

Project No. & Name:	9809 – Ancoats Works, Manchester	Prepared by:	Rev:	Date:
Document Ref:	9809-WML-00-XX-RP-C-1001	Daniel Baker	P02	November 2021

DRAINAGE STRATEGY

Background

1. The below Drainage Strategy Report has been created by WML to support and inform an initial drainage strategy for a project known as Ancoats Works, Manchester.
2. The project comprises a residential-led development to provide 183 no. apartments and 10 no. duplex apartments (Use Class C3) and flexible commercial space (Use Class E/ sui generis) at the site of Ancoats Works on Pollard Street, Manchester.

Surface Water Drainage Strategy

3. The proposed drainage strategy for this site will incorporate the principles of, and where appropriate demonstrate compliance with the NPPF and the SUDS manual.
4. The proposed drainage system should be designed in accordance with BS EN 752 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.
5. These options are discussed in further detail below.
6. **Surface water discharge via infiltration:** From a review of the WML Geo-Environmental & Geo-Technical Site Summary, 9809-WML-00-XX-RP-G-0001 it is understood that the site is generally comprises made ground underlain by cohesive soils that are not suitable for the use of soakaways and other infiltration techniques.
7. **Surface water discharge via watercourse:** It is understood that the Ashton Canal forms the western boundary of the site. At the time of writing it is unconfirmed whether or not the existing site currently discharges to the canal, however the drainage strategy presented below and on WML drawing 9809-WML-ZZ-XX-DR-C-1001 assumes that all surface water runoff from the proposed development can be discharged to the Ashton Canal for the purpose of design.
8. **Surface water discharge via public sewer connection:** In the event that disposal of surface water from the site to the adjacent canal is deemed not possible, a connection to the United Utilities (UU) public sewerage network will be required.

Surface Water Proposal

9. Reference should be made to WML drawing 9809-WML-ZZ-XX-DR-C-1001.
10. As noted above, the drainage strategy presented within this document and on WML drawing 9809-WML-ZZ-XX-DR-C-1001 assumes that all surface water runoff from the proposed development can be discharged to the Ashton Canal.
11. It is recommended that a GPR survey and/or CCTV survey is undertaken prior to detailed design to confirm/support the design principles set out within this document and identify any existing outfalls to the Ashton Canal that may be suitable for reuse by the proposed development.
12. The site is currently developed and is therefore classified as a 'Brownfield' site and thus requires a minimum 50% reduction in surface water runoff rate leaving the development site as outlined within the SFRA.
13. It is understood that LLFA policy is that any new development should aim to discharge surface water runoff at the pre-developed Greenfield runoff rate.

14. In consideration of the above, a greenfield runoff assessment was undertaken using Microdrainage software which concluded the following flow rates;

Return Period	Flow (l/s)
1 in 1 year	2.8
1 in 30 year	5.5
1 in 100 year	6.8

15. The proposals for the new build development intend to discharge all surface water 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.
16. It is proposed to collect roof water via siphonic roof drainage system and discharge via a new below ground drainage network located around the building footprint.
17. A below ground cellular storage tank has been incorporated within the drainage network to store the captured roof water where it can be then released via a Hydrobrake unit at a controlled/restricted flow rate to suit the allowable greenfield flow rates noted above.
18. Surface water runoff from external areas of hardstanding will be captured via a permeable paving which will comprise a shallow depth perforated pipe network located within the granular sub-base layer beneath the various external construction finishes.
19. The captured rainwater will percolate through the external construction build-up to the sub-base and will then be transported through the perforated pipe network and discharged via the same outfall to the Ashton Canal as the roof drainage.
20. Two cellular Permavoid Diffuser units have been included within the perforated network to collate the surface water from within the sub-base and release it via one of two Hydrobrake units at a controlled/restricted flow rate into the same outfall pipe as the roof water.
21. At the time of writing information relating to the existing water level within the Ashton Canal is unavailable and therefore it is assumed that the drainage design as shown on WML drawing 9809-WML-ZZ-XX-DR-C-1001 can be achieved via a gravity system only and that there is no requirement for a pumping solution.
22. Given that the external hardstanding will comprise pedestrian traffic only and that the granular sub-base used within the permeable construction will provide an element of water treatment in addition to storage, it is considered that no further water treatment is required prior to final disposal into the adjacent canal.

Waste Water proposal

23. It is understood from a review of the United Utilities Public Sewer Records that there are existing public combined sewers located within the adjacent Pollard Street (east) and Carruthers Street (south).
24. It is therefore proposed to collect waste water from the new development via traditional soil stacks/SVPs and discharge via a new below ground drainage network which then discharges via a new connection to the nearest public combined sewer located to the east, beneath Pollard Street.
25. It is recommended that a CCTV survey is undertaken prior to detailed design in order to identify and existing connections to the public sewerage network that may be suitable for reuse by the proposed development.

