

Technical design note

Project name	Ancoats Garden		
Design note title	Discharge of Planning Conditions 5 & 9		
Document reference	C-24134-HYD-XX-XX-TN-C-0001		
Author	Josh Booth		
Revision	Po4		
Date	3 August 2023	Approved	✓

1. Planning Conditions 5 and 9

With reference to the approved planning application granted, ref: 118120/FO/2017 this note has been produced in support of the discharge of Planning Conditions 5 and 9 relating to the surface water drainage. The planning conditions are as follows.

5. The development hereby approved shall be carried out in accordance Drainage Strategy Report (ref. GM-AJP-ZZ-RP-C-3010) DATED 14.11.2018 stamped as received by the City Council, as Local Planning Authority, on the 18 April 2020.

Prior to the first occupation of the development a verification report shall be submitted, including relevant photographic evidence, that the scheme has been implemented in accordance with the previously approved details.

Reason – To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution pursuant to policies SP1, EN14 and DM1 of the Manchester Core Strategy (2012).

9. Prior to the first occupation of the development hereby approved, details of the implementation, maintenance and management of the sustainable drainage scheme have been submitted for approval in writing by the City Council, as Local Planning Authority.

For the avoidance of doubt the scheme shall include the following:

- Management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.

The approved scheme shall the be implemented in accordance with the details and thereafter managed and maintained for as long as the development remains in use.

Reason – To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution pursuant to policies SP1, EN14 and DM1 of the Manchester Core Strategy (2012).

We have received further comments since revision P03, see comments below.

- Proposals have been accepted in principle by United Utilities (UU), can the developer please confirm the necessary formal approvals are now in place.
- Conditions 5 and 9 cannot be discharged until the built-out drainage system is connected to the public sewer and confirmation of this is submitted in the verification report.
- Nodes referenced within the MicroDrainage modelling need to be accurately reflected within the drainage drawing. Currently it is difficult to correlate manhole references with the modelled nodes. Once updated, we will review the amended drainage scheme further.
- The verification report does not include photos of the flow control (this is not visible in the photo provided). Please submit photographic evidence of this component.
- We would expect a PDF as-built engineering drawing, including cover levels, invert levels, flow control restrictions and attenuation details. Rather than an image demonstrated within figure 6.

2. Planning Condition 5 - Drainage verification

The proposed drainage has been constructed in accordance with the previously approved Alan Johnston Partnership drainage layout AGM-AJP-XX-00-DR-C-0001, which can be found within Appendix A.

Two changes were made to the design during construction -

Change 1

Following construction of the on-site drainage it was identified that the existing combined manhole to be connected to was too shallow for a gravity connection. This was resolved by lowering of the UU sewers within Bendix Street under a Section 185 Agreement. Hydrock were appointed to produce engineering drawings indicating the excavation and re-constructing of the existing United Utilities public combined sewer, creating a deeper connection chamber that will allow a gravity connection from the proposed development.

The proposed diversion works to the Public Sewer have been agreed with United Utilities, and the construction has been completed on site. The approved design can be found within Appendix B, and acceptance correspondence can be found within Appendix C.

Change 2

Between the Planning and Construction Phases of the proposed drainage, modifications were made to the arrangement of pipework, along with the reduction of attenuation volumes from 37.6m³ to 22.8m³. Hydrock updated the surface water drainage calculations within MicroDrainage to confirm that the performance of the drainage is the same as the approved design. The MicroDrainage calculations, which can be found with Appendix D, indicate that a flow rate of 9.9l/s is still achieved with the amendments to the pipe routes and attenuation.

The updated construction drawing AGM-AJP-XX-00-DR-C-0001 C01 is included in Appendix A which shows the above changes.

We are satisfied that the two changes above do not affect the operation of the drainage and the system still falls within the design intent set out in the planning application.

Quadrant Building Control Inspection

The following photographs were taken of the below ground drainage construction during site inspections dated between 13/05/20 and 04/06/20 undertaken by Quadrant Building Control.

The indicate the construction of chambers, benching and pop-ups.



Photo 1 – As built Chamber SW02 Access Point



Photo 2 – Chambers SW7 and SW9 either side of the attenuation tanks are in place and being benched up



Photo 3 – Foul Pop-Up Adjacent Structural Columns



Photo 4 - Attenuation Tank Installation



Photo 5 - Attenuation Tank Installation



Photo 6 - SWo6 PPIC



Photo 7 – SW07 Catchpit Cover



Photo 8 – FW08 Type B Manhole Cover



Photo 9 – SW09 HydroBrake Chamber



Photo 10 – FW07 – Type C Manhole Cover



Photo 11 – Surface Water Gully



Photo 12 – Foul Gully



Photo 13 – FW05 PPIC Cover



Photo 14 – Surface Water Gully



Photo 15 – SW04 PPIC Cover



Photo 16 - SW05 PPIC Cover



Photo 17 - FW04 Type C Manhole Cover

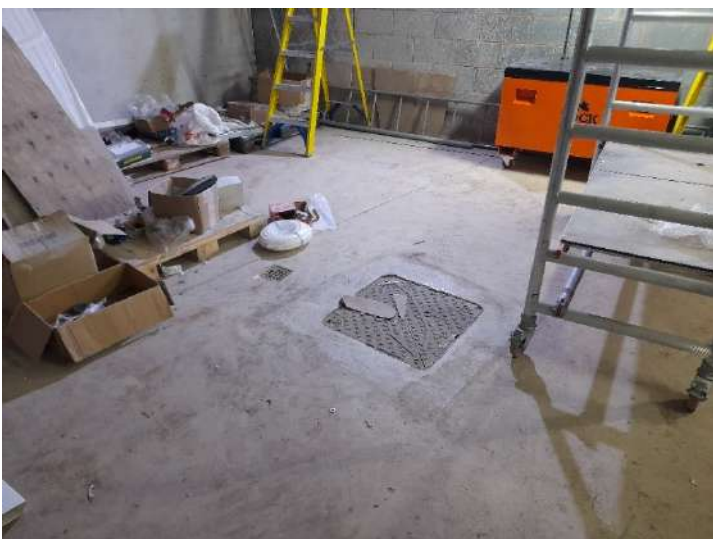


Photo 18 - FW01 PPIC Cover

A further site visit was undertaken on 26/07/23 to inspect the flow control manhole and downstream manhole, which is shown in photos 19 and 20.



Photo 19 - Flow control manhole



Photo 20 - Outfall manhole

The location of the photos is shown on the drawing in Appendix E.

The as-built drawing C-24134-HYD-XX-XX-DR-C-0530 is included in Appendix F.

We confirm the drainage system is now connected to the United Utilities network and is fully operational.

3. Condition 9 - Management and Maintenance Plan

The management company responsible for maintenance of the drainage systems is **Manchester Apartments**.

The maintenance strategy and responsibilities are as set out in the table below.

Table 7: General Maintenance of the Network

Component to be maintained	Actions	Frequency
Site wide external areas	Site to be generally kept free from litter and debris which may enter the drainage system.	On-going
Flow Control Chamber	Inspect for condition /silts debris. Check emergency drain down is in good working order. Ensure flow control is not impeded	6 monthly
Roof gutters	Check roof gutters for sediment, plant debris etc and clean as necessary	Annually
General network inc. pipes/ manholes/ catchpits/ gullies/ channel drains	Manholes covers to be lifted and inspected for sediment build up, remove as required	Annually

Table 8: General Maintenance of Attenuation Tanks (CIRIA SuDS Manual C753)

Operation and maintenance requirements for attenuation storage tanks		
Component to be maintained	Actions	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter- remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually or as requested
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Appendix A

AGM-AJP-XX-00-DR-C-0001-P04 – Proposed Drainage Strategy

AGM-AJP-XX-00-DR-C-0001-C01 – Proposed Drainage Strategy

ALL INTERNAL MANHOLES AND CHAMBERS TO HAVE DOUBLE SEALED AND LOCKABLE MANHOLE COVERS. ARCHITECT TO SPECIFY WHICH MANHOLE COVERS, IF ANY NEED TO BE RECESSED.

PRELIMINARY SUBJECT TO CONFIRMATION OF LANDSCAPE ARCHITECTS PROPOSED SITE LEVELS AND ALL FOUL WATER POP UP AND RAINWATER DOWNPIPE LOCATIONS AND FLOW RATES

PRELIMINARY SUBJECT TO CONFIRMATION OF UNITED UTILITIES AND MANCHESTER CITY COUNCIL ACCEPTANCE OF DISCHARGE CONNECTION LOCATIONS AND FLOW RATES

EXISTING SITE SURFACE WATER

LEGAL (RED LINE) SITE AREA = 2,149m²

THE EXISTING SITE IS A BROWNFIELD SITE WITH THE MAJORITY BEING IMPERMEABLE BUT IT IS ASSUMED THAT THE FOOTPATHS SURROUNDING THE EXISTING BUILDINGS WILL CONTINUE TO DISCHARGE TO THE SURROUNDING HIGHWAYS AND THEREFORE THESE AREAS HAVE BEEN EXCLUDED FROM THE EXISTING AND PROPOSED IMPERMEABLE AREAS.

AS SUCH, AN EXISTING IMPERMEABLE AREA OF 0.170ha HAS BEEN USED TO DETERMINE THE EXISTING BROWNFIELD RUNOFF RATES AND A POST DEVELOPMENT IMPERMEABLE AREA OF 0.156ha HAS BEEN USED TO DETERMINE THE REQUIRED ATTENUATION STORAGE.

EARLY DISCUSSIONS WITH MANCHESTER CITY COUNCIL & UNITED UTILITIES HAVE RESULTED IN A PEAK SURFACE WATER DISCHARGE RESTRICTION OF 9.9 L/s BEING IMPOSED FOR ALL RAINFALL EVENTS UP TO AND INCLUDING THE 1 IN 100 YEAR RETURN PERIOD.

PROPOSED DEVELOPMENT DETAILS

PRE DEVELOPMENT PERMEABLE AREA = 0m² - 0%

POST DEVELOPMENT PERMEABLE AREA = 140m² - 7%

PRE DEVELOPMENT IMPERMEABLE AREA = 2,149m² - 100%

PRE DEVELOPMENT IMPERMEABLE AREA EXCLUDING FOOTPATH AREAS = 1,700m² - 79%

POST DEVELOPMENT IMPERMEABLE AREA = 2,009m² - 93%

POST DEVELOPMENT IMPERMEABLE AREA EXCLUDING FOOTPATH AREAS = 1,560m² - 73%

SURFACE WATER DRAINAGE STRATEGY

SEPARATE SYSTEMS HAVE BEEN DETAILED WITH THE SURFACE WATER AND FOUL WATER COMBINING PRIOR TO DISCHARGING TO THE UNITED UTILITIES COMBINED SEWER, LOCATED IN BENDIX ROAD TO THE SOUTH-EAST CORNER OF THE SITE.

