



Welcomb Street, Manchester

Drainage Strategy

For Network Space

Date 11 April 2025

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P05	S2	11/04/2025	Planning

Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

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Executive Summary

This drainage strategy is to support the full application for the erection of four new industrial buildings, with the demolition of existing buildings, to create employment floor space within Use Classes E(g)(ii)(iii), B2 and B8 across the site and ancillary office space, with associated service yards, car parking including electric vehicle charging points, amended site access, refuse storage facilities, substations, boundary treatments, landscaping and associated works and infrastructure.

The surface water drainage hierarchy has been considered, and the preferred drainage solution is for disposal of surface water to the United Utilities existing combined public sewer via below ground gravity networks, where flows will discharge to attenuation tanks before entering the combined public sewer at a restricted flow rate of 45.6L/s, as agreed with United Utilities. The total site area is approximately 1.8 hectares, with 1.5 hectares of developed area.

The use of Sustainable Drainage Systems (SuDS) has been considered. Pollution prevention and site control methods will be utilised prior to outfall.

Pollution treatment measures will be provided in the form of Class 1 oil separators at car parks and SuDS structures (i.e. attenuation tanks, etc). Silt traps on drainage elements will be provided which will filter and trap silts and debris and mitigate against the risk of pollution entering the sewer network. All separators will be alarmed and remotely monitored at all times to ensure reliability.

The drainage network will be regularly maintained by a nominated management company on behalf of the client/occupier.

Foul flows will outfall at an unrestricted rate to the United Utilities existing combined public sewer which runs through the development flowing from east to west.

1. Introduction

1.1 Development Context

- 1.1.1 This report has been prepared by Hydrock Consultants Limited (Hydrock) on behalf of Network Space to support the planning application to be submitted to Manchester City Council for a proposed 4-unit industrial development with associated offices, service yards, car parking and access roads (see Appendix A).
- 1.1.2 The site is currently 'brownfield', whereby numerous buildings that were previously occupied by multiple businesses and Manchester School of Building are located. The existing brownfield development consists of 7 buildings and impermeable areas covering an approximate area of 1.59 Ha.
- 1.1.3 This report should be read in conjunction with the Ground Investigation - Phase 2 Geo-Environmental and Geotechnical Site Investigation Report (JER9536).
- 1.1.4 The surface water drainage strategy has been produced in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015), and Building Regulations Approved Document H: drainage and waste disposal requirements.

2. Development Description and Location

2.1 Site Location

2.1.1 This site is referenced in Table 1, and a location plan is provided in Figure 1.

Site Referencing Information	
Site Name	Welcomb Street, Manchester
Site Address & Location	Welcomb Street, Openshaw, Manchester, M11 2NJ
Council Area	Manchester City Council
Approximate Grid Reference	387920E, 397258N
Site Area	The total site area is 1.8Ha, of which 1.5ha will be developed area.
Boundaries & Surrounding Land	The site is located within the City Works Business Park, south of Welcomb Street, bound by industrial estate to the north, east and west. To the south it is bound by an Asphalt Supplier Plant.
Existing Land Use and Access	The site is currently brownfield, consisting of 7 buildings and an impermeable area covering approximately 1.59Ha.
Elevation and Topography	A topographical survey has been undertaken and indicates that the site levels fall from a high point of 60.394m at the western corner, to a low point of 59.465m in the centre of the site. As this site is an existing development, there are no steep falls or gradients across the site. See Appendix B for the full topographical survey.
Development Proposals	Erection of four new industrial buildings, with the demolition of existing buildings, to create employment floor space within Use Classes E(g)(ii)(iii), B2 and B8 across the site and ancillary office space, with associated service yards, car parking including electric vehicle charging points, amended site access, refuse storage facilities, substations, boundary treatments, landscaping, and associated works and infrastructure
Vehicular access	The main vehicular access to the site will be from Welcomb Street to the north of site.

Table 1: Site referencing information



Figure 1: Site location

3. Drainage Strategy

3.1 Existing Site Drainage

- 3.1.1 United Utilities sewer records indicate that an existing public combined sewer runs through the development flowing from east to west. The United Utilities sewer record is included within Appendix C.
- 3.1.2 A CCTV survey has been undertaken which indicates the existing private drainage connects into the United Utilities combined public sewer within the site. The site covers a total area of approximately 1.59Ha, with approximately 0.861Ha of this area proven to have a positive drainage connection through CCTV Survey to the existing combined sewer which passes through the centre of the development. The CCTV Survey Report is included within Appendix D.
- 3.1.3 The recorded level information of the sewers within Welcomb Street suggest that a gravity connection from the proposed development would be likely. The topographical survey (Appendix B) indicates numerous chambers around the existing site indicating the existing drainage. It is proposed to utilise part of the existing drainage that has the required depths for a gravity connection.

3.2 Existing Discharge Rates

- 3.2.1 In accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems and Staffordshire County Council SuDS Handbook;

For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

- 3.2.2 A hydraulic model of the existing drainage has been constructed to determine the existing site runoff based upon an existing hard landscaping catchment area of 0.861 Hectares, which has been proven to discharge into the 900mm United Utilities combined sewer through CCTV survey. MicroDrainage calculations of the existing drainage can be found in Appendix E.

Storm Event (Years)	Discharge Rate (l/s)
1	78.7
2	91.3
30	126.4
100	139.4

Table 2: MicroDrainage Existing Run-off Rates

The existing drainage and the associated catchment areas are indicated within the Existing drainage Layout found within Appendix C.

3.3 Proposed Site Discharge

- 3.3.1 A Pre-Development Enquiry has been submitted to United Utilities to agree proposed flow rates for the proposed surface water run-off. It has been stated by United Utilities that the post development pass forward flow rate does not exceed the 2 year event with betterment applied. Understanding that the Manchester area requires betterment on existing rates of 50%, the rate is not to exceed 45.6l/s.
- 3.3.2 Email correspondence with United Utilities confirming the agreed flow rates can be found within Appendix F.
- 3.3.3 It is therefore proposed that surface water run-off is restricted to a flow of 45.6l/s for a 1 in 2 year, a 30 year, and a 100 year +45% climate change event.
- 3.3.4 The proposed drainage and associated catchment areas are also indicated within Appendix C.

3.4 Drainage Discharge Hierarchy

3.4.1 In accordance with C753 SuDS manual, surface water should be managed following below discharge hierarchy:

- (1) Infiltration to the maximum extent that is practical;
- (2) Discharge to surface water body;
- (3) Discharge to surface water sewer;
- (4) Attenuated discharge to a combined sewer.

3.4.2 *Discharge via Infiltration*

Falling head test have been undertaken in three locations across the site. Only WSo2 indicated a rate of infiltration of 4.11×10^{-6} . This is located within the service yard between unit 3 and 4 where the existing combined sewer is present. Due to the public sewer easement and the requirement for infiltration structures to be located 5m away from buildings, there is insufficient space for infiltration to be the sole method of surface water discharge. Results from falling head test can be found in the ground investigation report included within the planning submission, 'JER9536 - Phase 2 Geo-Environmental and Geotechnical Site Investigation Report'. Infiltration is therefore not considered feasible.

3.4.3 *Discharge to a surface water body*

The nearest existing watercourse to the development is Clayton Brook, located approximately 421m to the west of the development. An existing culverted watercourse is present 330m to the west which discharges into Clayton Brook. Due to the proximity to the nearest watercourse and the requirement for passing through third party land it is unachievable to discharge surface water from the development to a watercourse.

3.4.4 *Discharge to surface water sewer*

United Utilities record information indicates that there are no existing public surface water sewers within the vicinity of the development, with possible connects.

3.4.5 *Discharge to a combined sewer*

United Utilities record information indicates existing combined public sewers are located within the vicinity of this development, one of which runs through the site. It has been proven through CCTV surveys that the existing site has a positive connection into this combined sewer. A Pre-Development Enquiry has been submitted to United Utilities, who have agreed that the proposed site can discharge to the sewer at this location at a restricted rate of 45.6l/s.

3.5 Sustainable Drainage Systems (SuDS)

- 3.5.1 Sustainable drainage developed in line with the ideals of sustainable development is collectively referred to as Sustainable Drainage Systems (SuDS). At a particular site, these systems are designed to manage both the environmental risks resulting from the urban runoff and to contribute, wherever possible, to environmental enhancement. Therefore, SuDS objectives are to minimise the impacts from the development on the quantity and quality of the runoff and maximise amenity and biodiversity opportunities (CIRIA C753, 2015).
- 3.5.2 SuDS help to mimic the natural flow of water ensuring that both the quantity and quality of the surface water is dealt with before feeding it into the drainage network. SuDS features usually come with added maintenance, however the benefits they reap are considered to outweigh this. The selection of the most appropriate SuDS features should consider constraints, requirements and maintenance of the site. It should be remembered that Local Planning Authorities expect SuDS to be investigated on construction projects. The implementation of SuDS features can assist in achieving the drainage requirements set out in the National Planning Policy Framework.
- 3.5.3 A strong design theme is essential if maximum aesthetic benefits are to be gained from the SuDS approach. At a more local scale SuDS should link with the individual plot structure, planting and amenity areas, gaining multiple benefits from a limited area of land.
- 3.5.4 The 'Management Train Approach' should be central to the surface water drainage strategy of a proposed site. The main objective is the treatment and control of runoff as near to source as possible, thus protecting downstream habitats and further enhancing the amenity value of the site. This concept uses a hierarchy of drainage techniques to incrementally reduce pollution, flow rates and volumes of storm water discharge from the site, and is as follows:
- » Prevention - The use of good site design and housekeeping measures to prevent runoff and pollution (e.g. rainwater re-use).
 - » Source Control - Control of runoff at source or as close to source as possible (e.g. soakaways, green roofs, pervious pavements).
 - » Site Control - Management of water in a local area (e.g. ground storage/attenuation, detention ponds/basins).
 - » Regional Control - Management of water from a site or various sites (e.g. wetlands, balancing ponds).
- 3.5.5 The SuDS philosophy for a development site is the promotion of Pollution Prevention and Site Control Techniques. The following design philosophy is proposed:
- » Surface water treatment using the 'Management Train' approach to remove and isolate contamination at all SuDS facilities prior to conveyance.
 - » Site Control features (attenuation) to accommodate the additional surface water runoff generated by the development site before discharging into the combined sewer.
 - » Provision of suitable oil separators (where applicable).
 - » Aim to limit, where possible, the impermeable fraction of development.

3.5.6 It is proposed that the development site has two levels of treatment. Prevention is considered as the first level of treatment and the site control as the second.

3.5.7 A review of the possible SuDS solutions that are feasible include:

- » Below ground storage
- » Oil separators

3.6 Prevention and Source Control - Principles and Objectives

3.6.1 The main objective of prevention and source control is the treatment and control of runoff as near to source as possible. Application of these techniques will require reduction of impermeable areas and techniques to restrict the runoff rates.

3.6.2 Prevention measures to be considered, where possible, as part of the overall approach to the management train at this site include rainwater harvesting. Typical examples are given in the SuDS Manual (Ciria C697) and are briefly described in Table 3 below. It must be noted that the effectiveness of each system is dependent on the final design as well as the actual site conditions.

SuDS Feature	Incorporated within design?	Reasoning
Green/Brown Roof	No	Greenroof systems have been excluded as they are unsuitable for lightweight structures.
Attenuation Pond	No	Attenuation ponds have been excluded for the site due to lack of available space within the development proposals due to existing gas main easements.
Rainwater Harvesting	No	Rainwater harvesting is not effective for this type of development where there are a limited number of toilets/ uses for harvested water.
Infiltration Methods	No	Infiltration is unachievable due to contaminated ground and shallow water table identified by Geotechnical Engineers.
Raingardens/Bio-retention areas	No	Excluded due to the nature of the development.
Filter strips and swales	No	Excluded due to lack of external space available.
Permeable Paving	No	Excluded, given the industrial nature of the development and gradients across the site.
Below ground attenuation systems / Oversized Pipework	Yes	Below ground attenuation will be achieved through the use of below ground cellular attenuation crates within the development.

Table 3: SuDS Considerations

3.7 Surface Water Drainage Strategy

3.7.1 It is proposed that the surface water drainage is to be separated into 4 networks to utilise existing drainage connections.

3.7.2 The agreed discharge rate of 45.6L/s will be split between each network, outlined below:

Catchment Reference	Total Impermeable Area (m ³)	Proposed Discharge Rate (L/s)
Units 1&2	4390	13.5
Unit 3	5836	18
Unit 4 Yard & Roof	3600	11
Unit 4 Car Park	950	3

Table 4: Proposed Discharge Rates

3.7.3 Surface water runoff from roofs and external areas will be directed to the below ground gravity network via rainwater pipes and channel drains before being attenuated within below ground cellular structures prior to outfall into the existing network (see Appendix G for Proposed Drainage Layout).

3.7.4 Attenuation storage of approximately 489m³ will be required to store proposed run off during the 1 in 100 Year plus 45% climate change allowance storm event.

3.7.5 A hydraulic model has been created using InfoDrainage drainage software as part of the preliminary drainage design, which defines pipe sizes and SuDS attenuation volumes for a range of events including the 1 in 2year, 1 in 30year and 1 in 100year + 45% climate change event. Hydraulic calculations have been provided in Appendix H. It is noted that these rates and volumes are preliminary and may change at detailed design stage when more specific information is available.

3.7.6 The proposed drainage layout is designed in accordance with Design and Construction Guidance.

3.7.7 In the event of an extreme rainfall beyond the designed storm events, or poor maintenance of the surface water drainage system, exceedance flooding will be safely contained on site and directed away from the buildings, where storm-water volumes will sit in the low points of the car park and yard areas, and drain into the surface water infrastructure as water levels recede as see in Appendix I.

3.7.8 Pollution treatment measures will be provided in the form of Class 1 oil separators for the car park and yard areas, and silt traps on drainage elements which will filter and trap silts and debris and mitigate against the risk of pollution. All separators will be alarmed and remotely monitored at all times to ensure reliability.

3.8 Foul Drainage Strategy

- 3.8.1 It is proposed that the foul drainage from Unit 1 and 2 of the new development is to discharge to a proposed combined manhole located on the existing private combined drainage network before discharging into United Utilities combined public sewer via existing connections that have been proven through CCTV surveys.
- 3.8.2 Foul drainage from Unit 3 of the new development is to discharge to an existing private manhole, previously utilised for surface water. As all surface water connections to this manhole will be abandoned, this manhole will serve as a foul water manhole for the proposed development, which discharges into United Utilities combined public sewer via existing connections that have been proven through CCTV surveys.
- 3.8.3 There is existing private foul drainage located under the proposed Unit 4 building, which will require diverting as part of the works for the new development. The foul drainage is to be relocated into the yard of the adjacent site to the east of the Unit 4 building. Foul flows from Unit 4 will discharge to the diverted foul network, which will discharge into United Utilities combined public sewer via existing connections that have been proven through CCTV surveys.
- 3.8.4 A non-return valve should be provided at the outfalls to ensure surcharging from the public sewer does not enter the private drainage network.

3.9 Management, Maintenance and Residual Risk

- 3.9.1 The proposed drainage layout will be designed in accordance with building regulations, Design and construction guidance, and Ciria C753 for SuDS structures.
- 3.9.2 Run-off from roofs is considered to be generally clean with limited contamination, and will be discharged directly to the proposed drainage infrastructure and new SuDS Facilities. Silt is to be prevented from entering the drainage system by the use of catchpits and interceptors.
- 3.9.3 Run-off from car park and yard areas will be treated via proprietary treatment system of a full-retention oil interceptor.
- 3.9.4 A private management company will maintain the drainage infrastructure as part of a site-wide management and maintenance schedule as shown in Table 5 below.
- 3.9.5 Access and egress arrangements to and from the new development, should exceedance flooding occur, will be via the existing access road, Welcomb Street, to the north of site. It is anticipated that flood water from an extreme rainfall beyond the designed storm events, or poor maintenance of the surface water drainage system, will be maintained within the proposed development.
- 3.9.6 Flood risk to people and property can be managed but it can never be completely removed. Residual risk remains after flood management or mitigation measures have been put in place. This relates to a rainfall event beyond what can be fully quantified.

Item	Maintenance	Frequency per year
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Foul Water and Surface Water Manholes	Manhole covers checked for operation/damage – seating's re-greased or replaced as required. Check for blockages and or damage to invert channel/inlets – jetting pipe runs if blocked, any damage to be repaired. All access ladders & other associated ironworks to be checked for corrosion & fixings to be checked for deterioration. To be repaired or replaced dependant of extent of damage.	1
Drainage Channels/Kerb Drains	All catch/access pits to have silt/solid accumulation removed. Channel run to be jetted through between access points. Any channel grates to be inspected for damage & replaced as necessary.	2
Rainwater Pipes / Roof Gutters	Check roof gutters for sediment, plant, debris, etc. and clean as necessary.	1
Attenuation Tanks	Inspect and identify any areas that are not operating correctly. If required, take remedial action. Remove debris from the catchment surface (where it may cause risks to performance) Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed Repair/rehabilitate inlets, outlet, overflows and vents. Survey inside of tank for sediment build-up and remove if necessary.	1 12 1 As required

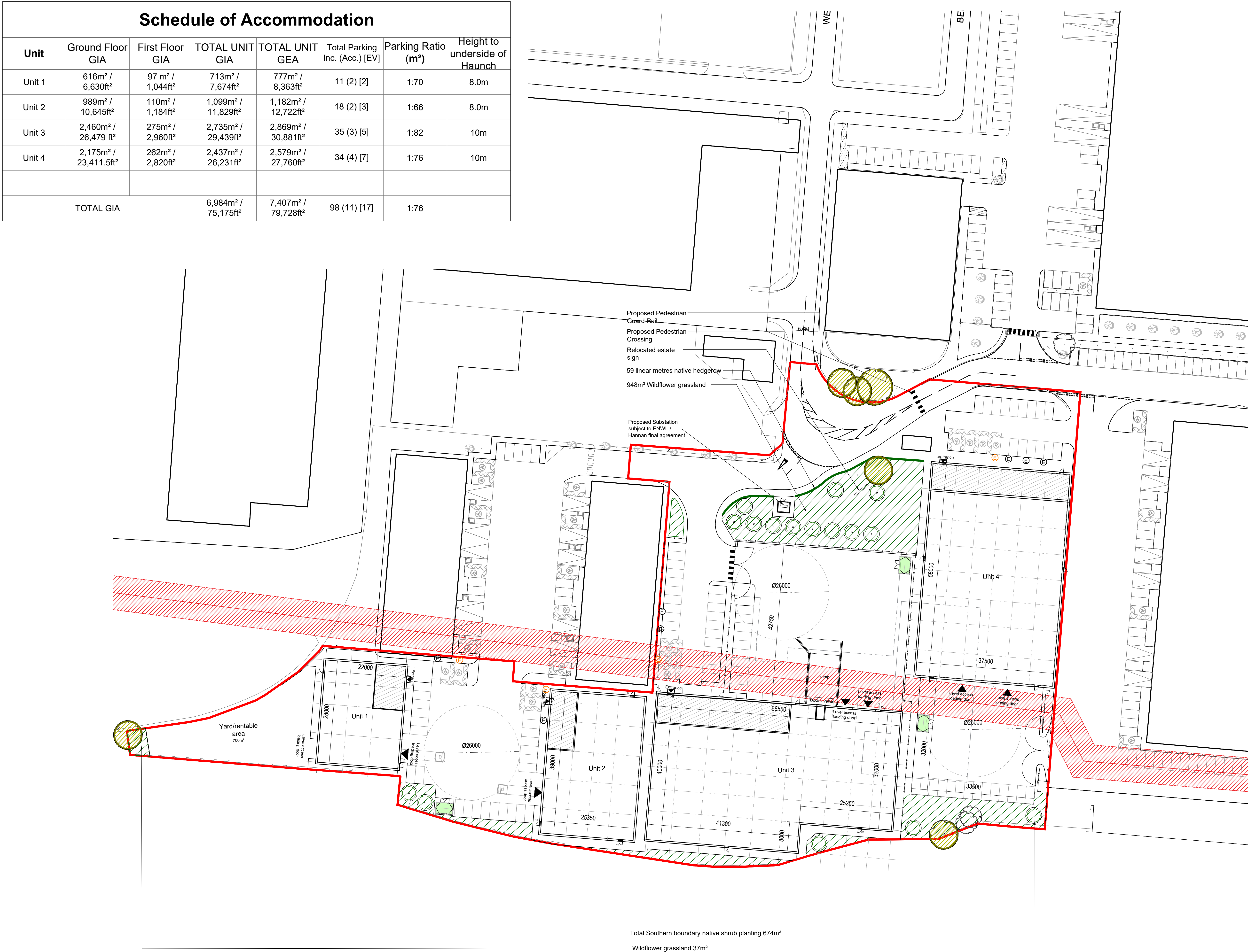
Table 5: Drainage Maintenance

Maintenance Schedule	Required Action	Frequency
Before Start Up	Remove of any inappropriate material from within the chamber and dispose off-site.	At start
Regular Maintenance	Removal of debris (which could include leaves, rubbish, branches) from areas served by drainage (where it may cause risk to performance)	Monthly
Remedial Actions	For blockages resulting in flooded manhole chambers, drain down manhole chamber and unblock. All catch pits/Vortex Separators to have silt/solid accumulation removed & base jetted clean.	As required
Monitoring	Inspect unit and hose down as required	Monthly for first three months, then once every six months

Table 6 - Flow Control Maintenance

Appendix A - Proposed Site Layout

Schedule of Accommodation							
Unit	Ground Floor GIA	First Floor GIA	TOTAL UNIT GIA	TOTAL UNIT GEA	Total Parking Inc. (Acc.) [EV]	Parking Ratio (m²)	Height to underside of Haunch
Unit 1	616m² / 6,630ft²	97 m² / 1,044ft²	713m² / 7,674ft²	777m² / 8,363ft²	11 (2) [2]	1:70	8.0m
Unit 2	989m² / 10,645ft²	110m² / 1,184ft²	1,099m² / 11,829ft²	1,182m² / 12,722ft²	18 (2) [3]	1:66	8.0m
Unit 3	2,460m² / 26,479 ft²	275m² / 2,960ft²	2,735m² / 29,439ft²	2,869m² / 30,881ft²	35 (3) [5]	1:82	10m
Unit 4	2,175m² / 23,411.5ft²	262m² / 2,820ft²	2,437m² / 26,231ft²	2,579m² / 27,760ft²	34 (4) [7]	1:76	10m
TOTAL GIA			6,984m² / 75,175ft²	7,407m² / 79,728ft²	98 (11) [17]	1:76	

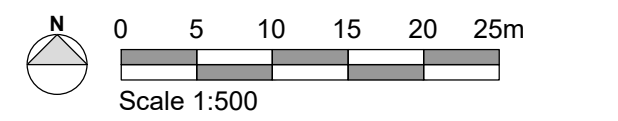


NOTES AEWTP026C

- All dimensions and levels are to be checked on site.
- Any discrepancies are to be reported to the architect before any work commences
- This drawing shall not be scaled to ascertain any dimensions. Work to figured dimensions only.
- This drawing shall not be reproduced without express written permission from AEW.
- Title overlay drawings and ownership boundaries are produced using all reasonable endeavours. AEW cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.
- All works are to be undertaken in accordance with Building Regulations and the latest British Standards.
- All proprietary materials and products are to be used strictly in accordance with the manufacturers recommendations.

CDM 2015

Client notified of duties: **07/04/21**
Principal Designer: **Client**
Unless noted below, all known hazards have been highlighted on the drawing:



-  Site Boundary 4.54ac / 1.80ha
-  Mezzanine Extents
-  30" combined sewer with 30ft easement.
Exact alignment TBC by survey
-  Footprint of existing Zone A + B
-  Landscape Planting to Landscape Architect Specification. Existing trees and shrubs to be retained where possible.
-  Existing trees to be retained
-  Proposed tree planting
- Manchester City Council Maximum parking standards:
- B2 = 1:45 sq.m
B8 = 1:100 sq.m
-  Proposed Bin store
-  Pedestrian gate with panic hardware
-  Future provision Electrical Vehicle Charging spaces with cable routes

NOTES

HGV circulation subject to tracking analysis

P12	16/04/24	MW	DRS
Planning Issue			

REV	Date	Drawn by: -	Checked by: -
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Status	Purpose of Issue
S4	For Planning

drawing stage **Stage 3**

Network Space

project

**Welcomb Street
Openshaw**

drawing title

Proposed Site Plan

date	Apr 2024	drawn	MW
scale@A1	1:500	checked	DRS

Appendix B - Topographical Survey

The strength of the bubble depends on the strength of the IPO and may not be the same for all companies. The strength of the IPO depends on the company's financial performance, the quality of its management, and the overall market conditions. The strength of the bubble also depends on the company's ability to raise capital through other means, such as debt or private equity.

There are several factors that can influence the strength of the IPO and the bubble:

- **Company performance:** Companies with strong financial performance and a clear growth strategy are more likely to attract a strong IPO and a large bubble.
- **Market conditions:** A strong overall market, particularly in the technology sector, can lead to a stronger IPO and a larger bubble.
- **Company size:** Larger companies with a proven business model and a large market opportunity are more likely to attract a strong IPO and a larger bubble.
- **Industry trends:** Companies in industries that are experiencing rapid growth, such as artificial intelligence and autonomous vehicles, are more likely to attract a strong IPO and a larger bubble.

It is important to note that the strength of the IPO and the bubble are not always a good indicator of a company's long-term success. Many companies that have a strong IPO and a large bubble have later experienced a sharp decline in their stock price. Therefore, investors should always conduct thorough due diligence before investing in a company's IPO.

Key factors for long-term success:

- **Strong financial performance:** Consistent revenue growth and profitability are essential for long-term success.
- **Clear growth strategy:** A well-defined plan for future growth and expansion is crucial.
- **Experienced management team:** A team with a proven track record of leading a company through challenges is a strong asset.
- **Strong relationships with investors and customers:** Building a loyal customer base and maintaining strong relationships with investors are key to long-term success.

The following information is for informational purposes only and does not constitute an offer or recommendation to buy or sell any securities.

Investing in the IPO and the bubble is a high-risk investment. The value of the IPO and the bubble can fluctuate significantly, and there is a risk of a sharp decline in the stock price. Investors should only invest in the IPO and the bubble if they are willing to accept the risk of a significant loss.

Exiting investment after the bubble peaks is a critical decision. Investors should monitor the stock price closely and consider exiting their investment when the stock price reaches a peak or shows signs of a sharp decline.