SUDs Review

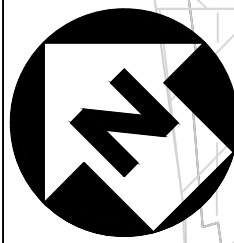
26. SUDs should be considered as part of the detailed drainage design for the new build development area and are discussed in further detail below.
27. Storing water for later use could be a viable option for this site. The expected limited roof space available combined with the extensive maintenance required for systems such as green roofs/water gardens, particularly at such a height of 9 storeys are considered not a practical solution for this development.
28. Above ground storage basins/swales have been considered for the storage of surface water prior to disposal into the existing drainage network, however due to the limited space within the shared amenity areas it is considered not a practical solution for this development.
29. Tree pits and small water gardens/features may be additional SuDs techniques that could be incorporated within the external landscaping for the proposed development and should be discussed during detail design works for the site.
30. Permeable paving construction has been incorporated across the site for the storage and treatment of surface water runoff for all external areas, thus alleviating the requirement channel drains, gullies and other traditional drainage items.

Maintenance Plan

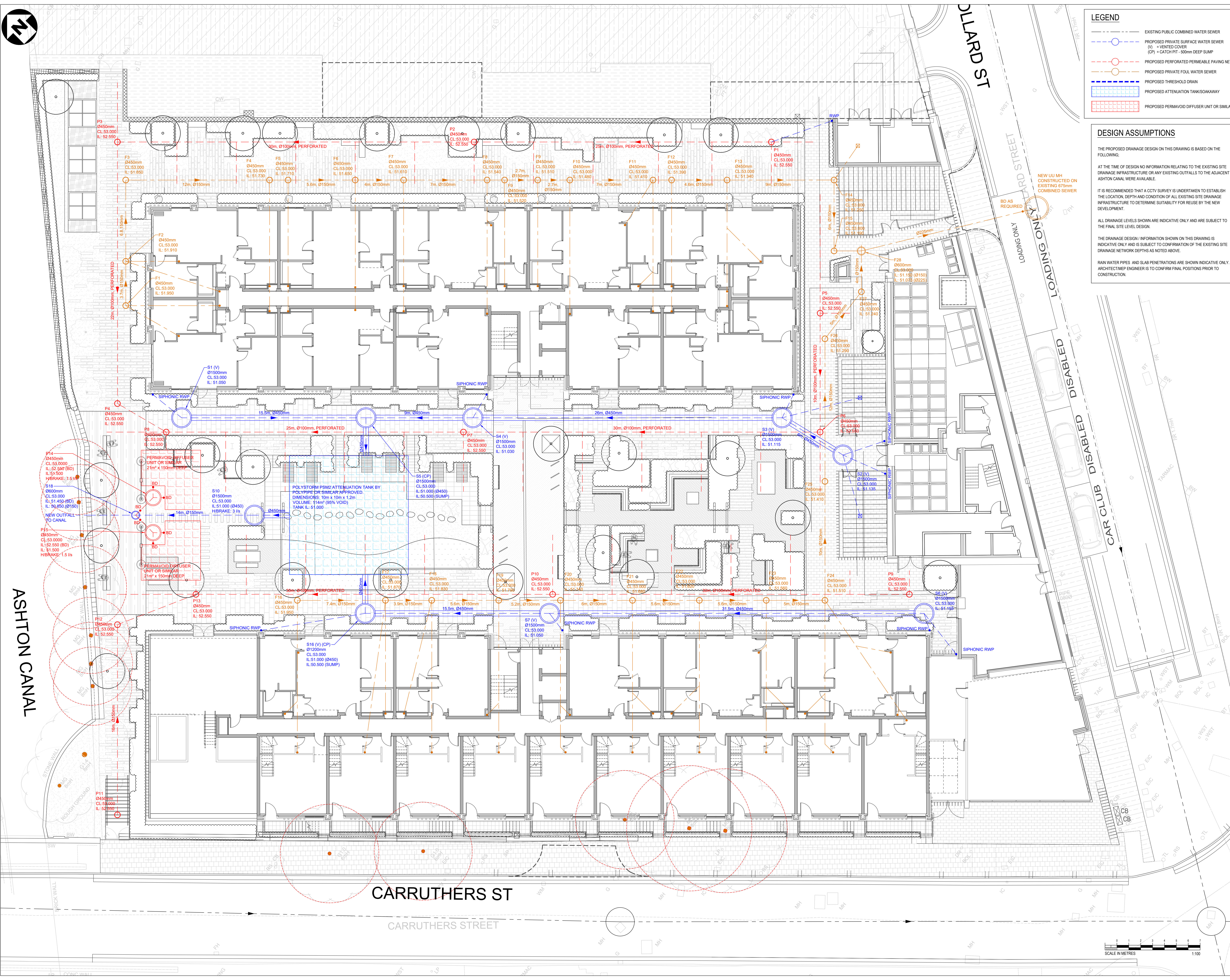
31. It is understood that the new drainage network will be privately owned and maintained by the client or an appointed maintenance company on their behalf and will not be offered up for adoption by United Utilities.
32. The proposed drainage system has been designed in accordance with the current standards and guidelines to achieve a minimum self-cleansing velocity, however excessive debris in the system could still result in loss of performance.
33. The proposed drainage design will consists of traditional manholes, pipes and channels.
34. 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.
35. Any problems encountered should be investigated by CCTV survey if required and any remedial works necessary carried out in a timely manner.
36. 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.
37. 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.
38. The proposed drainage system includes a permeable paving drainage solution. 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.
39. The drainage proposals include multiple Hydrobrake flow control units or similar. It is recommended that the hydrobrake is inspected twice a year during the full site drainage as noted above. The manufacturer also provides a cleaning, maintenance and repair service for the hydrobrake that covers the following;
 - a. Scheduled cleaning
 - b. Emergency breakdown assistance
 - c. On-site repairs
 - d. Equipment strip-down
 - e. Planned maintenance
 - f. Planned spares replacements
40. The above should be considered by the Client upon first occupation of the development as part of the general site maintenance plan.

