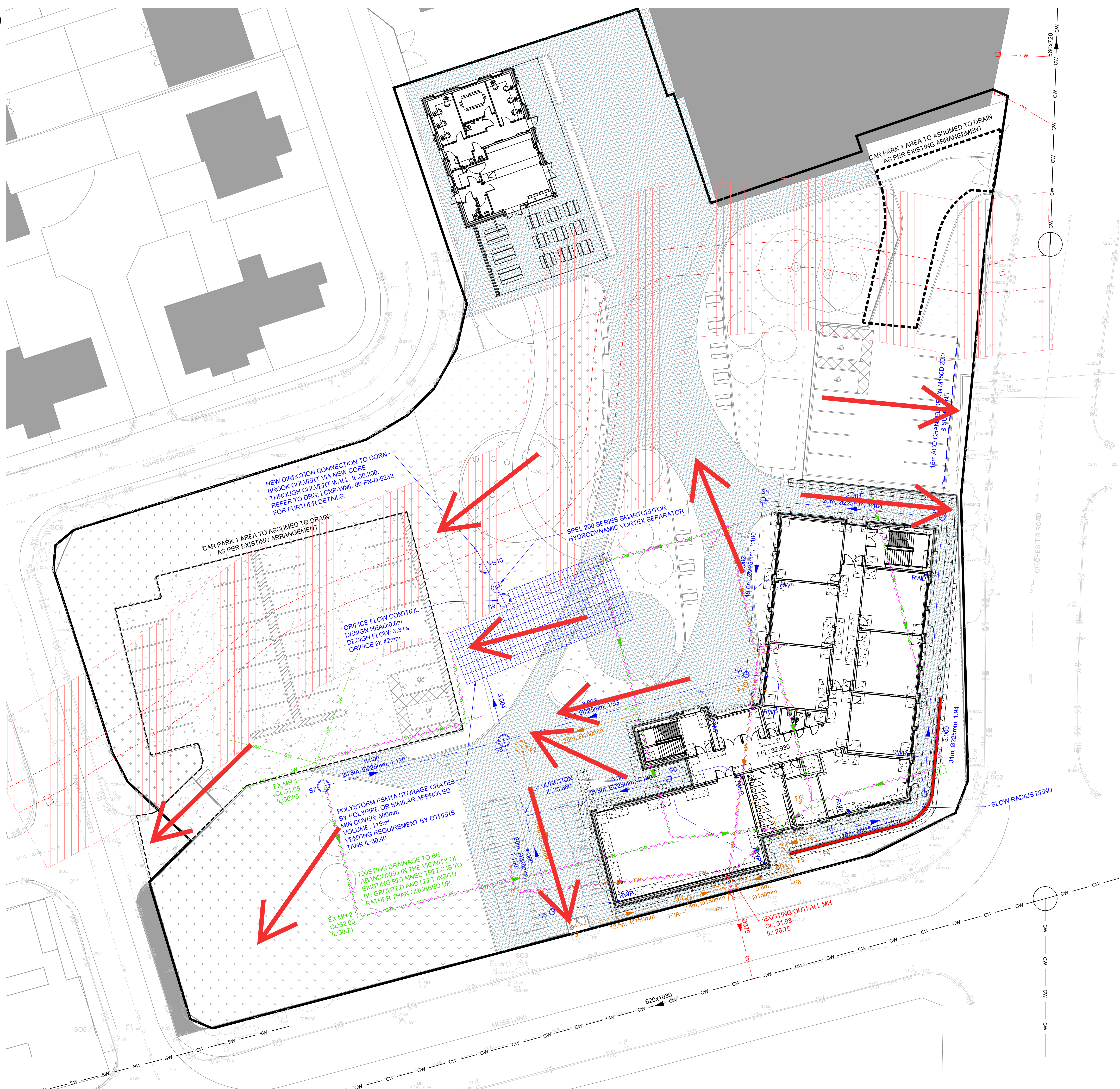
Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	360
Return Period(s) (years)	100
Climate Change (%)	0

Pipe					
	US/MH	US/CL	Discharge	Flow	
PN	Name	(m)	Vol (m³)	(l/s)	Status
S3.006	S9	31.800	78.611	2.5	SURCHARGED

