Victoria House, Manchester

Drainage Strategy

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author	**Henry Wilkinson**
date	**25.05.2022**
approved	**Kevin Gilsenan**
date	**25.05.2022**

Contact Details:-

Henry Wilkinson | Graduate Engineer
MEng

Carvers Warehouse, 77 Dale Street
Manchester, M1 2HG

e: henrywilkinson@renaissance-ltd.com

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1.0 INTRODUCTION

1.1 Purpose of this report

This Drainage Strategy report has been prepared to support the discharge of planning conditions 12 and 13 associated with planning application 122000/FO/2018.

The assessment includes the following to assist with the discharge of the planning conditions:

1. Maximise use of green SuDS in design including the public realm;
2. Details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area;
3. Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100-year rainfall event with allowance for climate change in any part of a building. Hydraulic calculation needs to be provided;
4. Assessment of overland flow routes for extreme events that is diverted away from buildings (including basements). Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site.
5. Construction details of flow control and SuDS attenuation elements.
6. Indicative maintenance requirements of sustainable drainage features

This report should also be read in conjunction with the landscape architects detailed proposals and specifications which will provide additional information on the sustainable drainage features i.e. green roof, bio-retention tree pits and soft landscaping etc.

2.0 THE SITE

2.1 Site Location

The proposed development site is located off Great Ancoats Street, Manchester.
The site location is described below:

- Post Code M4 7DB
- OS X (Easting) 385314
- OS Y (Northing) 398073
- Nat. Grid SJ853980

The site location is illustrated in Figure 2.1 below.

Figure 2.1: Site Location

2.2 Site Description

The development site is circa 0.13 hectares and currently comprises a singular three storey brick building in the east with adjoining steel framed warehouse to the west. There is associated car parking present across the southern half of the site and there is no vegetation present on the site.

The site is set within a mixed commercial and residential area. Great Ancoats Street is to the north and east with residential apartment buildings beyond. To the southeast lies an active construction site for a hotel and to the south there is a warehouse building and derelict brownfield land. Neighbouring the site, to the west, is a residential apartment building. A tram underpass is also present to the southwest.

The site is relatively flat with a slight fall from Longacre Street to Epworth Street, i.e. from west to east. Refer to Appendix A for a topographical survey.

The north-east of the site is enclosed by a brick wall with metal rails, a small metal pedestrian gate is present in the easternmost corner. The south-eastern site boundary is bound by a brick wall with metal rails, the eastern brick building gable end and a large electronic metal gate for vehicular access. The southernmost site boundary comprises the gable end of an adjacent warehouse, a gravel board fence, and a brick wall with metal fencing above. The north-western boundary is

demarked by a brick wall, large electronic metal gate, the western gable end of the steel frame warehouse and a brick wall with metal railing.

Vehicular access to the site can be gained from Epworth Street and egress is onto Longacre Street, thereby creating a one-way system. Pedestrian access to the building is available from Great Ancoats Street to the north.

2.3 Existing Site Drainage

The existing site areas, building roofs and car parking, are all impermeable with no vegetation present on the site. The topographical survey (Appendix A) indicates there to be various gullies and manholes within the site boundary and therefore it is assumed that all the existing site area discharge into the surrounding public sewers.

2.4 Geology

BGS mapping does not display any made ground deposits on site but indicates several examples of made or worked ground within a relevant distance of the site and based on the historical mapping and the development that has taken place, made ground deposits are highly likely to be present on the site.

The site is indicated to be underlain by Devensian Till. This stratum typically comprises of clay, silt, sand, and gravel.

According to the British Geological Survey (BGS), bedrock is classified as part of the Chester Formation which typically comprises sandstone.

No faults are shown on or within an influencing distance of the site.

A site investigation report has been undertaken with ground conditions found to be made ground up to a depth of 2.85m below ground level underlain by a firm to stiff clay. Sandstone was also encountered at a depth of 13.60-15.00m. For further information relating to the ground conditions on site refer to Brownfields Geo-Environmental Report dated July 2021.

2.5 Hydrology

The nearest surface water feature to the site is the Ashton Canal & Peak Forest Canal which is located

69m north-west of the site. The nearest watercourse to the site is the River Medlock which lies at a distance of 278m south-east of the site and flow direction is indicated to be from north-east to south-west.

There are no recorded active or historical surface water abstractions within 2000m of the site.

The closest active licenced discharge consent is 433m south of the site and relates to the discharge or sewer storm overflow to the River Medlock. The closest historic licensed discharge consent relates to the release of treated effluent to the Shooters brook 167m north-west of the site, this was revoked in 1993.

Information obtained from the Environment Agency (EA) Risk of Flooding from Rivers and the Sea (RoFRaS) database indicates that the risk of flooding across the site is very low (less than 1 in 1000 chance of flooding in any given year).

The site does not fall within an EA designated Zone 2 / Zone 3 flood plain.

The British Geological Survey indicate there is a potential for groundwater flooding at the subject site, with a low-risk rating. Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

2.6 Proposed Development

Erection of a part 25 3 storey residential tower (Use Class C3) for 177 apartments comprising 59 x 1 bed (34 x 1 bed 1 person and 25 1 bed 2 person), 113 x 2 bed (44 x 2 bed 3 person and 69 x 2 bed 4 person) and 5 x 3 bed (3 bed 5 person) with ground floor commercial space (Use Class A1, A2, A3, A4 and D1) above partial basement level associated shared amenity spaces at 3rd floor level, realm enhancements following demolition of existing buildings

Refer to Appendix B for the proposed development plans.

3.0 EXISTING & PROPOSED SURFACE WATER DISCHARGE RATES

3.1 Pre-Development Surface Water Run-Off Rates

The development site is considered to be 100% impermeable in its current condition. The brownfield area consists of positively drained car parking and buildings. Refer to drawing VHM-REN-00-XX-DR-C-01050 in Appendix C for a breakdown of the existing areas.

3.1.1 Existing Brownfield Run-Off Rates

As the drainage network is to discharge into the existing UU sewer, United Utilities normally require a minimum 50% betterment on the 1 in 30 year discharge rate.

To estimate the pre-development surface water discharge into the public sewer, a two-pipe model has been calculated in industry approved Micro Drainage Software (Appendix F). The model uses a variable rainfall intensity for the different storm events and is based on a 60-minute storm duration. A summary of the results are presented in the Tables 3.1.1:

Return Period	$Q_{Brownfield}$ (l/s)
1 in 30 year	25.7
1 in 100 year	33.7

Table 3.1.1 –Brownfield Run-off Rates

3.2 Proposed Surface Water Discharge Rates

Restricting discharge rates to Greenfield run-off rates for the whole site is not considered practicable given the site constraints including size of site and limitations on infiltration. However, practical measures in addition to the 50% reduction in pre-development discharge are presented below, including allowance for climate change in post-development rates and use of SUDs to reduce runoff.

A minimum 50% betterment on brownfield run-off rates is proposed in line with Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area. The peak discharge rates will therefore be restricted to 50% of the pre-development brownfield run-off rates. Based on this, the maximum proposed run-off rates the development site will be restricted to:

Return Period	$Q_{50\% \ Brownfield}$ (l/s)
1 in 30 year	12.9
1 in 100 year + CC	**16.9**

Table 3.2.1 –Proposed Surface Water Run-off Rates

United Utilities have requested that the maximum discharge to the public sewer is restricted to **11 l/s** and this represents a 57% betterment for the 1 in 30 year 60 minute event and a 67% betterment for the 1 in 100 year + CC 60 minute event. United Utilities correspondence has been attached in Appendix D.

3.3 Attenuation Requirements

Based on the detailed calculations included in appendix F an attenuation tank of 22.3m^3 has been provided underneath the building to limit the discharge to the 11 l/s as permitted by UU. This analysis is conservative as it ignores the benefits from the green roof and bioretention tree pits that have also been provided.

4.0 SURFACE WATER DISCHARGE & SUDS ASSESSMENT

4.1 Surface Water Discharge Assessment

In accordance with NPPF, the following hierarchy of surface water drainage options has been considered:

- Discharge into the ground (infiltration);
- Discharge to a surface water body;
- Discharge to a surface water sewer, highway drain, or another drainage system;
- Discharge to a combined sewer.

As noted within the Phase 2 Geo-Environmental Report completed by Brownfield Solutions Ltd, infiltration is not feasible due to the low infiltration rates, adjacent buildings, and the presence of variable and potentially contaminated made ground near the surface, and the respective underlying low permeability cohesive strata.

Opportunities for discharge to watercourse have been considered. The nearest named watercourse is the River Medlock, located approximately 278m to the southeast of the site across adopted highways and 3rd party land. Based on the above, direct discharge to the watercourse is deemed not viable.

Therefore, it has been proposed that surface water from the site is collected by a dedicated gravity system designed in accordance with BS EN 752 before discharging to the 520x750mm United Utlities public combined sewer network within Longacre Street, as advised by United Utilities via a pre-development enquiry and approved section 106 part 1 application (Appendix E).

The manholes of the sewer indicated on the United Utilities asset map (Appendix D) are not visible at surface level. It has been assumed that the covers have been buried under the surface of the road. This has prevented access to the manholes to understand the level that the proposed network will connect into the sewer. A Sonde survey has been instructed which will confirm the level of the connection. The final connection detail will be agreed with UU as part of the section 106-part 2 application.