TO REFLECT THE PEAK SURFACE WATER RESTRICTION OF 9.9 L/s WE NEED TO PROVIDE 37.3m³ OF STORAGE TO ACCOMMODATE THE 100yr + 30% CC RAINFALL EVENT.

SURFACE WATER DISPOSAL HIERARCHY

1. INFILTRATION - TO COMPLY WITH BUILDING REGULATIONS PART-H, NO SOAKAWAYS SHOULD BE LOCATED WITHIN 5.0m OF A BUILDING OR ROAD. ASSESSING THE SITE LAYOUT AND THE 5m RESTRICTION, IT WOULD BE IMPOSSIBLE TO LOCATE A SOAKAWAY OR OTHER INFILTRATION TECHNIQUE 5m AWAY FROM THE BUILDING OR ADJACENT ROADS. THEREFORE, AS A RESULT OF THE BUILDING REGULATIONS AND SITE LAYOUT RESTRICTIONS, INFILTRATION DRAINAGE IS NOT A VIABLE OPTION FOR THE DISCHARGE OF SURFACE WATER.

2. WATERCOURSE - NOT SUITABLE DUE TO DISTANCE.

3. LIVING ROOF - THESE ARE TO BE INCLUDED, WHERE POSSIBLE, ON THIS DEVELOPMENT.

4. BASINS & PONDS - THESE ARE NOT SUITABLE FOR THIS DEVELOPMENT.

5. FILTER STRIPS & SWALES - THESE ARE NOT SUITABLE FOR THIS DEVELOPMENT.

6. PERMEABLE SURFACES - THESE ARE NOT SUITABLE FOR THIS DEVELOPMENT.

7. TANKED SYSTEMS - A CELLULAR ATTENUATION TANK AND FLOW RESTRICTION SYSTEM HAVE BEEN DETAILED ON THE DRAWING.

FOUL DRAINAGE STRATEGY

IT IS ENVISAGED THAT THE FOUL WATER WILL DISCHARGE VIA A COMBINED CONNECTION TO THE PUBLIC COMBINED SEWER LOCATED IN BENDIX STREET TO THE SOUTH-EAST CORNER OF THE SITE. A NON-RETURN VALVE IS TO BE CONSTRUCTED WITHIN THE NEW COMBINED MANHOLE TO PREVENT SURCHARGED FLOWS FROM THE UNITED UTILITIES SEWERS ENTERING THE PRIVATE DRAINAGE NETWORK IN THE BASEMENT.

THE APPROXIMATE FOUL FLOW RATE FROM THE DEVELOPMENT IS YET TO BE DETERMINED AND THIS NEEDS TO BE DEVELOPED AND CONFIRMED BY THE M&E CONSULTANT.

UNITED UTILITIES CORRESPONDENCE

A PRE-DEVELOPMENT ENQUIRY HAS BEEN SUBMITTED TO UNITED UTILITIES AND RETURN COMMENTS HAVE BEEN RECEIVED. THE GUIDANCE INDICATED THAT THE SURFACE WATER RUNOFF CAN DISCHARGE TO THE 600mmØ COMBINED WATER SEWER ON BENDIX STREET, AT A MAXIMUM DISCHARGE RATE OF 9.9 L/s.

THE GUIDANCE ALSO INDICATED THAT THE FOUL WATER CAN ALSO DISCHARGE TO THE SURROUNDING COMBINED SEWERS AT AN UNRESTRICTED DISCHARGE RATE.

LLFA CORRESPONDENCE

IN COMPLIANCE WITH THE MANCHESTER CITY, SALFORD CITY AND TRAFFORD COUNCILS LEVEL 2 HYBRID SFRA USER GUIDE, MAY 2010, THE SURFACE WATER RUNOFF SHOULD BE RESTRICTED TO A MAXIMUM DISCHARGE RATE EQUIVALENT TO 50% OF THE EXISTING BROWNFIELD RUNOFF RATES. DISCUSSIONS WITH MANCHESTER CITY COUNCIL (LLFA) SHOULD BE COMPLETED TO CONFIRM THAT THIS IS ACCEPTABLE.

A PRE-DEVELOPMENT ENQUIRY TO REFLECT THE NEW BASEMENT GRAVITY OUTFALL DRAINAGE STRATEGY HAS BEEN SUBMITTED TO MANCHESTER CITY COUNCIL (LLFA) AND THEY HAVE RESPONDED INDICATING THAT THEY AGREE, IN PRINCIPLE WITH THE CURRENT DRAINAGE STRATEGY.

IMPORTANT NOTES

- SETTING OUT SHALL BE UNDERTAKEN USING ONLY THE INFORMATION GIVEN. DISTANCES SHOULD NOT BE SCALED FROM THIS DRAWING.
- ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION AND UNITED UTILITIES DETAILS & GUIDELINES.
- THE MINIMUM GRAVITY PIPE DIAMETER UNDER ADOPTABLE HIGHWAYS SHALL BE 150mm
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION GIVEN WITH REGARDS TO EXISTING SERVICES AND DRAINAGE CONNECTIONS ETC. PRIOR TO COMMENCING THE WORKS. THE RATES SHALL INCLUDE FOR HAND DIG AROUND SERVICES WHERE NECESSARY. THE CONTRACTOR SHALL ADHERE TO THE CDM REGULATIONS AT ALL TIMES
- THE OUTSIDES OF ALL SEWERS SHALL BE A MINIMUM OF 1.0m FROM KERB LINES AND THE OUTSIDE OF MANHOLES SHALL BE A MINIMUM OF 0.5m FROM KERB LINES
- EXISTING FLOWS IN WATERCOURSES, SEWERS AND LAND DRAINS SHALL BE MAINTAINED AT ALL TIMES
- ONLY TRAINED PERSONNEL SHALL BE PERMITTED TO ENTER CONFINED SPACES
- ALL MATERIALS TO BEAR THE RELEVANT B.S. KITEMARK AND COMPLY FULLY WITH THE SPECIFICATIONS. ALL CONCRETE & CONCRETE PRODUCTS MUST USE SULPHATE RESISTANT CEMENT (UNLESS THE SITE INVESTIGATION REPORT PROVES THAT SULPHATE ATTACK FROM SOILS AND GROUNDWATER WILL NOT OCCUR TO WITHSTAND A CLASS
- ALL OPENING NOTICES ETC. AS REQUIRED UNDER HIGHWAYS ACTS ETC. ARE TO BE OBTAINED PRIOR TO COMMENCEMENT OF WORKS. ALL WORKS ARE TO BE INSPECTED BY L.A., NHBC OR THE NETWORK OPERATOR AS APPLICABLE.
- SLAB LEVELS SHALL NOT BE VARIED WITHOUT REFERENCE TO THE ENGINEER FOR GUIDANCE
- SLOW REST BENDS TO BE USED IN ALL LOCATIONS MADE UP FROM 2No. 45 DEG BENDS (600mm TO INVERT FROM FFL)
- MANHOLE POSITIONS AND ACCESS COVERS TO BE ACCURATELY SET-OUT BY LANDSCAPE ARCHITECT TO SUIT EXTERNAL FINISHES
- ALL DRAINS CAST THROUGH FOUNDATIONS TO HAVE ROCKER PIPES ON BOTH SIDES OF FOUNDATION
- ALL POP UP POSITIONS TO BE CONFIRMED SET OUT DIMENSIONS TO BE AGREED & PROVIDED BY OTHERS
- ALL DISCHARGE RATES TO BE CONFIRMED BY M&E DESIGNER
- ALL SURFACE WATER COLLECTION FEATURES TO BE CONFIRMED BY THE LANDSCAPE ARCHITECT
- STORAGE HAS BEEN PROVIDED IN A CELLULAR STORAGE TANK.
- LANDSCAPE ARCHITECT TO CONFIRM GULLY AND DRAINAGE CHANNEL LOCATIONS TO LANDSCAPED AREAS.
- FOUL NETWORK TO BE CONFIRMED FOLLOWING CONFIRMATION OF BRANCH CONNECTION POINTS FROM BUILDING M&E DESIGNER

LEGEND

- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FOUL WATER MANHOLE
- PROPOSED COMBINED WATER MANHOLE
- PROPOSED FOUL WATER DRAINAGE
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED COMBINED WATER DRAINAGE
- EXISTING UNITED UTILITIES COMBINED SEWER (UNPROVEN BY CCTV SURVEY)
- EXISTING UNITED UTILITIES COMBINED SEWER
- EXISTING UNITED UTILITIES COMBINED SEWER TO BE ABANDONED AND GRUBBED UP
- EXISTING UNITED UTILITIES COMBINED SEWER TO BE ABANDONED AND GROUTED
- EXISTING PRIVATE SEWER
- EXISTING PRIVATE SEWER TO BE ABANDONED AND GRUBBED UP

P04	05.04.2019	RIBA STAGE 4 (TECHNICAL DESIGN)	JRS	DJS	DJS
P03	14.11.2018	RIBA STAGE 3 (DEVELOPED DESIGN) - UPDATED TO REFLECT LATEST LAYOUT	JRS	DJS	DJS
P02	17.08.2018	RIBA STAGE 3 (DEVELOPED DESIGN) - UPDATED TO REFLECT LATEST CCTV SURVEYS	JRS	DJS	DJS
P01	05.07.2018	RIBA STAGE 3 (DEVELOPED DESIGN)	JRS	DJS	DJS
REV	DATE	DESCRIPTION	BY	CHK	APP

DRAWING STATUS:

PRELIMINARY

CLIENT:

CREATE CONSTRUCTION

ARCHITECT:

BEECH DESIGN & BUILD

PROJECT:

103 ANCOATS GARDENS

TITLE:

BELOW GROUND DRAINAGE DRAINAGE STRATEGY

STATUS:

S2

PROJECT NUMBER:

218-156

DRAWING No:

AGM - AJP - XX - 00 - DR - C - 0001

REV:

P04

SCALE @ A1:

1:200

DESIGNED:

JRS

DRAWN:

JRS

CHECKED:

DJS

APPROVED:

DJS

DATE:

JUL 2018

alan johnston partnership LLP

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ajp structural

civil engineering

ASSUMED SUMP PUMP WITHIN LIFT PIT TO DRAIN INTO ADJACENT PROPOSED FOUL WATER DRAINAGE.

ALL MANHOLE COVERS TO BE C250 LOAD CLASS AND PPIC COVERS TO BE B125 LOAD CLASS UNLESS OTHERWISE NOTED.