Disclaimer: This document is not intended to provide financial advice or investment recommendations. It is for informational purposes only. Investors should consult with a qualified financial advisor before making any investment decisions.

The following text is for informational purposes only and does not constitute an offer or recommendation to buy or sell any securities.

There is a significant risk of a sharp decline in the stock price after the IPO and the bubble. Many companies that have a strong IPO and a large bubble have later experienced a sharp decline in their stock price. This is often due to a variety of factors, including overvaluation, lack of profitability, and changes in market conditions. Investors should be aware of this risk and should only invest in the IPO and the bubble if they are willing to accept the risk of a significant loss.

Investors should monitor the stock price closely and consider exiting their investment when the stock price reaches a peak or shows signs of a sharp decline. This is a critical decision, as the stock price can fluctuate significantly and there is a risk of a sharp decline. Investors should consider factors such as the company's financial performance, the overall market conditions, and the company's growth prospects when making this decision.

It is important to note that the strength of the IPO and the bubble are not always a good indicator of a company's long-term success. Many companies that have a strong IPO and a large bubble have later experienced a sharp decline in their stock price. Therefore, investors should always conduct thorough due diligence before investing in a company's IPO.

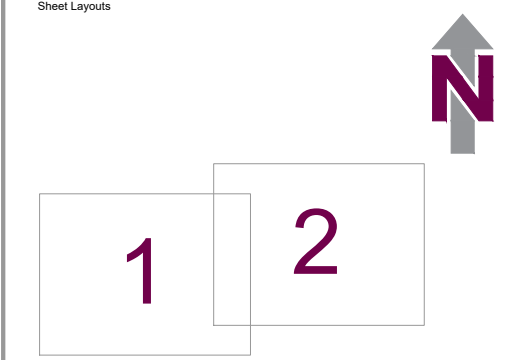
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Standard Abbreviations			
AA	ANIONIC POLYMERIZATION	AA	ACRYLIC ACID
AB	AB INITIO	AB	AB INITIO
AC	ACRYLIC CHLORIDE	AC	ACRYLIC CHLORIDE
AD	ADDITIONAL	AD	ADDITIONAL
AE	ACRYLIC ESTER	AE	ACRYLIC ESTER
AF	ACRYLIC FLUORIDE	AF	ACRYLIC FLUORIDE
AG	ACRYLIC GLYCOL	AG	ACRYLIC GLYCOL
AH	ACRYLIC HYDROLYSIS	AH	ACRYLIC HYDROLYSIS
AI	ACRYLIC IMIDE	AI	ACRYLIC IMIDE
AL	ACRYLIC LACTONE	AL	ACRYLIC LACTONE
AM	ACRYLIC MONOMER	AM	ACRYLIC MONOMER
AN	ACRYLIC NITRILE	AN	ACRYLIC NITRILE
AO	ACRYLIC OXIDE	AO	ACRYLIC OXIDE
AP	ACRYLIC POLYMERIZATION	AP	ACRYLIC POLYMERIZATION
AR	ACRYLIC RESIN	AR	ACRYLIC RESIN
AS	ACRYLIC SALT	AS	ACRYLIC SALT
AT	ACRYLIC THERMALLY	AT	ACRYLIC THERMALLY
AV	ACRYLIC VINYLS	AV	ACRYLIC VINYLS
AW	ACRYLIC WATER	AW	ACRYLIC WATER
AX	ACRYLIC XYLENE	AX	ACRYLIC XYLENE
AY	ACRYLIC YLENE	AY	ACRYLIC YLENE
AZ	ACRYLIC ZINC	AZ	ACRYLIC ZINC
BA	BENZOIC ACID	BA	BENZOIC ACID
BB	BENZOIC BLENDED	BB	BENZOIC BLENDED
BC	BENZOIC CHLORIDE	BC	BENZOIC CHLORIDE
BD	BENZOIC DIBROMIDE	BD	BENZOIC DIBROMIDE
BE	BENZOIC ESTER	BE	BENZOIC ESTER
BF	BENZOIC FLUORIDE	BF	BENZOIC FLUORIDE
BG	BENZOIC GLYCOL	BG	BENZOIC GLYCOL
BH	BENZOIC HYDROLYSIS	BH	BENZOIC HYDROLYSIS
BI	BENZOIC IMIDE	BI	BENZOIC IMIDE
BJ	BENZOIC LACTONE	BJ	BENZOIC LACTONE
BK	BENZOIC MONOMER	BK	BENZOIC MONOMER
BL	BENZOIC NITRILE	BL	BENZOIC NITRILE
BM	BENZOIC OXIDE	BM	BENZOIC OXIDE
BN	BENZOIC POLYMERIZATION	BN	BENZOIC POLYMERIZATION
BO	BENZOIC RESIN	BO	BENZOIC RESIN
BP	BENZOIC SALT	BP	BENZOIC SALT
BQ	BENZOIC THERMALLY	BQ	BENZOIC THERMALLY
BR	BENZOIC VINYLS	BR	BENZOIC VINYLS
BS	BENZOIC WATER	BS	BENZOIC WATER
BT	BENZOIC XYLENE	BT	BENZOIC XYLENE
BU	BENZOIC YLENE	BU	BENZOIC YLENE
BV	BENZOIC ZINC	BV	BENZOIC ZINC
BW	BENZOIC BENZOIC	BW	BENZOIC BENZOIC
BX	BENZOIC BENZOIC	BX	BENZOIC BENZOIC
BY	BENZOIC BENZOIC	BY	BENZOIC BENZOIC
BZ	BENZOIC BENZOIC	BZ	BENZOIC BENZOIC
CA	CACETIC ACID	CA	CACETIC ACID
CB	CACETIC BLENDED	CB	CACETIC BLENDED
CC	CACETIC CHLORIDE	CC	CACETIC CHLORIDE
CD	CACETIC DIBROMIDE	CD	CACETIC DIBROMIDE
CE	CACETIC ESTER	CE	CACETIC ESTER
CF	CACETIC FLUORIDE	CF	CACETIC FLUORIDE
CG	CACETIC GLYCOL	CG	CACETIC GLYCOL
CH	CACETIC HYDROLYSIS	CH	CACETIC HYDROLYSIS
CI	CACETIC IMIDE	CI	CACETIC IMIDE
CJ	CACETIC LACTONE	CJ	CACETIC LACTONE
CK	CACETIC MONOMER	CK	CACETIC MONOMER
CL	CACETIC NITRILE	CL	CACETIC NITRILE
CM	CACETIC OXIDE	CM	CACETIC OXIDE
CN	CACETIC POLYMERIZATION	CN	CACETIC POLYMERIZATION
CO	CACETIC RESIN	CO	CACETIC RESIN
CP	CACETIC SALT	CP	CACETIC SALT
CQ	CACETIC THERMALLY	CQ	CACETIC THERMALLY
CR	CACETIC VINYLS	CR	CACETIC VINYLS
CS	CACETIC WATER	CS	CACETIC WATER
CT	CACETIC XYLENE	CT	CACETIC XYLENE
CU	CACETIC YLENE	CU	CACETIC YLENE
CV	CACETIC ZINC	CV	CACETIC ZINC
CW	CACETIC BENZOIC	CW	CACETIC BENZOIC
CX	CACETIC BENZOIC	CX	CACETIC BENZOIC
CY	CACETIC BENZOIC	CY	CACETIC BENZOIC
CZ	CACETIC BENZOIC	CZ	CACETIC BENZOIC
DA	DACETIC ACID	DA	DACETIC ACID
DB	DACETIC BLENDED	DB	DACETIC BLENDED
DC	DACETIC CHLORIDE	DC	DACETIC CHLORIDE
DD	DACETIC DIBROMIDE	DD	DACETIC DIBROMIDE
DE	DACETIC ESTER	DE	DACETIC ESTER
DF	DACETIC FLUORIDE	DF	DACETIC FLUORIDE
DG	DACETIC GLYCOL	DG	DACETIC GLYCOL
DH	DACETIC HYDROLYSIS	DH	DACETIC HYDROLYSIS
DI	DACETIC IMIDE	DI	DACETIC IMIDE
DJ	DACETIC LACTONE	DJ	DACETIC LACTONE
DK	DACETIC MONOMER	DK	DACETIC MONOMER
DL	DACETIC NITRILE	DL	DACETIC NITRILE
DM	DACETIC OXIDE	DM	DACETIC OXIDE
DN	DACETIC POLYMERIZATION	DN	DACETIC POLYMERIZATION
DO	DACETIC RESIN	DO	DACETIC RESIN
DP	DACETIC SALT	DP	DACETIC SALT

[illegible]

Volume(s)	TAKEN FROM RECORDS	REF. CH102	REFERENCE 12/04/04 IN REPORT



 Grid: Local Grid by GPS Observations to the OS Active Network (OSTN15)	 Datum: Ordnance Datum by GPS Observations to the OS Active Network (OSGM15)
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Revision:	Amendments:	Date:	N
-	-	-	
-	-	-	
-	-	-	

A	ORIGINAL ISSUE	Jun'22
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CLIENT:

BRS Consulting

RFS Consulting

PROJECT:

Welcomb Street

TITLE: Topographical & Underground

Utility Survey

Drawn: <i>DLJS/JB/DW</i>	Checked: CA
--	---

Date: June 2022	Scale: 1:200 @ A0
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Org No: UAR3182_A Sheet: 2 of 2

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COMPLEX

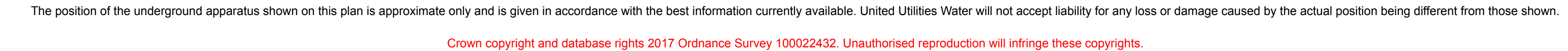
EASY

 UNIVERSITY OF NORTH CAROLINA

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Appendix C - Existing Drainage Layout



All point assets follow the standard colour convention:

red	- combined	blue	- surface water
brown	- foul	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 | ▽ Change of Characteristic |
| Drop Shaft | |
| Orifice Plate | |

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Welcomb Street Openshaw,

Sheet: 1 of 1

Printed by: Property Searches



United Utilities
Water for the North West



Ex. UU 6200
CL:59.000
IL:52.620
DEPTH:6.380

1.002 9000 @1:73

NO DRAINAGE VISIBLE
IN THIS AREA

Connection 02
IL: 54.252

1.001 9000 @1:72

PIPE 5.004
AREA 0.017Ha

PIPE 5.004
AREA 0.027Ha

PIPE 5.004
AREA 0.027Ha

PIPE 5.004
AREA 0.027Ha

PIPE 5.004
AREA 0.027Ha

PIPE 5.004
AREA 0.027Ha

PIPE 5.004
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PIPE 5.004
AREA 0.027Ha

PIPE 5.004
AREA 0.027Ha

NOTE:
INFORMATION SHOWN ON THIS
DRAWING IS FOR PLANNING
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SUBJECT TO CHANGE
FOLLOWING DETAILED DESIGN.

NOTES

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LEGEND

- EXISTING COMBINED DRAINAGE
- EXISTING SURFACE WATER
- EXISTING FOUL DRAINAGE
- EXISTING CHANNEL DRAIN
- EXISTING GULLY DRAIN
- EXISTING RAIN WATER PIPE

PO2 PRELIMINARY ISSUE

J. BOOTH 07.09.22 L. PILSBURY 07.09.22 R. HENSHALL 07.09.22

PO1 PRELIMINARY ISSUE

J. BOOTH 02.08.22 L. PILSBURY 02.08.22 R. HENSHALL 02.08.22

REV REVISION NOTES/COMMENTS

DRAWN BY DATE CHECKED BY DATE APPROVED BY DATE

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NETWORK SPACE

PROJECT

WELCOMB STREET, MANCHESTER

TITLE

EXISTING SURFACE WATER DRAINAGE

HYDROCK PROJECT NO. SCALE @ A1

C-22975 1:250

STATUS DESCRIPTION

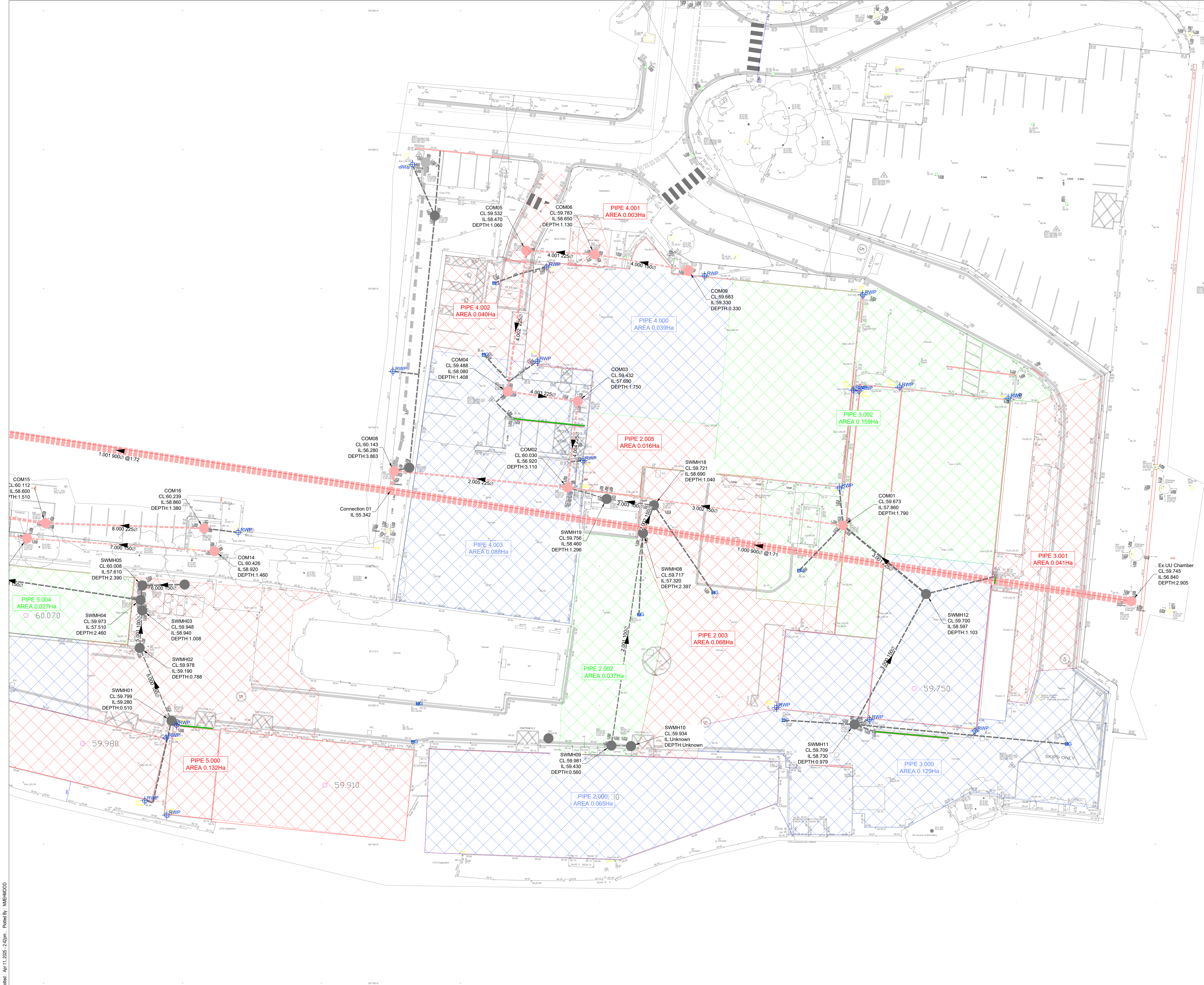
INFORMATION ONLY

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)

C22975-HYD-XX-XX-SK-C-0530

REVISION

PO2



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LEGEND

EXISTING COMBINED DRAINAGE

EXISTING SURFACE WATER

EXISTING FOUL DRAINAGE

EXISTING CHANNEL DRAIN

EXISTING GULLY DRAIN

EXISTING RAIN WATER PIPE

P01	PRELIMINARY ISSUE					
	J. BOOTH	02.08.22	L. PILSBURY	02.08.22	R. HENSHALL	02.08.22
REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT

NETWORK SPACE

PROJECT

WELCOMB STREET, MANCHESTER

TITLE

EXISTING SURFACE WATER DRAINAGE

HYDROCK PROJECT NO.

C-22975

SCALE @ A1

1:250

STATUS DESCRIPTION

INFORMATION ONLY

STATUS

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)

C22975-HYD-XX-XX-SK-C-0531

REVISION

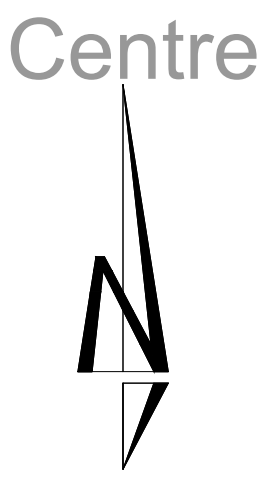
P01

Date Plotted: Apr 11, 2025 - 2:42pm

Plotted By: NIEHMOOD

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Filepath: P:\22000-22999\22975-SMAN - Welcomb St. Manchester\01_WIP\SK_Sketches\C-22975-HYD-XX-XX-SK-C-0530_Existing Catchment Areas.dwg



LEGEND

SURFACE WATER DRAINAGE

SIPHONIC DRAINAGE

FOUL WATER DRAINAGE

COMBINED DRAINAGE

CATCHPIT MANHOLE

PETROL INTERCEPTOR

EXISTING SURFACE WATER DRAINAGE TO REMAIN

CHANNEL DRAIN

EXISTING FOUL WATER DRAINAGE TO REMAIN

EXISTING SURFACE WATER MANHOLE TO BE UTILISED IN PROPOSED FOUL NETWORK

- NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS, SPECIFICATIONS AND DOCUMENTATION.

2. THE POSITION, SIZE AND LEVELS OF ALL DRAINS ARE TO BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS AND ANY DISCREPANCIES REPORTED IMMEDIATELY TO THE ENGINEER.

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REVISIONS

Rev.	PLANNING ISSUE	Revision Notes	Date	Drawn By	Checked	Approved
T01	PLANNING ISSUE		11.04.25	NM		CF 1 NB



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CLIENT

NETWORK SPACE

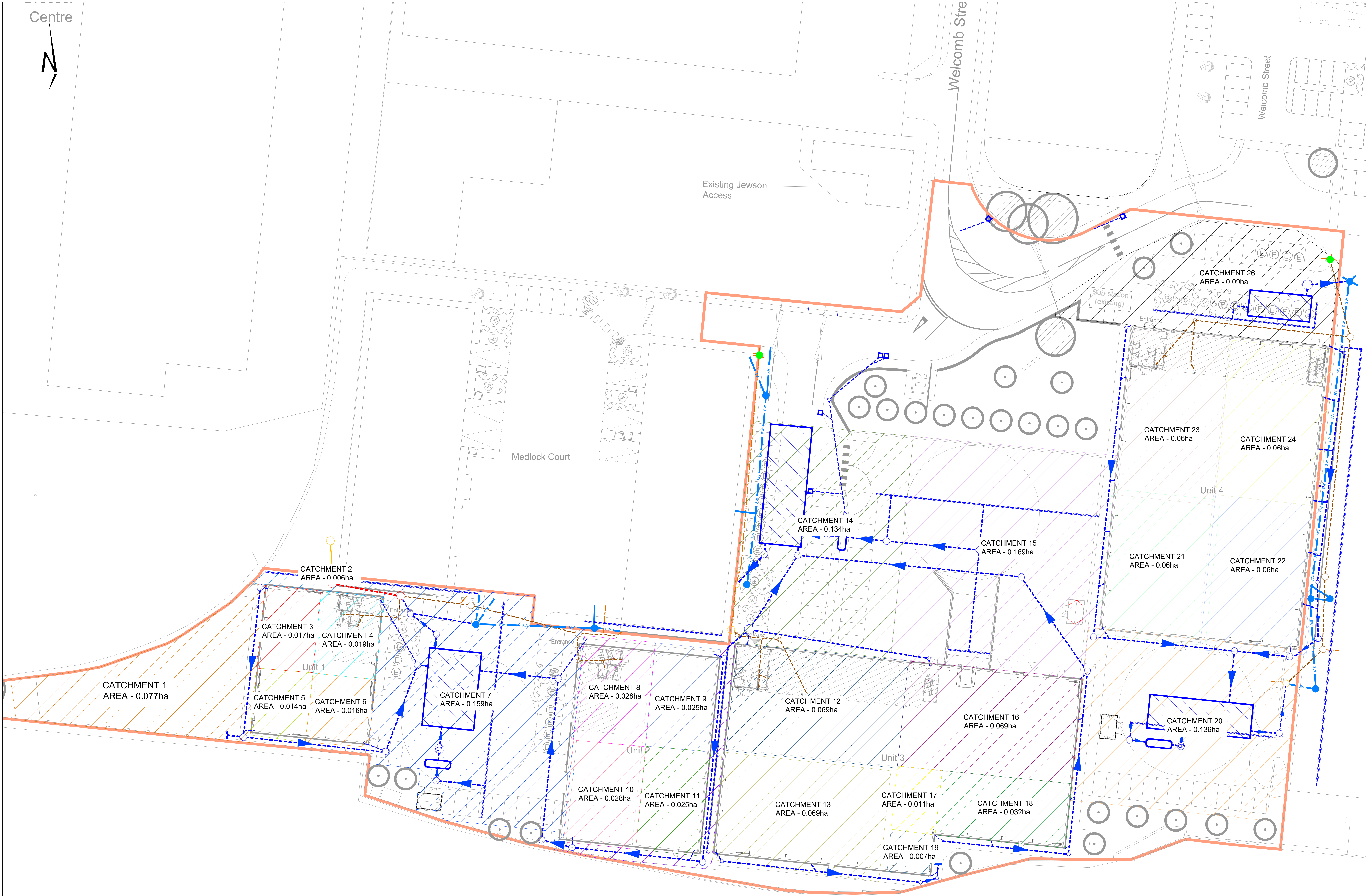
PROJECT

WELCOMB STREET
MANCHESTER

TITLE

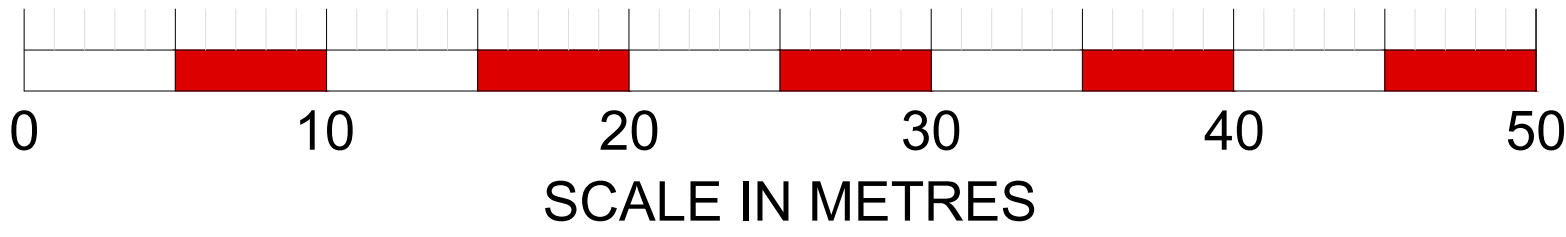
PROPOSED IMPERMEABLE LAYOUT

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STATUS DESCRIPTION SUITABLE FOR INFORMATION		REVISION T01
DRAWING NO. 22975-HYD-XX-XX-DR-C-0560		

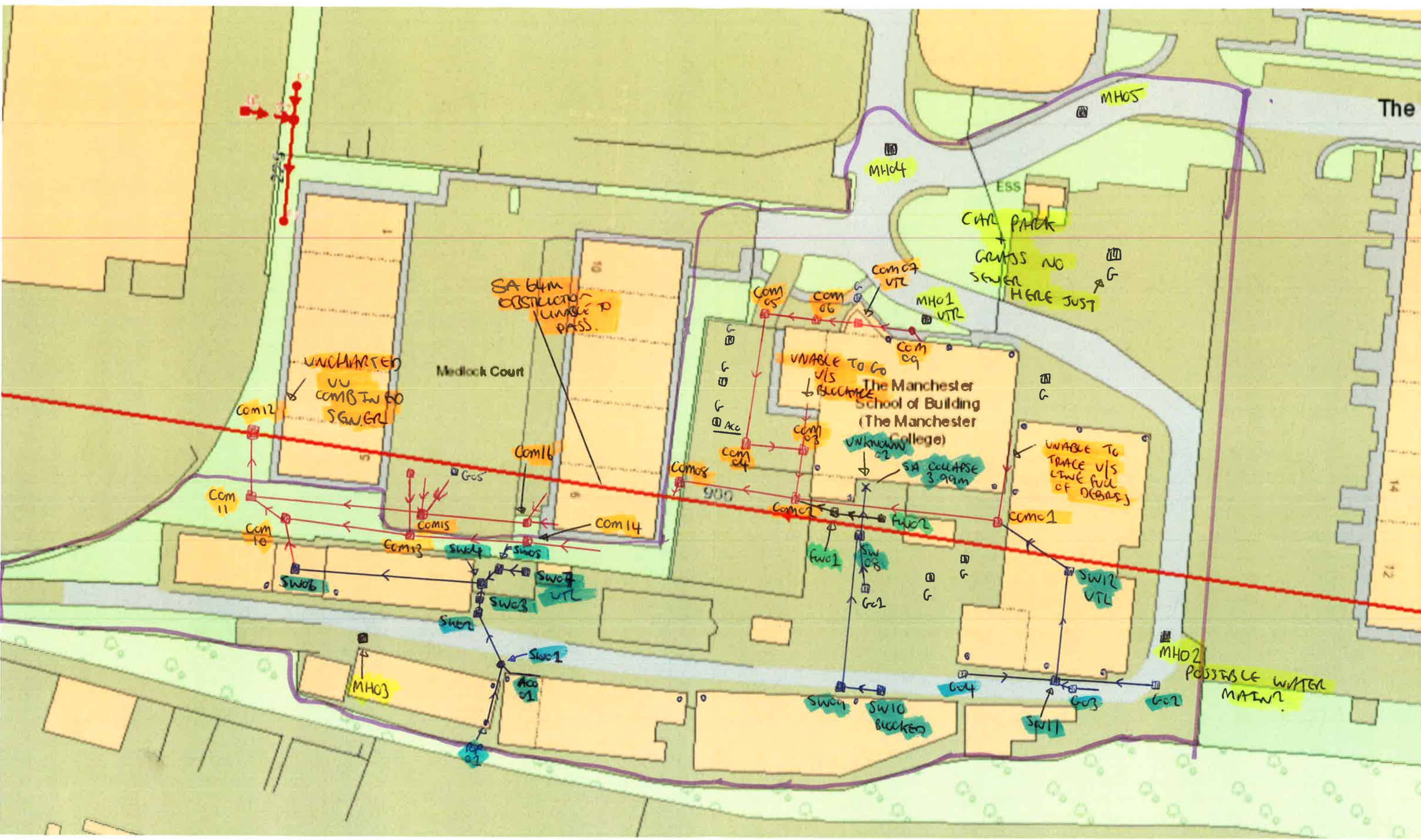


TARMAC ASHBURY
ASPHALT PLANT

LaFarge



Appendix D - CCTV Survey Report



• ← circles on buildings = MAIN WATER PIPES

SW08 = CATCH PIT

UNABLE TO SURVEY fwc2
full of clay

Manchester College, Welcomb Street

PLEASE NOTE: Upon further inspection of the whole boundary, we discovered that from SW01 -> SW12 may in fact be combined systems not surface water, the system is disused meaning it was difficult to judge at start of the survey the function of the sewer.