4.2 Sustainable Urban Drainage features

Based on a review of the suitability of the SUDs techniques it has been proposed that the Victoria House development may incorporate the following:

4.2.1 Green Roof

A Green roof has been provided at roof level to the building. This will facilitate evaporation, provide storage for the first circa 12.5mm of rainfall and improve water quality.

4.2.2 Bioretention system

Bioretention tree pits have been proposed. This will provide localised storage for the landscaped areas before discharging into the drainage network. This will facilitate infiltration and evaporation, improve water quality and reduce run-off rates of the drainage system.

4.2.3 Attenuation tank

An attenuation tank in combination with a downstream flow control device has been proposed. This will provide both online and offline storage for the drainage network in order to limit runoff rates to acceptable limits.

4.3 Water Quality Assessment

The drainage from the site is from the roof to the building and a public realm area which is restricted to pedestrian use only. Water quality is generally affected by frequent rainfall events, 1 in 1 year events or less, which is circa 5mm/hr for the proposed development site. To assess the water quality, consideration will be given to the guidance with the National Standard for Sustainable Urban Drainage (NSSUD) and CIRIA Guide C753. The pollution hazard levels for difference land uses are presented in table 4.2 and are based on the definitions in the NSSUD and C753.

Pollution Hazard Level	Land Use
Very Low	Residential roofs
Low	Individual property driveways, non-residential roofs, residential car parks, low traffic roads, non-residential car parking with infrequent change (e.g. Schools, offices)
Medium	Commercial yards and delivery areas, non-residential car parking with frequent change (e.g. hospital, retail), minor roads
High	Site with heavy pollution (e.g. Haulage yards, lorry parks, waste sites, sites with chemical and fuels are delivered, handled, stored etc.)

Table 4.2 – Pollution Hazard Levels

As the public realm area is to restricted to pedestrian access only the Pollution Hazard Level is considered very low to low with the primary consideration given to removal of gross solids and sediment.

The following tables indicate the minimum number of treatment stages required before surface runoff should reach the infiltration or receiving water body and are extracted from the NSSUD.

Pollution Hazard Level	Land Use	Low	Med	High
G1	Source Protection Zone 1, within 50m of a well, spring or borehole that supplies potable water.	1	3	Consult the EA
G2	Into or immediately adjacent to a sensitive receptor that could be influenced by infiltrated water. Includes designated nature conservation, heritage, and landscape sites – including Biodiversity Action Plan (BAP) habitats and Protected Species.	1	3	
G3	Source Protection Zone II and III or Principal Aquifer	1	3	
G4	Secondary Aquifer	1	2	
G5	Unproductive strata	1	2	

Table 4.3 – Groundwater Minimum Treatment Stages

Pollution Hazard Level	Normal surface water	Sensitive surface water
Low	0	1
Med	2	3
High	Consult the EA	

Table 4.4 – Surface Water Body Minimum Treatment Stages

As the proposed point of discharge is to the combined public sewer and the pollution hazard level is low, no treatment stages are required, however, the adoption of SUDS and good practice will provide inherent treatment.

Areas of green roof, dependant on detailing, will act to absorb most frequent rainfall events and filter out solids and sediment. Any roof areas not utilised as green roofs would pass through silt traps prior to entering the attenuation tank and flow control device. Silt traps and sumps will allow most of the sediment and solids to settle out under low flows prior to discharging to the public sewer.

4.4 SUDS Management Plan

The Sustainable Urban Drainage systems are to be maintained by a Building Management Company selected by the Client. The building management company will be required to maintain the SUDs features in line with the following recommendations and suppliers' requirements of the various features.

The following operation and maintenance requirements for the SUDs features incorporated into the development are to be adopted by the Building Management Company. These requirements are general and have been extracted from the CIRA Guide C753.

The Main Contractor delivering each phase of development is to update the general requirements to reflect the product specific requirements of the as installed proprietary SUDs and incorporate these into the Operation & Maintenance manual for the building.

4.4.1 Green Roof

The following general maintenance requirements are extracted from the CIRIA SUDS Manual C753 and are provided to give an overview of the likely operation and maintenance that will be required for the green roof.

The project specific detailed operation and maintenance requirements are to be to the landscape architect and contractors' requirements and should be incorporated into the operation and maintenance manual for the building.

TABLE 12.5 Operation and maintenance requirements for green roofs

Maintenance schedule	Required action	Typical frequency
Regular inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required
	During establishment (ie year one), replace dead plants as required	Monthly (but usually responsibility of manufacturer)
	Post establishment, replace dead plants as required (where > 5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required

Table 12.5 - Operation and maintenance requirement for green roofs

4.4.1 Bioretention Tree Pit Systems

The following general maintenance requirements are extracted from the CIRIA SUDS Manual C753 and are provided to give an overview of the likely operation and maintenance that will be required for the bioretention tree pit system.

The project specific detailed operation and maintenance requirements are to be to the landscape architect and contractors' requirements and should be incorporated into the operation and maintenance manual for the building.

TABLE 18.3 Operation and maintenance requirements for bioretention systems

Maintenance schedule	Required action	Typical frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

Table 18.3 – Operation and maintenance requirement for bioretention systems

TABLE 19.3 Operation and maintenance requirements for trees (after CRWA, 2009)

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets and outlets	Inspect monthly
Occasional maintenance	Check tree health and manage tree appropriately	Annually
	Remove silt build-up from inlets and surface and replace mulch as necessary	Annually, or as required
	Water	As required (in periods of drought)
Monitoring	Inspect silt accumulation rates and establish appropriate removal frequencies	Half yearly

Table 19.3 - Operation and maintenance requirement for trees

4.4.1 Attenuation tank

The following general maintenance requirements are extracted from the CIRIA SUDS Manual C753 and are provided to give an overview of the likely operation and maintenance that will be required for the attenuation tank .

The project specific detailed operation and maintenance requirements are to be to the contractor and attenuation tank supplier's requirements and should be incorporated into the operation and maintenance manual for the building.

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

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

Table 21.3 - Operation and maintenance requirement for attenuation storage tanks

5.0 DRAINAGE STRATEGY

5.1 Surface Water System

It is proposed that the site is drained via a dedicated surface water network that is to collect the rainwater from the proposed building roof areas, impermeable external areas and bioretention areas.

Slot drains have been adopted along the site boundaries which interface with the neighbouring site to the east and the public highways to the north and west. Channel Drains have been adopted at door thresholds. Storage within the network will allow water to pass through the flow control device at an acceptable rate without resulting in a flooding event up to and including the 1:100 year + 40% climate change event.

The surface water system combines with the onsite foul water system before discharging under gravity to the public surface water sewer within Longacre Street. United Utilities have confirmed via a pre-development enquiry that a connection to the public sewer is acceptable in principle and a section S106 part 1 application has been submitted and approved (See Appendix D).

The surface water discharge from the site is to be limited to the **11 l/s** rate detailed within Section 3.2 of this report using a flow control device within the final manhole of the surface water system prior to connecting with the foul network at combined water manhole and discharging into the public sewer in Longacre Street. This limits the discharge to a 57% betterment for the 1 in 30 year event and a 67% betterment for the 1 in 100 year + CC event

Attenuation will be provided using a combination of green roof, bioretention tree pits and a below ground attenuation tank.

The surface water discharging from the site will be from the building roofs and pedestrian external areas. The various SuDS features will ensure water quality to the public sewer is acceptable. Any external areas that do not pass through a SuDS system will be collected in gullies and channels with sumps. Catchpit manholes will be placed upstream of the attenuation tank to allow silt to be intercepted and settle out under normal rainfall conditions.

The system has been designed to not take any benefit from the SUD's features with the attenuation tank sized accordingly. This approach is conservative and provides additional resilience within the system in exceedance event..

The surface water drainage network is to be designed in accordance with Building Regulation Part H, BS EN 752 and Code for Adoption. In addition, the following requirements will also be adopted in accordance with the Non-Statutory Technical Standards for Sustainable Drainage: Practice Guidance and Manchester City council SuDS requirements for new developments:

- No surcharging of drainage network for design storm of 1 in 2 years.
- As the site is relatively flat with limited opportunity for management to store exceedance at grade the below ground drainage system will be designed to ensure flooding does not occur on site for both the 1 in 30 year and 1 in 100-year rainfall events
- Flood routing plans, in the event of the drainage network becomes overwhelmed, prepared as part of detailed site design
- No flooding inside buildings in a 1 in 100 year plus climate change event.
- Refer to Appendix E for the proposed Below Ground Drainage GA.
- Refer to Appendix F for Micro Drainage calculations showing proposed drainage networks for each of the development areas. The surface water system has been designed to accommodate the 1- 2-, 30- and 100-year return events with 40% climate change up to a 6hr duration.

5.2 Foul Water System

The site will have a dedicated foul water network that will collect the foul water from the apartments, commercial spaces, shared amenity spaces and plantroom, cycle store and bin store washdown gullies.

It is proposed to connect to the existing public 520x750 combined sewer within Longacre Street. Further survey information is required to confirm the depth and condition of the sewer within Longacre Street.