CCTV SURVEYS HAVE IDENTIFIED THAT THE EXISTING UU SEWER CONTINUES AS A PRIVATE SEWER ALONG HATTER STREET PRIOR TO CHANGING TO A 450mm BRICK U-SHAPED SEWER AND EVENTUALLY TO A 150mmØ SEWER WHICH TERMINATES AT THE EXISTING ACCESS GULLY TO THE NORTH EAST CORNER OF THE EXISTING BUILDING TO THE WEST OF THE EXISTING SEWER.

SECTION 185 AGREEMENT IN PLACE WITH UNITED UTILITIES TO ABANDON EXISTING UNITED UTILITIES SEWER. THE PRIVATE COMBINED SEWERS AND UNITED UTILITIES COMBINED SEWER WITHIN THE SITE BOUNDARY SHOULD BE ABANDONED AND COMPLETELY GRUBBED UP, WHERE AS THE EXISTING UNITED UTILITIES COMBINED SEWER UNDER BENDIX STREET IS TO BE ABANDONED AND FULLY GROUTED UP.

CONSTRUCTION PROGRAMME TO BE DISCUSSED TO FINALISE CELLULAR ATTENUATION TANK SPECIFICATION AND COVER SLAB REQUIREMENTS.

37.6m³ (11m x 4.5m X 0.8m DEEP) CELLULAR ATTENUATION TANK TO PROVIDE ATTENUATION STORAGE UP TO AND INCLUDING 1 IN 100 YEAR +30% CLIMATE CHANGE RAINFALL EVENT. (MINIMUM STORAGE REQUIRED = 37.3m³) TOP OF TANK: 47.750mAOD BASE OF TANK: 46.950mAOD.

LOCATION AND DEPTHS OF ALL EXISTING SERVICES ALONG THE LINE OF THE PROPOSED OUTFALL PIPELINE TO BE IDENTIFIED AND CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY POTENTIAL CLASHES BETWEEN EXISTING SERVICES AND PROPOSED OUTFALL PIPELINE TO BE HIGHLIGHTED TO ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS.

ASSUMED THAT ALL FOOTPATHS EXTERNAL TO BUILDING ARE TO DISCHARGE DIRECTLY TO SURROUNDING HIGHWAYS AS PER THE EXISTING SCENARIO.

AT THIS POINT SEWER CHANGES TO 150mmØ. FURTHER INTRUSIVE SURVEYS HAVE PROVEN THAT THE SEWER CONNECTS TO THE EXISTING ACCESS GULLY TO THE NORTH EAST CORNER OF THE EXISTING BUILDING TO THE WEST OF THE EXISTING SEWER.

ALL LEVELS INDICATED ON PROPOSED DRAINAGE ARE SUBJECT TO CONFIRMATION OF FFL AND LEVELS WITHIN THE BASEMENT AREA. AS SUCH, ALL PROPOSED DRAINAGE LEVELS ARE TO BE CONFIRMED.

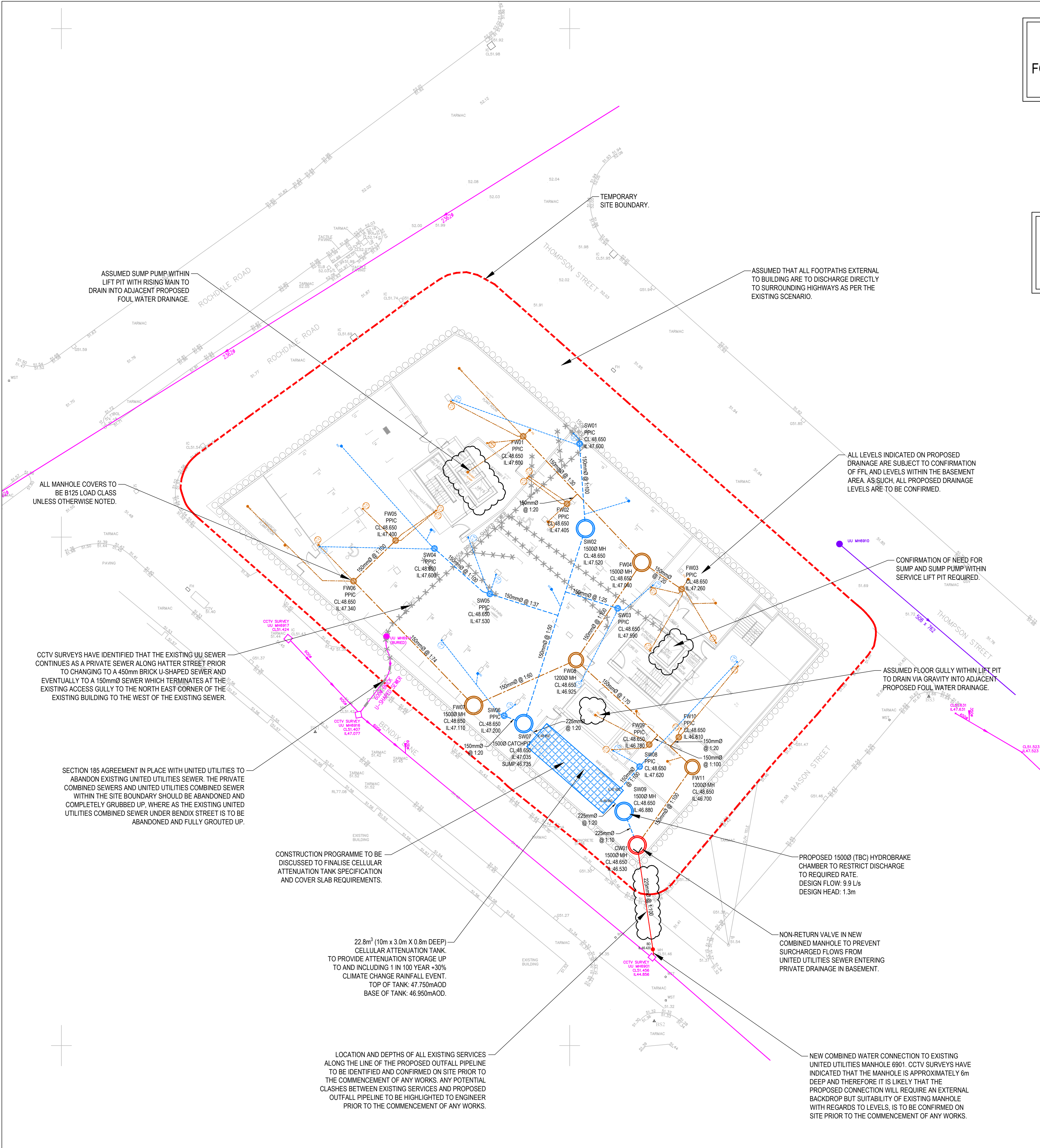
CONFIRMATION OF NEED FOR SUMP PUMP WITHIN SERVICE LIFT PIT REQUIRED.

ASSUMED SUMP PUMP WITHIN LIFT PIT TO DRAIN INTO ADJACENT PROPOSED FOUL WATER DRAINAGE.

PROPOSED 1500Ø (TBC) HYDROBRAKE CHAMBER TO RESTRICT DISCHARGE TO REQUIRED RATE. DESIGN FLOW: 9.9 L/s DESIGN HEAD: 1.0m

NON-RETURN VALVE IN NEW COMBINED MANHOLE TO PREVENT SURCHARGED FLOWS FROM UNITED UTILITIES SEWER ENTERING PRIVATE DRAINAGE IN BASEMENT.

NEW COMBINED WATER CONNECTION TO EXISTING UNITED UTILITIES MANHOLE 6901. CCTV SURVEYS HAVE INDICATED THAT THE MANHOLE IS APPROXIMATELY 6m DEEP AND THEREFORE IT IS LIKELY THAT THE PROPOSED CONNECTION WILL REQUIRE AN EXTERNAL BACKDROP BUT SUITABILITY OF EXISTING MANHOLE WITH REGARDS TO LEVELS, IS TO BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS.



PRELIMINARY SUBJECT TO CONFIRMATION OF ARCHITECTS PROPOSED SITE LEVELS AND ALL FOUL WATER POP UP AND RAINWATER DOWNPIPE LOCATIONS AND FLOW RATES

PRELIMINARY SUBJECT TO CONFIRMATION OF UNITED UTILITIES AND MANCHESTER CITY COUNCIL ACCEPTANCE OF DISCHARGE CONNECTION LOCATIONS AND FLOW RATES

ALL INTERNAL MANHOLES AND CHAMBERS TO HAVE DOUBLE SEALED AND LOCKABLE COVERS. ARCHITECT TO SPECIFY WHICH COVERS, IF ANY NEED TO BE RECESSED.

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LEGAL (RED LINE) SITE AREA = 2,149m²

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AS SUCH, AN EXISTING IMPERMEABLE AREA OF 0.170ha HAS BEEN USED TO DETERMINE THE EXISTING BROWNFIELD RUNOFF RATES AND A POST DEVELOPMENT IMPERMEABLE AREA OF 0.156ha HAS BEEN USED TO DETERMINE THE REQUIRED ATTENUATION STORAGE.

EARLY DISCUSSIONS WITH MANCHETSER CITY COUNCIL & UNITED UTILITIES HAVE RESULTED IN A PEAK SURFACE WATER DISCHARGE RESTRICTION OF 9.9 L/s BEING IMPOSED FOR ALL RAINFALL EVENTS UP TO AND INCLUDING THE 1 IN 100 YEAR RETURN PERIOD.

PROPOSED DEVELOPMENT DETAILS
PRE DEVELOPMENT PERMEABLE AREA = 0m² - 0%
POST DEVELOPMENT PERMEABLE AREA = 140m² - 7%

PRE DEVELOPMENT IMPERMEABLE AREA = 2,149m² - 100%
PRE DEVELOPMENT IMPERMEABLE AREA EXCLUDING FOOTPATH AREAS = 1,700m² - 79%

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SURFACE WATER DRAINAGE STRATEGY
SEPARATE SYSTEMS HAVE BEEN DETAILED WITH THE SURFACE WATER AND FOUL WATER COMBINING PRIOR TO DISCHARGING TO THE UNITED UTILITIES COMBINED SEWER, LOCATED IN BENDIX ROAD TO THE SOUTH-EAST CORNER OF THE SITE.

TO REFLECT THE PEAK SURFACE WATER RESTRICTION OF 9.9 L/s WE NEED TO PROVIDE 37.3m³ OF STORAGE TO ACCOMMODATE THE 100yr + 30% CC RAINFALL EVENT. THIS HAS BEEN PROVIDED BY THE 22.8m³ ATTENUATION TANK, WITH THE REMAINING 14.5m³ STORED WITHIN THE DRAINAGE NETWORK ITSELF.