Also, FW01 AND FW02 can be accounted as combined which would make the entirety of the site combined.

Although we couldn't prove where SW08 discharges so we are unable to determine the function of SW08/09 and 10.

SW01

Firstly we surveyed downstream to SW02, survey abandoned due to 80% silt at 6.9m, overlap not attempted, see below location and internal pictures and also the silt within the line.



Also from SW01 we surveyed upstream towards ACO1, the survey was complete with only a large displaced joint within the line see picture below



Lastly from SW01 we surveyed upstream to RP01, not much to report about within line other than a protruding sealing ring and survey abandoning due to silt at 11.93m. See below



SW02

From SW02 we surveyed downstream to SW03, no defects to report within sewer length see below Internal and location of SW02



SW03

From SW03 we surveyed downstream to SW04, no defects to report withinline. See below internal and location of SW03

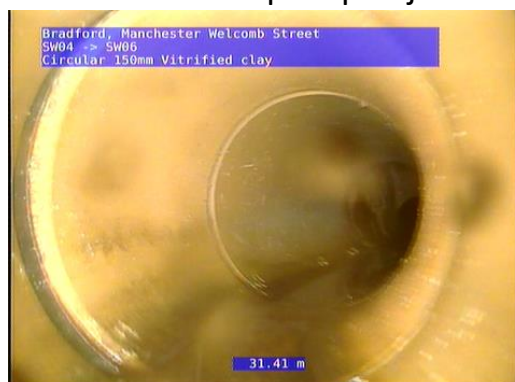


SW04

Firstly from SW04 we surveyed up stream to SW05, no defects to report within line. See below internal and location pictures of SW04.



Also from SW04 we surveyed downstream to SW06, not much to report within this sewer length other than a couple open joints. See picture below.



SW06

From SW06 we attempted to survey downstream to COM10 but abandoned 1.1m in due to silt, we attempted an overlap from COM10 upstream to SW06 but also abandoned at 0.83 due to silt and mass roots. We sound tested to prove the connection of the two manholes, see below pictures

COM10 U/S



SW05



From SW05 we surveyed up stream to SW07, this pipe has been lined and there are also mass roots at the mouth of the pipe in SW07. Unfortunately we were unable to locate SW07. Mass Roots in SW07



SW08



SW08 internal

SW08 is a catch pit, Firstly we surveyed upstream to G01 but we abandoned due to compact solids in pipe at 8.13m. Also there were a couple of other defects within line like fractures. See pictures below



Secondly we completed the survey upstream from SW08 to SW09, within this line there were defects such as a displaced joint and silt, see below.



SW09 Internal and Location



Lastly we surveyed downstream from SW08 towards UNKNOWN02 in which we survey abandoned due to collapse in pipe at 3.99, unable to trace line any further as it goes underneath building.



SW11



First of all we surveyed downstream from SW11 to SW12, this pipe is a 150mm but at 12.21m it changes to 100mm. There is also silt within line, see pictures below.



SW12 couldn't be located, line runs under building.

Next we surveyed upstream from SW11 to G02, several defects found within this line such as fractures, cracks and a piece of masonry which was pushed through until we had to abandon on silt. See pictures below.



Thirdly we surveyed upstream from SW11 to G03, no defects to report within this sewer length.

Finally from SW11 we surveyed upstream to G04 but had to abandon due to a broken/deformed pipe. See picture below.



COM12 – set up here CCTV upstream 64.2m had to survey abandon due to obstruction what looks like a spade in the invert camera would not pass this point, line would need cleaning to carry out a full survey



- COM01 D/S TO COM02 – Survey complete
- COM01 B PIPE – Unable to survey due to heavy silt, picture taken
- COM01 U/S TO SW12 – Survey complete, we believe SW12 (UTL) is in-between SW11 and COM01, sound tested to prove connections.
SW11 -> SW12 -> COM01
- FW01 U/S TO FW02 – Survey abandoned due to blockage 100% at 4.7m, overlap not attempted
- FW01 D/S TO COM02 – Survey complete
- COM05 U/S TO COM06 – Survey complete
- COM05 D/S TO COM04 – Survey complete
- COM04 D/S TO COM03 – Survey complete

- COM02 D/S TO COM08 – Survey complete
- COM02 U/S TO COM03 – Survey complete
- COM03 U/S (B PIPE) - Unable to survey due to 100% blockage, picture taken
- COM09 D/S TO COM07 – Survey complete
- COM10 D/S TO COM11 – Survey complete

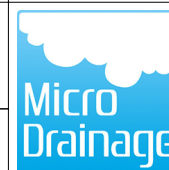
- COM11 D/S TO COM12 – Survey complete, COM12 is a United Utilities combined sewer
- COM13 D/S TO COM10 – Survey complete
- COM13 U/S TO COM14 – Survey complete
- COM15 U/S TO COM16 – Survey complete
- COM15 U/S TO GO5 – Survey abandoned at 3.25m due to silt and sludge, residue noticed on car park which could be the cause
- COM15 D/S TO COM11 – Survey abandoned at 12.52m due to being unable to pass right bend in sewer, white residue found all in line. Sound tested to COM11 to prove connections, unable to overlap as pipe high level drop shaft in COM11

- MH01 - Unable to raise therefor unknown asset
- MH02 - Unknown asset, possible water main?
- MH03 – Unknown asset, unable to trace or CCTV. Small pipe coming through soil in chamber
- MH04 – Unable to survey due to being in middle of 3-way junction
- MH05 - Unable to survey due to being located next to existing road works

Appendix E - Existing Surface Water Calculations

	.
	.
	.

Welcomb Street
Manchester
Existing Drainage Network



Date	07/09/2022
------	------------

Designed by L Pilsbury

File EXISTING CALCS.MDX

Checked by

Innovyze

Network 2020.1.3

Existing Network Details 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
6.000	6.144	0.105	58.5	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
6.001	2.112	0.040	52.8	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
5.003	37.642	0.350	107.5	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
5.004	6.251	0.180	34.7	0.044	5.00	0.0	0.600	o	225	Pipe/Conduit
7.000	27.137	1.060	25.6	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
7.001	21.459	1.040	20.6	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
5.005	5.660	-0.020	-283.0	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit
8.000	22.861	0.190	120.3	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit
8.001	28.776	0.130	221.4	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit
5.006	12.041	2.098	5.7	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit

Network Results Table

PN	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Vel (m/s)	Cap (l/s)
6.000	59.190	0.000	0.0	1.32	23.3
6.001	57.610	0.000	0.0	1.39	24.5
5.003	57.510	0.132	0.0	0.97	17.1
5.004	57.140	0.176	0.0	2.23	88.6
7.000	58.920	0.000	0.0	2.00	35.3
7.001	57.840	0.000	0.0	2.23	39.4
5.005	56.950	0.176	0.0	0.00	0.0
8.000	58.860	0.000	0.0	1.19	47.3
8.001	58.600	0.000	0.0	0.87	34.8
5.006	56.950	0.176	0.0	6.60	466.8

Hydrock Consultants Ltd		Page 3
. . .	Welcomb Street Manchester Existing Drainage Network	
Date 07/09/2022 File EXISTING CALCS.MDX	Designed by L Pilsbury Checked by	
Innovyze	Network 2020.1.3	

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	0.000
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	0
Number of Online Controls	0	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)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.358		

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Hydrock Consultants Ltd								Page 6																																																																																																								
.				Welcomb Street																																																																																																												
.				Manchester																																																																																																												
.				Existing Drainage Network																																																																																																												
Date 07/09/2022				Designed by L Pilsbury																																																																																																												
File EXISTING CALCS.MDX				Checked by																																																																																																												
Innovyze				Network 2020.1.3																																																																																																												
<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>																																																																																																																
<table><tr><th colspan="2">US/MH</th><th rowspan="2">Storm</th><th rowspan="2">Return Period</th><th rowspan="2">Climate Change</th><th rowspan="2">First (X) Surcharge</th><th rowspan="2">First (Y) Flood</th><th rowspan="2">First (Z) Overflow</th><th rowspan="2">Overflow Act.</th><th>Water Level</th></tr><tr><th>PN</th><th>Name</th><th>(m)</th></tr><tr><td>6.001</td><td>5</td><td>15 Summer</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>57.610</td></tr><tr><td>5.003</td><td>4</td><td>15 Winter</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>57.600</td></tr><tr><td>5.004</td><td>5</td><td>15 Winter</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>57.216</td></tr><tr><td>7.000</td><td>8</td><td>15 Summer</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>58.920</td></tr><tr><td>7.001</td><td>10</td><td>15 Summer</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>57.840</td></tr><tr><td>5.005</td><td>6</td><td>15 Winter</td><td>1</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>57.178</td></tr><tr><td>8.000</td><td>12</td><td>15 Summer</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>58.860</td></tr><tr><td>8.001</td><td>13</td><td>15 Summer</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>58.600</td></tr><tr><td>5.006</td><td>7</td><td>15 Winter</td><td>1</td><td>+0%</td><td></td><td></td><td></td><td></td><td>56.988</td></tr></table>										US/MH		Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	PN	Name	(m)	6.001	5	15 Summer	1	+0%					57.610	5.003	4	15 Winter	1	+0%					57.600	5.004	5	15 Winter	1	+0%					57.216	7.000	8	15 Summer	1	+0%					58.920	7.001	10	15 Summer	1	+0%					57.840	5.005	6	15 Winter	1	+0%	30/15 Summer				57.178	8.000	12	15 Summer	1	+0%					58.860	8.001	13	15 Summer	1	+0%					58.600	5.006	7	15 Winter	1	+0%					56.988
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5.006	7	-0.262	0.000	0.04		14.6	OK																																																																																																									

Appendix F - United Utilities Correspondence

Luke Pilsbury

From: wastewaterdeveloperservices@uuplc.co.uk
Sent: 22 September 2022 15:39
To: Luke Pilsbury
Cc: Robert Henshall; brownl@rpsgroup.com; Jingchao Yang
Subject: RE: RE:[Hydrock: 22975-SMAN] 02435665 welcomb Street Openshaw Manchester M11 2NJ

Categories: Scanned by Gekko

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.

Good Afternoon, Luke

Thank you for the attachments in your latest email.

I am happy with the amended microdrainage model and discharge rates.

As is our company stance, similarly to that regarding the Winwick Road development, we request that the post development pass forward flow rate does not exceed the 2 year event with betterment applied. Understanding that the Manchester area requires betterment on existing rates of 50%, we request the rate does not exceed 45.6l/s.

As discussed in previous emails, a connection to the combined sewer is acceptable in principle at this rate, subject to a 106 connection application and approval.

If I can be of any further assistance, please do not hesitate to contact me.

Kind regards



Gary Jaundrell
Assistant Developer Engineer
Developer Services & Metering
Customer Services
T: 07388 715 589
unitedutilities.com

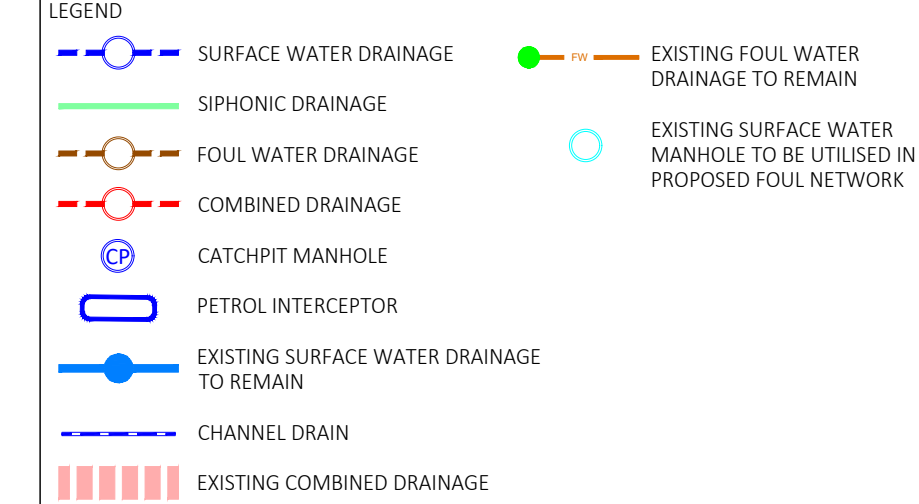
If you have received a great service today why not tell us?

Visit: [unitedutilities.com/wow](https://www.unitedutilities.com/wow)

Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you with your enquiry <https://www.unitedutilities.com/builders-developers/> or you can email us at WastewaterDeveloperServices@uuplc.co.uk

----- Original Message -----

Appendix G - Proposed Drainage Layout



- NOTES
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS, SPECIFICATIONS AND DOCUMENTATION.
 - THE POSITION, SIZE AND LEVELS OF ALL DRAINS ARE TO BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS AND ANY DISCREPANCIES REPORTED IMMEDIATELY TO THE ENGINEER.
 - DO NOT SCALE FROM THIS DRAWING. WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED.
 - THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
 - THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF SLUITS, PUMPING AND DE WATERS AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
 - FINISHED FLOOR LEVELS ARE APPROXIMATE ONLY AND MAY VARY BY +/- 300MM.
 - ANY GRADIENTS OF DRAINS INDICATED ARE INDICATIVE ONLY AND THE CONTRACTOR SHALL INSTALL THE DRAINS TO THE SPECIFIED LEVELS SHOWN FOR EACH MANHOLE (LUL/DL). CATCHPIT INVERT LEVELS ARE FOR THE OUTGOING PIPE WITH THE SUMP LEVEL SPECIFIED SEPARATELY.
 - CO-ORDINATE SETTING OUT INFORMATION FOR MANHOLES IS TO THE INTERSECTION OF THE DRAINS AND NOT THE CENTRE OF THE MANHOLE.
 - COVER LEVELS OF THE MANHOLES ARE PROVISIONAL AND SUBJECT TO ADJUSTMENT ON SITE TO SUIT THE FINISHED GROUND LEVELS. ALL EXTERNAL WORKS CONSTRUCTION ARE TO BE AS LOCATED BY THE ARCHITECT.
 - POSITIONS AND SIZES OF ABOVE GROUND FOUL AND SURFACE WATER DRAINAGE CONNECTIONS ARE TO BE CONFIRMED PRIOR TO CONSTRUCTION WITH THE ARCHITECT AND MAKE ENGINEER.
 - DIAMETER OF PCC MANHOLES VARIES WITH PIPE SIZE, AND IS TO BE IN ACCORDANCE WITH THE TABLES SIZED BY THE SUPPLIER AND APPROVED BY THE ENGINEER IN WRITING PRIOR TO ORDERING. DRAINAGE CHANNELS TO BE INSTALLED TO MANUFACTURERS' REQUIREMENTS. DESIGN OF CHANNELS SHALL BE BASED ON A 1 IN 30 YEAR STORM RETURN PERIOD, 15 MINUTE DURATION.
 - ALL WORKS ARE ASSUMED TO BE WITHIN PUBLIC HIGHWAY OR WITHIN LAND OWNERS LANDS & NO WORKS ARE REQUIRED ON THIRD PARTY LAND OWNERS PROPERTY.
 - DESIGN ASSUMES THAT NO WATER AUTHORITY SOURCE OR OTHER DRAINAGE SYSTEMS REQUIRE MODIFICATION, DIVERSION OR ABANDONING.
 - ALL WORKS WITHIN THE PUBLIC HIGHWAY TO BE REINSTATED TO HIGHWAY AUTHORITY REQUIREMENTS.
 - NO DEEP ROOTING TREES/VEGETATION SHOULD BE PLANTED WITHIN 5.0M OF ANY DRAINAGE WORKS.
 - ALL WPCS, SWMPs AND RWPS ARE SHOWN INDICATIVELY. LOCATIONS SHALL BE CONFIRMED BY OTHERS.
 - ALL MANHOLES LESS THAN 1.5M DEEP ARE CONSIDERED AS NONE MAN ENTRY AND SHALL BE MAINTAINED FROM GROUND LEVEL.
 - RAINWATER DOWNPIPE LOCATIONS IN ABYSSANCE.

REVISIONS				
Rev.	Revision Notes	Date	Drawn By	Checked / Approved
T04	PLANNING ISSUE	11.04.25	NM	CF / NB
T03	ROAD GULLY MOVED TO SUIT LEVELS	28.02.25	TF	CF / NB
T02	TENDER ISSUE	07.02.25	TF	CF / NB
T01	TENDER ISSUE	17.01.25	TF	CF / NB



CLIENT
NETWORK SPACE

PROJECT
WELCOMB STREET MANCHESTER

TITLE
PROPOSED DRAINAGE LAYOUT

HYDROCK PROJECT NO. C-22975	SCALE @ A0 1:250	STATUS S2
STATUS DESCRIPTION FOR INFORMATION		REVISION T04
DRAWING NO. 22975-HYD-XX-XX-DR-C-0500		

NOTE: ALL EXISTING DRAINAGE EXCLUDED FROM THE DRAINAGE LAYOUT IS TO BE ABANDONED - SEE DRAWING 22975-HYD-XX-XX-DR-C-0520

LaFarge



TARMAC ASHBURY ASPHALT PLANT

Existing Jewson Access

Welcomb Street

Welcomb Street

Medlock Court

UNIT 1
FFL 60.820

UNIT 2
60.750

UNIT 3
FFL 60.750

UNIT 4
FFL 60.115

UNIT 1 AND 2 TANK
DEPTH 1.0m
STORAGE VOL 150m³
CL 59.965
IL 58.600

UNIT 3 TANK
DEPTH 1.0m
STORAGE VOL 184m³
CL 59.964
IL 57.100

UNIT 4 TANK 1
DEPTH 1.0m
STORAGE VOL 130m³
CL 59.921
IL 57.000

UNIT 4 TANK 2
DEPTH 1.0m
STORAGE VOL 30m³
CL 58.850
IL 58.130

HYDROBRAKE MH28
CL 59.799
IL 56.900
DISCHARGE RATE 111/s

HYDROBRAKE MH30
CL 59.807
IL 58.115
DISCHARGE RATE 31/s

HYDROBRAKE MH12
CL 60.315
IL 57.390
DISCHARGE RATE 13.5/s

HYDROBRAKE MH21
CL 60.057
IL 56.360
DISCHARGE RATE 181/s

HYDROBRAKE MH18
CL 60.628
IL 58.100
DEPTH 2.04

HYDROBRAKE MH17
CL 60.568
IL 58.070
6000

HYDROBRAKE MH16
CL 60.550
IL 57.650
12000

HYDROBRAKE MH15
CL 60.08
IL 57.65
DEPTH 2.43

HYDROBRAKE MH14
CL 60.628
IL 58.100
DEPTH 2.04

HYDROBRAKE MH13
CL 60.550
IL 57.650
12000

HYDROBRAKE MH12
CL 60.315
IL 57.390
DISCHARGE RATE 13.5/s

HYDROBRAKE MH11
CL 60.057
IL 56.360
DISCHARGE RATE 181/s

HYDROBRAKE MH10
CL 60.018
IL 57.740
12000

HYDROBRAKE MH9
CL 60.673
IL 57.590
12000

HYDROBRAKE MH8
CL 60.739
IL 59.407
6000

HYDROBRAKE MH7
CL 60.668
IL 58.135
6000

HYDROBRAKE MH6
CL 60.687
IL 59.316
6000

HYDROBRAKE MH5
CL 60.706
IL 59.010
12000

HYDROBRAKE MH4
CL 60.608
IL 58.87
DEPTH 1.21

HYDROBRAKE MH3
CL 59.715
IL 58.965
6000

HYDROBRAKE MH2
CL 60.253
IL 58.28
DEPTH 3.87

HYDROBRAKE MH1
CL 60.253
IL 58.28
DEPTH 3.87

Appendix H - Proposed Surface Water Calculations

Welcomb Street: Proposed Drainage	Date: 11/04/2025		
	Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Storm	100 Barbirolli Square: Manchester M2 3PW		





UNIT4 TANK 2

Type : Tank

Dimensions

Exceedance Level (m)	59.850
Depth (m)	1.720
Base Level (m)	58.130
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	31.220

Depth (m)	Area (m²)	Volume (m³)
0.000	60.00	0.000
0.500	60.00	30.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	10.000
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	10.001
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	2.982

Welcomb Street: Proposed Drainage	Date: 11/04/2025		
	Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Storm	100 Barbirolli Square: Manchester M2 3PW		





UNIT4 TANK 1

Type : Tank

Dimensions

Exceedance Level (m)	59.821
Depth (m)	2.821
Base Level (m)	57.000
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	131.821

Depth (m)	Area (m²)	Volume (m³)
0.000	130.00	0.000
1.000	130.00	130.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	6.001
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	5.001
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	4.005
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	6.308

Welcomb Street: Proposed Drainage	Date: 11/04/2025		
	Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Storm	100 Barbirolli Square: Manchester M2 3PW		





UNIT3 TANK

Type : Tank

Dimensions

Exceedance Level (m)	59.964
Depth (m)	2.864
Base Level (m)	57.100
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	185.864

Depth (m)	Area (m²)	Volume (m³)
0.000	184.00	0.000
1.000	184.00	184.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	9.002
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	8.001
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	7.008
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	8.543

Welcomb Street: Proposed Drainage	Date: 11/04/2025		
	Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Storm	100 Barbirolli Square: Manchester M2 3PW		





UNIT1 AND 2 TANK

Type : Tank

Dimensions

Exceedance Level (m)	59.965
Depth (m)	1.965
Base Level (m)	58.000
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	0.00
Total Volume (m³)	150.965

Depth (m)	Area (m²)	Volume (m³)
0.000	150.00	0.000
1.000	150.00	150.000

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	2.004
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	3.001
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	1.003
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	1.004
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	12.527

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Connections Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	29.063	Pipe	290.630		0.6	225	60.772	58.880
1.001	27.578	Pipe	306.422		0.6	225	60.763	58.780
1.002	17.774	Pipe	296.232		0.6	225	60.683	58.690
2.000	39.446	Pipe	292.191		0.6	225	60.706	59.010
2.001	25.342	Pipe	298.146		0.6	225	60.688	58.875
2.002	6.007	Pipe	300.000		0.6	225	60.683	58.790
2.003	31.236	Pipe	297.552		0.6	225	61.004	58.770
3.000	6.213	Pipe	59.171		0.6	225	60.174	58.775
1.005	6.341	Pipe	18.650		0.6	225	60.315	57.990
4.000	27.312	Pipe	32.907		0.6	225	60.120	58.370
5.000	10.697	Pipe	106.970		0.6	225	60.046	57.640
6.000	10.013	Pipe	21.533		0.6	225	59.887	57.915
4.004	9.761	Pipe	81.345		0.6	150	59.799	56.960
7.000	22.202	Pipe	40.004		0.6	225	60.699	58.665
7.001	43.295	Pipe	84.892		0.6	225	60.135	58.110
8.000	17.097	Pipe	17.446		0.6	225	60.588	58.580
9.000	17.852	Pipe	99.178		0.6	225	59.987	57.940
9.001	11.677	Pipe	97.308		0.6	225	59.986	57.760
7.007	7.986	Pipe	99.825		0.6	300	60.057	56.360
10.002	8.169	Pipe	49.509		0.6	300	59.807	58.115
4.001	59.967	Pipe	148.066		0.6	225	60.069	58.775
7.002	38.504	Pipe	150.997		0.6	225	60.699	59.390
7.003	3.280	Pipe	131.206		0.6	225	60.696	59.135
7.004	7.220	Pipe	160.455		0.6	225	60.683	59.110
7.005	24.793	Pipe	150.261		0.6	225	60.725	59.065
7.006	35.529	Pipe	151.185		0.6	225	60.701	58.900
10.000	3.319	Pipe	25.534		0.6	300	59.981	58.260
10.001	4.619	Pipe	307.937		0.6	300	59.850	58.130
6.001	3.391	Pipe	7.536		0.6	225	59.890	57.450
4.005	5.522	Pipe	138.043		0.6	300	59.821	57.000
9.002	4.488	Pipe	8.312		0.6	225	59.955	57.640
8.001	3.363	Pipe	6.726		0.6	300	60.066	57.600
7.008	2.925	Pipe	3.953		0.6	300	59.964	57.100
2.004	13.735	Pipe	20.655		0.6	225	60.626	58.665
3.001	8.959	Pipe	13.371		0.6	225	60.171	58.670
1.003	4.534	Pipe	7.197		0.6	300	60.461	58.630
1.004	2.697	Pipe	269.690		0.6	300	59.965	58.000
5.004	44.494	Pipe	101.817		0.6	225	59.897	58.667
5.003	10.867	Pipe	98.795		0.6	225	59.911	58.230
5.002	6.514	Pipe	13.572		0.6	225	59.884	58.120
5.001	10.576	Pipe	19.586		0.6	225	60.066	57.540