United Utilities have confirmed via a pre-development enquiry the proposed connection to the public sewer is acceptable in principle at an unrestricted rate (refer to Appendix D).

It is proposed that the separate surface water and foul water networks will be combined into a single manhole close to the site boundary prior to discharging to the public sewer. United Utilities have confirmed via a pre-development enquiry that a connection to the public sewer is acceptable in principle and a section S106 part 1 application has been submitted and approved (See Appendix D).

The drainage system is to be designed in accordance with Building Regulations Part H, BS EN 752 and Codes for Adoption.

5.3 Exceedance Events

The levels to the site are relatively flat and in an exceedance event, safe egress can be provided directly from the buildings onto either Longacre Street, Epworth Street or Great Ancoats Street via the main entrance and emergency exits in the buildings. Refer to Appendix H for Exceedance Flood Flow Routes - note onsite drainage system is designed to accommodate up to a 1 in 100 year + 40% climate change event and therefore flood flow routes are only applicable for flood events in exceedance of this.

5.4 Phasing & Surface Water Management During Construction

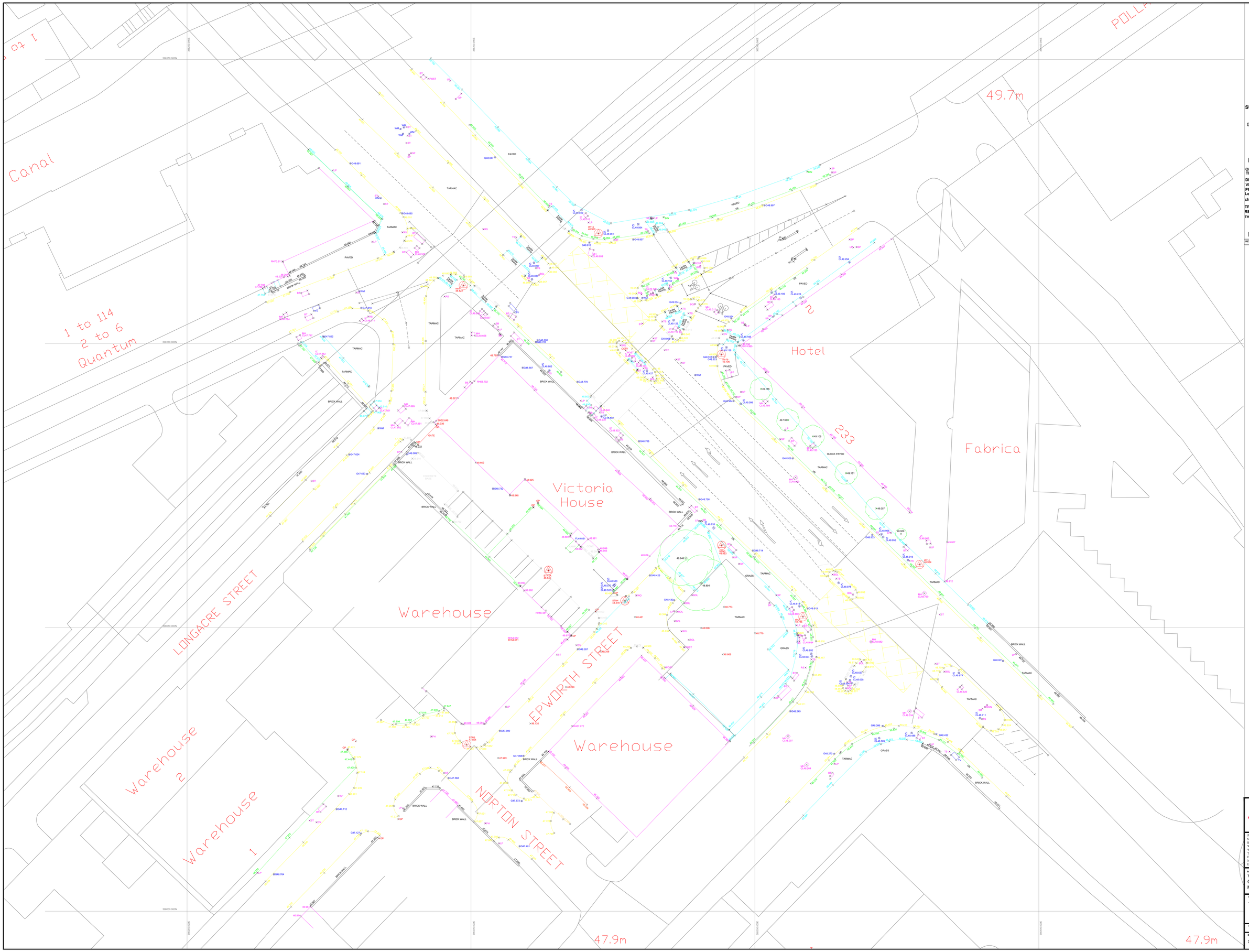
It is assumed that given the scale of the development that it will be delivered in a single phase.

The management of surface water management during construction will be addressed by the Main Contractor as part of their 'Construction Management Plan'.

A brief overview of the key considerations relating to surface water management and flood risk that will need to be incorporated into the Main Contractors construction methodology include:

- Subject to the level of contamination beneath the site, level of site remediation, and quality of working platform compaction to reduce infiltration, consideration should be given to the risk of residual contamination on site affecting groundwaters and the adjacent watercourse.
- The risk of spillage of diesel and other contamination risk during construction activities are to be assessed and measures implemented to ensure they do not cause a risk to groundwaters and the adjacent watercourse.

APPENDIX A
Topographical Survey



SURVEY ORIENTATED TO REAL TIME GPS

0m 10m 20m 30m 40m

SCALE BAR 1:500

NOTES AND AMENDMENTS

ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN

DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING

Levels defining edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated.

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE THE AVERAGE SPREAD. THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

REVISIONS

REV.	DESCRIPTION	DRAWN	CHKD.	DATE

Topographical Survey Legend

BIn	Litter bin	TL	Tie line
BH	Bore Hole	TP	Telegraph pole
Bol	Bollard	TPS	Tactile paving slabs
BS	Bus stop	TS	Traffic signal light
BT	British telecom	TV	Television cover
CPS	Concrete paving slabs	VP	Vent pipe
Dr	Drain	WC	Water cover
Elec	Electrical ic	WM	Water meter
EP	Elec. pole	WO	Wash Out
Erth	Earth out	U.To.	Unable to lift
FH	Fire Hydrant	B/W	Barbed wire
FL	Floodlight	C/L	Chain link
FT	Floodlight	C/P	Corrugated iron
G	Gully	C/L	Chain link
GP	Gate post	C/P	Concrete panel
GV	Gas valve	H/R	Hand rail
IC	Inspection cover	I/R	Iron railings
JB	Junction box	O/B	Open boarded
LB	Letter box	P/W	Post & wire
LB	Letter box	P/R	Post & rail
LP	Lamp post	P/W	Post & wire
MV	Utility marker	W/M	Wire mesh
Mo	Mooring		Level prefix descriptions
MW	Mooring Well	BL	Bed level
NP	Name plate	TL	Bed level
P	Post	CL	Cover level
PM	Parking meter	EL	Eaves level
RS	Rodding eye	FL	Floor level
SC	Sign post	RL	Roof level
PW	Rain water pipe	PL	Parapet level
SP	Sign post	RH	Roof/ridge level
ST	Stop tap	S	Soffit level
SV	Sluice valve	Spr	Arch springing level
SV	Sluice valve	Cill	Window cill/sill
TCB	Telephone call box	HT	Wall height
TH	Trial Hole	WL	Water level

BENCH MARK INFORMATION

All levels relate to OSBM Newyln

Datum Generated by VRS GPS

SURVEY STATIONS			
stn1	385298.664	398110.187	48.822
stn1a	385322.443	398119.367	48.960
stn1b	385344.095	398098.044	49.106
stn1c	385379.035	398061.083	48.924
stn2	385358.459	398051.874	48.785
stn3	385344.165	398064.436	48.963
stn4	385327.108	398054.668	48.378
stn4a	385313.659	398060.041	48.846

JLP Surveying

JLP Surveying Consultants Ltd,
Suite 25 Rodney House,
King Street,
Wigan
WN1 1BT
Tel - 01942 243313
Fax - 01942 492230
Mobile - 07710 424489
EMAIL - peterhouston@jlpsurveys.com