APPENDIX 01

WML Proposed Drainage GA 9809-WML-ZZ-XX-DR-C-1001



ASHTON CANAL



CARRUTHERS ST

CARRUTHERS STREET

DILLARD ST

LEGEND

- EXISTING PUBLIC COMBINED WATER SEWER
- PROPOSED PRIVATE SURFACE WATER SEWER (V) = VENTED COVER (CP) = CATCH PIT - 500mm DEEP SUMP
- PROPOSED PERFORATED PERMEABLE PAVING NETWORK
- PROPOSED PRIVATE FOUL WATER SEWER
- PROPOSED THRESHOLD DRAIN
- PROPOSED ATTENUATION TANK/SOAKAWAY
- PROPOSED PERMAVOID DIFFUSER UNIT OR SIMILAR

DESIGN ASSUMPTIONS

THE PROPOSED DRAINAGE DESIGN ON THIS DRAWING IS BASED ON THE FOLLOWING:

AT THE TIME OF DESIGN NO INFORMATION RELATING TO THE EXISTING SITE DRAINAGE INFRASTRUCTURE OR ANY EXISTING OUTFALLS TO THE ADJACENT ASHTON CANAL WERE AVAILABLE.

IT IS RECOMMENDED THAT A CCTV SURVEY IS UNDERTAKEN TO ESTABLISH THE LOCATION, DEPTH AND CONDITION OF ALL EXISTING SITE DRAINAGE INFRASTRUCTURE TO DETERMINE SUITABILITY FOR REUSE BY THE NEW DEVELOPMENT.

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

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 CASSED INTERFACES.

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

COVER LEVELS ON THIS DRAWING ARE APPROXIMATE AND INDICATIVE ONLY ARCHITECT TO CONFIRM COVER LEVELS TO ALL MANHOLES AND GULLIES PRIOR TO CONSTRUCTION.

THE LAYOUT OF DRAINAGE ON THIS DRAWING IS INDICATIVE ONLY ARCHITECT TO CONFIRM EXACT LOCATION OF MANHOLES AND GULLIES.

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, LOCKABLE AND RECESSED TO ACCEPT FLOOR FINISHES WHERE APPLICABLE.

SETTING OUT OF ALL INTERNAL GULLY/PLUMBING 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 SLAB LEVEL.

ALL SURFACE WATER CONNECTIONS TO BE 100mm DIAMETER AT MINIMUM FALLS OF 1:100 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/METER 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 MANHOLE TYPES B UNLESS NOTED OTHERWISE. INTERNAL DIAMETERS OF MANHOLES TO BE 1000mm 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 [38] - EN 124 CLASS B125 SLOW MOVING
GLV [10] - 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 SIMILAR APPROVED.

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

SUBJECT TO APPROVAL FROM
LOCAL PLANNING AUTHORITY
AND UNITED UTILITIES

PRELIMINARY

P03	REVISED TO SUIT UPDATED SITE LAYOUT.	25.11.21	DB	CB
P02	REVISED TO SUIT UPDATED SITE LAYOUT.	11.10.21	DB	CB
P01	PRELIMINARY ISSUE.	13.09.21	DB	CB
Rev.	Amendment	Date	By	Chkd

Project
ANCOATS, MANCHESTER

ARCHITECT
CAPITAL & CENTRIC

Title
PROPOSED DRAINAGE GA

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9809	DB	CB	SEPT 2021	1:100 @ A0

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9809	- WML - ZZ - XX - DR - C -	1001	P03				