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Connections Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Lock	Flow Restriction (L/s)	Culvert Type	Culvert Entrance
1.000	60.763	58.780	None		(None)	(None)
1.001	60.683	58.690	None		(None)	(None)
1.002	60.461	58.630	None		(None)	(None)
2.000	60.688	58.875	None		(None)	(None)
2.001	60.683	58.790	None		(None)	(None)
2.002	61.004	58.770	None		(None)	(None)
2.003	60.626	58.665	None		(None)	(None)
3.000	60.171	58.670	None		(None)	(None)
1.005	60.560	57.650	None	14.7	(None)	(None)
4.000	60.066	57.540	None		(None)	(None)
5.000	60.066	57.540	None		(None)	(None)
6.000	59.890	57.450	None		(None)	(None)
4.004	59.897	56.840	None	12.0	(None)	(None)
7.000	60.135	58.110	None		(None)	(None)
7.001	60.066	57.600	None		(None)	(None)
8.000	60.066	57.600	None		(None)	(None)
9.000	59.986	57.760	None		(None)	(None)
9.001	59.955	57.640	None		(None)	(None)
7.007	60.253	56.280	None	19.6	(None)	(None)
10.002	59.770	57.950	None	3.3	(None)	(None)
4.001	60.120	58.370	None		(None)	(None)
7.002	60.696	59.135	None		(None)	(None)
7.003	60.683	59.110	None		(None)	(None)
7.004	60.725	59.065	None		(None)	(None)
7.005	60.701	58.900	None		(None)	(None)
7.006	60.699	58.665	None		(None)	(None)
10.000	59.850	58.130	None		(None)	(None)
10.001	59.807	58.115	None		(None)	(None)
6.001	59.821	57.000	None		(None)	(None)
4.005	59.799	56.960	None		(None)	(None)
9.002	59.964	57.100	None		(None)	(None)
8.001	59.964	57.100	None		(None)	(None)
7.008	60.057	56.360	None		(None)	(None)
2.004	59.965	58.000	None		(None)	(None)
3.001	59.965	58.000	None		(None)	(None)
1.003	59.965	58.000	None		(None)	(None)
1.004	60.315	57.990	None		(None)	(None)
5.004	59.911	58.230	None		(None)	(None)
5.003	59.884	58.120	None		(None)	(None)
5.002	60.046	57.640	None		(None)	(None)
5.001	59.821	57.000	None		(None)	(None)

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH01	60.772 58.880		Diameter / Length: 1.200					Manhole - Access Required	{a} Free Discharge	
E:387798.706 N:397233.344	1.892									
IP E:387798.706 IP N:397233.344				{a} 1.000	Pipe	58.880	Diam/Width: 225	Not Applicable		
SWMH02	60.763 58.780		Diameter / Length: 1.200	{1} 1.000	Pipe	58.780	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387795.442 N:397204.465	1.983									
IP E:387795.442 IP N:397204.465				{a} 1.001	Pipe	58.780	Diam/Width: 225	Not Applicable		
SWMH03	60.683 58.690		Diameter / Length: 1.200	{1} 1.001	Pipe	58.690	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387822.880 N:397201.689	1.993									
IP E:387822.880 IP N:397201.689				{a} 1.002	Pipe	58.690	Diam/Width: 225	Not Applicable		
SWMH04	60.461 58.630		Diameter / Length: 1.200	{1} 1.002	Pipe	58.630	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387829.067 N:397218.352	1.831									
IP E:387829.067 IP N:397218.352				{a} 1.003	Pipe	58.630	Diam/Width: 300	Not Applicable		

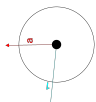
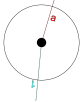
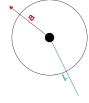
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH05	60.706 59.010		Diameter / Length: 1.200					Manhole - Access Required	{a} Free Discharge	
E:387888.18 1 N:397219.56 0	1.696									
IP E:387888.18 1 IP N:397219.56 0				{a} 2.000	Pipe	59.010	Diam/Width: 225	Not Applicable		
SWMH06	60.688 58.875		Diameter / Length: 1.200	{1} 2.000	Pipe	58.875	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387884.00 3 N:397180.33 6	1.813									
IP E:387884.00 3 IP N:397180.33 6				{a} 2.001	Pipe	58.875	Diam/Width: 225	Not Applicable		
SWMH07	60.683 58.790		Diameter / Length: 1.200	{1} 2.001	Pipe	58.790	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387858.81 9 N:397183.16 2	1.893									
IP E:387858.81 9 IP N:397183.16 2				{a} 2.002	Pipe	58.790	Diam/Width: 225	Not Applicable		
SWMH08	61.004 58.770		Diameter / Length: 1.200	{1} 2.002	Pipe	58.770	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387852.99 5 N:397184.63 5	2.234									
IP E:387852.99 5 IP N:397184.63 5				{a} 2.003	Pipe	58.770	Diam/Width: 225	Not Applicable		

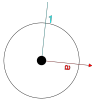
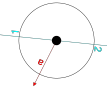
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH09	60.626 58.665		Diameter / Length: 1.200	{1} 2.003	Pipe	58.665	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387856.189 N:397215.707	1.961									
IP E:387856.189 IP N:397215.707				{a} 2.004	Pipe	58.665	Diam/Width: 225	Not Applicable		
SWMH10	60.174 58.775		Diameter / Length: 1.200					Manhole - Access Required	{a} Free Discharge	
E:387832.644 N:397196.032	1.399									
IP E:387832.644 IP N:397196.032				{a} 3.000	Pipe	58.775	Diam/Width: 225	Not Applicable		
SWMH11	60.171 58.670		Diameter / Length: 1.200	{1} 3.000	Pipe	58.670	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387833.245 N:397202.216	1.501									
IP E:387833.245 IP N:397202.216				{a} 3.001	Pipe	58.670	Diam/Width: 225	Not Applicable		
HYDRO MH12	60.315 57.990		Diameter / Length: 1.200	{1} 1.004	Pipe	57.990	Diam/Width: 300	Manhole	{a} Hydro-Brake®	57.990
E:387832.718 N:397224.309	2.325									
IP E:387832.718 IP N:397224.309				{a} 1.005	Pipe	57.990	Diam/Width: 225	Not Applicable		

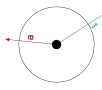
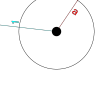
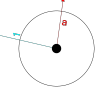
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH13	60.560 57.650		Diameter / Length: 1.200	{1} 1.005	Pipe	57.650	Diam/Width: 225	Manhole		
E:387827.716 N:397228.206	2.910									
IP E:387827.716 IP N:397228.206								Not Applicable		
SWMH22	60.120 58.370		Diameter / Length: 1.200	{1} 4.001	Pipe	58.370	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387959.392 N:397223.813	1.750									
IP E:387959.392 IP N:397223.813				{a} 4.000	Pipe	58.370	Diam/Width: 225	Not Applicable		
SWMH24	60.066 57.540		Diameter / Length: 1.200	{1} 4.000	Pipe	57.540	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387986.566 N:397221.062	2.526			{2} 5.000	Pipe	57.540	Diam/Width: 225			
IP E:387986.566 IP N:397221.062				{a} 5.001	Pipe	57.540	Diam/Width: 225	Not Applicable		

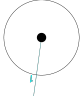
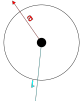
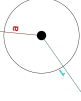
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH23	60.046 57.640		Diameter / Length: 1.200	{1} 5.002	Pipe	57.640	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387997.206 N:397219.963	2.406									
IP E:387997.206 IP N:397219.963				{a} 5.000	Pipe	57.640	Diam/Width: 225	Not Applicable		
SWMH26	59.887 57.915		Diameter / Length: 1.200					Manhole - Access Required	{a} Free Discharge	
E:387966.317 N:397203.903	1.972									
IP E:387966.317 IP N:397203.903				{a} 6.000	Pipe	57.915	Diam/Width: 225	Not Applicable		
SWMH27	59.890 57.450		Diameter / Length: 1.200	{1} 6.000	Pipe	57.450	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387976.263 N:397202.750	2.440									
IP E:387976.263 IP N:397202.750				{a} 6.001	Pipe	57.450	Diam/Width: 225	Not Applicable		
HYDRO MH28	59.799 56.960		Diameter / Length: 1.200	{1} 4.005	Pipe	56.960	Diam/Width: 300	Manhole	{a} Hydro-Brake®	56.960
E:387995.225 N:397205.178	2.839									
IP E:387995.225 IP N:397205.178				{a} 4.004	Pipe	56.960	Diam/Width: 150	Not Applicable		

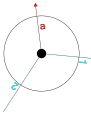
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
EX. COMH20	59.897 56.840		Diameter / Length: 1.200	{1} 4.004	Pipe	56.840	Diam/Width: 150	Manhole		
E:387996.53 7 N:397214.85 1	3.057									
IP E:387996.53 7 IP N:397214.85 1								Not Applicable		
SWMH14	60.699 58.665		Diameter / Length: 1.200	{1} 7.006	Pipe	58.665	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387958.22 6 N:397217.17 4	2.034									
IP E:387958.22 6 IP N:397217.17 4				{a} 7.000	Pipe	58.665	Diam/Width: 225	Not Applicable		
SWMH15	60.135 58.110		Diameter / Length: 1.200	{1} 7.000	Pipe	58.110	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387945.49 0 N:397235.36 0	2.025									
IP E:387945.49 0 IP N:397235.36 0				{a} 7.001	Pipe	58.110	Diam/Width: 225	Not Applicable		

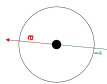
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH17	60.066 57.600		Diameter / Length: 1.200	{1} 7.001	Pipe	57.600	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387902.395 N:397239.515	2.466			{2} 8.000	Pipe	57.600	Diam/Width: 225			
IP E:387902.395 IP N:397239.515				{a} 8.001	Pipe	57.600	Diam/Width: 300	Not Applicable		
SWMH16	60.588 58.580		Diameter / Length: 1.200					Manhole - Access Required	{a} Free Discharge	
E:387893.008 N:397225.226	2.008									
IP E:387893.008 IP N:397225.226				{a} 8.000	Pipe	58.580	Diam/Width: 225	Not Applicable		
SWMH18	59.987 57.940		Diameter / Length: 1.200					Manhole - Access Required	{a} Free Discharge	
E:387937.327 N:397240.588	2.047									
IP E:387937.327 IP N:397240.588				{a} 9.000	Pipe	57.940	Diam/Width: 225	Not Applicable		

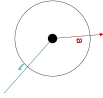
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH19	59.986 57.760		Diameter / Length: 1.200	{1} 9.000	Pipe	57.760	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387919.554 N:397242.264	2.226									
IP E:387919.554 IP N:397242.264				{a} 9.001	Pipe	57.760	Diam/Width: 225	Not Applicable		
SWMH20	59.955 57.640		Diameter / Length: 1.200	{1} 9.001	Pipe	57.640	Diam/Width: 225	Manhole - Access Required	{a} Free Discharge	
E:387907.930 N:397243.380	2.315									
IP E:387907.930 IP N:397243.380				{a} 9.002	Pipe	57.640	Diam/Width: 225	Not Applicable		
HYDRO MH21	60.057 56.360		Diameter / Length: 1.200	{1} 7.008	Pipe	56.360	Diam/Width: 300	Manhole	{a} Hydro-Brake®	56.360
E:387895.920 N:397239.767	3.697									
IP E:387895.920 IP N:397239.767				{a} 7.007	Pipe	56.360	Diam/Width: 300	Not Applicable		
EX.CMH15	60.253 56.280		Diameter / Length: 1.200	{1} 7.007	Pipe	56.280	Diam/Width: 300	Manhole		
E:387890.480 N:397233.920	3.973									
IP E:387890.480 IP N:397233.920								Not Applicable		

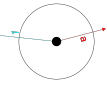
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH29	59.981 58.260		Diameter / Length: 1.200					Manhole - Access Required	{a} Free Discharge	
E:387986.53 0 N:397287.65 7	1.721									
IP E:387986.53 0 IP N:397287.65 7				{a} 10.000	Pipe	58.260	Diam/Width: 300	Not Applicable		
HYDRO MH30	59.807 58.115		Diameter / Length: 1.800	{1} 10.001	Pipe	58.115	Diam/Width: 300	Manhole	{a} Hydro-Brake®	58.115
E:388000.69 0 N:397291.70 7	1.692									
IP E:388000.69 0 IP N:397291.70 7				{a} 10.002	Pipe	58.115	Diam/Width: 300	Not Applicable		
EX.SWMH42	59.770 57.950		Diameter / Length: 1.200	{1} 10.002	Pipe	57.950	Diam/Width: 300	Manhole		
E:388008.83 0 N:397292.38 7	1.820									
IP E:388008.83 0 IP N:397292.38 7								Not Applicable		
SWMH31	59.897 58.667		Diameter / Length: 0.600					Manhole	{a} Free Discharge	
E:388007.74 5 N:397278.54 2	1.230									
IP E:388007.74 5 IP N:397278.54 2				{a} 5.004	Pipe	58.667	Diam/Width: 225	Not Applicable		

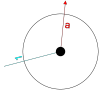
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)			Connection Details				Type		
Coordinates (m)	Depth (m)	Manhole Schematic	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH36	60.725 59.065		Diameter / Length: 0.600	{1} 7.004	Pipe	59.065	Diam/Width: 225	Manhole	{a} Free Discharge	
E:387929.91 4 N:397184.43 7	1.660									
IP E:387929.91 4 IP N:397184.43 7				{a} 7.005	Pipe	59.065	Diam/Width: 225	Not Applicable		
SWMH37	60.701 58.900		Diameter / Length: 0.600	{1} 7.005	Pipe	58.900	Diam/Width: 225	Manhole	{a} Free Discharge	
E:387954.57 0 N:397181.83 4	1.801									
IP E:387954.57 0 IP N:397181.83 4				{a} 7.006	Pipe	58.900	Diam/Width: 225	Not Applicable		
SWMH33	60.699 59.390		Diameter / Length: 0.600					Manhole	{a} Free Discharge	
E:387887.75 0 N:397180.51 8	1.309									
IP E:387887.75 0 IP N:397180.51 8				{a} 7.002	Pipe	59.390	Diam/Width: 225	Not Applicable		
SWMH34	60.696 59.135		Diameter / Length: 0.600	{1} 7.002	Pipe	59.135	Diam/Width: 225	Manhole	{a} Free Discharge	
E:387926.03 6 N:397176.42 0	1.561									
IP E:387926.03 6 IP N:397176.42 0				{a} 7.003	Pipe	59.135	Diam/Width: 225	Not Applicable		

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Setting Out Information	
Easting Origin (m)	0.000
Northing Origin (m)	0.000
Orientation (Degrees anticlockwise from North)	0

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
Coordinates (m)	Depth (m)			Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Intersection (m)				Outgoing Connections				Cover		
SWMH35	60.683 59.110		Diameter / Length: 0.600	{1} 7.003	Pipe	59.110	Diam/Width: 225	Manhole	{a} Free Discharge	
E:387929.209 N:397177.251	1.573									
IP E:387929.209 IP N:397177.251				{a} 7.004	Pipe	59.110	Diam/Width: 225	Not Applicable		
SWMH32	60.069 58.775		Diameter / Length: 0.600					Manhole	{a} Free Discharge	
E:387965.731 N:397283.444	1.294									
IP E:387965.731 IP N:397283.444				{a} 4.001	Pipe	58.775	Diam/Width: 225	Not Applicable		
SWMH45	59.911 58.230		Diameter / Length: 0.600	{1} 5.004	Pipe	58.230	Diam/Width: 225	Manhole	{a} Free Discharge	
E:388002.585 N:397234.348	1.681									
IP E:388002.585 IP N:397234.348				{a} 5.003	Pipe	58.230	Diam/Width: 225	Not Applicable		
SWMH46	59.884 58.120		Diameter / Length: 1.200	{1} 5.003	Pipe	58.120	Diam/Width: 225	Manhole	{a} Free Discharge	
E:388002.689 N:397223.481	1.764									
IP E:388002.689 IP N:397223.481				{a} 5.002	Pipe	58.120	Diam/Width: 225	Not Applicable		

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Inflow Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment 1	SWMH02		Time of Concentration	0.077	100	0	100	0.077
Catchment 2	SWMH01		Time of Concentration	0.006	100	0	100	0.006
Catchment 3	SWMH01		Time of Concentration	0.017	100	0	100	0.017
Catchment 4	SWMH04		Time of Concentration	0.019	100	0	100	0.019
Catchment 5	SWMH02		Time of Concentration	0.014	100	0	100	0.014
Catchment 6	SWMH03		Time of Concentration	0.016	100	0	100	0.016
Catchment 7	SWMH10		Time of Concentration	0.159	100	0	100	0.159
Catchment 8	SWMH09		Time of Concentration	0.028	100	0	100	0.028
Catchment 9	SWMH05		Time of Concentration	0.025	100	0	100	0.025
Catchment 10	SWMH07		Time of Concentration	0.028	100	0	100	0.028
Catchment 11	SWMH06		Time of Concentration	0.025	100	0	100	0.025
Catchment 12	SWMH16		Time of Concentration	0.069	100	0	100	0.069
Catchment 13	SWMH33		Time of Concentration	0.069	100	0	100	0.069
Catchment 14	SWMH19		Time of Concentration	0.134	100	0	100	0.134
Catchment 15	SWMH18		Time of Concentration	0.169	100	0	100	0.169
Catchment 16	SWMH14		Time of Concentration	0.069	100	0	100	0.069
Catchment 17	SWMH36		Time of Concentration	0.011	100	0	100	0.011
Catchment 18	SWMH37		Time of Concentration	0.032	100	0	100	0.032
Catchment 19	SWMH35		Time of Concentration	0.007	100	0	100	0.007
Catchment 20	SWMH26		Time of Concentration	0.136	100	0	100	0.136
Catchment 21	SWMH22		Time of Concentration	0.060	100	0	100	0.060
Catchment 22	SWMH23		Time of Concentration	0.060	100	0	100	0.060
Catchment 23	SWMH32		Time of Concentration	0.060	100	0	100	0.060
Catchment 24	SWMH31		Time of Concentration	0.060	100	0	100	0.060
Catchment 25	SWMH29		Time of Concentration	0.090	100	0	100	0.090
Catchment 26	SWMH07		Time of Concentration	0.017	100	0	100	0.017
TOTAL		0.0		1.457				1.457

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

Flow Options

Peak Flow Calculation	Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Inverts
Min. Slope (1:X)	1000.00
Max. Slope (1:X)	40.00
Use Flow Restriction	☒
Reduce Channel Depths	☒

Manhole Options

Apply Offset	☐
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Welcomb Street: Proposed Drainage	Date: 11/04/2025			
	Designed by: N.Mehmood	Checked by:	Approved By:	
Report Details:	100 Barbirolli Square:			
Type: Outfall Details	Manchester			
Storm Phase: Storm	M2 3PW			

Outfalls

Outfall	Outfall Type	Gated	Fixed Surcharged Level (m)	Level Curve
SWMH13	Free Discharge			
EX. COMH20	Free Discharge			
EX.CMH15	Free Discharge			
EX.SWMH42	Free Discharge			

Welcomb Street: Proposed Drainage	Date: 11/04/2025		
	Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Rainfall Analysis Criteria	100 Barbirolli Square: Manchester M2 3PW		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	0
Perform No Discharge Analysis	☐

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



Sim Criteria FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWMH01	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	60.772	58.880	58.918	0.038	1.9	0.043	0.000	1.9	2.271	OK
SWMH02	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	60.763	58.780	58.870	0.090	9.4	0.102	0.000	9.4	11.019	OK
SWMH03	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	60.683	58.690	58.781	0.091	10.7	0.103	0.000	10.7	12.551	OK
SWMH04	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.461	58.630	58.664	0.034	11.7	0.038	0.000	11.7	10.745	OK
SWMH05	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.706	59.010	59.062	0.052	4.0	0.059	0.000	3.6	1.832	OK
SWMH06	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.688	58.875	58.946	0.071	7.5	0.081	0.000	6.6	3.630	OK
SWMH07	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.683	58.790	58.902	0.112	13.6	0.127	0.000	12.7	6.854	OK
SWMH08	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	61.004	58.770	58.871	0.101	12.7	0.114	0.000	11.8	6.821	OK
SWMH09	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.626	58.665	58.723	0.058	16.2	0.066	0.000	15.8	8.868	OK
SWMH10	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.174	58.775	58.880	0.105	25.0	0.119	0.000	24.7	11.559	OK
SWMH11	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.171	58.670	58.738	0.068	24.7	0.077	0.000	24.6	11.568	OK
HYDRO MH12	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	60.315	57.990	58.219	0.229	11.7	0.259	0.000	11.7	40.896	Surcharged
SWMH13	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	60.560	57.650	57.697	0.047	11.7	0.000	0.000	11.7	40.869	OK
SWMH22	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.120	58.370	58.436	0.066	18.2	0.075	0.000	17.3	8.727	OK
SWMH24	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.066	57.540	57.630	0.090	34.6	0.102	0.000	33.8	17.445	OK
SWMH23	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.046	57.640	57.739	0.099	17.8	0.112	0.000	17.3	8.713	OK
SWMH26	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.887	57.915	57.988	0.073	21.5	0.082	0.000	21.3	9.924	OK
SWMH27	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.890	57.450	57.505	0.055	21.3	0.063	0.000	21.1	9.925	OK
HYDRO MH28	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	59.799	56.960	57.225	0.265	9.0	0.300	0.000	8.9	36.693	Surcharged
EX. COMH20	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	59.897	56.840	56.910	0.070	8.9	0.000	0.000	8.9	36.648	OK
SWMH14	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.699	58.665	58.752	0.087	26.3	0.098	0.000	25.2	13.559	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025		
		Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW		



SWMH15	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.135	58.110	58.221	0.111	25.2	0.126	0.000	23.5	13.517	OK
SWMH17	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.066	57.600	57.665	0.065	34.2	0.074	0.000	33.4	18.543	OK
SWMH16	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.588	58.580	58.624	0.044	10.9	0.050	0.000	10.7	5.025	OK
SWMH18	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.987	57.940	58.060	0.120	26.6	0.136	0.000	26.0	12.276	OK
SWMH19	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.986	57.760	57.931	0.171	47.1	0.193	0.000	45.8	22.044	OK
SWMH20	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.955	57.640	57.732	0.092	45.8	0.104	0.000	45.5	22.046	OK
HYDRO MH21	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	60.057	56.360	57.254	0.894	18.3	1.011	0.000	18.0	50.385	Surcharged
EX.CMH15	Sim Criteria FSR: 2 years: +0 %: 15 mins: Summer	60.253	56.280	56.361	0.081	18.0	0.000	0.000	18.0	24.003	OK
SWMH29	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.981	58.260	58.318	0.058	14.1	0.066	0.000	14.0	6.546	OK
HYDRO MH30	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	59.807	58.115	58.242	0.127	2.5	0.322	0.000	2.4	8.803	OK
EX.SWMH42	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	59.770	57.950	57.976	0.026	2.4	0.000	0.000	2.4	8.788	OK
SWMH31	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.897	58.667	58.732	0.065	9.4	0.018	0.000	9.0	4.363	OK
SWMH36	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.725	59.065	59.149	0.084	12.2	0.024	0.000	11.7	6.260	OK
SWMH37	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.701	58.900	58.999	0.099	16.7	0.028	0.000	15.5	8.543	OK
SWMH33	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.699	59.390	59.468	0.078	10.9	0.022	0.000	10.4	5.028	OK
SWMH34	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.696	59.135	59.221	0.086	10.4	0.024	0.000	9.7	5.017	OK
SWMH35	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.683	59.110	59.196	0.086	10.7	0.024	0.000	10.5	5.491	OK
SWMH32	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	60.069	58.775	58.846	0.071	9.4	0.020	0.000	8.8	4.369	OK
SWMH45	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.911	58.230	58.296	0.066	9.0	0.019	0.000	8.5	4.352	OK
SWMH46	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	59.884	58.120	58.157	0.037	8.5	0.042	0.000	8.3	4.348	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



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

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWMH01	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	60.772	58.880	58.932	0.052	3.7	0.059	0.000	3.7	4.322	OK
SWMH02	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	60.763	58.780	58.913	0.133	17.8	0.151	0.000	17.8	20.970	OK
SWMH03	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	60.683	58.690	58.817	0.127	20.3	0.144	0.000	20.3	23.903	OK
SWMH04	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	60.461	58.630	58.675	0.045	23.3	0.050	0.000	23.3	27.415	OK
SWMH05	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.706	59.010	59.083	0.073	7.5	0.082	0.000	7.0	3.466	OK
SWMH06	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.688	58.875	58.982	0.107	14.4	0.121	0.000	12.1	6.885	OK
SWMH07	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.683	58.790	58.956	0.166	25.3	0.188	0.000	24.0	12.975	OK
SWMH08	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	61.004	58.770	58.916	0.146	24.0	0.165	0.000	22.8	12.938	OK
SWMH09	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.626	58.665	58.745	0.080	31.1	0.091	0.000	30.6	16.788	OK
SWMH10	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.174	58.775	58.930	0.155	47.3	0.175	0.000	46.8	21.854	OK
SWMH11	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.171	58.670	58.766	0.096	46.8	0.108	0.000	46.5	21.861	OK
HYDRO MH12	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	60.315	57.990	58.467	0.477	13.6	0.540	0.000	13.5	114.884	Surcharged
SWMH13	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	60.560	57.650	57.701	0.051	13.5	0.000	0.000	13.5	114.862	OK
SWMH22	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.120	58.370	58.464	0.094	34.6	0.106	0.000	33.1	16.489	OK
SWMH24	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.066	57.540	57.674	0.134	66.2	0.152	0.000	64.6	32.940	OK
SWMH23	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.046	57.640	57.790	0.150	33.9	0.169	0.000	33.1	16.468	OK
SWMH26	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.887	57.915	58.019	0.104	40.6	0.118	0.000	40.2	18.752	OK
SWMH27	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.890	57.450	57.533	0.083	40.2	0.094	0.000	39.8	18.750	OK
HYDRO MH28	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	59.799	56.960	57.486	0.526	10.8	0.595	0.000	10.8	100.433	Surcharged
EX. COMH20	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	59.897	56.840	56.919	0.079	10.8	0.000	0.000	10.8	100.393	OK
SWMH14	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.699	58.665	58.796	0.131	50.4	0.148	0.000	48.4	25.653	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025		
		Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW		