SURFACE WATER DISPOSAL HIERARCHY

- INFILTRATION - TO COMPLY WITH BUILDING REGULATIONS PART-H, NO SOAKAWAYS SHOULD BE LOCATED WITHIN 5.0m OF A BUILDING OR ROAD. ASSESSING THE SITE LAYOUT AND THE 5m RESTRICTION, IT WOULD BE IMPOSSIBLE TO LOCATE A SOAKAWAY OR OTHER INFILTRATION TECHNIQUE 5m AWAY FROM THE BUILDING OR ADJACENT ROADS. THEREFORE, AS A RESULT OF THE BUILDING REGULATIONS AND SITE LAYOUT RESTRICTIONS, INFILTRATION DRAINAGE IS NOT A VIABLE OPTION FOR THE DISCHARGE OF SURFACE WATER.
- WATERCOURSE - NOT SUITABLE DUE TO DISTANCE.
- LIVING ROOF - THESE ARE TO BE INCLUDED, WHERE POSSIBLE, ON THIS DEVELOPMENT.
- BASINS & PONDS - THESE ARE NOT SUITABLE FOR THIS DEVELOPMENT.
- FILTER STRIPS & SWALES - THESE ARE NOT SUITABLE FOR THIS DEVELOPMENT.
- PERMEABLE SURFACES - THESE ARE NOT SUITABLE FOR THIS DEVELOPMENT.
- TANKED SYSTEMS - A CELLULAR ATTENUATION TANK AND FLOW RESTRICTION SYSTEM HAVE BEEN DETAILED ON THE DRAWING.

FOUL DRAINAGE STRATEGY
IT IS ENVISAGED THAT THE FOUL WATER WILL DISCHARGE VIA A COMBINED CONNECTION TO THE PUBLIC COMBINED SEWER LOCATED IN BENDIX STREET TO THE SOUTH-EAST CORNER OF THE SITE. A NON-RETURN VALVE IS TO BE CONSTRUCTED WITHIN THE NEW COMBINED MANHOLE TO PREVENT SURCHARGED FLOWS FROM THE UNITED UTILITIES SEWERS ENTERING THE PRIVATE DRAINAGE NETWORK IN THE BASEMENT.

THE APPROXIMATE FOUL FLOW RATE FROM THE DEVELOPMENT IS YET TO BE DETERMINED AND THIS NEEDS TO BE DEVELOPED AND CONFIRMED BY THE M&E CONSULTANT.

UNITED UTILITIES CORRESPONDENCE
A PRE-DEVELOPMENT ENQUIRY HAS BEEN SUBMITTED TO UNITED UTILITIES AND RETURN COMMENTS HAVE BEEN RECEIVED. THE GUIDANCE INDICATED THAT THE SURFACE WATER RUNOFF CAN DISCHARGE TO THE 600mmØ COMBINED WATER SEWER ON BENDIX STREET, AT A MAXIMUM DISCHARGE RATE OF 9.9 L/s.

THE GUIDANCE ALSO INDICATED THAT THE FOUL WATER CAN ALSO DISCHARGE TO THE SURROUNDING COMBINED SEWERS AT AN UNRESTRICTED DISCHARGE RATE.

LLFA CORRESPONDENCE
IN COMPLIANCE WITH THE MANCHESTER CITY, SALFORD CITY AND TRAFFORD COUNCILS LEVEL 2 HYBRID SFRA USER GUIDE, MAY 2010, THE SURFACE WATER RUNOFF SHOULD BE RESTRICTED TO A MAXIMUM DISCHARGE RATE EQUIVALENT TO 50% OF THE EXISTING BROWNFIELD RUNOFF RATES. DISCUSSIONS WITH MANCHESTER CITY COUNCIL (LLFA) SHOULD BE COMPLETED TO CONFIRM THAT THIS IS ACCEPTABLE.

A PRE-DEVELOPMENT ENQUIRY TO REFLECT THE NEW BASEMENT GRAVITY OUTFALL DRAINAGE STRATEGY HAS BEEN SUBMITTED TO MANCHESTER CITY COUNCIL (LLFA) AND THEY HAVE RESPONDED INDICATING THAT THEY AGREE, IN PRINCIPLE WITH THE CURRENT DRAINAGE STRATEGY.

- IMPORTANT NOTES**
- SETTING OUT SHALL BE UNDERTAKEN USING ONLY THE INFORMATION GIVEN. DISTANCES SHOULD NOT BE SCALED FROM THIS DRAWING.
 - ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION AND UNITED UTILITIES DETAILS & GUIDELINES.
 - THE MINIMUM GRAVITY PIPE DIAMETER UNDER ADOPTABLE HIGHWAYS SHALL BE 150mm
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION GIVEN WITH REGARDS TO EXISTING SERVICES AND DRAINAGE CONNECTIONS ETC. PRIOR TO COMMENCING THE WORKS. THE RATES SHALL INCLUDE FOR HAND DIG AROUND SERVICES WHERE NECESSARY. THE CONTRACTOR SHALL ADHERE TO THE CDM REGULATIONS AT ALL TIMES
 - THE OUTSIDES OF ALL SEWERS SHALL BE A MINIMUM OF 1.0m FROM KERB LINES AND THE OUTSIDE OF MANHOLES SHALL BE A MINIMUM OF 0.5m FROM KERB LINES
 - EXISTING FLOWS IN WATERCOURSES, SEWERS AND LAND DRAINS SHALL BE MAINTAINED AT ALL TIMES
 - ONLY TRAINED PERSONNEL SHALL BE PERMITTED TO ENTER CONFINED SPACES
 - ALL MATERIALS TO BEAR THE RELEVANT B.S. KITEMARK AND COMPLY FULLY WITH THE SPECIFICATIONS. ALL CONCRETE & CONCRETE PRODUCTS MUST USE SULPHATE RESISTANT CEMENT (UNLESS THE SITE INVESTIGATION REPORT PROVES THAT SULPHATE ATTACK FROM SOILS AND GROUNDWATER WILL NOT OCCUR TO WITHSTAND A CLASS
 - ALL OPENING NOTICES ETC. AS REQUIRED UNDER HIGHWAYS ACTS ETC. ARE TO BE OBTAINED PRIOR TO COMMENCEMENT OF WORKS. ALL WORKS ARE TO BE INSPECTED BY L.A., NHBC OR THE NETWORK OPERATOR AS APPLICABLE.
 - SLAB LEVELS SHALL NOT BE VARIED WITHOUT REFERENCE TO THE ENGINEER FOR GUIDANCE
 - SLOW REST BENDS TO BE USED IN ALL LOCATIONS MADE UP FROM 2No. 45 DEG BENDS (600mm TO INVERT FROM FFL)
 - MANHOLE POSITIONS AND ACCESS COVERS TO BE ACCURATELY SET-OUT BY LANDSCAPE ARCHITECT TO SUIT EXTERNAL FINISHES
 - ALL DRAINS CAST THROUGH FOUNDATIONS TO HAVE ROCKER PIPES ON BOTH SIDES OF FOUNDATION
 - ALL POP UP POSITIONS TO BE CONFIRMED SET OUT DIMENSIONS TO BE AGREED & PROVIDED BY OTHERS
 - ALL DISCHARGE RATES TO BE CONFIRMED BY M&E DESIGNER
 - ALL SURFACE WATER COLLECTION FEATURES TO BE CONFIRMED BY THE LANDSCAPE ARCHITECT
 - STORAGE HAS BEEN PROVIDED IN A CELLULAR STORAGE TANK
 - LANDSCAPE ARCHITECT TO CONFIRM GULLY AND DRAINAGE CHANNEL LOCATIONS TO LANDSCAPED AREAS.
 - FOUL NETWORK TO BE CONFIRMED FOLLOWING CONFIRMATION OF BRANCH CONNECTION POINTS FROM BUILDING M&E DESIGNER

LEGEND

- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FOUL WATER MANHOLE
- PROPOSED COMBINED WATER MANHOLE
- PROPOSED FOUL WATER DRAINAGE
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED COMBINED WATER DRAINAGE
- EXISTING UNITED UTILITIES COMBINED SEWER (UNPROVEN BY CCTV SURVEY)
- EXISTING UNITED UTILITIES COMBINED SEWER
- EXISTING UNITED UTILITIES COMBINED SEWER TO BE ABANDONED AND GRUBBED UP
- EXISTING UNITED UTILITIES COMBINED SEWER TO BE ABANDONED AND GROUTED
- EXISTING PRIVATE SEWER
- EXISTING PRIVATE SEWER TO BE ABANDONED AND GRUBBED UP

C01	25.11.2019	CONSTRUCTION ISSUE - UPDATED TO REFLECT REVISED POP-UP LOCATIONS	JRS	DJS	DJS
P04	05.04.2019	RIBA STAGE 4 (TECHNICAL DESIGN)	JRS	DJS	DJS
P03	14.11.2018	RIBA STAGE 3 (DEVELOPED DESIGN) - UPDATED TO REFLECT LATEST LAYOUT	JRS	DJS	DJS
P02	17.08.2018	RIBA STAGE 3 (DEVELOPED DESIGN) - UPDATED TO REFLECT LATEST CCTV SURVEYS	JRS	DJS	DJS
P01	05.07.2018	RIBA STAGE 3 (DEVELOPED DESIGN)	JRS	DJS	DJS
REV	DATE	DESCRIPTION	BY	CHK	APP

DRAWING STATUS:

CONSTRUCTION

CLIENT: **CREATE CONSTRUCTION**

ARCHITECT: **BEECH DESIGN & BUILD**

PROJECT: **103 ANCOATS GARDENS**

TITLE: **BELOW GROUND DRAINAGE DRAINAGE STRATEGY**

STATUS:	PROJECT No:	PROJECT	ORIGINATOR	VOUSYS	LEVEL	TYPE	ROLE	DRAWING No	REV:
S2	218-156	AGM - AJP - XX - 00 - DR - C - 0001							C01