PROJECT

VICTORIA HOUSE
GREAT ANCOATES STREET
MANCHESTER

DRAWING TITLE

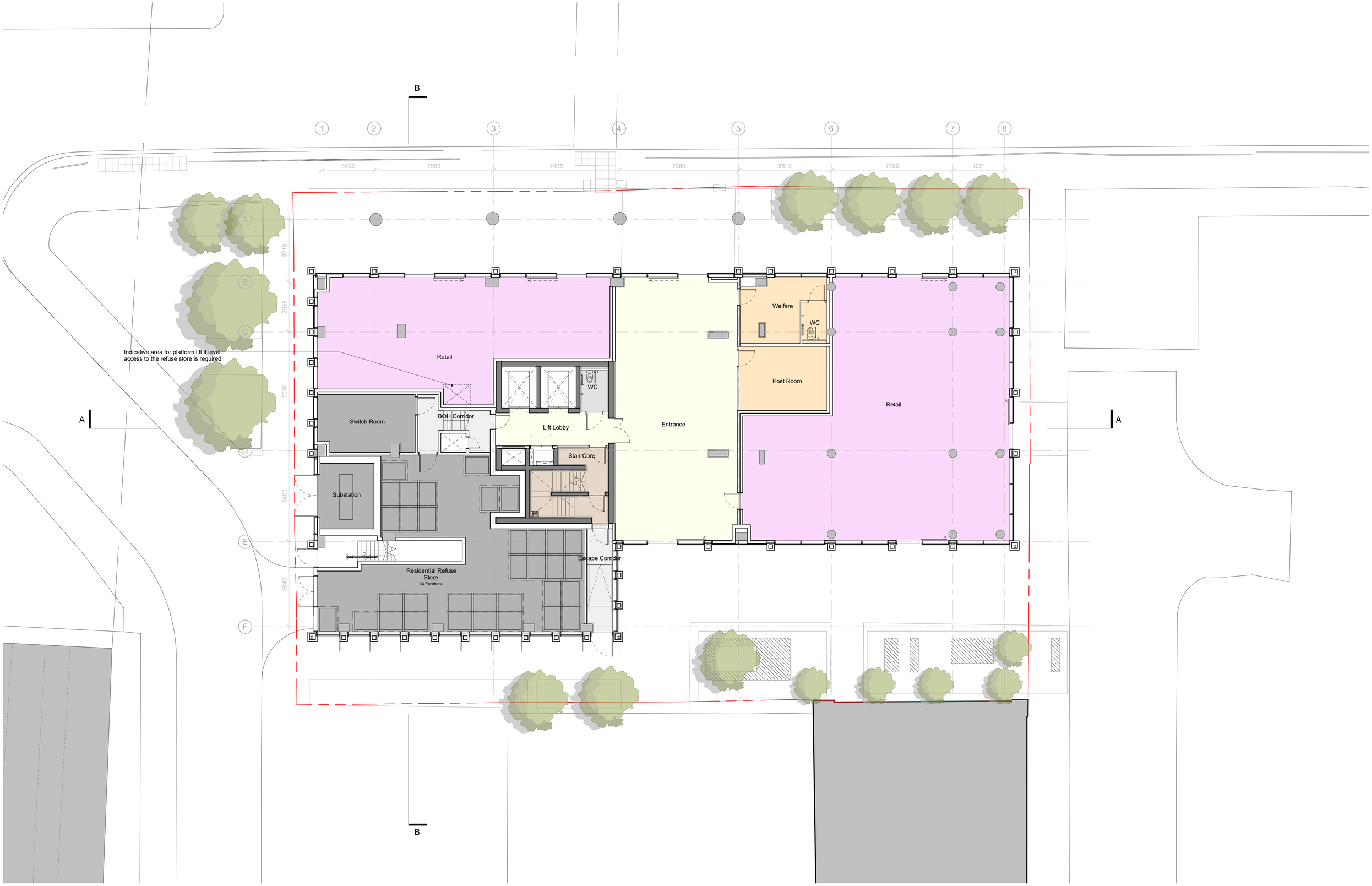
Topographical Land Survey

SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1:200	A0	1	04.07.2018	

DRAWING NUMBER

S18-517

APPENDIX B
Proposed Development Plans & Proposed Levels



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Drawing to be read in conjunction with SHP specification.

Indicative details to illustrate visual intent only. All to contractor's design.

All details to be co-ordinated with adjacent trades and SE and M+E Engineers' details.

The contractor is responsible for meeting the specified performance criteria.

NORTH

Rev	Date	Description
P01	26-03-2021	First Issue
P02	07-05-2021	GA Updates
P03	12-05-2021	GA update
P04	21-05-2021	Stage 3 Issue
P05	30-07-2021	GA Issue - Information updated in line with design development
P06	13-08-2021	Stage 4 Issue
P07	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Ground Floor Plan

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-00-0001

Revision
P07

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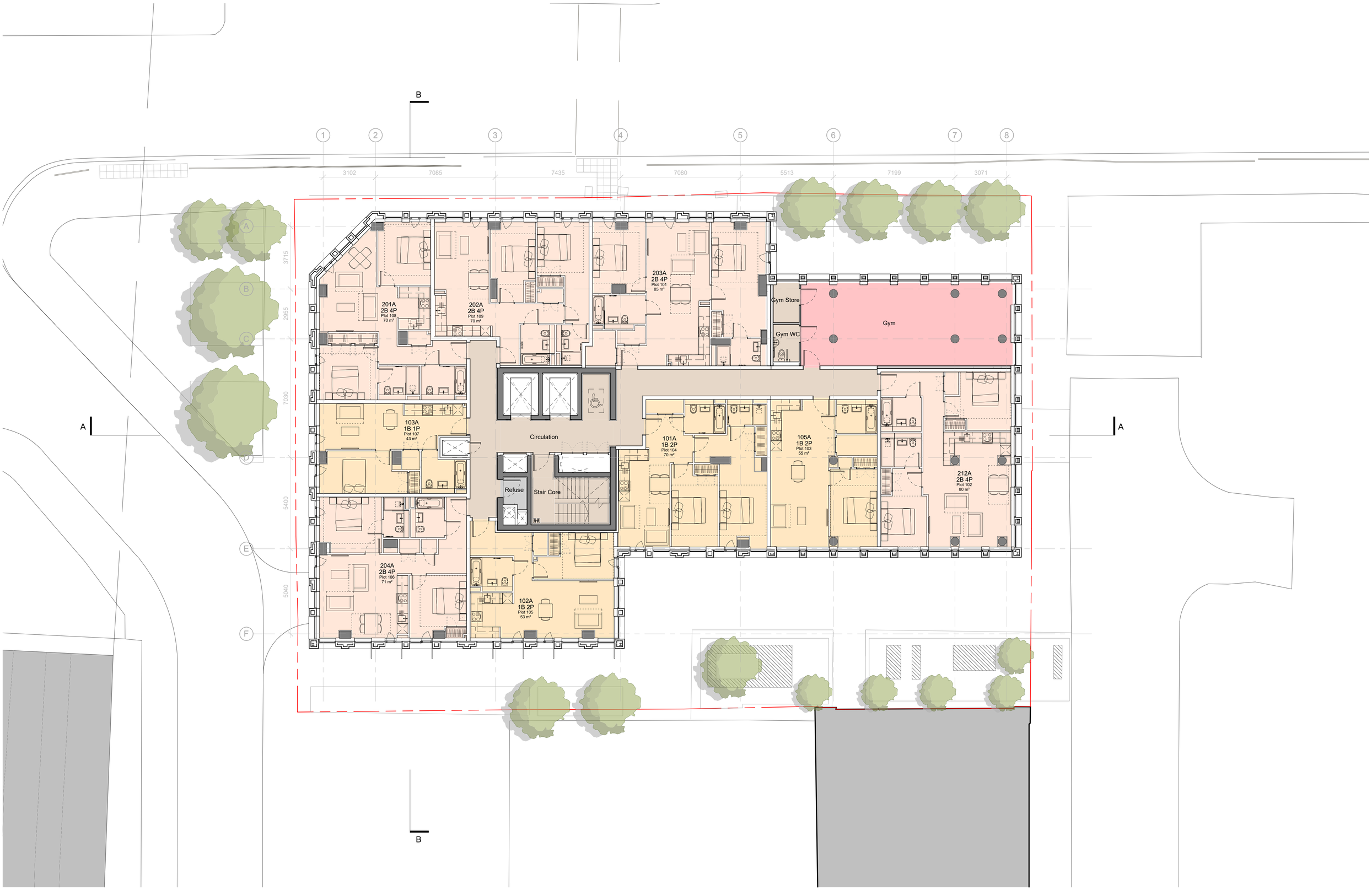

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P03	21-05-2021	Stage 3 Issue
P04	30-07-2021	GA Issue - Information updated in line with design development
P05	13-08-2021	Stage 4 Issue
P06	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Level 01

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLASS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-01-0001