SWMH15	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.135	58.110	58.280	0.170	48.4	0.193	0.000	45.3	25.605	OK
SWMH17	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.066	57.600	57.695	0.095	65.6	0.108	0.000	64.1	35.104	OK
SWMH16	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.588	58.580	58.641	0.061	20.5	0.069	0.000	20.3	9.496	OK
SWMH18	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.987	57.940	58.474	0.534	50.2	0.604	0.000	44.8	23.214	Surcharged
SWMH19	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.986	57.760	58.308	0.548	84.7	0.620	0.000	80.5	41.680	Surcharged
SWMH20	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.955	57.640	57.771	0.131	80.5	0.148	0.000	79.7	41.674	OK
HYDRO MH21	Sim Criteria FSR: 30 years: +0 %: 60 mins: Winter	60.057	56.360	57.515	1.155	22.4	1.306	0.000	18.0	113.362	Surcharged
EX.CMH15	Sim Criteria FSR: 30 years: +0 %: 240 mins: Winter	60.253	56.280	56.361	0.081	18.0	0.000	0.000	18.0	194.158	OK
SWMH29	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	59.981	58.260	58.360	0.100	8.8	0.113	0.000	8.8	25.837	OK
HYDRO MH30	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	59.807	58.115	58.359	0.244	3.1	0.622	0.000	3.0	24.297	OK
EX.SWMH42	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	59.770	57.950	57.978	0.028	3.0	0.000	0.000	3.0	24.285	OK
SWMH31	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.897	58.667	58.759	0.092	17.8	0.026	0.000	17.1	8.241	OK
SWMH36	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.725	59.065	59.188	0.123	23.3	0.035	0.000	22.5	11.842	OK
SWMH37	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.701	58.900	59.049	0.149	31.9	0.042	0.000	29.8	16.165	OK
SWMH33	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.699	59.390	59.502	0.112	20.5	0.032	0.000	19.8	9.500	OK
SWMH34	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.696	59.135	59.266	0.131	19.8	0.037	0.000	18.6	9.486	OK
SWMH35	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.683	59.110	59.239	0.129	20.5	0.036	0.000	20.2	10.376	OK
SWMH32	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	60.069	58.775	58.877	0.102	17.8	0.029	0.000	16.8	8.251	OK
SWMH45	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.911	58.230	58.322	0.092	17.1	0.026	0.000	16.3	8.227	OK
SWMH46	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	59.884	58.120	58.171	0.051	16.3	0.058	0.000	16.1	8.222	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



Sim Criteria FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWMH01	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.772	58.880	59.507	0.627	4.3	0.709	0.000	4.3	13.227	Surcharged
SWMH02	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.763	58.780	59.506	0.726	20.7	0.822	0.000	20.7	63.340	Surcharged
SWMH03	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.683	58.690	59.505	0.815	23.6	0.921	0.000	23.1	72.111	Surcharged
SWMH04	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.461	58.630	59.503	0.873	26.6	0.987	0.000	26.5	82.637	Surcharged
SWMH05	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.706	59.010	59.506	0.496	4.7	0.561	0.000	4.7	14.332	Surcharged
SWMH06	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.688	58.875	59.506	0.631	9.4	0.713	0.000	9.4	29.036	Surcharged
SWMH07	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.683	58.790	59.505	0.715	17.7	0.809	0.000	17.7	53.551	Surcharged
SWMH08	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	61.004	58.770	59.505	0.735	17.7	0.831	0.000	17.7	53.486	Surcharged
SWMH09	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.626	58.665	59.504	0.839	22.9	0.949	0.000	22.9	68.761	Surcharged
SWMH10	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.174	58.775	59.505	0.730	29.7	0.825	0.000	29.7	87.112	Surcharged
SWMH11	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.171	58.670	59.504	0.834	29.7	0.943	0.000	29.7	87.107	Surcharged
HYDRO MH12	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.315	57.990	59.502	1.512	14.0	1.710	0.000	13.5	156.200	Surcharged
SWMH13	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.560	57.650	57.701	0.051	13.5	0.000	0.000	13.5	156.135	OK
SWMH22	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.120	58.370	59.015	0.645	22.4	0.729	0.000	22.6	65.852	Surcharged
SWMH24	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.066	57.540	59.013	1.473	44.3	1.666	0.000	44.2	132.193	Surcharged
SWMH23	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.046	57.640	59.014	1.374	22.5	1.554	0.000	22.2	67.053	Surcharged
SWMH26	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.887	57.915	59.012	1.097	25.5	1.241	0.000	25.5	74.802	Surcharged
SWMH27	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.890	57.450	59.011	1.561	25.5	1.766	0.000	24.8	74.698	Surcharged
HYDRO MH28	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.799	56.960	59.010	2.050	11.5	2.318	0.000	11.0	132.794	Surcharged
EX. COMH20	Sim Criteria FSR: 100 years: +45 %: 120 mins: Summer	59.897	56.840	56.920	0.080	11.0	0.000	0.000	11.0	132.760	OK
SWMH14	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	60.699	58.665	59.145	0.480	76.8	0.543	0.000	72.1	47.985	Surcharged

Welcomb Street: Proposed Drainage		Date: 11/04/2025		
		Designed by: N.Mehmood	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW		



SWMH15	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.135	58.110	58.731	0.621	34.9	0.702	0.000	35.3	102.219	Surcharged
SWMH17	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.066	57.600	58.724	1.124	48.3	1.272	0.000	46.7	140.206	Surcharged
SWMH16	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.588	58.580	58.725	0.145	12.9	0.164	0.000	12.9	37.800	OK
SWMH18	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	59.987	57.940	59.741	1.801	94.0	2.037	0.000	83.7	43.440	Surcharged
SWMH19	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	59.986	57.760	59.243	1.483	158.5	1.677	0.000	149.8	78.016	Surcharged
SWMH20	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.955	57.640	58.727	1.087	56.6	1.229	0.000	56.3	166.692	Surcharged
HYDRO MH21	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.057	56.360	58.722	2.362	18.8	2.671	0.000	18.0	218.810	Surcharged
EX.CMH15	Sim Criteria FSR: 100 years: +45 %: 1440 mins: Summer	60.253	56.280	56.361	0.081	18.0	0.000	0.000	18.0	498.057	OK
SWMH29	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.981	58.260	59.083	0.823	16.8	0.930	0.000	16.6	49.166	Surcharged
HYDRO MH30	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.807	58.115	59.082	0.967	4.9	2.462	0.000	3.0	36.306	Surcharged
EX.SWMH42	Sim Criteria FSR: 100 years: +45 %: 30 mins: Winter	59.770	57.950	57.978	0.028	3.0	0.000	0.000	3.0	8.660	OK
SWMH31	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.897	58.667	59.015	0.348	11.2	0.098	0.000	11.2	32.791	Surcharged
SWMH36	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	60.725	59.065	59.443	0.378	33.2	0.107	0.000	37.0	22.175	Surcharged
SWMH37	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	60.701	58.900	59.364	0.464	44.3	0.131	0.000	45.7	30.297	Surcharged
SWMH33	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	60.699	59.390	59.587	0.197	38.4	0.056	0.000	30.1	17.693	OK
SWMH34	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	60.696	59.135	59.481	0.346	30.1	0.098	0.000	25.9	17.746	Surcharged
SWMH35	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	60.683	59.110	59.465	0.355	29.2	0.101	0.000	31.6	19.422	Surcharged
SWMH32	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	60.069	58.775	59.015	0.240	11.2	0.068	0.000	11.2	32.867	Surcharged
SWMH45	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.911	58.230	59.014	0.784	11.6	0.222	0.000	11.2	33.268	Surcharged
SWMH46	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.884	58.120	59.014	0.894	11.2	1.011	0.000	11.2	34.107	Surcharged

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



Sim Criteria FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By:
Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
UNIT4 TANK 2	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	58.242	58.242	0.112	0.112	7.1	6.723	0.000	0.000	2.5	8.941	45	78.466
UNIT4 TANK 1	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	57.226	57.226	0.226	0.226	29.5	29.378	0.000	0.000	9.0	36.874	34	77.714
UNIT3 TANK	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	57.257	57.257	0.157	0.157	58.1	28.880	0.000	0.000	18.3	50.568	17	84.462
UNIT1 AND 2 TANK	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	58.220	58.220	0.220	0.220	32.1	33.050	0.000	0.000	11.7	41.016	38	78.107

Welcomb Street: Proposed Drainage	Date: 11/04/2025			
	Designed by: N.Mehmood	Checked by:	Approved By:	
Report Details:	100 Barbirolli Square:			
Type: Stormwater Controls Summary	Manchester			
Storm Phase: Storm	M2 3PW			

Status
OK
OK
OK
OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



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

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
UNIT4 TANK 2	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	58.360	58.360	0.230	0.230	8.8	13.773	0.000	0.000	3.1	24.405	41	55.885
UNIT4 TANK 1	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	57.487	57.487	0.487	0.487	36.9	63.358	0.000	0.000	10.8	100.593	60	51.937
UNIT3 TANK	Sim Criteria FSR: 30 years: +0 %: 60 mins: Winter	57.517	57.517	0.417	0.417	84.1	76.735	0.000	0.000	22.4	114.455	39	58.714
UNIT1 AND 2 TANK	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	58.468	58.468	0.468	0.468	41.5	70.256	0.000	0.000	13.6	114.980	55	53.462

Welcomb Street: Proposed Drainage	Date: 11/04/2025			
	Designed by: N.Mehmood	Checked by:	Approved By:	
Report Details:	100 Barbirolli Square:			
Type: Stormwater Controls Summary	Manchester			
Storm Phase: Storm	M2 3PW			

Status
OK
OK
OK
OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



Sim Criteria FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank
By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
UNIT4 TANK 2	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.082	59.082	0.952	0.952	16.6	30.474	0.000	0.000	4.9	36.988	70	2.388
UNIT4 TANK 1	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.011	59.011	2.011	2.011	68.8	131.057	0.000	0.000	11.5	133.933	114	0.579
UNIT3 TANK	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	58.724	58.724	1.624	1.624	103.0	184.689	0.000	0.000	18.8	220.649	95	0.632
UNIT1 AND 2 TANK	Sim Criteria FSR: 100 years: +45 %: 120 mins: Winter	59.503	59.503	1.503	1.503	79.2	150.556	0.000	0.000	14.0	157.751	92	0.271

Welcomb Street: Proposed Drainage	Date: 11/04/2025			
	Designed by:	Checked by:	Approved By:	
	N.Mehmood			
Report Details: Type: Stormwater Controls Summary Storm Phase: Storm	100 Barbirolli Square: Manchester M2 3PW			

Status
OK
OK
OK
OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



Sim Criteria FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SWMH01	SWMH02	60.772	58.918	0.064	2.271	0.2	0.06	1.9	OK
1.001	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SWMH02	SWMH03	60.763	58.870	0.091	11.019	0.6	0.32	9.4	OK
1.002	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SWMH03	SWMH04	60.683	58.781	0.062	12.551	1.2	0.36	10.7	OK
2.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH05	SWMH06	60.706	59.062	0.062	1.832	0.4	0.12	3.6	OK
2.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH06	SWMH07	60.688	58.946	0.092	3.630	0.4	0.22	6.6	OK
2.002	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH07	SWMH08	60.683	58.902	0.107	6.854	0.7	0.43	12.7	OK
2.003	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH08	SWMH09	61.004	58.871	0.080	6.821	0.9	0.39	11.8	OK
3.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH10	SWMH11	60.174	58.880	0.087	11.559	1.8	0.37	24.7	OK
1.005	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	Pipe	HYDRO MH12	SWMH13	60.315	58.219	0.049	40.869	1.8	0.1	11.7	Surcharged
4.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH22	SWMH24	60.120	58.436	0.078	8.727	1.4	0.19	17.3	OK
5.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH23	SWMH24	60.046	57.739	0.095	8.713	1.1	0.34	17.3	OK
6.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH26	SWMH27	59.887	57.988	0.064	9.924	2.3	0.19	21.3	OK
4.004	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	Pipe	HYDRO MH28	EX. COMH20	59.799	57.225	0.073	36.648	1.0	0.45	8.9	Surcharged
7.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH14	SWMH15	60.699	58.752	0.099	13.559	1.5	0.31	25.2	OK
7.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH15	SWMH17	60.135	58.221	0.088	13.517	1.6	0.42	23.5	OK
8.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH16	SWMH17	60.588	58.624	0.055	5.025	1.4	0.09	10.7	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:	Approved By:	
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

9.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH1 8	SWMH19	59.987	58.060	0.146	12.276	1.0	0.5	26.0	OK
9.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH1 9	SWMH20	59.986	57.931	0.132	22.044	1.9	0.87	45.8	OK
7.007	Sim Criteria FSR: 2 years: +0 %: 15 mins: Summer	Pipe	HYDRO MH21	EX.CMH 15	60.057	57.218	0.085	24.003	1.1	0.16	18.0	Surchar ged
10.002	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	Pipe	HYDRO MH30	EX.SWM H42	59.807	58.242	0.026	8.788	0.8	0.02	2.4	OK
4.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH3 2	SWMH22	60.069	58.846	0.069	4.369	0.9	0.21	8.8	OK
7.002	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH3 3	SWMH34	60.699	59.468	0.082	5.028	0.8	0.25	10.4	OK
7.003	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH3 4	SWMH35	60.696	59.221	0.086	5.017	0.7	0.21	9.7	OK
7.004	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH3 5	SWMH36	60.683	59.196	0.085	5.491	0.8	0.26	10.5	OK
7.005	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH3 6	SWMH37	60.725	59.149	0.091	6.260	0.8	0.28	11.7	OK
7.006	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH3 7	SWMH14	60.701	58.999	0.093	8.543	1.0	0.37	15.5	OK
10.000	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH2 9	UNIT4 TANK 2	59.981	58.318	0.056	6.546	1.8	0.06	14.0	OK
10.001	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	Pipe	UNIT4 TANK 2	HYDRO MH30	59.850	58.242	0.119	8.941	0.2	0.04	2.5	OK
6.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH2 7	UNIT4 TANK 1	59.890	57.505	0.095	9.925	3.0	0.11	21.1	OK
4.005	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	Pipe	UNIT4 TANK 1	HYDRO MH28	59.821	57.226	0.245	36.874	0.3	0.09	9.0	OK
9.002	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH2 0	UNIT3 TANK	59.955	57.732	0.090	22.046	3.9	0.25	45.5	OK
8.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH1 7	UNIT3 TANK	60.066	57.665	0.089	18.543	3.1	0.08	33.4	OK
7.008	Sim Criteria FSR: 2 years: +0 %: 30 mins: Summer	Pipe	UNIT3 TANK	HYDRO MH21	59.964	57.238	0.300	45.603	0.8	0.05	28.1	OK
2.004	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH0 9	UNIT1 AND 2 TANK	60.626	58.723	0.090	8.868	1.9	0.14	15.8	OK
3.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH1 1	UNIT1 AND 2 TANK	60.171	58.738	0.085	11.568	3.0	0.17	24.6	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025				
		Designed by: N.Mehmood	Checked by:	Approved By:		
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW				

1.003	Sim Criteria FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SWMH0 4	UNIT1 AND 2 TANK	60.461	58.664	0.113	14.402	1.4	0.03	12.3	OK
1.004	Sim Criteria FSR: 2 years: +0 %: 60 mins: Winter	Pipe	UNIT1 AND 2 TANK	HYDRO MH12	59.965	58.220	0.225	41.016	0.2	0.17	11.7	OK
5.004	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH3 1	SWMH45	59.897	58.732	0.065	4.363	0.9	0.17	9.0	OK
5.003	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH4 5	SWMH46	59.911	58.296	0.051	4.352	1.2	0.16	8.5	OK
5.002	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH4 6	SWMH23	59.884	58.157	0.068	4.348	0.8	0.06	8.3	OK
5.001	Sim Criteria FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SWMH2 4	UNIT4 TANK 1	60.066	57.630	0.109	17.445	2.6	0.29	33.8	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



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

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SWMH01	SWMH02	60.772	58.932	0.093	4.322	0.2	0.12	3.7	OK
1.001	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SWMH02	SWMH03	60.763	58.913	0.130	20.970	0.7	0.6	17.8	OK
1.002	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SWMH03	SWMH04	60.683	58.817	0.086	23.903	1.5	0.68	20.3	OK
2.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH05	SWMH06	60.706	59.083	0.090	3.466	0.5	0.23	7.0	OK
2.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH06	SWMH07	60.688	58.982	0.136	6.885	0.5	0.4	12.1	OK
2.002	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH07	SWMH08	60.683	58.956	0.156	12.975	0.8	0.8	24.0	OK
2.003	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH08	SWMH09	61.004	58.916	0.113	12.938	1.1	0.76	22.8	OK
3.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH10	SWMH11	60.174	58.930	0.125	21.854	2.1	0.69	46.8	OK
1.005	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	Pipe	HYDRO MH12	SWMH13	60.315	58.467	0.053	114.862	1.9	0.11	13.5	Surcharged
4.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH22	SWMH24	60.120	58.464	0.114	16.489	1.6	0.36	33.1	OK
5.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH23	SWMH24	60.046	57.790	0.142	16.468	1.3	0.66	33.1	OK
6.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH26	SWMH27	59.887	58.019	0.094	18.752	2.6	0.36	40.2	OK
4.004	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	Pipe	HYDRO MH28	EX. COMH20	59.799	57.486	0.082	100.393	1.1	0.55	10.8	Surcharged
7.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH14	SWMH15	60.699	58.796	0.151	25.653	1.7	0.59	48.4	OK
7.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH15	SWMH17	60.135	58.280	0.133	25.605	1.9	0.8	45.3	OK
8.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH16	SWMH17	60.588	58.641	0.078	9.496	1.7	0.16	20.3	OK

Welcomb Street: Proposed Drainage				Date: 11/04/2025									
				Designed by: N.Mehmood		Checked by:						Approved By:	
Report Details: Type: Connections Summary Storm Phase: Storm				100 Barbirolli Square: Manchester M2 3PW									

9.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH1 8	SWMH19	59.987	58.474	0.225	23.214	1.1	0.86	44.8	Surchar ged
9.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH1 9	SWMH20	59.986	58.308	0.225	41.680	2.0	1.53	80.5	Surchar ged
7.007	Sim Criteria FSR: 30 years: +0 %: 240 mins: Winter	Pipe	HYDRO MH21	EX.CMH 15	60.057	57.348	0.085	194.158	1.1	0.16	18.0	Surchar ged
10.002	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	Pipe	HYDRO MH30	EX.SWM H42	59.807	58.359	0.029	24.285	0.9	0.02	3.0	OK
4.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH3 2	SWMH22	60.069	58.877	0.098	8.251	1.0	0.39	16.8	OK
7.002	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH3 3	SWMH34	60.699	59.502	0.121	9.500	0.9	0.47	19.8	OK
7.003	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH3 4	SWMH35	60.696	59.266	0.130	9.486	0.8	0.41	18.6	OK
7.004	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH3 5	SWMH36	60.683	59.239	0.126	10.376	0.9	0.49	20.2	OK
7.005	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH3 6	SWMH37	60.725	59.188	0.136	11.842	0.9	0.53	22.5	OK
7.006	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH3 7	SWMH14	60.701	59.049	0.140	16.165	1.1	0.71	29.8	OK
10.000	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH2 9	UNIT4 TANK 2	59.981	58.345	0.100	12.357	2.0	0.12	26.5	OK
10.001	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	Pipe	UNIT4 TANK 2	HYDRO MH30	59.850	58.336	0.213	8.293	0.3	0.06	3.5	OK
6.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH2 7	UNIT4 TANK 1	59.890	57.533	0.176	18.750	3.0	0.21	39.8	OK
4.005	Sim Criteria FSR: 30 years: +0 %: 120 mins: Winter	Pipe	UNIT4 TANK 1	HYDRO MH28	59.821	57.487	0.300	100.593	0.3	0.11	10.8	Surchar ged
9.002	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH2 0	UNIT3 TANK	59.955	57.771	0.179	41.674	4.2	0.44	79.7	OK
8.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH1 7	UNIT3 TANK	60.066	57.695	0.176	35.104	3.4	0.15	64.1	OK
7.008	Sim Criteria FSR: 30 years: +0 %: 60 mins: Winter	Pipe	UNIT3 TANK	HYDRO MH21	59.964	57.517	0.300	114.455	0.8	0.04	22.4	Surchar ged
2.004	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH0 9	UNIT1 AND 2 TANK	60.626	58.745	0.164	16.788	2.1	0.27	30.6	OK
3.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH1 1	UNIT1 AND 2 TANK	60.171	58.766	0.158	21.861	3.2	0.32	46.5	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:	Approved By:	
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

1.003	Sim Criteria FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SWMH0 4	UNIT1 AND 2 TANK	60.461	58.675	0.214	27.415	1.3	0.06	23.3	OK
1.004	Sim Criteria FSR: 30 years: +0 %: 60 mins: Winter	Pipe	UNIT1 AND 2 TANK	HYDRO MH12	59.965	58.462	0.300	72.909	0.2	0.2	13.6	Surchar ged
5.004	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH3 1	SWMH45	59.897	58.759	0.092	8.241	1.1	0.33	17.1	OK
5.003	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH4 5	SWMH46	59.911	58.322	0.072	8.227	1.5	0.31	16.3	OK
5.002	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH4 6	SWMH23	59.884	58.171	0.100	8.222	0.9	0.11	16.1	OK
5.001	Sim Criteria FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SWMH2 4	UNIT4 TANK 1	60.066	57.674	0.193	32.940	2.9	0.55	64.6	OK

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:		Approved By:
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			



Sim Criteria FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	Sim Criteria FSR: 100 years: +45 %: 30 mins: Winter	Pipe	SWMH01	SWMH02	60.772	59.015	0.181	8.190	0.2	0.23	6.9	OK
1.001	Sim Criteria FSR: 100 years: +45 %: 30 mins: Winter	Pipe	SWMH02	SWMH03	60.763	59.008	0.207	39.688	0.9	1.14	33.7	Surcharged
1.002	Sim Criteria FSR: 100 years: +45 %: 30 mins: Winter	Pipe	SWMH03	SWMH04	60.683	58.876	0.174	45.082	1.7	1.28	38.3	OK
2.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Summer	Pipe	SWMH05	SWMH06	60.706	59.112	0.157	5.797	0.4	0.37	11.0	OK
2.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH06	SWMH07	60.688	59.115	0.225	12.923	0.5	0.63	19.0	Surcharged
2.002	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH07	SWMH08	60.683	59.073	0.225	24.329	1.0	1.39	41.4	Surcharged
2.003	Sim Criteria FSR: 100 years: +45 %: 15 mins: Summer	Pipe	SWMH08	SWMH09	61.004	58.987	0.164	21.691	1.3	1.25	37.5	OK
3.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH10	SWMH11	60.174	59.227	0.225	40.909	2.1	1.24	84.0	Surcharged
1.005	Sim Criteria FSR: 100 years: +45 %: 120 mins: Summer	Pipe	HYDROMH12	SWMH13	60.315	58.930	0.053	155.699	1.9	0.11	13.5	Surcharged
4.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH22	SWMH24	60.120	58.509	0.225	30.844	1.6	0.69	62.4	OK
5.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH23	SWMH24	60.046	58.132	0.225	30.820	1.4	1.12	56.2	Surcharged
6.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH26	SWMH27	59.887	58.074	0.146	35.114	2.8	0.67	75.2	OK
4.004	Sim Criteria FSR: 100 years: +45 %: 120 mins: Summer	Pipe	HYDROMH28	EX.COMH20	59.799	57.953	0.083	132.760	1.1	0.56	11.0	Surcharged
7.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH14	SWMH15	60.699	59.145	0.225	47.985	1.8	0.87	72.1	Surcharged
7.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH15	SWMH17	60.135	58.646	0.225	48.001	1.7	1.21	68.5	Surcharged

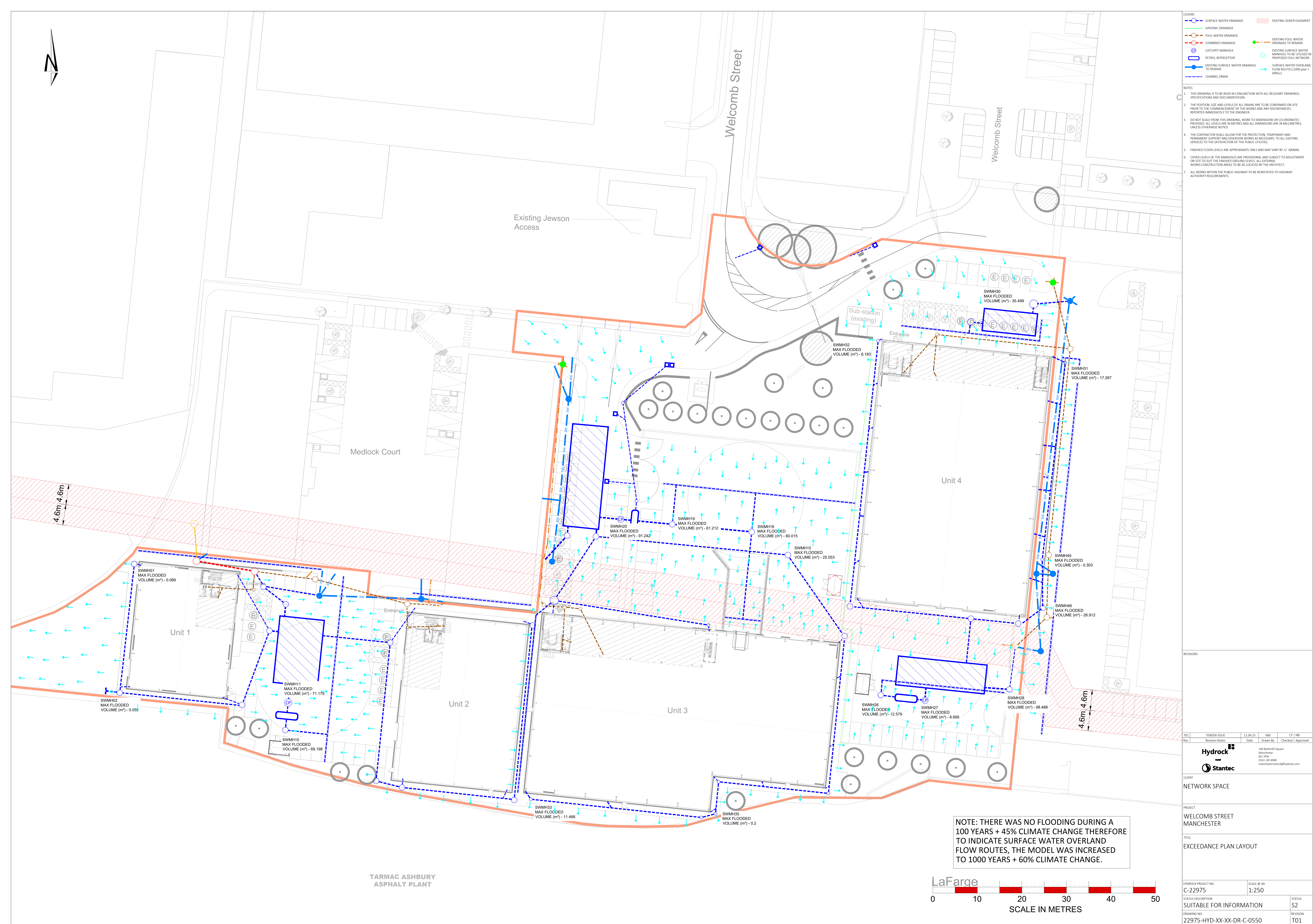
Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:	Approved By:	
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