SCALE @ A1: 1:200

DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
JRS	JRS	DJS	DJS	JUL 2018

alan johnston partnership LLP
CONSULTING STRUCTURAL & CIVIL ENGINEERS

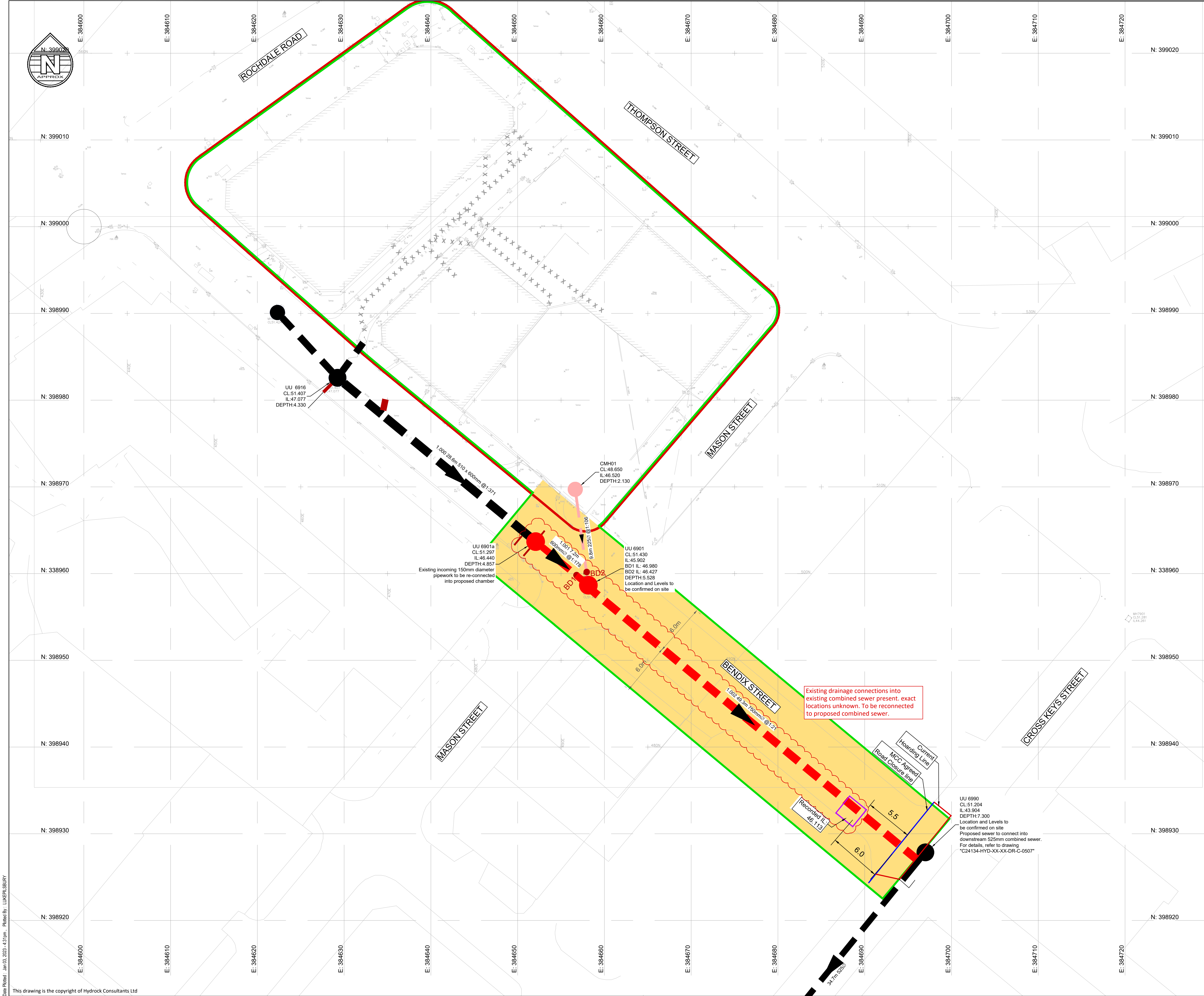
1 Dale Street, Liverpool L2 2ET
Tel: 0151 227 1462
Fax: 0151 225 1187
E-Mail: Mail@ajpsructeng.com

ajp structural
Civil Engineers

Appendix B

*C24134-HYD-XX-XX-DR-C-0501_P08_United Utilities
Diversion - Proposed Drainage Layout*

*C24134-HYD-XX-XX-DR-C-0507_P04_United Utilities
Diversion - Manhole Connection Detail*



NOTES

1.

THIS DRAWING IS NOT TO BE SCALED.

2.

ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.

3.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND SERVICE ENGINEERS' DRAWINGS AND SPECIFICATIONS.

4.

ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE

5.

DRAINAGE, SURVEY AND SERVICES INFORMATION SHOWN ON THIS DRAWING IS BASED UPON UNITED UTILITIES SEWER RECORDS, AND LEVEL INFORMATION OBTAINED ON SITE. ALL EXISTING PIPE CONNECTIONS TO BE CONFIRMED THROUGH CCTV SURVEY

LEGEND

Existing United Utilities Combined Sewer

Proposed Adoptable United Utilities Combined Sewer Diversion

Private Drainage Connection

Current Building Extents

Extent of United Utilities Easement

Extent of Works Boundary

Existing Incoming Private Connection Identified on CCTV Survey

Existing United Utilities Combined Sewer to be abandoned and diverted

P08	PREVIOUS PROPOSALS REINSTATED FOLLOWING ON SITE FINDINGS					
	L. PILSBURY	03/01/23	L. PILSBURY	03/01/23	R. HENSHALL	03/01/23
P07	AMENDED TO SUIT UNITED UTILITIES COMMENT					
	L. PILSBURY	31/10/22	L. PILSBURY	31/10/22	R. HENSHALL	31/10/22
P06	AMENDED TO SUIT UNITED UTILITIES COMMENT					
	J. BOOTH	20/10/22	L. PILSBURY	20/10/22	R. HENSHALL	20/10/22
P05	AMENDED TO SUIT UNITED UTILITIES COMMENT					
	J. BOOTH	12/10/22	L. PILSBURY	12/10/22	R. HENSHALL	12/10/22
P04	PROPOSED BACKDROP ADDED. MANHOLE DEEPEENED TO SUIT UU REQUIREMENTS					
	J. BOOTH	04/10/22	L. PILSBURY	04/10/22	R. HENSHALL	04/10/22
P03	REVISED TO SUIT UDP COMMENTS					
	L. PILSBURY	31/08/22	R. HENSHALL	31/08/22	R. HENSHALL	31/08/22
P02	REVISED TO SUIT UNITED UTILITIES COMMENTS					
	L. PILSBURY	17/08/22	R. HENSHALL	17/08/22	R. HENSHALL	17/08/22
P01	ISSUED FOR INFORMATION					
	L. PILSBURY	30/06/22	R. HENSHALL	30/06/22	R. HENSHALL	30/06/22
REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock

North Assurance Buildings
9-21 Princess Street, St Albans Square
Manchester
M2 4DN
t: +44(0)161 804 5550
e: manchester@hydrock.com

CLIENT

Beech Developments

PROJECT

Ancoats Garden - Manchester

TITLE

Proposed Drainage Diversion Layout

HYDROCK PROJECT NO.
C-24134

SCALE @ A1
1:200

STATUS DESCRIPTION
INFORMATION ONLY

STATUS

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
C24134-HYD-XX-XX-DR-C-0501

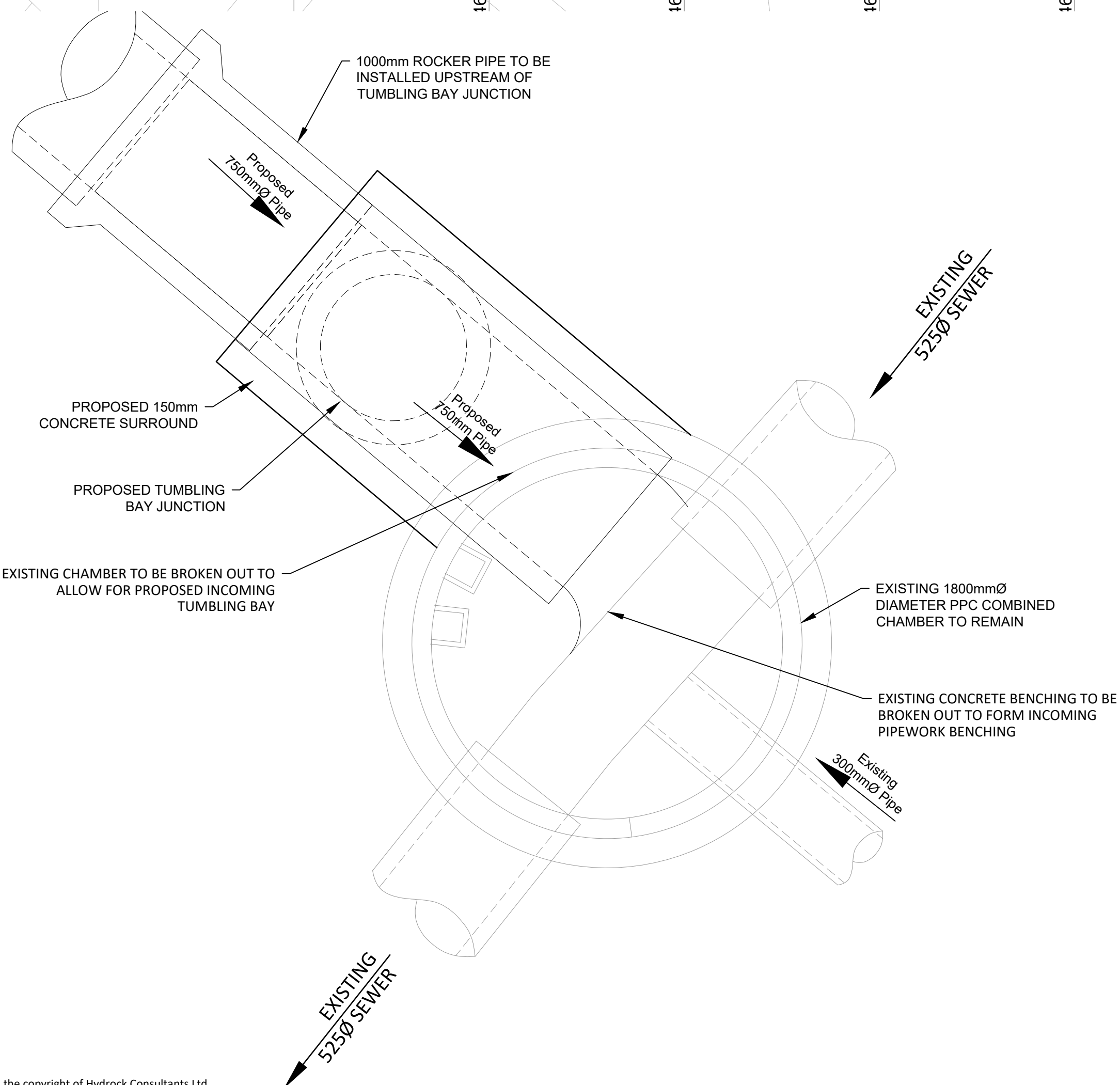
REVISION
P08

Date Plotted: Jan 03, 2023 - 4:31pm

Plotted By: LUKE PILSBURY

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Filepath: P:\Manchester Central Office\STRUCTURES\C-24134 Ancoats Garden - Manchester\01_WIP\DR_Drawing\C-24134-HYD-XX-XX-DR-C-0501_Proposed Drainage Layout.dwg