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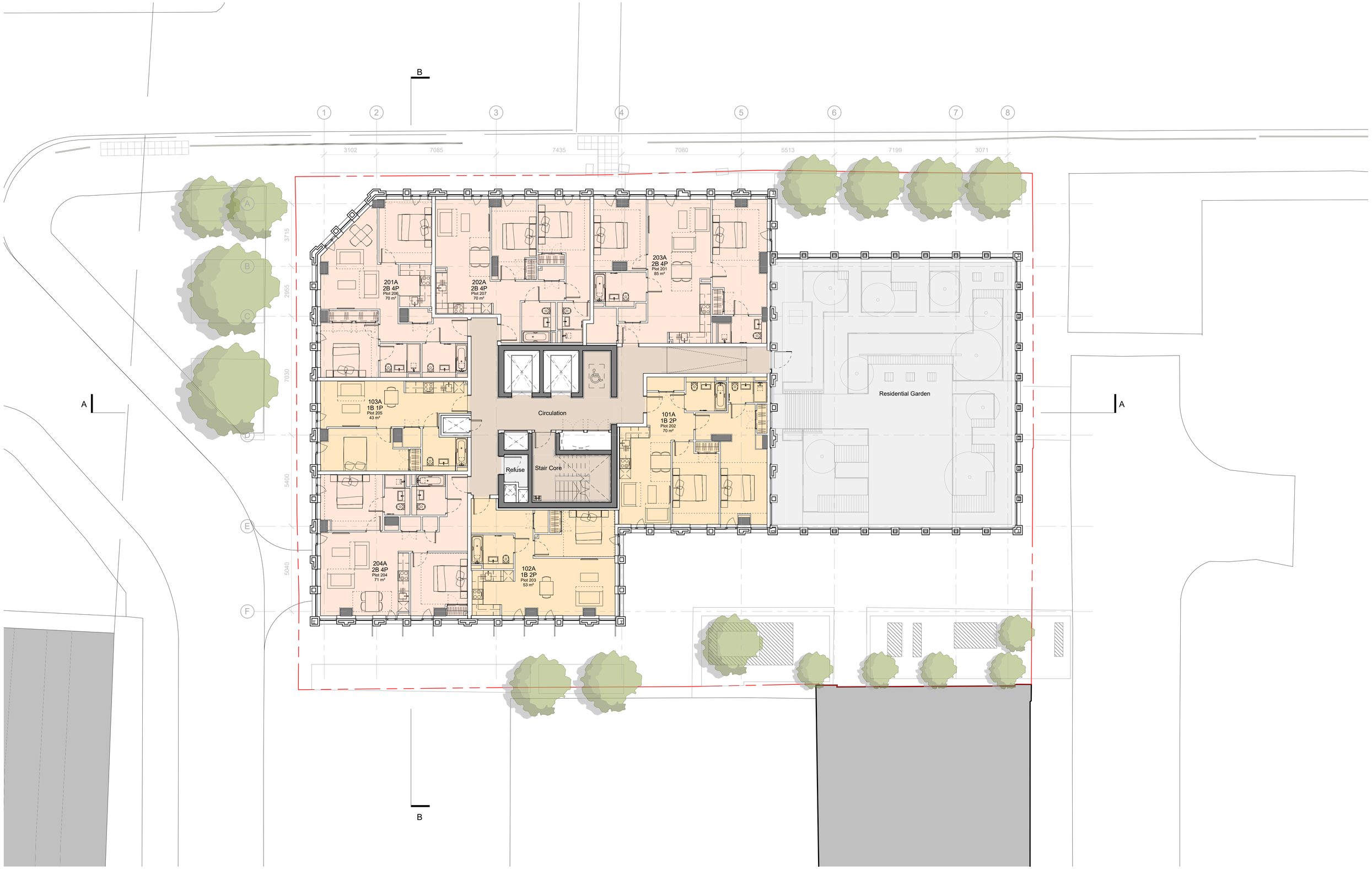

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Rev	Date	Description
P01	26-03-2021	First Issue
P02	07-05-2021	GA Updates
P03	21-05-2021	Stage 3 Issue
P04	30-07-2021	GA Issue - Information updated in line with design development
P05	13-08-2021	Stage 4 Issue
P06	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Level 02

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-02-0001

Revision
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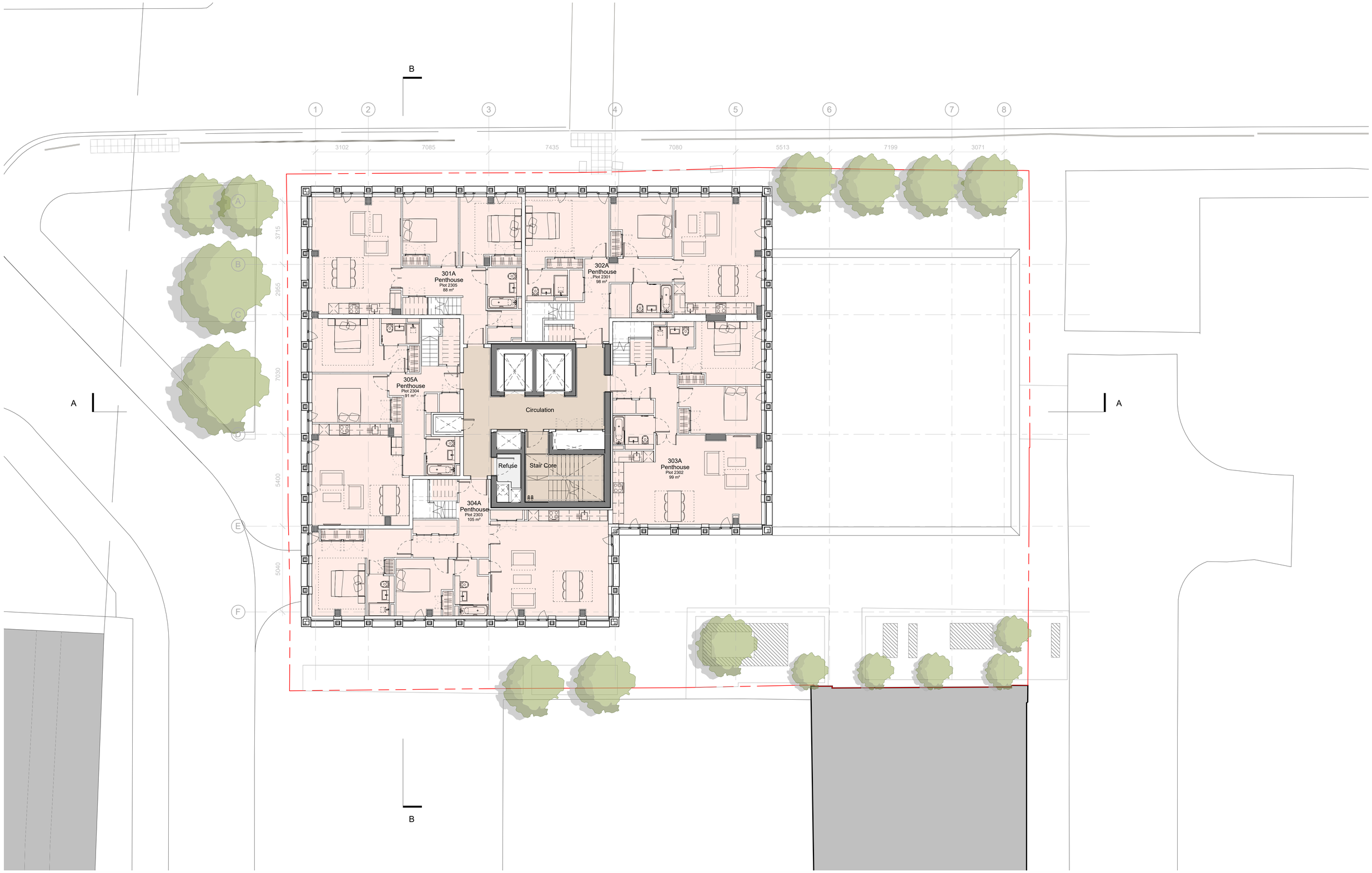

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NORTH

Rev	Date	Description
P01	26-03-2021	First Issue
P02	07-05-2021	GA Updates
P03	21-05-2021	Stage 3 Issue
P04	30-07-2021	GA Issue - Information updated in line with design development
P05	13-08-2021	Stage 4 Issue
P06	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Level 23