8.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH1 6	SWMH17	60.588	58.665	0.112	17.778	1.9	0.3	38.1	OK
9.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH1 8	SWMH19	59.987	59.741	0.225	43.440	2.1	1.6	83.7	Surchar ged
9.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH1 9	SWMH20	59.986	59.243	0.225	78.016	3.8	2.84	149.8	Surchar ged
7.007	Sim Criteria FSR: 100 years: +45 %: 1440 mins: Summer	Pipe	HYDRO MH21	EX.CMH 15	60.057	57.205	0.085	498.057	1.1	0.16	18.0	Surchar ged
10.002	Sim Criteria FSR: 100 years: +45 %: 30 mins: Winter	Pipe	HYDRO MH30	EX.SWM H42	59.807	58.548	0.029	8.660	0.9	0.02	3.0	Surchar ged
4.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH3 2	SWMH22	60.069	58.927	0.146	15.446	1.2	0.74	31.6	OK
7.002	Sim Criteria FSR: 100 years: +45 %: 15 mins: Summer	Pipe	SWMH3 3	SWMH34	60.699	59.551	0.209	15.796	0.9	0.85	35.8	OK
7.003	Sim Criteria FSR: 100 years: +45 %: 15 mins: Summer	Pipe	SWMH3 4	SWMH35	60.696	59.392	0.225	15.844	0.7	0.58	26.3	Surchar ged
7.004	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH3 5	SWMH36	60.683	59.465	0.225	19.422	0.8	0.77	31.6	Surchar ged
7.005	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH3 6	SWMH37	60.725	59.443	0.225	22.175	0.9	0.87	37.0	Surchar ged
7.006	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH3 7	SWMH14	60.701	59.364	0.225	30.297	1.1	1.08	45.7	Surchar ged
10.000	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH2 9	UNIT4 TANK 2	59.981	58.455	0.260	22.887	2.1	0.22	49.4	OK
10.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	UNIT4 TANK 2	HYDRO MH30	59.850	58.455	0.300	5.054	0.4	0.08	5.2	Surchar ged
6.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH2 7	UNIT4 TANK 1	59.890	57.660	0.225	34.722	2.9	0.4	76.8	OK
4.005	Sim Criteria FSR: 100 years: +45 %: 240 mins: Winter	Pipe	UNIT4 TANK 1	HYDRO MH28	59.821	58.704	0.300	240.628	0.2	0.13	12.6	Surchar ged
9.002	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH2 0	UNIT3 TANK	59.955	58.023	0.225	77.762	4.4	0.8	145.2	Surchar ged
8.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH1 7	UNIT3 TANK	60.066	57.772	0.300	64.912	3.6	0.24	104.9	OK
7.008	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	UNIT3 TANK	HYDRO MH21	59.964	57.772	0.300	26.663	0.5	0.04	24.6	Surchar ged

Welcomb Street: Proposed Drainage		Date: 11/04/2025			
		Designed by: N.Mehmood	Checked by:	Approved By:	
Report Details: Type: Connections Summary Storm Phase: Storm		100 Barbirolli Square: Manchester M2 3PW			

2.004	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH0 9	UNIT1 AND 2 TANK	60.626	58.776	0.225	31.422	2.3	0.46	52.5	OK
3.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Summer	Pipe	SWMH1 1	UNIT1 AND 2 TANK	60.171	58.810	0.225	36.476	3.4	0.57	81.7	OK
1.003	Sim Criteria FSR: 100 years: +45 %: 30 mins: Winter	Pipe	SWMH0 4	UNIT1 AND 2 TANK	60.461	58.828	0.300	51.419	1.5	0.1	43.0	OK
1.004	Sim Criteria FSR: 100 years: +45 %: 30 mins: Winter	Pipe	UNIT1 AND 2 TANK	HYDRO MH12	59.965	58.826	0.300	37.975	0.3	0.22	14.5	Surchar ged
5.004	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH3 1	SWMH45	59.897	58.802	0.134	15.421	1.3	0.62	32.2	OK
5.003	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH4 5	SWMH46	59.911	58.362	0.101	15.404	1.8	0.59	30.8	OK
5.002	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH4 6	SWMH23	59.884	58.189	0.225	15.395	0.8	0.22	30.5	OK
5.001	Sim Criteria FSR: 100 years: +45 %: 15 mins: Winter	Pipe	SWMH2 4	UNIT4 TANK 1	60.066	57.957	0.225	61.296	3.0	0.94	110.5	Surcha rged

Appendix I - Exceedance Flow Plan



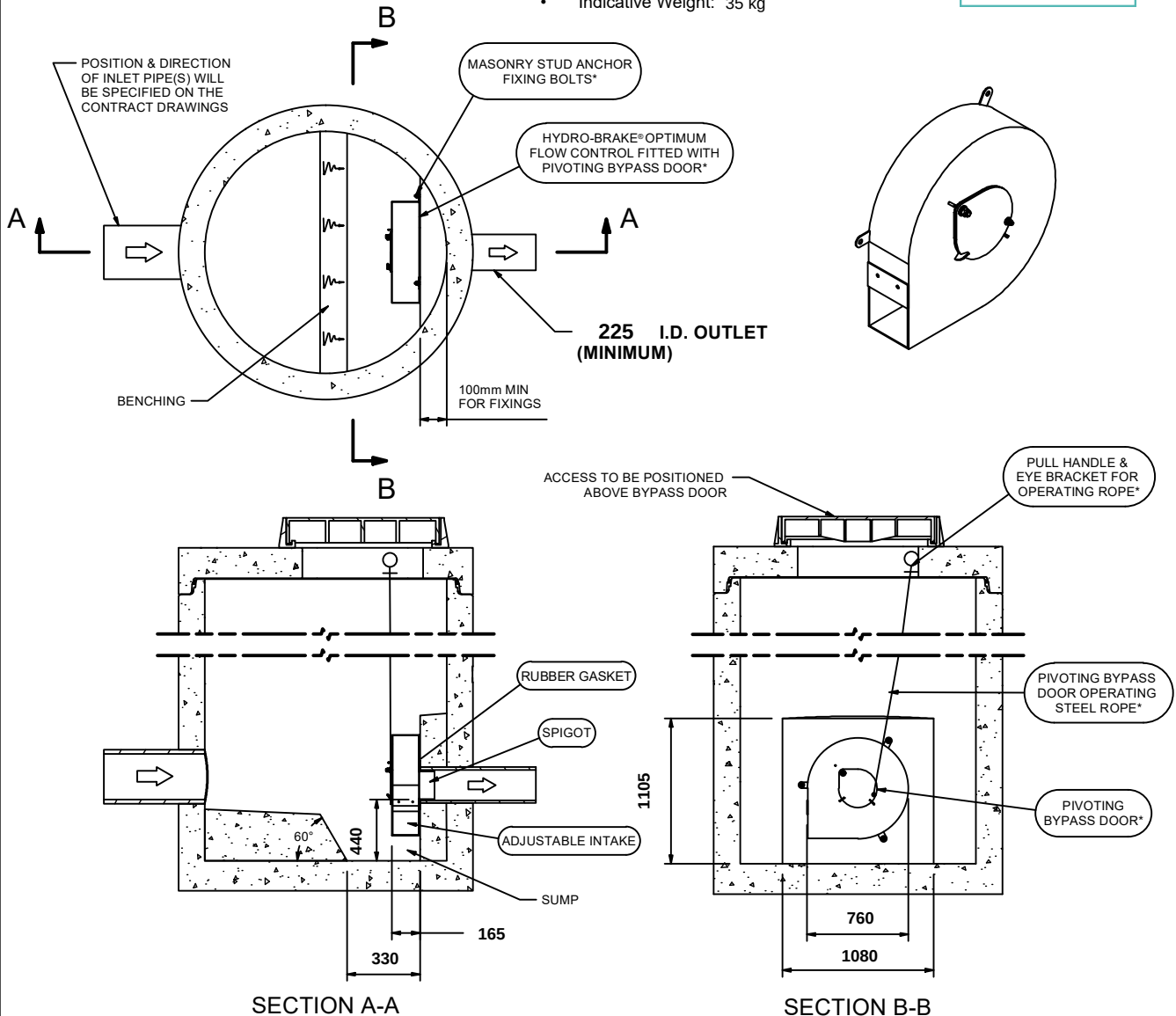
Appendix J - Flow Control Details

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.522	13.500
Flush-Flo™	0.450	13.500
Kick-Flo®	0.963	10.881
Mean Flow		11.738

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Variable flow rate post installation via adjustable inlet
- Indicative Weight: 35 kg



IMPORTANT: ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
 ALL CIVIL AND INSTALLATION WORK BY OTHERS
 * WHERE SUPPLIED
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW
 CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SHE-0159-1350-1522-1350 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

**Hydro
International**
 A CRH COMPANY

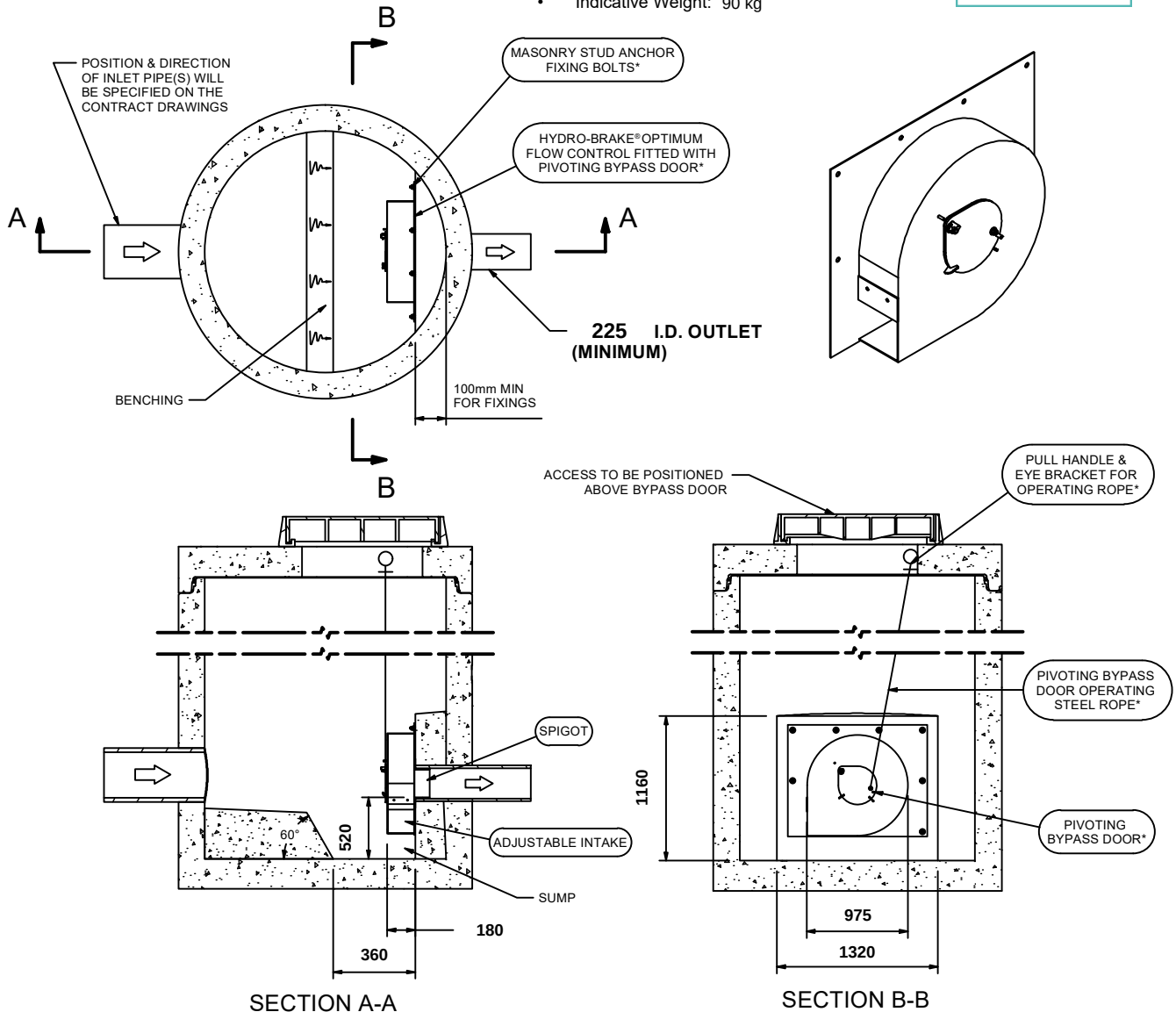
DATE	08/04/2025 15:03	SHE-0159-1350-1522-1350 Hydro-Brake® Optimum
SITE	Welcomb Street	
DESIGNER	Natasha Mehmood	
REF	SWMH 12	

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	2.301	18.000
Flush-Flo™	0.675	17.990
Kick-Flo®	1.397	14.184
Mean Flow		15.745

Hydro-Brake® Optimum Flow Control including:

- 5 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Variable flow rate post installation via adjustable inlet
- Indicative Weight: 90 kg



IMPORTANT:

○ LIMIT OF HYDRO INTERNATIONAL SUPPLY

THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS

* WHERE SUPPLIED

HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

**DESIGN
ADVICE**



The head/flow characteristics of this SHE-0170-1800-2301-1800 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

**Hydro
International**
A CRH COMPANY

DATE	08/04/2025 15:08
SITE	Welcomb Street
DESIGNER	Natasha Mehmood
REF	SWMH 21

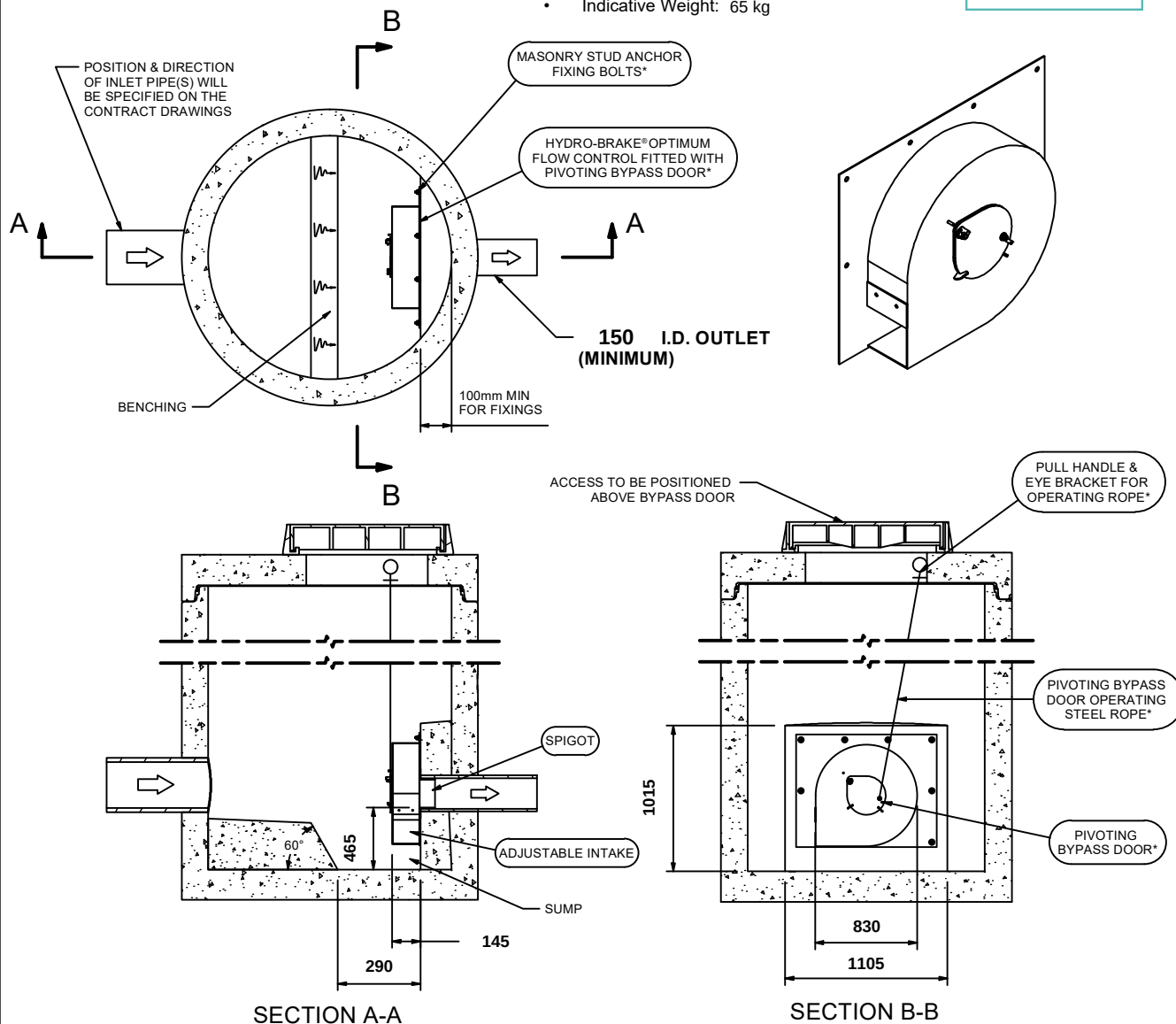
SHE-0170-1800-2301-1800
Hydro-Brake® Optimum

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	2.000	11.000
Flush-Flo™	0.599	10.995
Kick-Flo®	1.222	8.712
Mean Flow		9.649

Hydro-Brake® Optimum Flow Control including:

- 5 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Variable flow rate post installation via adjustable inlet
- Indicative Weight: 65 kg



IMPORTANT: ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SHE-0137-1100-2000-1100 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro International
A CRH COMPANY

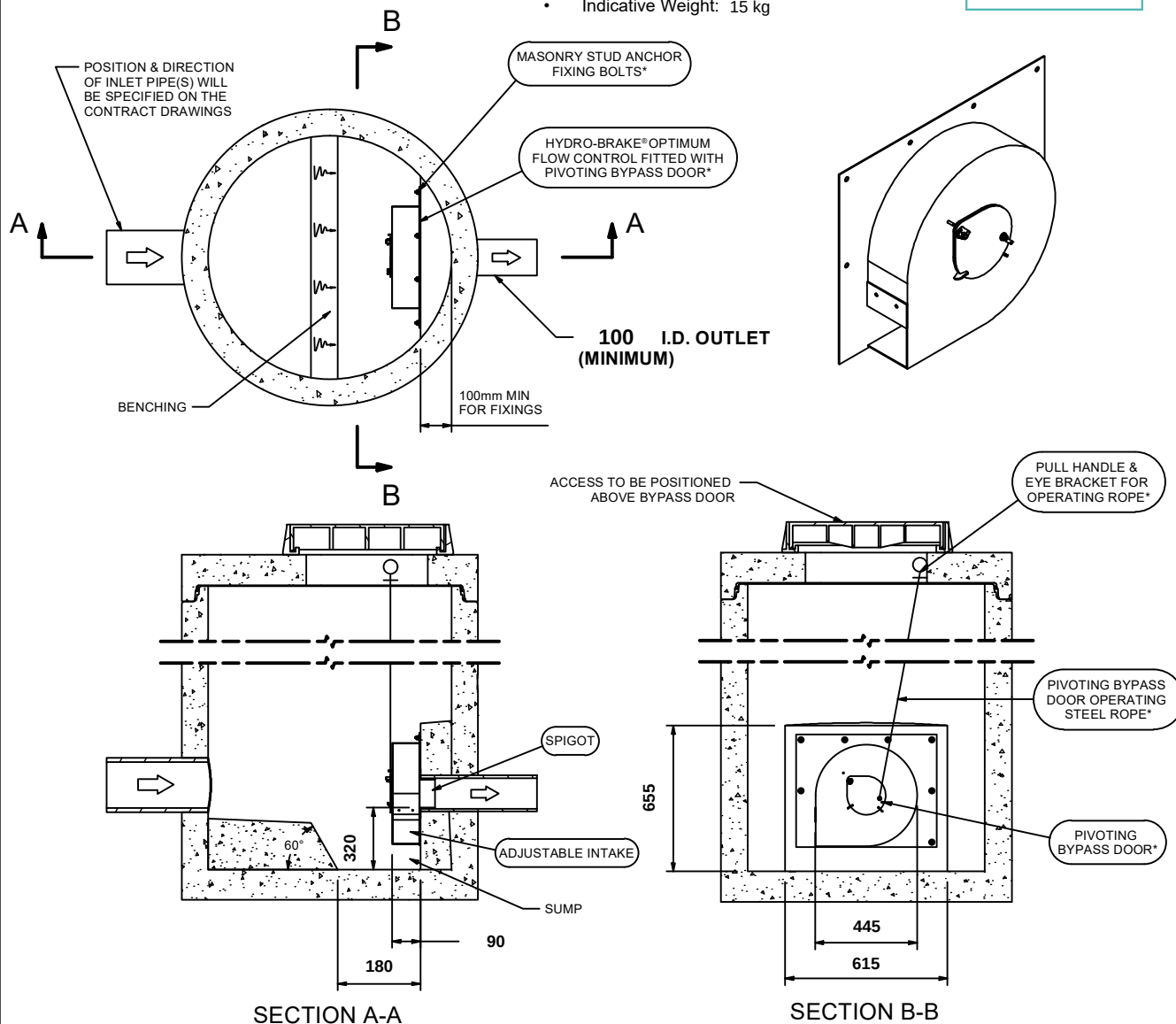
DATE	08/04/2025 15:10	SHE-0137-1100-2000-1100 Hydro-Brake® Optimum
SITE	Welcomb Street	
DESIGNER	Natasha Mehmood	
REF	SWMH 28	

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	0.968	3.000
Flush-Flo™	0.288	2.997
Kick-Flo®	0.606	2.424
Mean Flow		2.623

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Variable flow rate post installation via adjustable inlet
- Indicative Weight: 15 kg



IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
 ALL CIVIL AND INSTALLATION WORK BY OTHERS
 * WHERE SUPPLIED
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW
 CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SHE-0083-3000-0968-3000 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

**Hydro
International**
 A CRH COMPANY

DATE	08/04/2025 15:12
SITE	Welcomb Street
DESIGNER	Natasha Mehmood
REF	SWMH 30

SHE-0083-3000-0968-3000
 Hydro-Brake® Optimum

Appendix K - Attenuation Tank Details



ACO StormBrixx SD Parts List

Project Title

Welcomb Street

Tank Reference

Tank 1

ACO Reference

OPP100247 / DES025158

Notes

Length (m)	Width (m)	Height (m)	Void Ratio	Gross Volume (m³)
				159.91
16.200	10.800	0.914	97%	Net Volume (m³)
				155.12



Selected	Part No.	Product Description	Quantity
Main Components			
<u>StormBrixx SD</u>			
✓	314090	StormBrixx SD Half Body	486
✓	314091	StormBrixx SD/HD900 Side Panel	90
✓	314092	StormBrixx SD/HD900 Top Cover	486
✓	314093	StormBrixx SD/HD900 Clips	243
	314094	StormBrixx SD/HD900 Cover Plate	
	314098	StormBrixx SD/HD900 Half Side Panel	
<u>StormBrixx HD</u>			
	314061	StormBrixx HD Half Body	
	314021	StormBrixx HD Side Panel	
	314022	StormBrixx HD Top Cover	
	314023	StormBrixx HD Clips	
<u>StormBrixx HD900</u>			
	314154	StormBrixx HD900 Half Body	
	314091	StormBrixx SD/HD900 Side Panel	
	314092	StormBrixx SD/HD900 Top Cover	
	314093	StormBrixx SD/HD900 Clips	
	314094	StormBrixx SD/HD900 Cover Plate	
	314098	StormBrixx SD/HD900 Half Side Panel	
Accessories			
<u>Access</u>			
	27034	StormBrixx HD Remote Access Chamber	
✓	314075	StormBrixx Remote Access Plate	6
✓	314038	StormBrixx Inspection/Rising Shaft	12
	27018	Vertical Inspection Point Connector	
<u>Access Covers</u>			
✓	314055	Vented Φ450mm D400 Ductile Iron Access Cover	6
	314056	Non-Vented Φ450mm D400 Ductile Iron Access Cover	
	314057	Vented Φ600mm D400 Ductile Iron Access Cover	
	314045	Non-Vented Φ225mm D400 Ductile Iron Inspection Cover	
<u>Universal Pipe Connectors</u>			
	27056	Horizontal pipe connector Φ100mm	
	27057	Horizontal pipe connector Φ150mm	
	27058	Horizontal pipe connector Φ225mm	
	27059	Horizontal pipe connector Φ300mm	

<u>SD/HD900 Pipe Connectors</u>			
	27262	Horizontal pipe connector Φ375mm	
	27263	Horizontal pipe connector Φ400mm	
	27264	Horizontal pipe connector Φ450mm	
	27265	Horizontal pipe connector Φ500mm	
<u>HD Pipe Connectors</u>			
	27105	Horizontal pipe connector Φ375mm	
	27101	Horizontal pipe connector Φ450mm	
	27102	Horizontal pipe connector Φ500mm	
<u>Flexible Top Hats</u>			
	27045	Flexible Top Hat Φ110mm	
	27046	Flexible Top Hat Φ160mm	
	27047	Flexible Top Hat Φ225mm	
	27048	Flexible Top Hat Φ300mm	
<u>Geotextiles and Geomembranes</u>			
✓	27041	ACOTex Plus Protection Fleece 4 x 100m	459.17m2
			0 rolls
✓	27042	ACOWrap Impermeable Geomembrane 4 x 12.5m	459.17m2
			0 rolls
	27038	ACOTex Infiltration Geotextile 4 x 100m	
	27044	StormBrixx Sealing Tape	0 rolls