©1982-2020 Innovyze

Exceedance Flow Route Plan

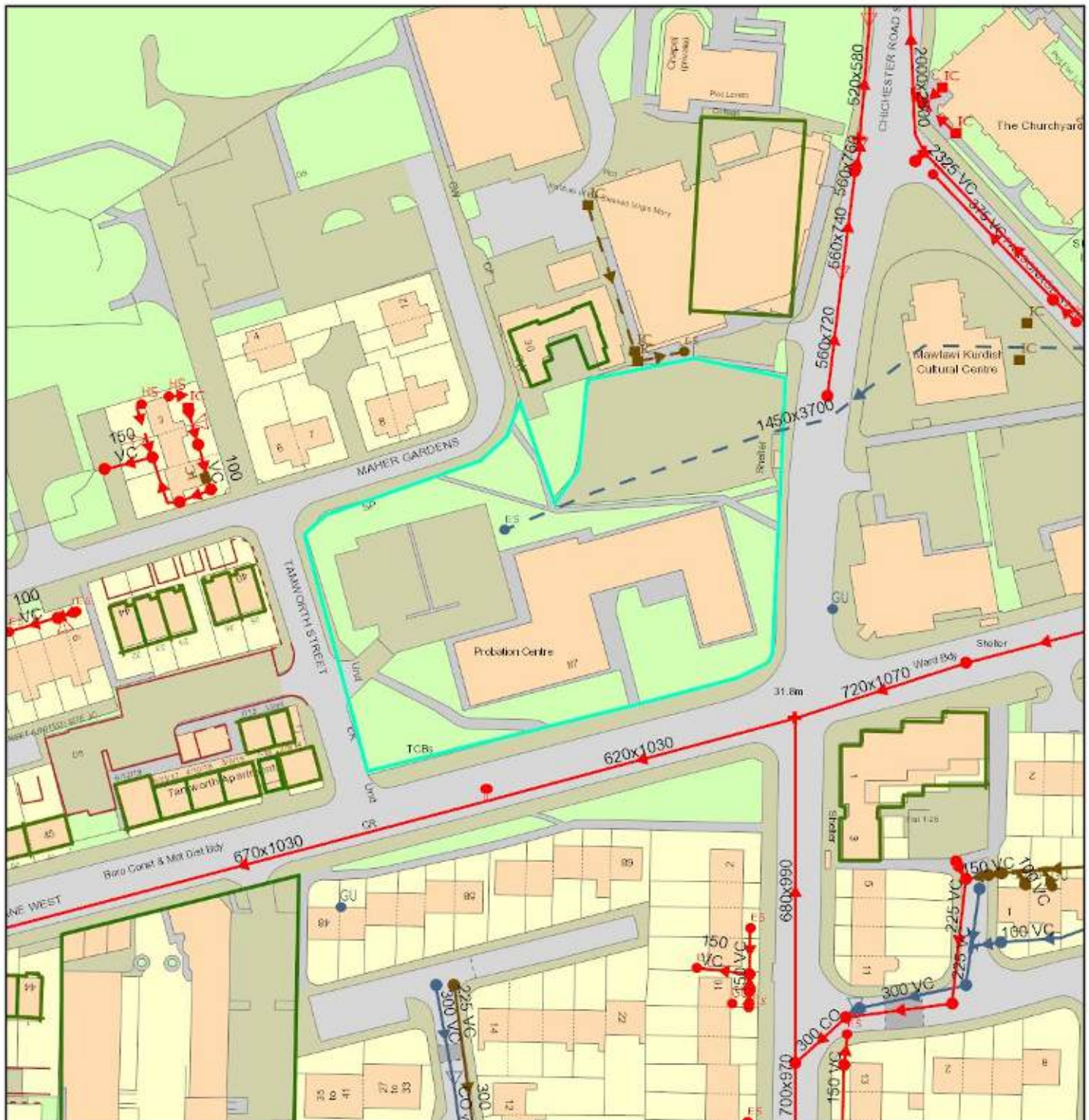


EXCEEDANCE FLOW ROUTES

United Utilities Sewer Records

SEWER RECORD

Former Moss Side Probation Offices 87 Moss Lane West Moss Side Manchester M15 5PE



The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities Water PLC will not accept any liability for any damage caused by the actual positions being different from those shown.

© United Utilities Water PLC 2017. The plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office, Crown copyright 100022432 and United Utilities Water PLC copyrights are reserved. Unauthorised reproduction will infringe these copyrights.

Wastewater Symbolology

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

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

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

Corn Brook Culvert Survey Drawings