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-23-0001

Revision
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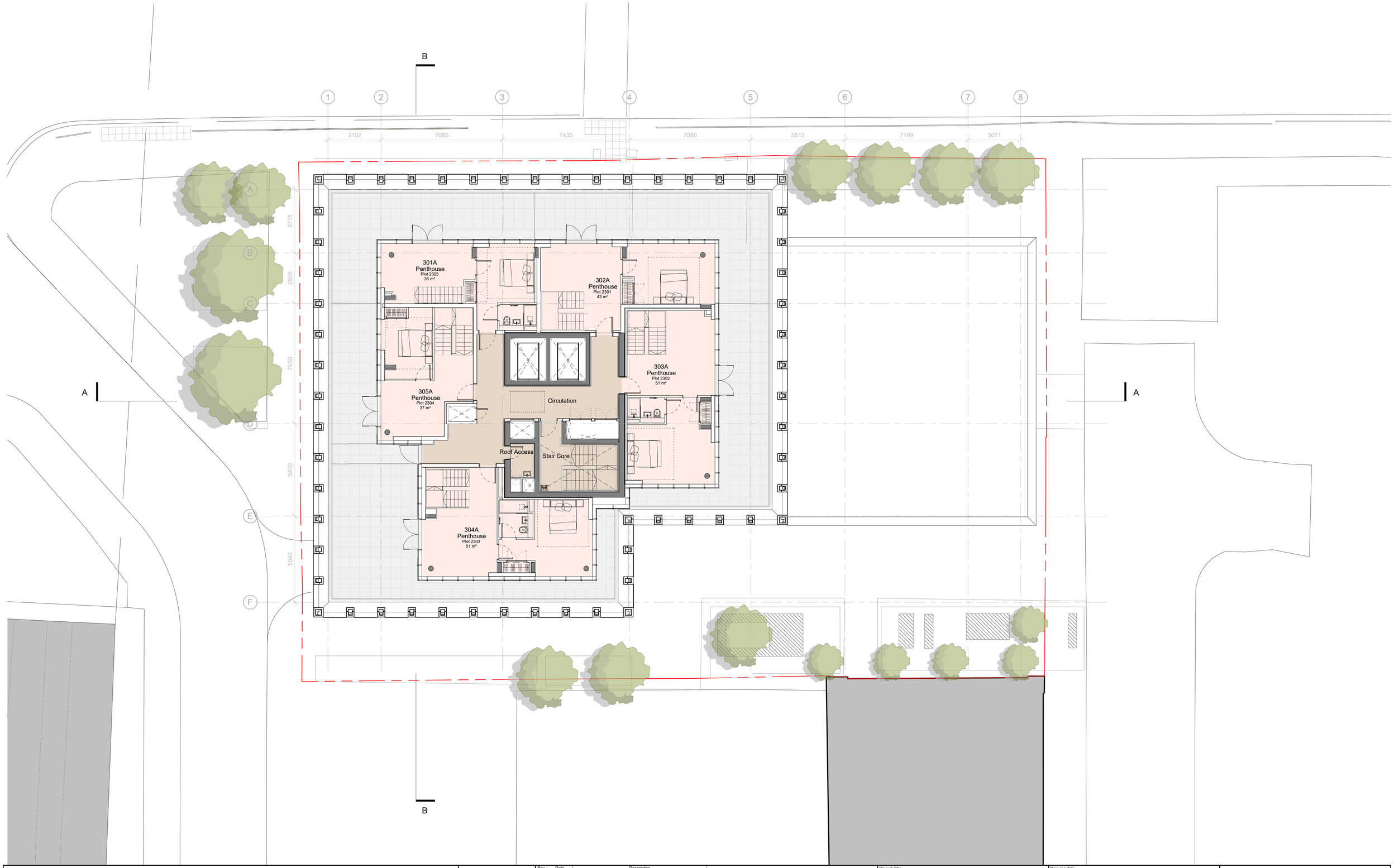

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Indicative details to illustrate visual intent only. All to contractor's design.

All details to be co-ordinated with adjacent trades and SE and M+E Engineers' details.

The contractor is responsible for meeting the specified performance criteria.

NORTH

Rev	Date	Description
P01	26-03-2021	First Issue
P02	07-05-2021	GA Updates
P03	21-05-2021	Stage 3 Issue
P04	14-07-2021	Level 24 curtain wall arrangment alterations
P05	30-07-2021	GA Issue - Information updated in line with design development
P06	13-08-2021	Stage 4 Issue
P07	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Level 24

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-24-0001

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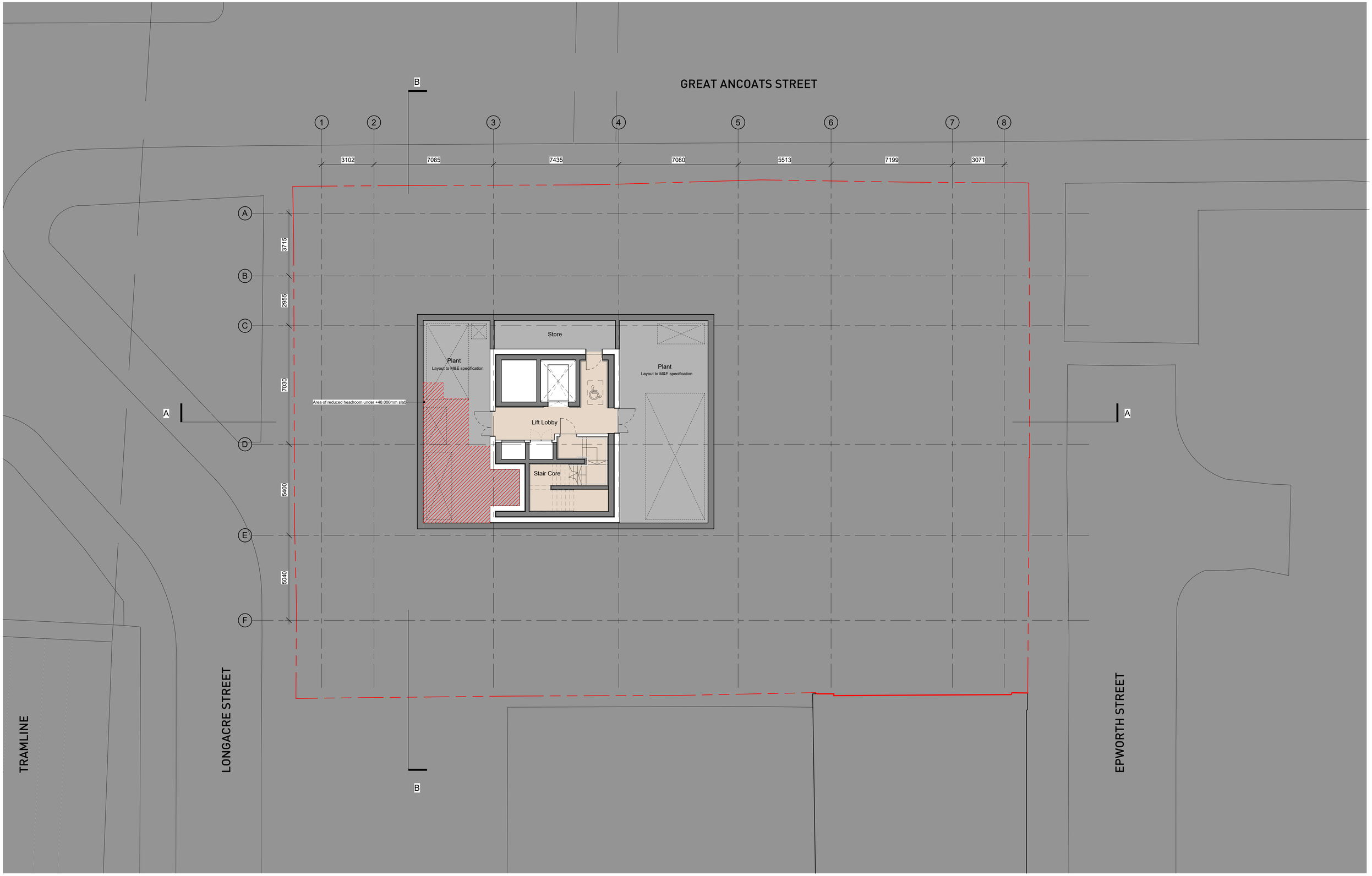

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NORTH

Rev	Date	Description
P01	26-03-2021	First Issue
P02	07-05-2021	GA Updates
P03	12-05-2021	GA update
P04	21-05-2021	Stage 3 Issue
P05	30-07-2021	GA Issue - Information updated in line with design development
P06	13-08-2021	Stage 4 Issue
P07	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Basement Level

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC -SEQ
10122-SHP-Z0-A-G200-PL-B1-0001

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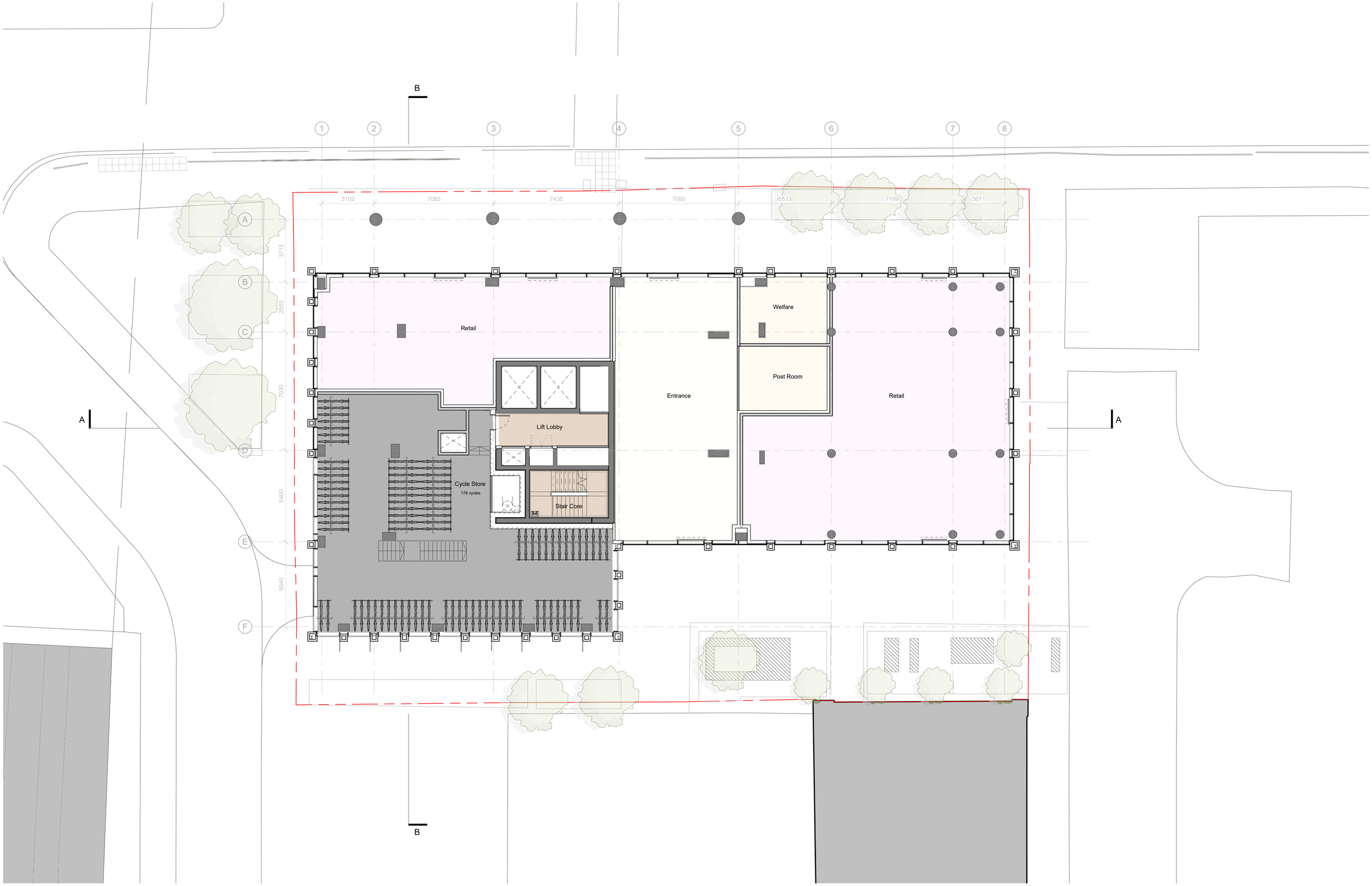