ACO StormBrixx SD Parts List

Project Title

Welcomb Street

Tank Reference

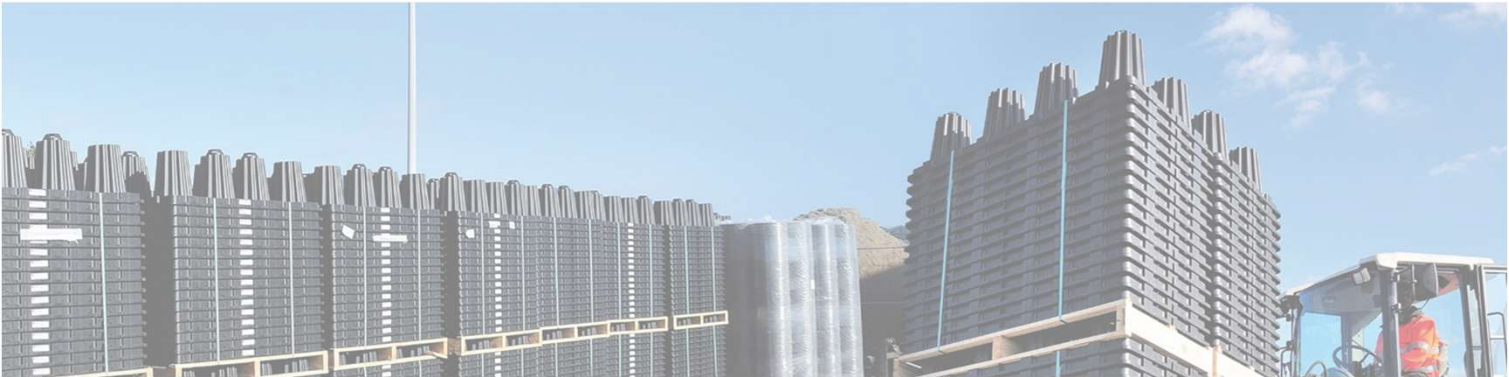
Tank 2

ACO Reference

OPP100247 / DES025158

Notes

Length (m)	Width (m)	Height (m)	Void Ratio	Gross Volume (m³)
				193.48
25.200	8.400	0.914	97%	Net Volume (m³)
				187.67



Selected	Part No.	Product Description	Quantity
Main Components			
<u>StormBrixx SD</u>			
✓	314090	StormBrixx SD Half Body	588
✓	314091	StormBrixx SD/HD900 Side Panel	112
✓	314092	StormBrixx SD/HD900 Top Cover	588
✓	314093	StormBrixx SD/HD900 Clips	294
	314094	StormBrixx SD/HD900 Cover Plate	
	314098	StormBrixx SD/HD900 Half Side Panel	
<u>StormBrixx HD</u>			
	314061	StormBrixx HD Half Body	
	314021	StormBrixx HD Side Panel	
	314022	StormBrixx HD Top Cover	
	314023	StormBrixx HD Clips	
<u>StormBrixx HD900</u>			
	314154	StormBrixx HD900 Half Body	
	314091	StormBrixx SD/HD900 Side Panel	
	314092	StormBrixx SD/HD900 Top Cover	
	314093	StormBrixx SD/HD900 Clips	
	314094	StormBrixx SD/HD900 Cover Plate	
	314098	StormBrixx SD/HD900 Half Side Panel	
Accessories			
<u>Access</u>			
	27034	StormBrixx HD Remote Access Chamber	
✓	314075	StormBrixx Remote Access Plate	6
✓	314038	StormBrixx Inspection/Rising Shaft	12
	27018	Vertical Inspection Point Connector	
<u>Access Covers</u>			
✓	314055	Vented Φ450mm D400 Ductile Iron Access Cover	6
	314056	Non-Vented Φ450mm D400 Ductile Iron Access Cover	
	314057	Vented Φ600mm D400 Ductile Iron Access Cover	
	314045	Non-Vented Φ225mm D400 Ductile Iron Inspection Cover	
<u>Universal Pipe Connectors</u>			
	27056	Horizontal pipe connector Φ100mm	
	27057	Horizontal pipe connector Φ150mm	
	27058	Horizontal pipe connector Φ225mm	
	27059	Horizontal pipe connector Φ300mm	

<u>SD/HD900 Pipe Connectors</u>			
	27262	Horizontal pipe connector Ø375mm	
	27263	Horizontal pipe connector Ø400mm	
	27264	Horizontal pipe connector Ø450mm	
	27265	Horizontal pipe connector Ø500mm	
<u>HD Pipe Connectors</u>			
	27105	Horizontal pipe connector Ø375mm	
	27101	Horizontal pipe connector Ø450mm	
	27102	Horizontal pipe connector Ø500mm	
<u>Flexible Top Hats</u>			
	27045	Flexible Top Hat Ø110mm	
	27046	Flexible Top Hat Ø160mm	
	27047	Flexible Top Hat Ø225mm	
	27048	Flexible Top Hat Ø300mm	
<u>Geotextiles and Geomembranes</u>			
✓	27041	ACOTex Plus Protection Fleece 4 x 100m	557.50m2
			0 rolls
✓	27042	ACOWrap Impermeable Geomembrane 4 x 12.5m	557.50m2
			0 rolls
	27038	ACOTex Infiltration Geotextile 4 x 100m	
	27044	StormBrixx Sealing Tape	0 rolls



ACO StormBrixx SD Parts List

Project Title

Welcomb Street

Tank Reference

Tank 3

ACO Reference

OPP100247 / DES025158

Notes

Length (m)	Width (m)	Height (m)	Void Ratio	Gross Volume (m³)
				<u>134.25</u>
20.400	7.200	0.914	97%	Net Volume (m³)
				<u>130.22</u>



Selected	Part No.	Product Description	Quantity
Main Components			
<u>StormBrixx SD</u>			
✓	314090	StormBrixx SD Half Body	408
✓	314091	StormBrixx SD/HD900 Side Panel	92
✓	314092	StormBrixx SD/HD900 Top Cover	408
✓	314093	StormBrixx SD/HD900 Clips	204
	314094	StormBrixx SD/HD900 Cover Plate	
	314098	StormBrixx SD/HD900 Half Side Panel	
<u>StormBrixx HD</u>			
	314061	StormBrixx HD Half Body	
	314021	StormBrixx HD Side Panel	
	314022	StormBrixx HD Top Cover	
	314023	StormBrixx HD Clips	
<u>StormBrixx HD900</u>			
	314154	StormBrixx HD900 Half Body	
	314091	StormBrixx SD/HD900 Side Panel	
	314092	StormBrixx SD/HD900 Top Cover	
	314093	StormBrixx SD/HD900 Clips	
	314094	StormBrixx SD/HD900 Cover Plate	
	314098	StormBrixx SD/HD900 Half Side Panel	
Accessories			
<u>Access</u>			
	27034	StormBrixx HD Remote Access Chamber	
✓	314075	StormBrixx Remote Access Plate	6
✓	314038	StormBrixx Inspection/Rising Shaft	12
	27018	Vertical Inspection Point Connector	
<u>Access Covers</u>			
✓	314055	Vented Φ450mm D400 Ductile Iron Access Cover	6
	314056	Non-Vented Φ450mm D400 Ductile Iron Access Cover	
	314057	Vented Φ600mm D400 Ductile Iron Access Cover	
	314045	Non-Vented Φ225mm D400 Ductile Iron Inspection Cover	
<u>Universal Pipe Connectors</u>			
	27056	Horizontal pipe connector Φ100mm	
	27057	Horizontal pipe connector Φ150mm	
	27058	Horizontal pipe connector Φ225mm	
	27059	Horizontal pipe connector Φ300mm	

<u>SD/HD900 Pipe Connectors</u>			
	27262	Horizontal pipe connector Φ375mm	
	27263	Horizontal pipe connector Φ400mm	
	27264	Horizontal pipe connector Φ450mm	
	27265	Horizontal pipe connector Φ500mm	
<u>HD Pipe Connectors</u>			
	27105	Horizontal pipe connector Φ375mm	
	27101	Horizontal pipe connector Φ450mm	
	27102	Horizontal pipe connector Φ500mm	
<u>Flexible Top Hats</u>			
	27045	Flexible Top Hat Φ110mm	
	27046	Flexible Top Hat Φ160mm	
	27047	Flexible Top Hat Φ225mm	
	27048	Flexible Top Hat Φ300mm	
<u>Geotextiles and Geomembranes</u>			
✓	27041	ACOTex Plus Protection Fleece 4 x 100m	395.84m2
			0 rolls
✓	27042	ACOWrap Impermeable Geomembrane 4 x 12.5m	395.84m2
			0 rolls
	27038	ACOTex Infiltration Geotextile 4 x 100m	
	27044	StormBrixx Sealing Tape	0 rolls



ACO StormBrixx SD Parts List

Project Title

Welcomb Street

Tank Reference

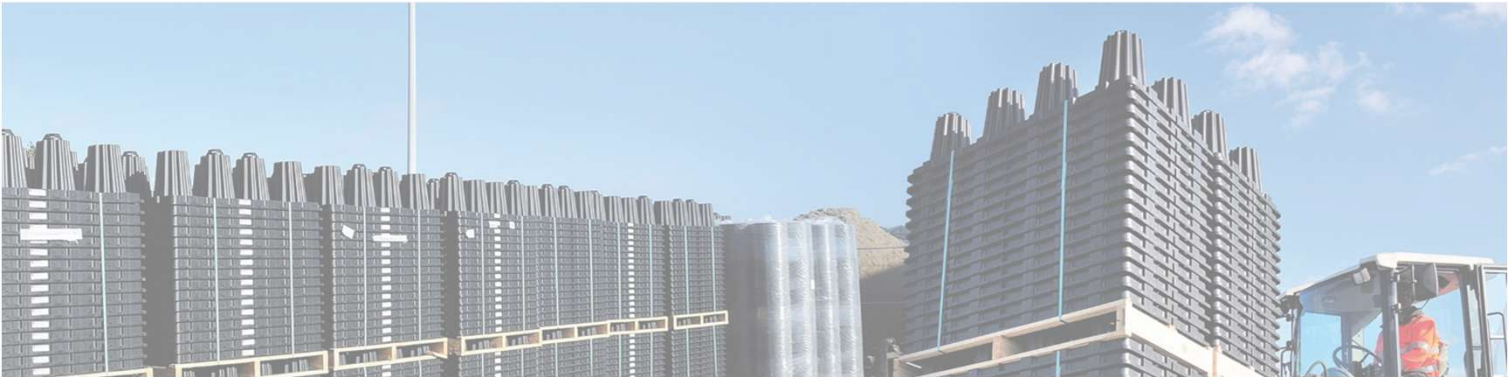
Tank 4

ACO Reference

OPP100247 / DES025158

Notes

Length (m)	Width (m)	Height (m)	Void Ratio	Gross Volume (m³)
				<u>30.97</u>
12.000	5.400	0.478	97%	Net Volume (m³)
				<u>30.05</u>



Selected	Part No.	Product Description	Quantity
Main Components			
<u>StormBrixx SD</u>			
✓	314090	StormBrixx SD Half Body	90
	314091	StormBrixx SD/HD900 Side Panel	
	314092	StormBrixx SD/HD900 Top Cover	
	314093	StormBrixx SD/HD900 Clips	
✓	314094	StormBrixx SD/HD900 Cover Plate	90
✓	314098	StormBrixx SD/HD900 Half Side Panel	58
<u>StormBrixx HD</u>			
	314061	StormBrixx HD Half Body	
	314021	StormBrixx HD Side Panel	
	314022	StormBrixx HD Top Cover	
	314023	StormBrixx HD Clips	
<u>StormBrixx HD900</u>			
	314154	StormBrixx HD900 Half Body	
	314091	StormBrixx SD/HD900 Side Panel	
	314092	StormBrixx SD/HD900 Top Cover	
	314093	StormBrixx SD/HD900 Clips	
	314094	StormBrixx SD/HD900 Cover Plate	
	314098	StormBrixx SD/HD900 Half Side Panel	
Accessories			
<u>Access</u>			
	27034	StormBrixx HD Remote Access Chamber	
✓	314075	StormBrixx Remote Access Plate	6
✓	314038	StormBrixx Inspection/Rising Shaft	12
	27018	Vertical Inspection Point Connector	
<u>Access Covers</u>			
✓	314055	Vented Φ450mm D400 Ductile Iron Access Cover	6
	314056	Non-Vented Φ450mm D400 Ductile Iron Access Cover	
	314057	Vented Φ600mm D400 Ductile Iron Access Cover	
	314045	Non-Vented Φ225mm D400 Ductile Iron Inspection Cover	
<u>Universal Pipe Connectors</u>			
	27056	Horizontal pipe connector Φ100mm	
	27057	Horizontal pipe connector Φ150mm	
	27058	Horizontal pipe connector Φ225mm	
	27059	Horizontal pipe connector Φ300mm	

<u>SD/HD900 Pipe Connectors</u>			
	27262	Horizontal pipe connector Φ375mm	
	27263	Horizontal pipe connector Φ400mm	
	27264	Horizontal pipe connector Φ450mm	
	27265	Horizontal pipe connector Φ500mm	
<u>HD Pipe Connectors</u>			
	27105	Horizontal pipe connector Φ375mm	
	27101	Horizontal pipe connector Φ450mm	
	27102	Horizontal pipe connector Φ500mm	
<u>Flexible Top Hats</u>			
	27045	Flexible Top Hat Φ110mm	
	27046	Flexible Top Hat Φ160mm	
	27047	Flexible Top Hat Φ225mm	
	27048	Flexible Top Hat Φ300mm	
<u>Geotextiles and Geomembranes</u>			
✓	27041	ACOTex Plus Protection Fleece 4 x 100m	168.17m2
			0 rolls
✓	27042	ACOWrap Impermeable Geomembrane 4 x 12.5m	168.17m2
			0 rolls
	27038	ACOTex Infiltration Geotextile 4 x 100m	
	27044	StormBrixx Sealing Tape	0 rolls



This indicative drawing is intended to give an overall impression of a surface water management design using the ACO range of products and accessories.

Due to the lack of level information provided, an assumption is made that all Aco runs are laid flat and therefore reflect the most conservative assumption. Catchment areas are clearly shown so that an assessment can be made against the proposed levels strategy.

Unless otherwise stated in writing, the drawing is not intended as a final, fully detailed working document. Accordingly critical or leading dimensions should not be scaled from this drawing.

This drawing should, however, be read in conjunction with the relevant ACO literature and current British and other relevant standards for specific guidance on the detailing of units.

ACO offers advice to aid designers in the use of ACO products. The indicative drawings are based solely on the information provided to ACO. The drawings should not be offered for construction purposes. It is the responsibility of the consulting engineer or designated Principal Designer to check and ensure the drawings meet their requirements. For clarity, ACO does not under any circumstance act as a project designer or the Principal Designer [as defined in Construction (Design and Management) Regulations 2015: Regulation 5(1)(a)].

Any queries regarding technical comment should be addressed to the ACO Design Services team on 01462 816666.

Existing Jewson Access

Welcomb Street

Welcomb Street

Tank 2
Aco Stormbrixx SD
Length 25.2m
Width 9.4m
Depth 0.914m
Void Ratio 97%
Gross Volume 193.48m³
Net Volume 187.67m³
Maximum Cover Level 60.202
Minimum Cover Level 59.964
Invert Level 57.100
Design Load Rigid HGV Parking (GVW<30T)

Tank 4
Aco Stormbrixx SD
Length 12m
Width 5.4m
Depth 0.478m
Void Ratio 97%
Gross Volume 30.97m³
Net Volume 30.05m³
Maximum Cover Level 59.973
Minimum Cover Level 58.850
Invert Level 58.130
Design Load Cars & Vans

UNIT 1
FFL 60.570

Tank 1
Aco Stormbrixx SD
Length 16.2m
Width 10.8m
Depth 0.914m
Void Ratio 97%
Gross Volume 159.91m³
Net Volume 155.12m³
Maximum Cover Level 60.361
Minimum Cover Level 59.965
Invert Level 58.000
Design Load Rigid HGV Parking (GVW<30T)

UNIT 2
60.500

UNIT 3
FFL 60.500

Tank 3
Aco Stormbrixx SD
Length 20.4m
Width 7.2m
Depth 0.914m
Void Ratio 97%
Gross Volume 134.25m³
Net Volume 130.22m³
Maximum Cover Level 59.900
Minimum Cover Level 58.821
Invert Level 57.000
Design Load Rigid HGV Parking (GVW<30T)

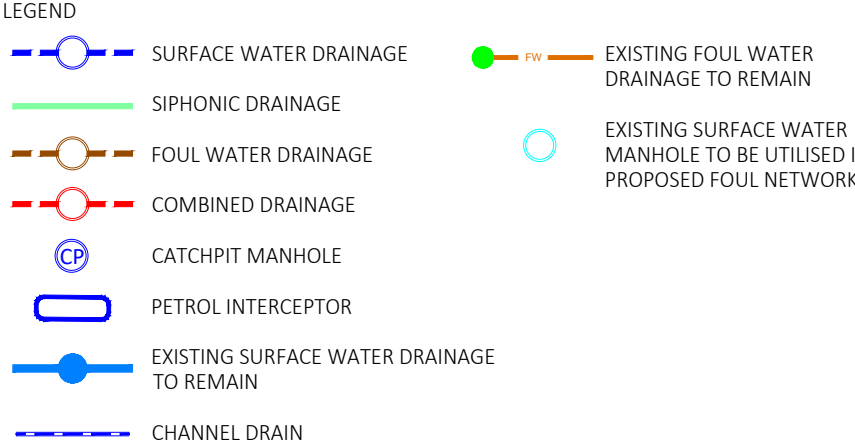
UNIT 4
FFL 60.115

NOTE: ALL EXISTING DRAINAGE EXCLUDED FROM THE DRAINAGE LAYOUT IS TO BE ABANDONED - SEE DRAWING 22975-HYD-XX-XX-DR-C-0520

TARMAC ASHBURY
ASPHALT PLANT

LaFarge

0 10 20 30 40 50
SCALE IN METRES



- NOTES
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS, SPECIFICATIONS AND DOCUMENTATION.
 - THE POSITION, SIZE AND LEVELS OF ALL DRAINS ARE TO BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS AND ANY DISCREPANCIES REPORTED IMMEDIATELY TO THE ENGINEER.
 - DO NOT SCALE FROM THIS DRAWING. WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED.
 - THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
 - THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF SLUITS, PUMPING AND BE WAITING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
 - FINISHED FLOOR LEVELS ARE APPROXIMATE ONLY AND MAY VARY BY +/- 300MM.
 - ANY GRADIENTS OF DRAINS INDICATED ARE INDICATIVE ONLY AND THE CONTRACTOR SHALL INSTALL THE DRAINS TO THE SPECIFIED LEVELS SHOWN FOR EACH MANHOLE (LUA DL). CATCHPIT INVERT LEVELS ARE FOR THE OUTGOING PIPE WITH THE SUMP LEVEL SPECIFIED SEPARATELY.
 - CO-ORDINATE SETTING OUT INFORMATION FOR MANHOLES IS TO THE INTERSECTION OF THE DRAINS AND NOT THE CENTRE OF THE MANHOLE.
 - COVER LEVELS OF THE MANHOLES ARE PROVISIONAL AND SUBJECT TO ADJUSTMENT ON SITE TO SUIT THE FINISHED GROUND LEVELS. ALL EXTERNAL WORKS CONSTRUCTION AREAS TO BE AS LOCATED BY THE ARCHITECT.
 - POSITIONS AND SIZES OF ABOVE GROUND FOUL AND SURFACE WATER DRAINAGE CONNECTIONS ARE TO BE CONFIRMED PRIOR TO CONSTRUCTION WITH THE ARCHITECT AND MAKE ENGINEER.
 - DIAMETER OF PCC MANHOLES VARIES WITH PIPE SIZE, AND IS TO BE IN ACCORDANCE WITH THE TABLES SHOWN ON THE HYDROK STANDARD DETAILS DRAWINGS AT CONSTRUCTION STAGE.
 - COVER LEVELS OF THE MANHOLES ARE PROVISIONAL AND SUBJECT TO ADJUSTMENT ON SITE TO SUIT THE FINISHED GROUND LEVELS. ALL EXTERNAL WORKS CONSTRUCTION AREAS TO BE AS LOCATED BY THE ARCHITECT.
 - POSITIONS AND SIZES OF ABOVE GROUND FOUL AND SURFACE WATER DRAINAGE CONNECTIONS ARE TO BE CONFIRMED PRIOR TO CONSTRUCTION WITH THE ARCHITECT AND MAKE ENGINEER.
 - DIAMETER OF PCC MANHOLES VARIES WITH PIPE SIZE, AND IS TO BE IN ACCORDANCE WITH THE TABLES SHOWN ON THE HYDROK STANDARD DETAILS DRAWINGS AT CONSTRUCTION STAGE.
 - CHANNELS ARE TO BE SIZED BY THE SUPPLIER AND APPROVED BY THE ENGINEER IN WRITING PRIOR TO ORDERING. DRAINAGE CHANNELS TO BE INSTALLED TO MANUFACTURER'S REQUIREMENTS. DESIGN OF CHANNELS SHALL BE BASED ON A 1 IN 30 YEAR STORM RETURN PERIOD, 15 MINUTE DURATION.
 - ALL WORKS ARE ASSUMED TO BE WITHIN PUBLIC HIGHWAY OR WITHIN LAND OWNERS LANES & NO WORKS ARE REQUIRED ON THIRD PARTY LAND OWNERS PROPERTY.
 - DESIGN ASSUMES THAT NO WATER AUTHORITY SEWERS OR OTHER DRAINAGE SYSTEMS REQUIRE MODIFICATION, DIVERSION OR ABANDONING.
 - ALL WORKS WITHIN THE PUBLIC HIGHWAY TO BE REINSTATED TO HIGHWAY AUTHORITY REQUIREMENTS.
 - NO DEEP ROOTING TREES/VEGETATION SHOULD BE PLANTED WITHIN 5.0M OF ANY DRAINAGE WORKS.
 - ALL WPCS, SWAPS AND RWPS ARE SHOWN INDICATIVELY. LOCATIONS SHALL BE CONFIRMED BY OTHERS.
 - ALL MANHOLES LESS THAN 1.5M DEEP ARE CONSIDERED AS NONE MAN ENTRY AND SHALL BE MAINTAINED FROM GROUND LEVEL.
 - RAINWATER DOWNPIPE LOCATIONS IN ABYSSANCE.

REVISIONS

Rev.	Revision Notes	Date	Drawn By	Checked	Approved
T04	LAYOUT AND MANHOLE COVER LEVELS UPDATED	02.04.25	JK	CF	1 NB
T03	ROAD GULLY MOVED TO SUIT LEVELS	18.02.25	TF	CF	1 NB
T02	TENDER ISSUE	07.02.25	TF	CF	1 NB
T01	TENDER ISSUE	17.01.25	TF	CF	1 NB

Hydrok
Stantec

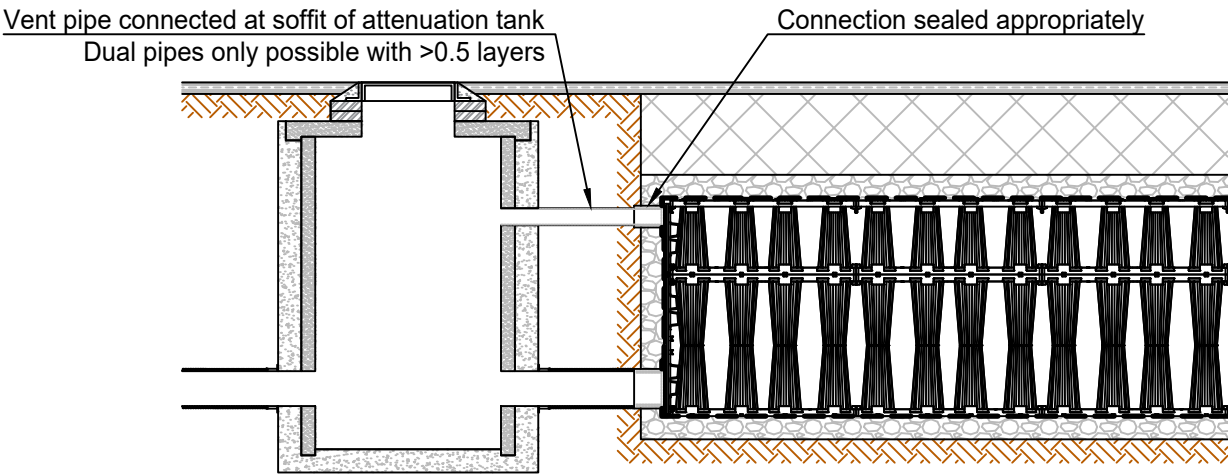
CLIENT
NETWORK SPACE

PROJECT
WELCOMB STREET
MANCHESTER

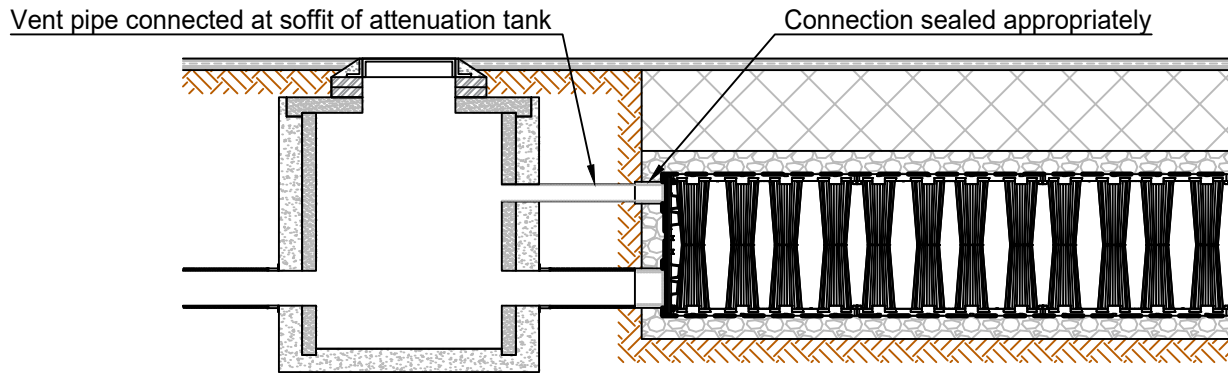
TITLE
PROPOSED DRAINAGE LAYOUT

HYDROK PROJECT NO. C-22975	SCALE @ A0 1:250	STATUS S2
STATUS DESCRIPTION TENDER		REVISION T03
DRAWING NO. 22975-HYD-XX-XX-DR-C-0500		