- | | | | | | | |
|-----|---|----------|-------------|----------|-------------|----------|
| P04 | REVISED TO SUIT UNITED UTILITIES COMMENTS | | | | | |
| | L. PILSBURY | 25/01/23 | L. PILSBURY | 25/01/23 | R. HENSHELL | 25/01/23 |
| P03 | REVISED TO SUIT UUI COMMENTS | | | | | |
| | L. PILSBURY | 09/01/23 | R. HENSHELL | 09/01/23 | R. HENSHELL | 09/01/23 |
| P02 | ISSUED FOR APPROVAL | | | | | |
| | L. PILSBURY | 03/01/23 | R. HENSHELL | 03/01/23 | R. HENSHELL | 03/01/23 |
| P01 | ISSUED FOR INFORMATION | | | | | |
| | L. PILSBURY | 11/10/22 | R. HENSHELL | 11/10/22 | R. HENSHELL | 11/10/22 |
| REV | REVISION NOTES/COMMENTS | | | | | |
| | DRAWN BY | DATE | CHECKED BY | DATE | APPROVED BY | DATE |

CLIENT		
Beech Developments		
PROJECT		
Ancoats Garden - Manchester		
TITLE		
Proposed Drainage Diversion 1:20 Manhole Connection Detail 6990		
HYDROCK PROJECT NO. C-24134		SCALE @ A1 As Shown
STATUS DESCRIPTION INFORMATION ONLY		STATUS
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) C24134-HYD-XX-XX-DR-C-0507		REVISION P04

Appendix C

United Utilities Correspondence

Josh Booth

From: Livesey, Sara <Sara.Livesey@uuplc.co.uk>
Sent: 12 May 2023 10:16
To: Jingchao Yang
Cc: Wastewater Developer Services
Subject: RE: Ancoats Garden S185 - UU ref 4200027062

CAUTION: This email originated from outside of Hydrock. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Jingchao,

Following on from my email below, I can confirm that I have spoken to the Project Engineering Manager and he has confirmed that we have no objections for connecting the Mason Street sewer into the new Mh 6901 and to avoid a round of design submission and review for such a change, we ask that the detail of the connection be agreed with Lee Hall who is the Construction Supervisor on site to ensure it is in line with our standards.

Kind Regards

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Sara Livesey
NAV & Asset Protection Engineer
Developer Services & Metering
M: 07881 036 352
T: 0345 072 6067
unitedutilities.com

From: Livesey, Sara
Sent: 11 May 2023 10:46
To: 'Jingchao Yang' <JingchaoYang@hydrock.com>; Olsen, Stuart <Stuart.Olsen@uuplc.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: RE: Ancoats Garden S185 - UU ref 4200027062

Hi Jingchao,

This is currently with the Project Engineering Manager, I have just sent a chase email asking on timescales.

I will advise accordingly once I have a reply.

Kind Regards

If you have received a great service today why not tell us?

Visit: unitedutilities.com/wow

From: Jingchao Yang [<mailto:JingchaoYang@hydrock.com>]
Sent: 11 May 2023 10:43
To: Olsen, Stuart <Stuart.Olsen@uuplc.co.uk>; Livesey, Sara <Sara.Livesey@uuplc.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: RE: Ancoats Garden S185 - UU ref 4200027062

Hi Stu,

Many thanks for getting back to me so quickly on this and hope you are well too.

[@Livesey, Sara](#) understand that this is a critical asset that requires further assessment. Would you please advise the likely timescale that we can hear back from UU?

Many thanks,
Jingchao

From: Olsen, Stuart <Stuart.Olsen@uuplc.co.uk>
Sent: Thursday, May 11, 2023 10:34 AM
To: Jingchao Yang <JingchaoYang@hydrock.com>; Livesey, Sara <Sara.Livesey@uuplc.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: RE: Ancoats Garden S185 - UU ref 4200027062

CAUTION: This email originated from outside of Hydrock. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Jing

I hope you're well?

I've CC'd Sara livsey in as she is dealing with it as it I acritical asset.

Sara does have a task on the system to look at but just so you have her contact.

Thanks

Stu

If you have received a great service today why not tell us?

Visit: unitedutilities.com/WOW

From: Jingchao Yang [<mailto:JingchaoYang@hydrock.com>]
Sent: 11 May 2023 09:30
To: Olsen, Stuart <Stuart.Olsen@uuplc.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Ancoats Garden S185 - UU ref 4200027062

Good morning Stu,

Apologise for getting you involved in this – we have submitted a S185 enquiry on April 26th and our client is chasing for a response.

Would you please allow the team to have a quick turn around on this?

Many thanks,

Jingchao Yang *BEng, MSc*
Senior Drainage Engineer

Make flexibility work: Hydrock promotes flexible working; if you get an email from me outside normal hours it is because I am sending it at a time convenient to me. I do not expect you to read or reply until normal office hours.

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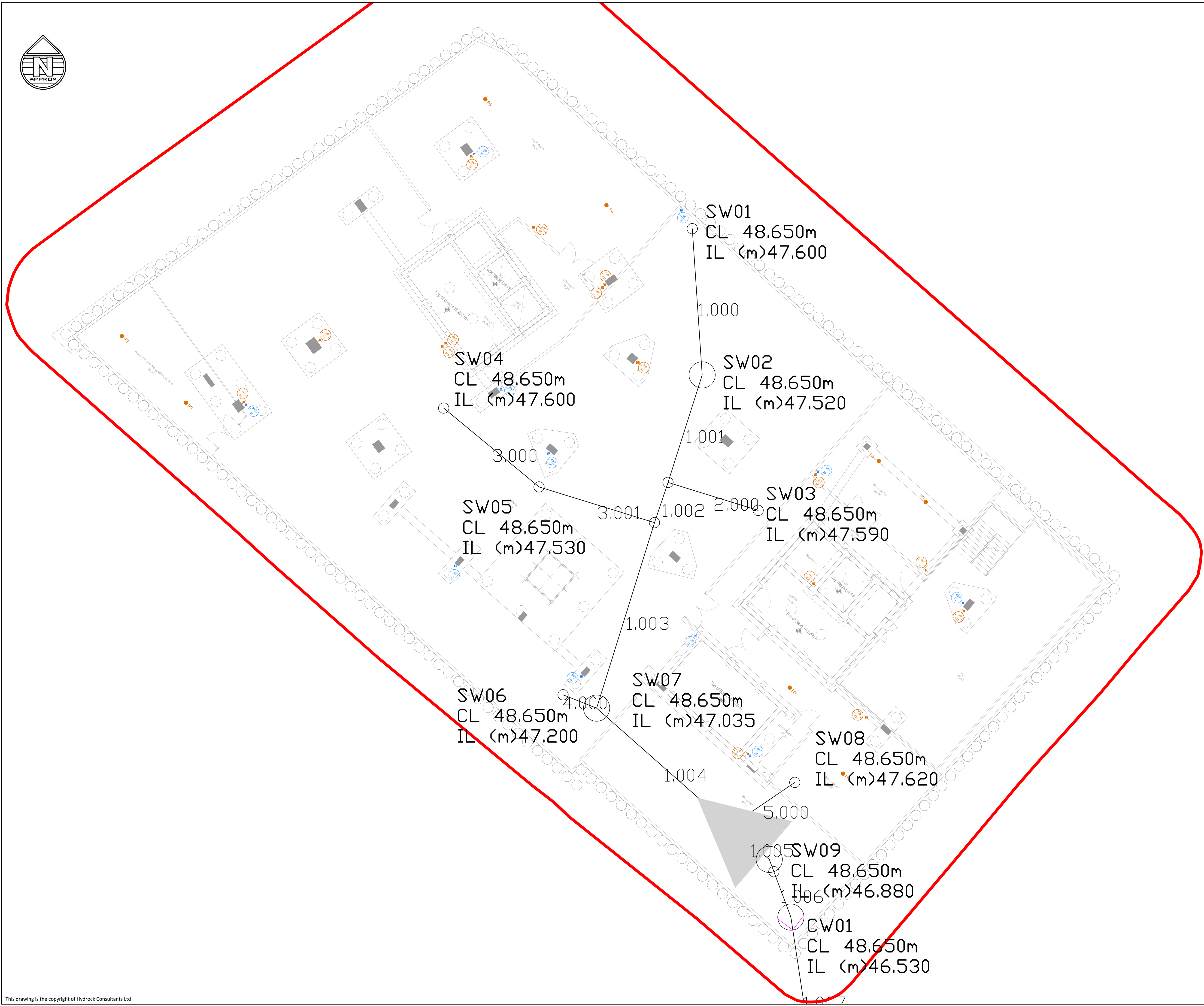
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Warrington, WA5 3LP

Appendix D

C24134-HYD-XX-XX-CA-C-0500 - Proposed Drainage Calculations



1. THIS DRAWING IS NOT TO BE SCALED.
2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND SERVICE ENGINEERS' DRAWINGS AND SPECIFICATIONS.
4. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE
5. EXISTING GROUND INFORMATION SHOWN ON THIS DRAWING IS ARE BASED UPON TOPOGRAPHICAL SURVEY "LS065-CCTV Bendix Street" DATED 30.06.2022.

FOR INFORMATION					
P01	J. BOOTH	03.08.23	N. BYRNE	03.08.23	03.08.23
REVISION NOTES/COMMENTS					
REV	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY
Hydrock					
North Assurance Buildings 9-21 Princess Street, St Albans Square Manchester M2 4DN t: +44(0)161 804 5550 e: manchester@hydrock.com					
CLIENT					
BEECH DEVELOPMENTS					
PROJECT					
ANCOATS GARDEN, MANCHESTER					
TITLE					
MICRODRAIAGE HYDRAULIC MODEL					
HYDROCK PROJECT NO.			SCALE @ A1		
C-24134			1:100		
STATUS DESCRIPTION					STATUS
FOR INFORMATION					
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)					REVISION
C-24134-HYD-XX-XX-DR-C-0000					P01

Hydrock Consultants Ltd		Page 1
. . .	Ancoats Garden SW Drainage AJP Design	
Date 05/12/2022 File	Designed by L Pilsbury Checked by	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Foul Sewage (l/s/ha)	0.000	Maximum Backdrop Height (m)	20.000
M5-60 (mm)	18.000	Volumetric Runoff Coeff.	0.750	Min Design Depth for Optimisation (m)	1.200
Ratio R	0.360	PIMP (%)	100	Min Vel for Auto Design only (m/s)	1.00
Maximum Rainfall (mm/hr)	50	Add Flow / Climate Change (%)	0	Min Slope for Optimisation (1:X)	500
Maximum Time of Concentration (mins)	30	Minimum Backdrop Height (m)	0.000		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	8.400	0.120	70.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.12	47.520	0.000	0.0	0.0	0.0	1.20	21.3	0.0