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NORTH

Rev	Date	Description
P01	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Mezzanine Floor Plan

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-MZ-0001

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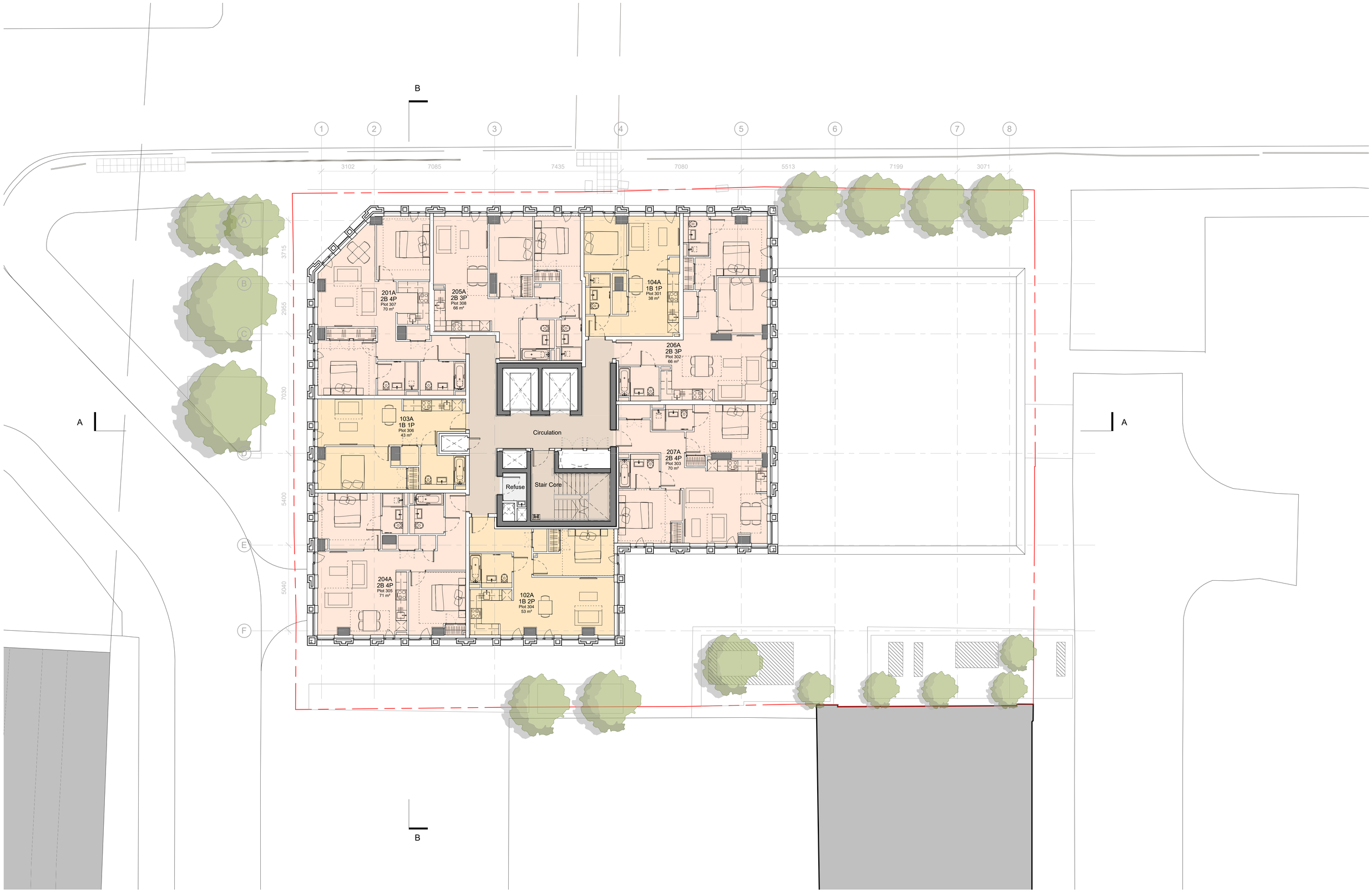

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Rev	Date	Description
P01	26-03-2021	First Issue
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P03	21-05-2021	Stage 3 Issue
P04	30-07-2021	GA Issue - Information updated in line with design development
P05	13-08-2021	Stage 4 Issue
P06	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Level 03-08

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-XX-0001

Revision
P06

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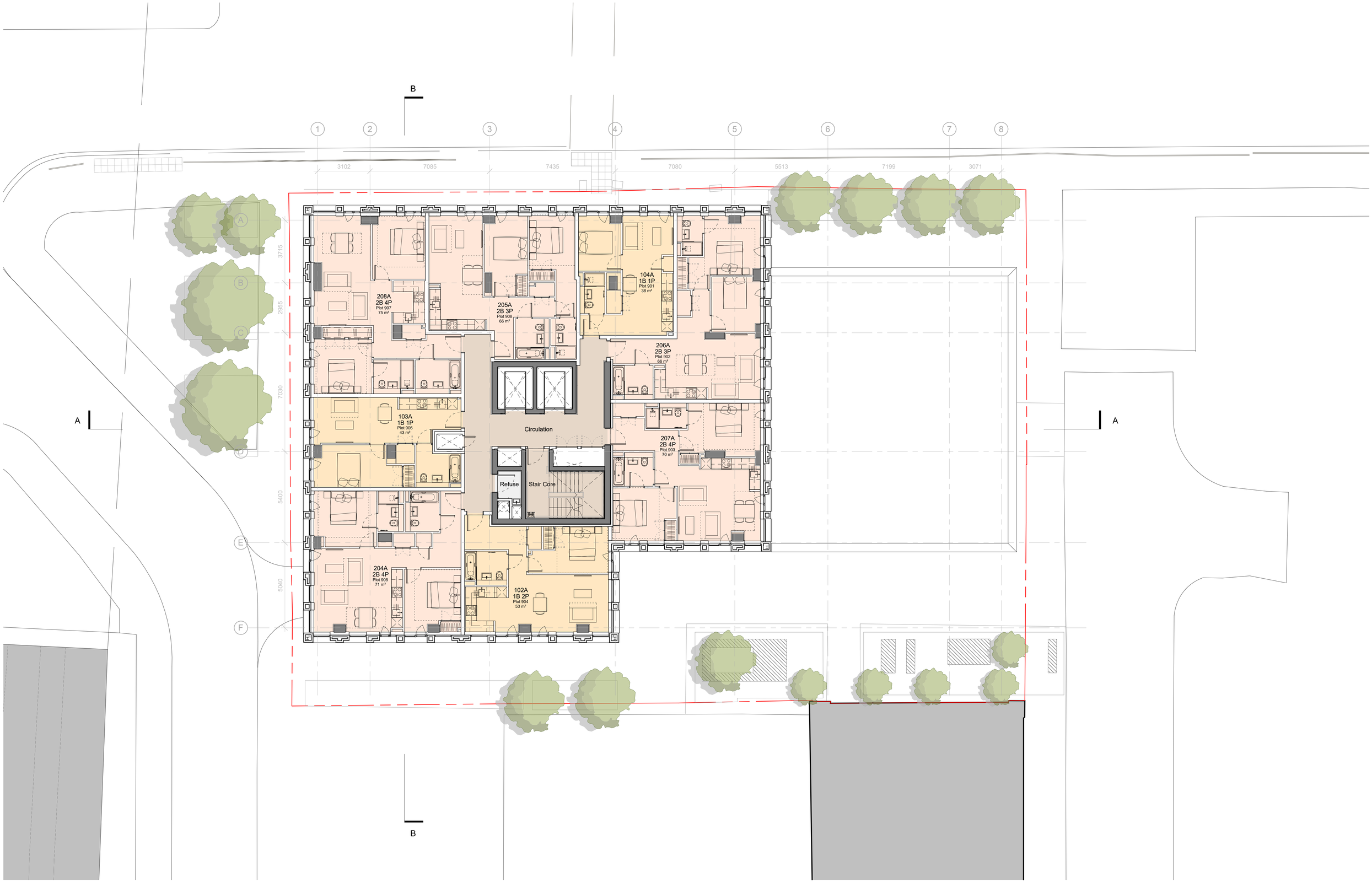