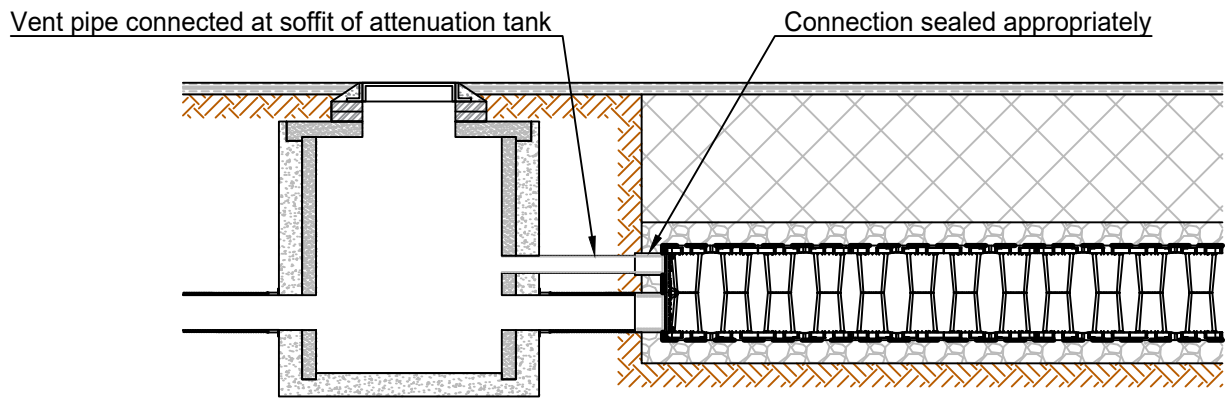
Vent Returning to Manhole



StormBrixx SD with Half Layer

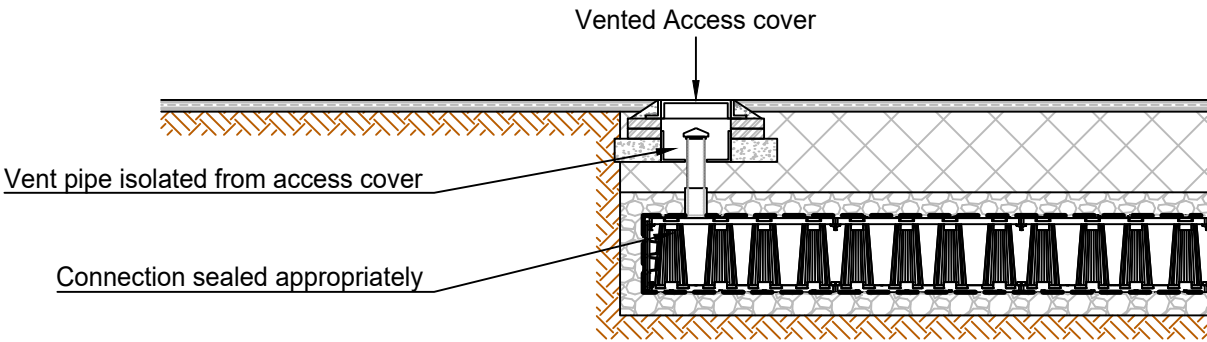


StormBrixx SD

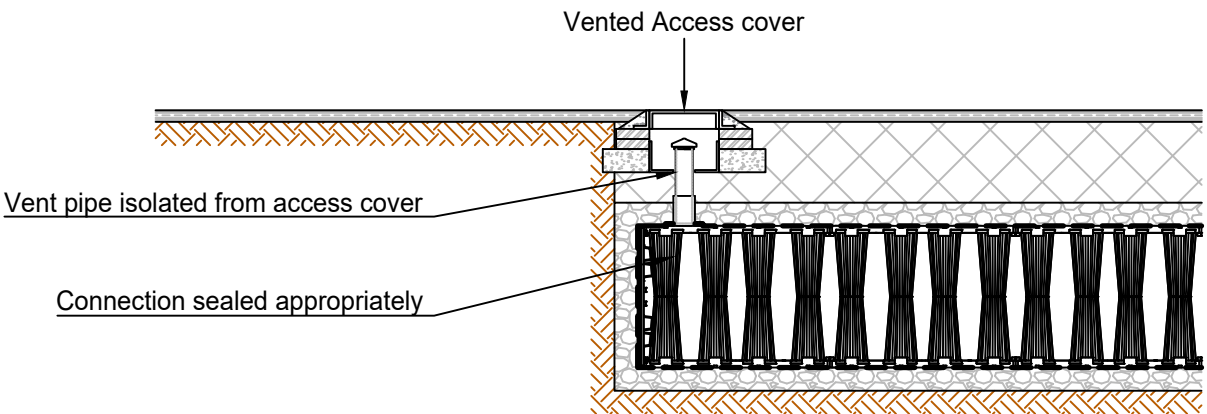


StormBrixx HD

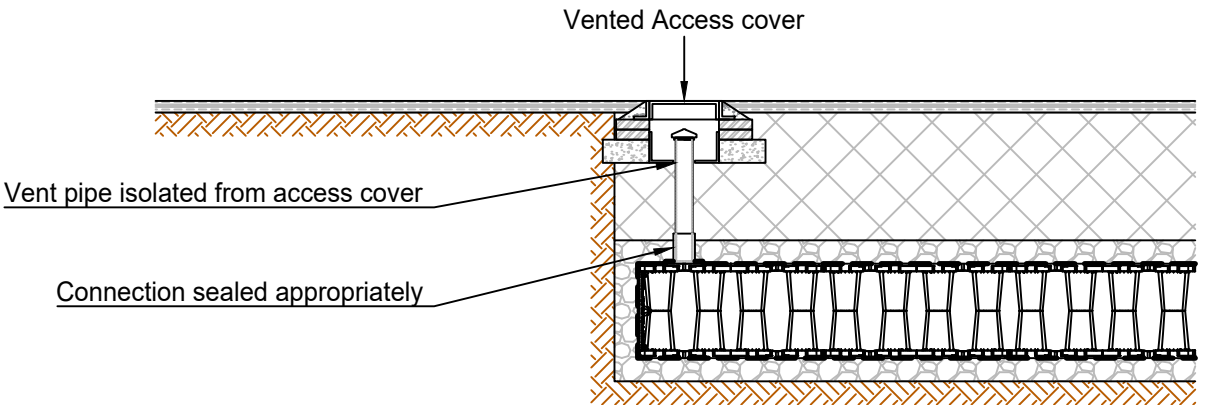
Vertical Vent



StormBrixx SD Half Layer



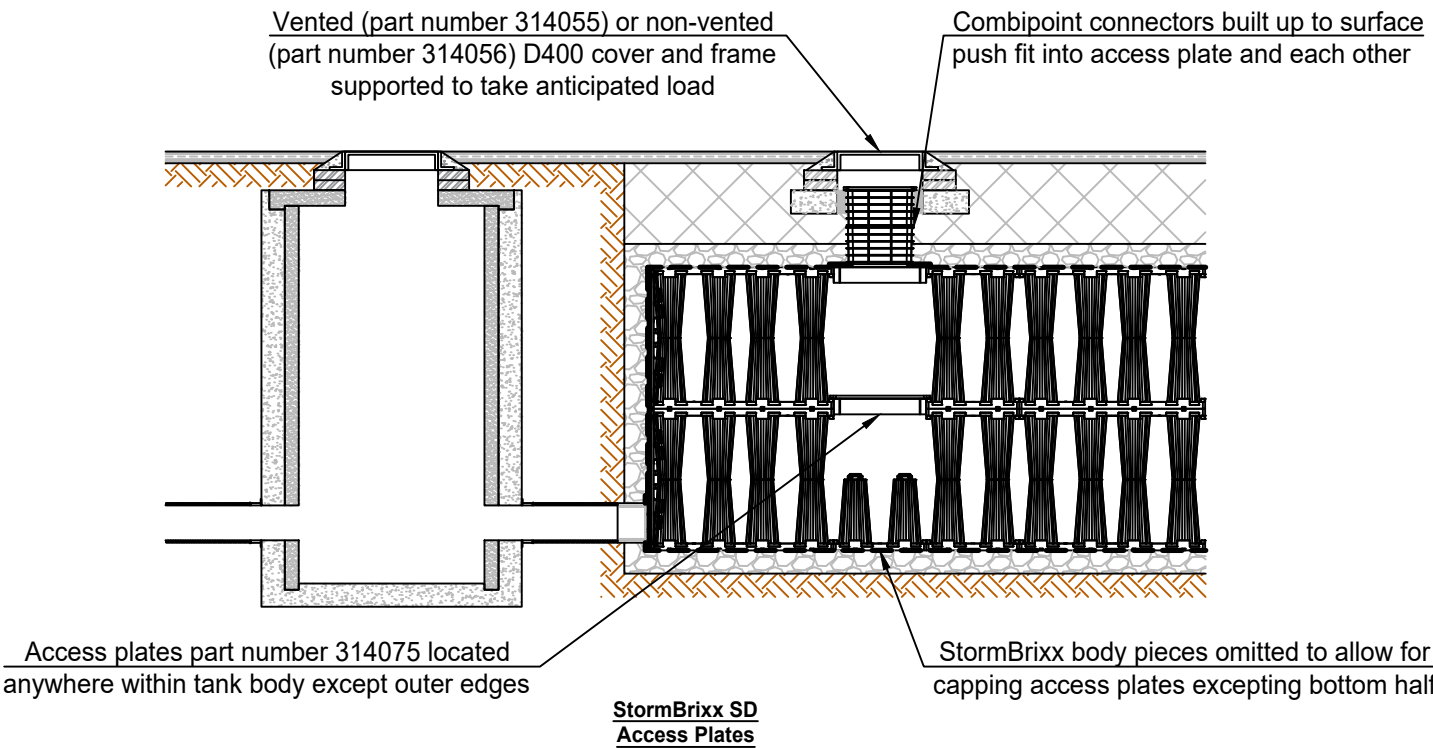
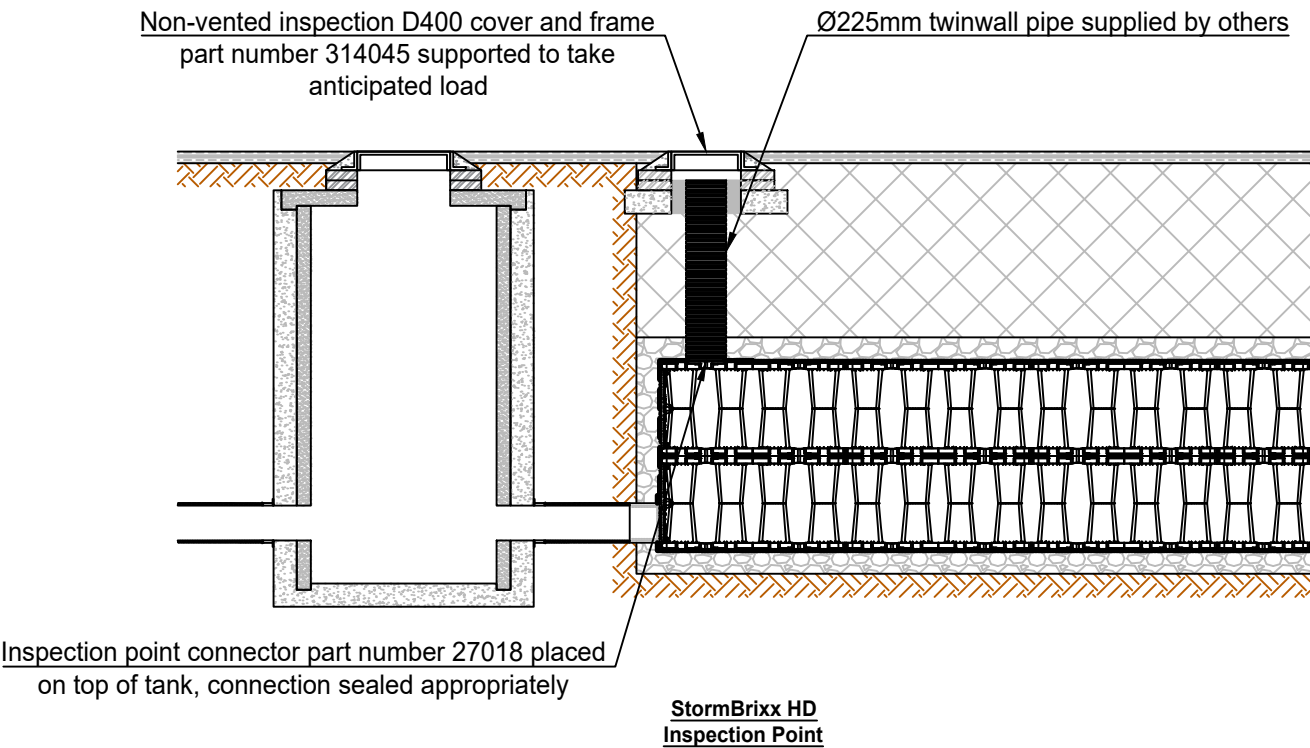
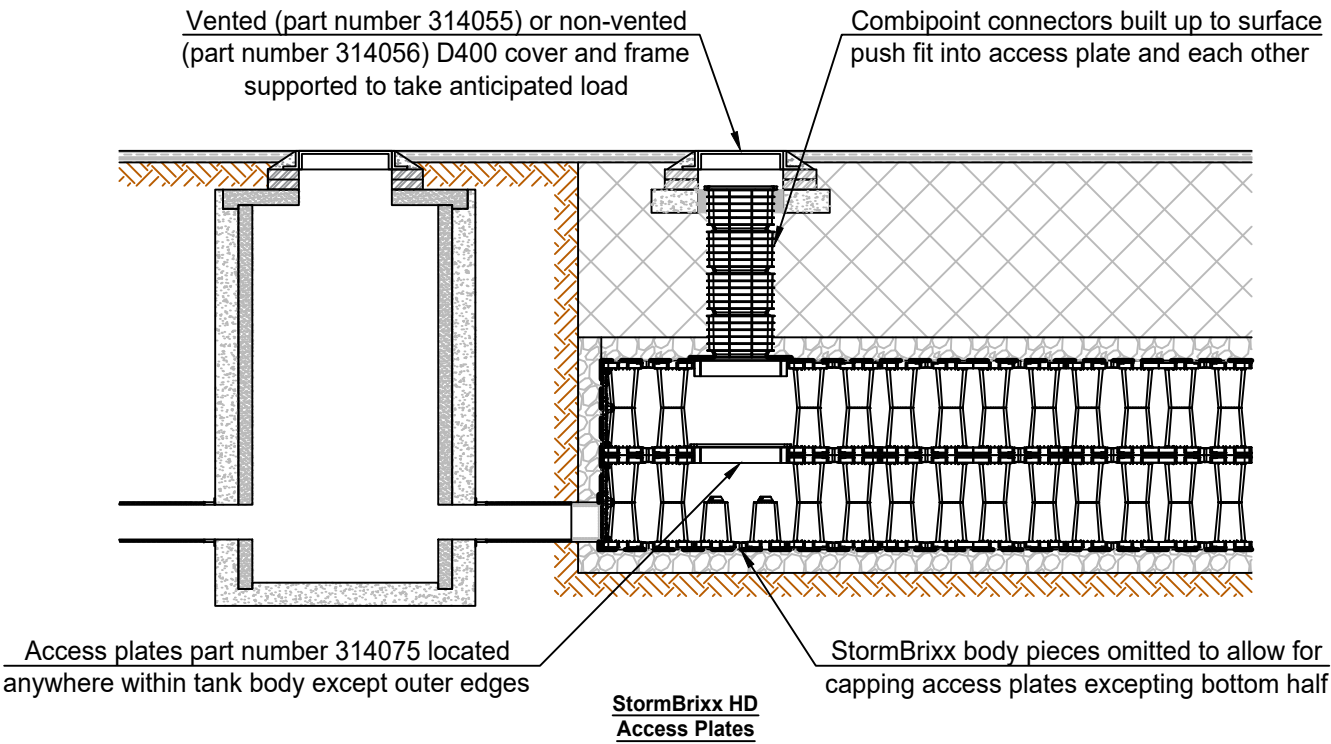
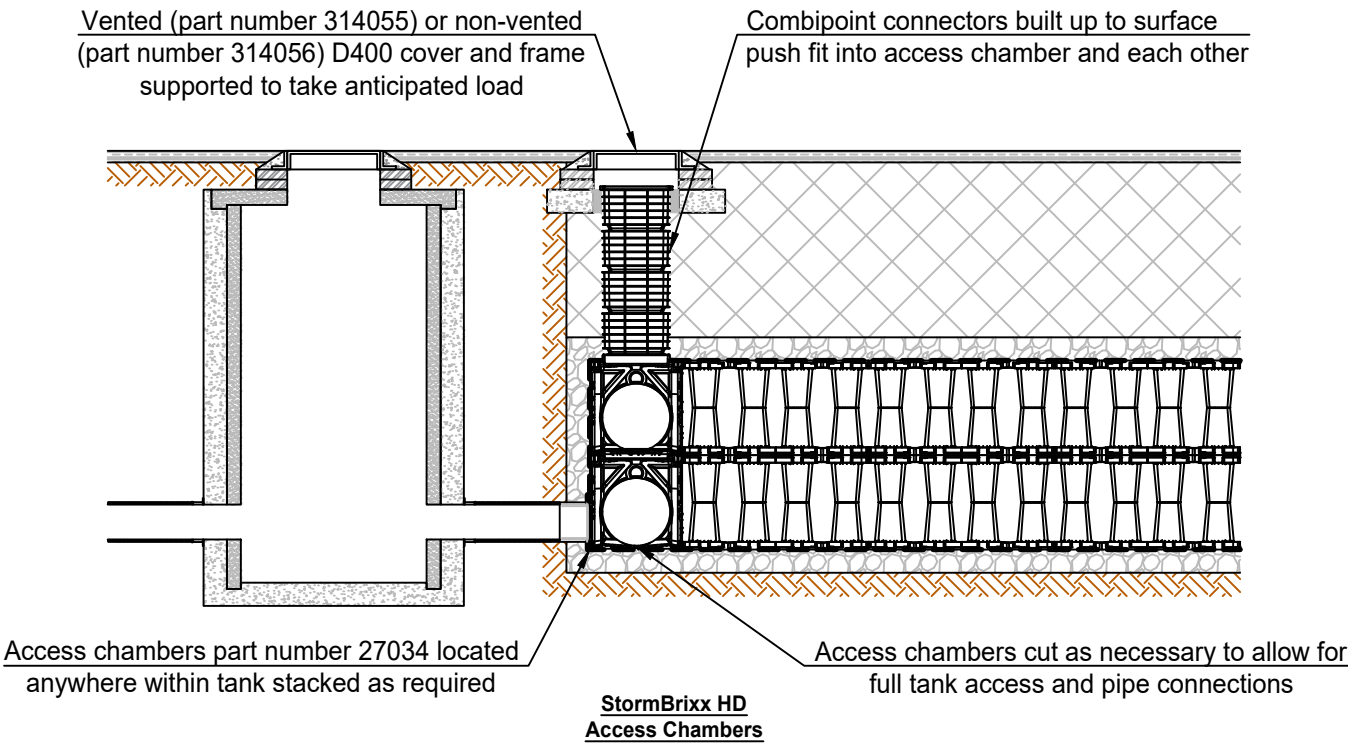
StormBrixx SD



StormBrixx HD

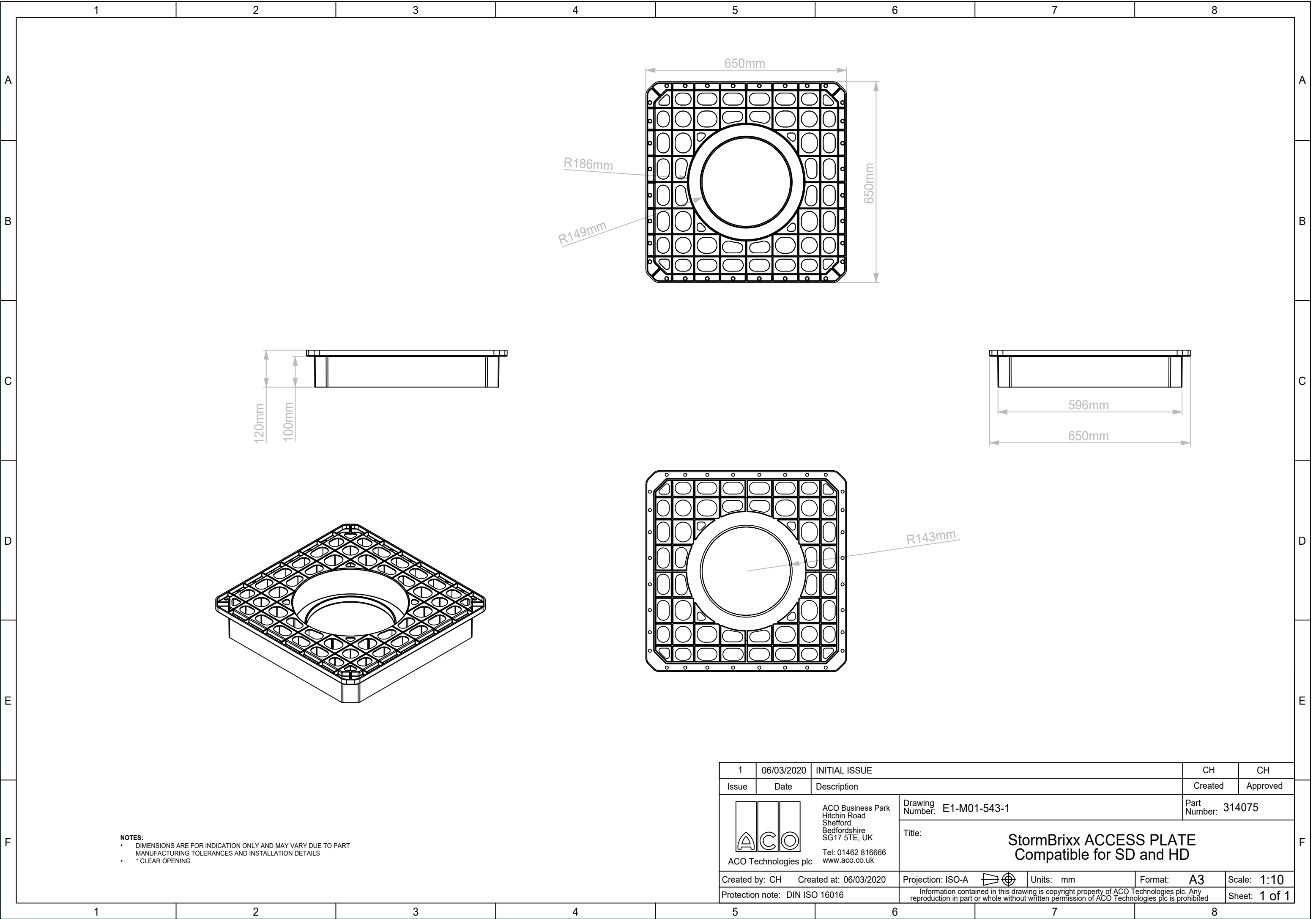
Minimum cover depths ⁽¹⁾ over the top of ACO StormBrixx			(1) Assumed 27° load distribution angle through fill material and overlaying surface asphalt or block paving	B	13/02/19	SD Half Layer added, layout changed		P.J
Location	HD ⁽²⁾	SD		Version	Date	Description		Name
Non-Trafficked areas i.e landscaping	0.5 ⁽³⁾	Consult ACO		 ACO Technologies plc	ACO Business Park Hitchin Road Shefford Bedfordshire SG17 5TE, UK Tel: 01462 816666 www.aco.co.uk	Drawing Number: 23767		Revision: B
Car parks, vehicles up to 2500kg gross mass	0.6	Consult ACO				Title: ACO StormBrixx Typical Vent Detail Installation Detail Drawing		
Car parks, occasional vehicles greater than 2500kg ⁽⁴⁾ mass	0.75	Consult ACO						
Occasional HGV traffic up to 44000kg GVW (HA loading)	Consult ACO	Consult ACO		Created by: P.J	Released by: L.D	Projection: ISO-A 		Units: mm
			(2) Please check minimum frost check cover depths for geographical location	Created at: 25/10/17	Released at: 25/10/17			Scale: 1 : 30
			(3) Minimum cover depth to avoid accidental damage from gardening/landscaping work	Replacement for: -	Replaced by: -	Information contained in this drawing is copyright property of ACO Technologies plc. Any reproduction in part or whole without written permission of ACO Technologies plc is prohibited		Sheet: 1 of 1
			(4) Occasional trafficking by refuse collection or similar vehicles (typically one per week)					

Access Configurations



Minimum cover depths ⁽¹⁾ over the top of ACO StormBrixx			(1) Assumed 27° load distribution angle through fill material and overlaying surface asphalt or block paving
Location	HD ⁽²⁾	SD	
Non-Trafficked areas i.e landscaping	0.5 ⁽³⁾	Consult ACO	
Car parks, vehicles up to 2500kg gross mass	0.6	Consult ACO	
Car parks, occasional vehicles greater than 2500kg ⁽⁴⁾ mass	0.75	Consult ACO	
Occasional HGV traffic up to 44000kg GVW (HA loading)	Consult ACO	Consult ACO	(4) Occasional trafficking by refuse collection or similar vehicles (typically one per week)

A	25/10/17	Initial Issue	P.J
Version	Date	Description	Name
 ACO Technologies plc	ACO Business Park Hitchin Road Shefford Bedfordshire SG17 5TE, UK Tel: 01462 816666 www.aco.co.uk		Revision: A
	Created by: P.J	Released by: L.D	Title: ACO StormBrixx Typical Access Detail Installation Detail Drawing
	Created at: 25/10/17	Released at: 25/10/17	
Replacement for: -	Replaced by: -	Projection: ISO-A 	Units: mm
Information contained in this drawing is copyright property of ACO Technologies plc. Any reproduction in part or whole without written permission of ACO Technologies plc is prohibited			Format: A3
			Scale: 1 : 5
			Sheet: 1 of 1



NOTES:

- DIMENSIONS ARE FOR INDICATION ONLY AND MAY VARY DUE TO PART MANUFACTURING TOLERANCES AND INSTALLATION DETAILS
- * CLEAR OPENING

1	06/03/2020	INITIAL ISSUE			CH	CH	
Issue	Date	Description			Created	Approved	
 ACO Technologies plc		ACO Business Park Hitchin Road Shefford Bedfordshire SG17 5TE, UK Tel: 01462 816666 www.aco.co.uk			Drawing Number: E1-M01-543-1		Part Number: 314075
					Title: StormBrixx ACCESS PLATE Compatible for SD and HD		
Created by: CH		Created at: 06/03/2020		Projection: ISO-A 	Units: mm	Format: A3	Scale: 1:10
Protection note: DIN ISO 16016				Information contained in this drawing is copyright property of ACO Technologies plc. Any reproduction in part or whole without written permission of ACO Technologies plc is prohibited			Sheet: 1 of 1