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Micro
Drainage

Micro Drainage

Innovyze	Network 2020.1.3
----------	------------------

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.001	6.461	0.092	70.0	0.036	0.00	0.0	0.600	o	150	Pipe/Conduit		
2.000	5.401	0.216	25.0	0.024	5.00	0.0	0.600	o	150	Pipe/Conduit		
1.002	2.429	0.035	70.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		
3.000	7.090	0.071	100.0	0.023	5.00	0.0	0.600	o	150	Pipe/Conduit		
3.001	6.919	0.187	37.0	0.013	0.00	0.0	0.600	o	150	Pipe/Conduit		
1.003	11.134	0.162	68.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.001	50.00	5.21	47.400	0.036	0.0	0.0	0.0	1.20	21.3	4.8
2.000	50.00	5.04	47.590	0.024	0.0	0.0	0.0	2.02	35.7	3.3
1.002	50.00	5.24	47.308	0.060	0.0	0.0	0.0	1.20	21.3	8.1
3.000	50.00	5.12	47.530	0.023	0.0	0.0	0.0	1.00	17.8	3.1
3.001	50.00	5.19	47.459	0.036	0.0	0.0	0.0	1.66	29.3	4.8
1.003	50.00	5.39	47.272	0.096	0.0	0.0	0.0	1.21	21.5	13.0

•
•
•

Ancoats Garden
SW Drainage
AJP Design



Micro
Drainage

Designed by L Pilsbury

Checked by

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)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
1	48.650	1.130	Open Manhole	1200	1.000	47.520	150				
2	48.650	1.250	Open Manhole	1200	1.001	47.400	150	1.000	47.400	150	
3	48.650	1.060	Open Manhole	600	2.000	47.590	150				
3	48.650	1.342	Junction		1.002	47.308	150	1.001	47.308	150	
								2.000	47.374	150	66
4	48.650	1.120	Open Manhole	600	3.000	47.530	150				
5	48.650	1.191	Open Manhole	600	3.001	47.459	150	3.000	47.459	150	
4	48.650	1.378	Junction		1.003	47.272	150	1.002	47.273	150	1
								3.001	47.272	150	
5	48.650	1.130	Open Manhole	600	4.000	47.520	150				
5	48.650	1.615	Open Manhole	1200	1.004	47.035	225	1.003	47.110	150	
								4.000	47.417	150	307
6	48.650	1.030	Open Manhole	600	5.000	47.620	150				
6	48.650	1.770	Open Manhole	1200	1.005	46.880	225	1.004	46.880	225	
								5.000	47.573	150	618
7	48.640	2.110	Open Manhole	1200	1.006	46.530	225	1.005	46.530	225	
	51.370	4.930	Open Manhole	0		OUTFALL		1.006	46.440	225	



Micro
Drainage

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
1	384650.977	399009.173	384650.977	399009.173	Required	
2	384651.543	399000.792	384651.543	399000.792	Required	
3	384654.747	398993.035	384654.747	398993.035	Required	
3	384649.588	398994.634			No Entry	
4	384636.742	398998.895	384636.742	398998.895	Required	
5	384642.204	398994.375	384642.204	398994.375	Required	
4	384648.814	398992.332			No Entry	
5	384643.577	398982.467	384643.577	398982.467	Required	



Micro
Drainage

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
5	384645.498	398981.703	384645.498	398981.703	Required	
6	384656.848	398977.446	384656.848	398977.446	Required	
6	384655.298	398973.027	384655.298	398973.027	Required	
7	384656.625	398969.729	384656.625	398969.729	Required	
	384657.969	398960.795			No Entry	

Hydrock Consultants Ltd		Page 7
. . .	Ancoats Garden SW Drainage AJP Design	
Date 05/12/2022 File	Designed by L Pilsbury Checked by	
Innovyze Network 2020.1.3		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: 6, DS/PN: 1.005, Volume (m³): 2.5

Unit Reference	MD-SHE-0141-9900-1300-9900	Sump Available	Yes
Design Head (m)	1.300	Diameter (mm)	141
Design Flow (l/s)	9.9	Invert Level (m)	46.880
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	225
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	9.9	Kick-Flo®	0.825	8.0
Flush-Flo™	0.382	9.9	Mean Flow over Head Range	-	8.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.1	0.600	9.5	1.600	10.9	2.600	13.7	5.000	18.8	7.500	22.8
0.200	9.2	0.800	8.3	1.800	11.5	3.000	14.7	5.500	19.6	8.000	23.5
0.300	9.8	1.000	8.8	2.000	12.1	3.500	15.8	6.000	20.5	8.500	24.2
0.400	9.9	1.200	9.5	2.200	12.7	4.000	16.9	6.500	21.3	9.000	24.9
0.500	9.8	1.400	10.3	2.400	13.2	4.500	17.8	7.000	22.1	9.500	25.6

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Hydrock Consultants Ltd		Page 8
. . .	Ancoats Garden SW Drainage AJP Design	
Date 05/12/2022 File	Designed by L Pilsbury Checked by	
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Storage Structures for Storm

Cellular Storage Manhole: 6, DS/PN: 1.005

Invert Level (m) 46.880 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	30.0	0.0	0.800	30.0	0.0	0.810	0.0	0.0

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Ancoats Garden
SW Drainage
AJP Design

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

	US/MH	Level
PN	Name	Status Exceeded
1.000	1	OK
1.001	2	OK



Micro
Drainage

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

PN	US/MH		Return Period	Climate Change	First (X) Surcharges	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Flow / Overflow Cap. (l/s)	Half Drain	Pipe
	Name	Storm							Level (m)	Depth (m)	Volume (m³)		Time (mins)	Flow (l/s)
2.000	3	15 Winter	1	+0%	100/15 Summer				47.622	-0.118	0.000	0.10		2.9
1.002	3	15 Winter	1	+0%	30/15 Summer				47.389	-0.068	0.000	0.56		6.6
3.000	4	15 Winter	1	+0%	100/15 Summer				47.574	-0.106	0.000	0.18		2.8
3.001	5	15 Winter	1	+0%	100/15 Summer				47.500	-0.109	0.000	0.16		4.0
1.003	4	15 Winter	1	+0%	30/15 Summer				47.348	-0.075	0.000	0.50		10.7
4.000	5	15 Winter	1	+0%	100/15 Winter				47.554	-0.116	0.000	0.12		2.3
1.004	5	15 Winter	1	+0%	30/15 Summer				47.114	-0.146	0.000	0.27		13.0
5.000	6	15 Winter	1	+0%	100/15 Summer				47.683	-0.087	0.000	0.36		4.9
1.005	6	30 Winter	1	+0%	30/15 Summer				47.044	-0.061	0.000	0.11	14	8.8
1.006	7	30 Winter	1	+0%					46.599	-0.156	0.000	0.21		8.8

PN	US/MH	Level
	Name	Status Exceeded
2.000	3	OK
1.002	3	OK*
3.000	4	OK
3.001	5	OK
1.003	4	OK*
4.000	5	OK
1.004	5	OK
5.000	6	OK
1.005	6	OK

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Ancoats Garden
SW Drainage
AJP Design



Micro
Drainage

Date	05/12/2022
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Status	Level Exceeded
1.006	7	OK	

Hydrock Consultants Ltd			Page 14
.	Ancoats Garden		
.	SW Drainage		
.	AJP Design		
Date 05/12/2022	Designed by L Pilsbury		
File	Checked by		
Innovyze	Network 2020.1.3		
<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>			
 <			

Hydrock Consultants Ltd			Page 16																					
.		Ancoats Garden																						
.		SW Drainage																						
.		AJP Design																						
Date 05/12/2022		Designed by L Pilsbury																						
File		Checked by																						
Innovyze		Network 2020.1.3																						
<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>																								
<table><tr><td></td><td></td><td>Pipe</td><td></td><td></td></tr><tr><td></td><td>US/MH</td><td>Flow</td><td></td><td>Level</td></tr><tr><td>PN</td><td>Name</td><td>(l/s)</td><td>Status</td><td>Exceeded</td></tr><tr><td>1.006</td><td>7</td><td>9.8</td><td>OK</td><td></td></tr></table>							Pipe				US/MH	Flow		Level	PN	Name	(l/s)	Status	Exceeded	1.006	7	9.8	OK	
		Pipe																						
	US/MH	Flow		Level																				
PN	Name	(l/s)	Status	Exceeded																				
1.006	7	9.8	OK																					
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Micro
Drainage

Hydrock Consultants Ltd			Page 18
.	Ancoats Garden		
.	SW Drainage		
.	AJP Design		
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File	Checked by		
Innovyze	Network 2020.1.3		
<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>			
	PN	US/MH Name	Level Status Exceeded
	1.000	1 FLOOD RISK	
	1.001	2 FLOOD RISK	



Micro
Drainage

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

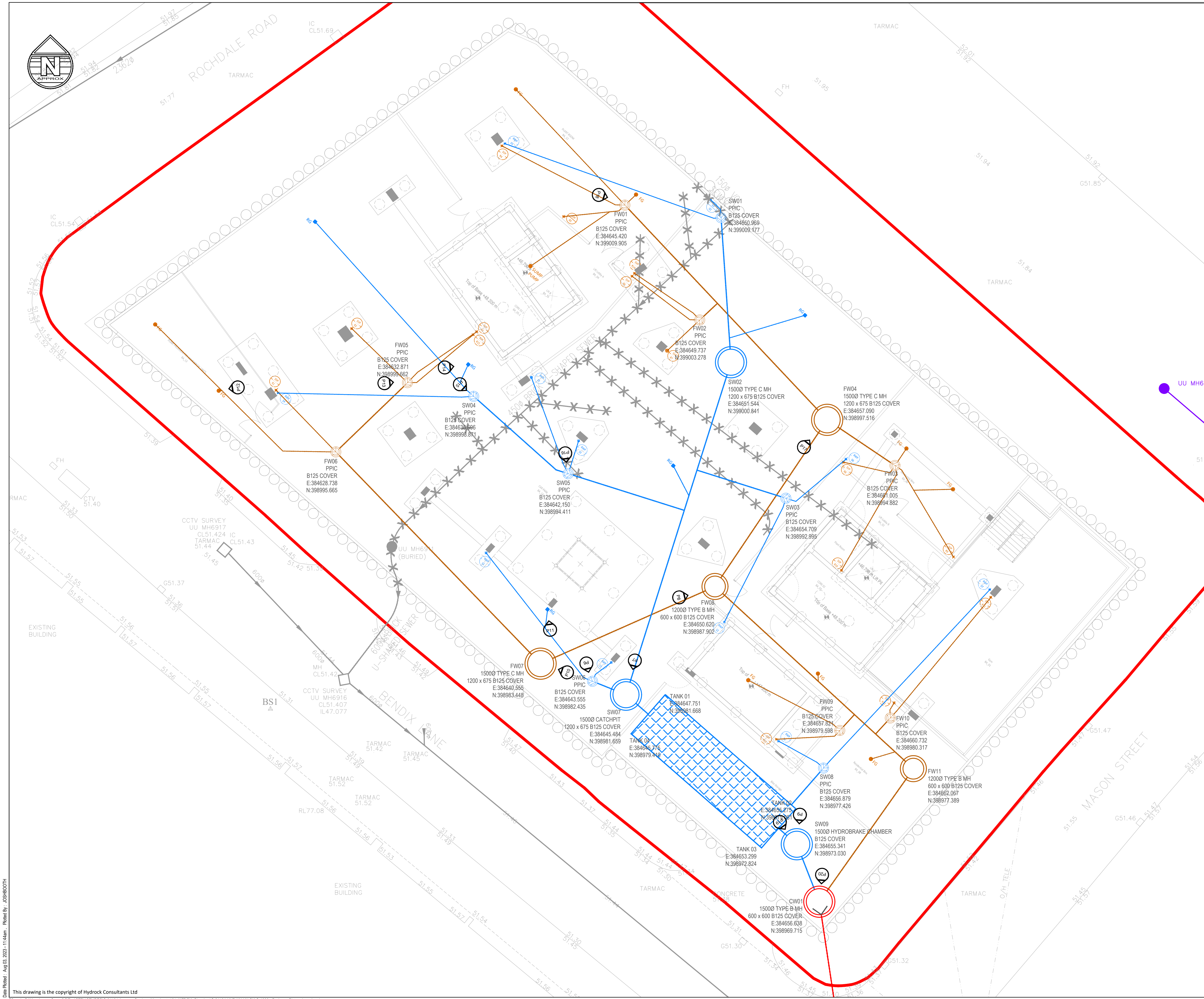
									Water	Surcharged	Flooded				Half Drain	Pipe
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume	Flow /	Overflow	Time	Flow	
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	
2.000	3 60	Winter	100	+30%	100/15	Summer			48.442	0.702	0.000	0.22			6.4	
1.002	3 15	Summer	100	+30%	30/15	Summer			47.524	0.066	0.000	1.72			20.1	
3.000	4 60	Winter	100	+30%	100/15	Summer			48.446	0.766	0.000	0.40			6.0	
3.001	5 60	Winter	100	+30%	100/15	Summer			48.442	0.833	0.000	0.35			8.8	
1.003	4 15	Summer	100	+30%	30/15	Summer			47.423	0.001	0.000	1.54			33.0	
4.000	5 60	Winter	100	+30%	100/15	Winter			48.415	0.745	0.000	0.26			5.2	
1.004	5 60	Winter	100	+30%	30/15	Summer			48.414	1.154	0.000	0.48			23.6	
5.000	6 60	Winter	100	+30%	100/15	Summer			48.406	0.636	0.000	0.81			11.0	
1.005	6 60	Winter	100	+30%	30/15	Summer			48.401	1.296	0.000	0.13		55	10.7	
1.006	7 60	Winter	100	+30%					46.606	-0.149	0.000	0.25			10.7	

PN	US/MH Name	Status	Level Exceeded
2.000	3	FLOOD RISK	
1.002	3	SURCHARGED*	
3.000	4	FLOOD RISK	
3.001	5	FLOOD RISK	
1.003	4	SURCHARGED*	
4.000	5	FLOOD RISK	
1.004	5	FLOOD RISK	
5.000	6	FLOOD RISK	
1.005	6	FLOOD RISK	

Hydrock Consultants Ltd			Page 20												
. . .	Ancoats Garden SW Drainage AJP Design														
Date 05/12/2022 File	Designed by L Pilsbury Checked by														
Innovyze	Network 2020.1.3														
100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm															
<table><thead><tr><th></th><th>US/MH</th><th></th><th>Level</th></tr><tr><th>PN</th><th>Name</th><th>Status</th><th>Exceeded</th></tr></thead><tbody><tr><td>1.006</td><td>7</td><td>OK</td><td></td></tr></tbody></table>					US/MH		Level	PN	Name	Status	Exceeded	1.006	7	OK	
	US/MH		Level												
PN	Name	Status	Exceeded												
1.006	7	OK													
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Appendix E

C24134-HYD-XX-XX-SK-C-1000 - Drainage Picture Locations



NOTES

- THIS DRAWING IS NOT TO BE SCALED.
- ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND SERVICE ENGINEERS' DRAWINGS AND SPECIFICATIONS.
- ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE
- INDICATIVE SITE BOUNDARY, AND PROPOSED LEVELS TAKEN FROM DRAWING "AGM-AIP-XX-00-DR-C-0006-C01 - Drainage Setting Out and Manhole Details" RECEIVED 31.05.2022.

PO2	FOR INFORMATION					
	J. BOOTH	03.08.23	N. BYRNE	03.08.23	N. BYRNE	03.08.23
P01	PRELIMINARY ISSUE					
	J. BOOTH	26.10.22	L. PILLSBURY	26.10.22	R. HENSHALL	26.10.22
REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

North Assurance Buildings
9-21 Princess Street, St Albans Square
Manchester
M2 4DN
t: +44(0)161 804 5550
e: manchester@hydrock.com

CLIENT

BEECH DEVELOPMENTS

PROJECT

ANCOATS GARDEN

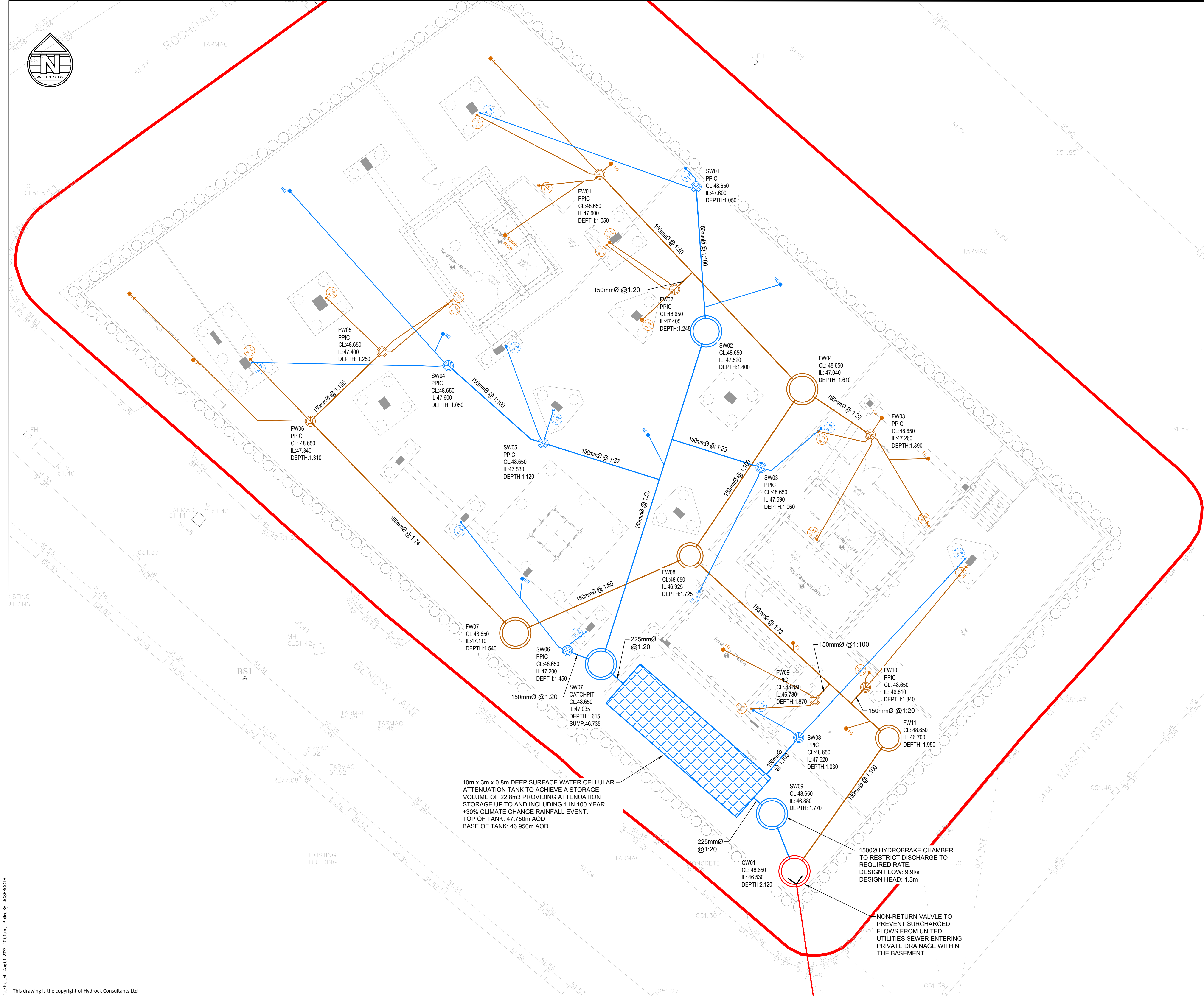
TITLE

MANHOLE PICTURE LOCATIONS

HYDROCK PROJECT NO.	SCALE @ A1
C-24134	1:100
STATUS DESCRIPTION	STATUS
INFORMATION ONLY	
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
C24134-HYD-XX-XX-DR-C-1000	P02

Appendix F

C24134-HYD-XX-XX-DR-C-0530_As-Built Drainage Records



- NOTES
1. THIS DRAWING IS NOT TO BE SCALED.
 2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND SERVICE ENGINEERS' DRAWINGS AND SPECIFICATIONS.
 4. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE
 5. EXISTING GROUND INFORMATION SHOWN ON THIS DRAWING IS ARE BASED UPON TOPOGRAPHICAL SURVEY "LS065-CCTV Bendix Street" DATED 30.06.2022.

NOTE:
THIS DRAWING IS BASED ON
AS-CONSTRUCTED INFORMATION
PROVIDED BY THE CONTRACTOR.

AS BUILT RECORDS					
AB1	J. MANTLE	01.08.23	J. BOOTH	01.08.23	N. BYRNE 01.08.23
REVISION NOTES/COMMENTS					
REV	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY DATE
Hydrock North Assurance Buildings 9-21 Princess Street, St Alberts Square Manchester M2 4DN t: +44(0)161 804 5550 e: manchester@hydrock.com					
CLIENT					
BEECH DEVELOPMENTS					
PROJECT					
ANCOATS GARDEN, MANCHESTER					
TITLE					
AS BUILT DRAINAGE RECORDS					
HYDROCK PROJECT NO. C-24134				SCALE @ A1 1:200	
STATUS DESCRIPTION					STATUS
AS BUILT RECORDS					
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) C-24134-HYD-XX-XX-DR-C-0530					REVISION AB1