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P03	21-05-2021	Stage 3 Issue
P04	30-07-2021	GA Issue - Information updated in line with design development
P05	13-08-2021	Stage 4 Issue
P06	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Level 09-18

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-XX-0002

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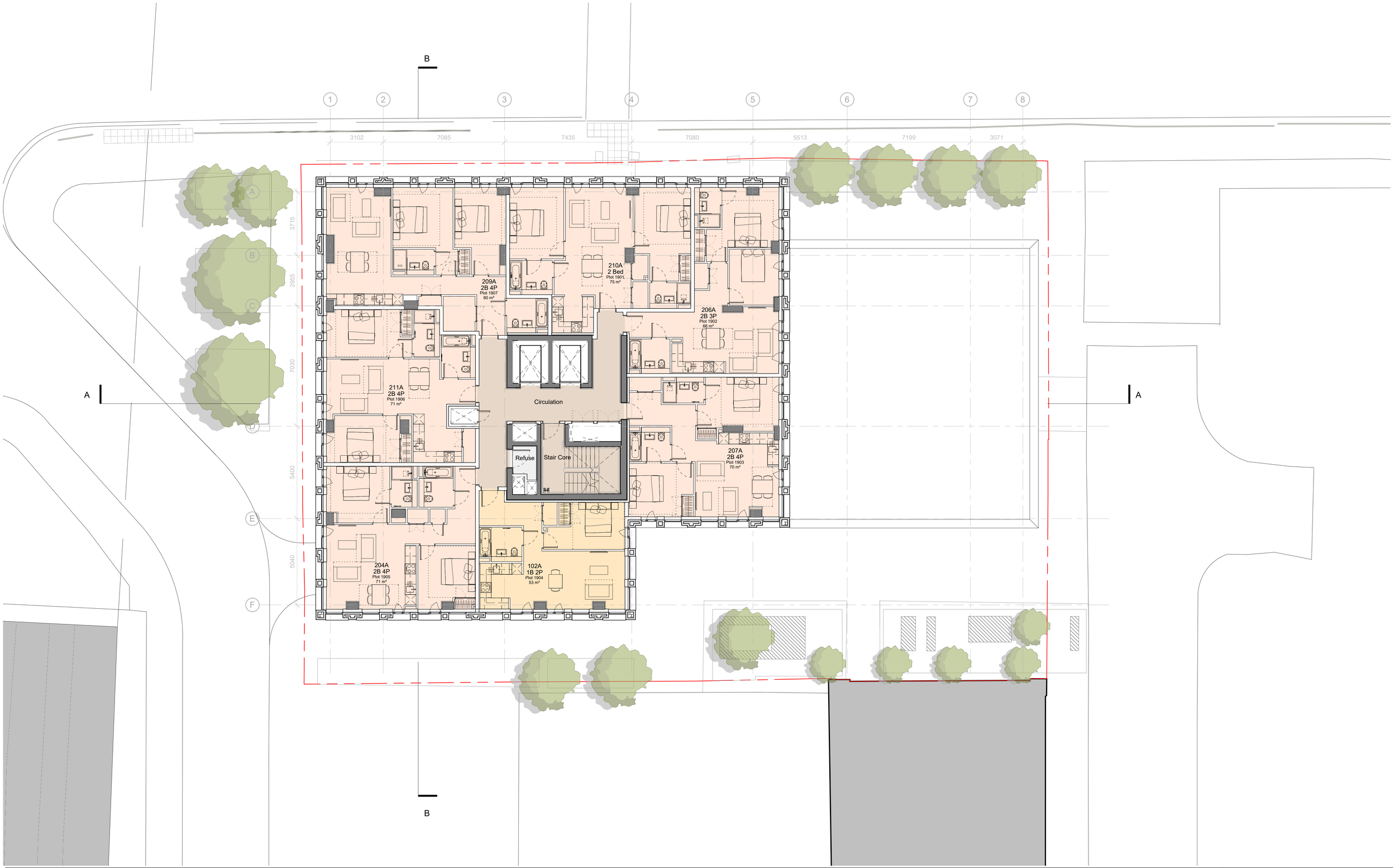

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P04	30-07-2021	GA Issue - Information updated in line with design development
P05	13-08-2021	Stage 4 Issue
P06	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Level 19-22

Project No
10122

Scale
1 : 100@ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-PL-XX-0003

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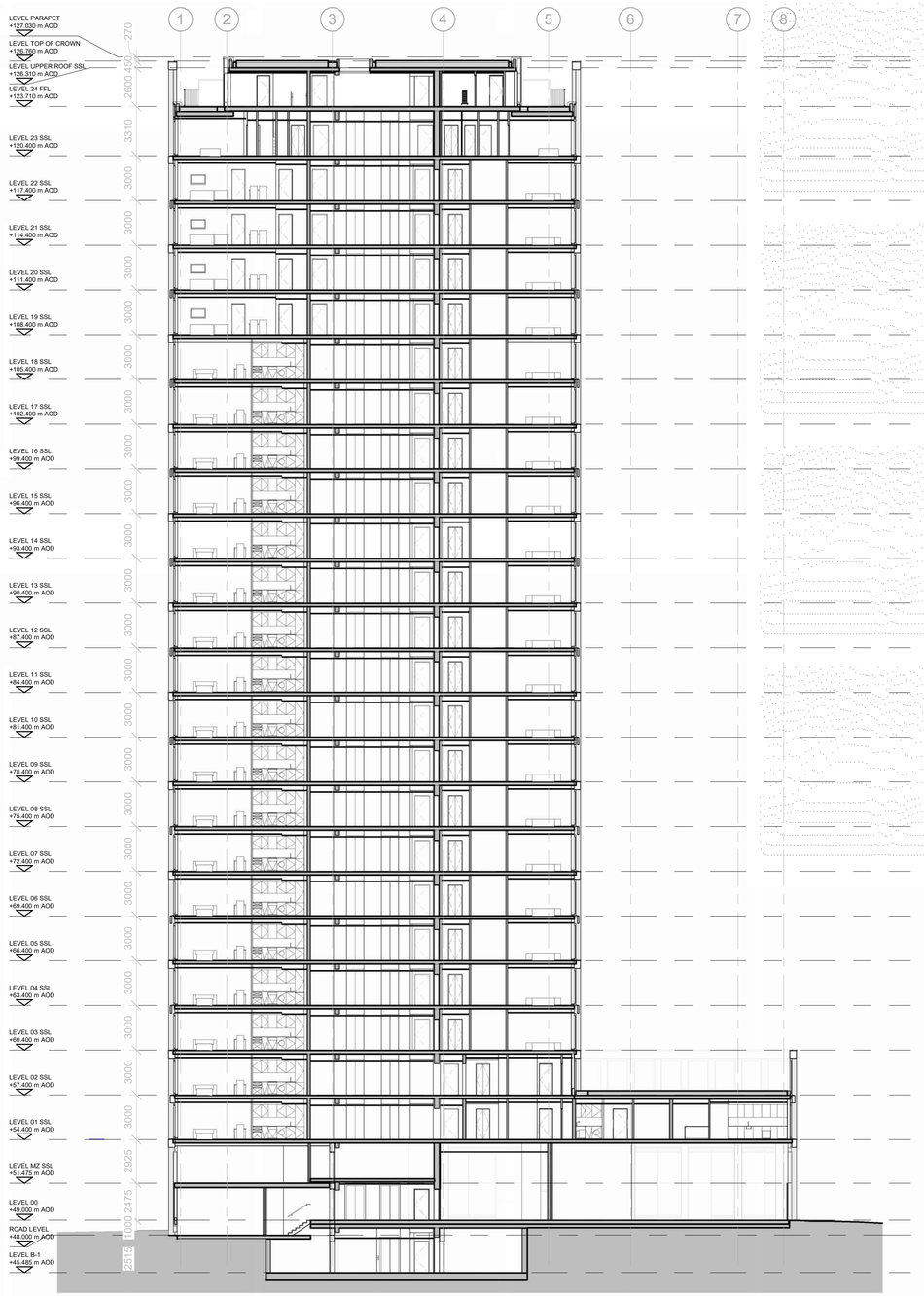
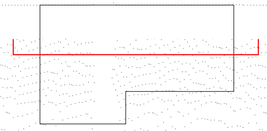


Key Plan



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P01	26-03-2021	First Issue
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P05	13-08-2021	Stage 4 Issue
P06	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Sections
Section AA

Project No
10122

Scale
1;200 @ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-SE-AA-0001

Revision
P06

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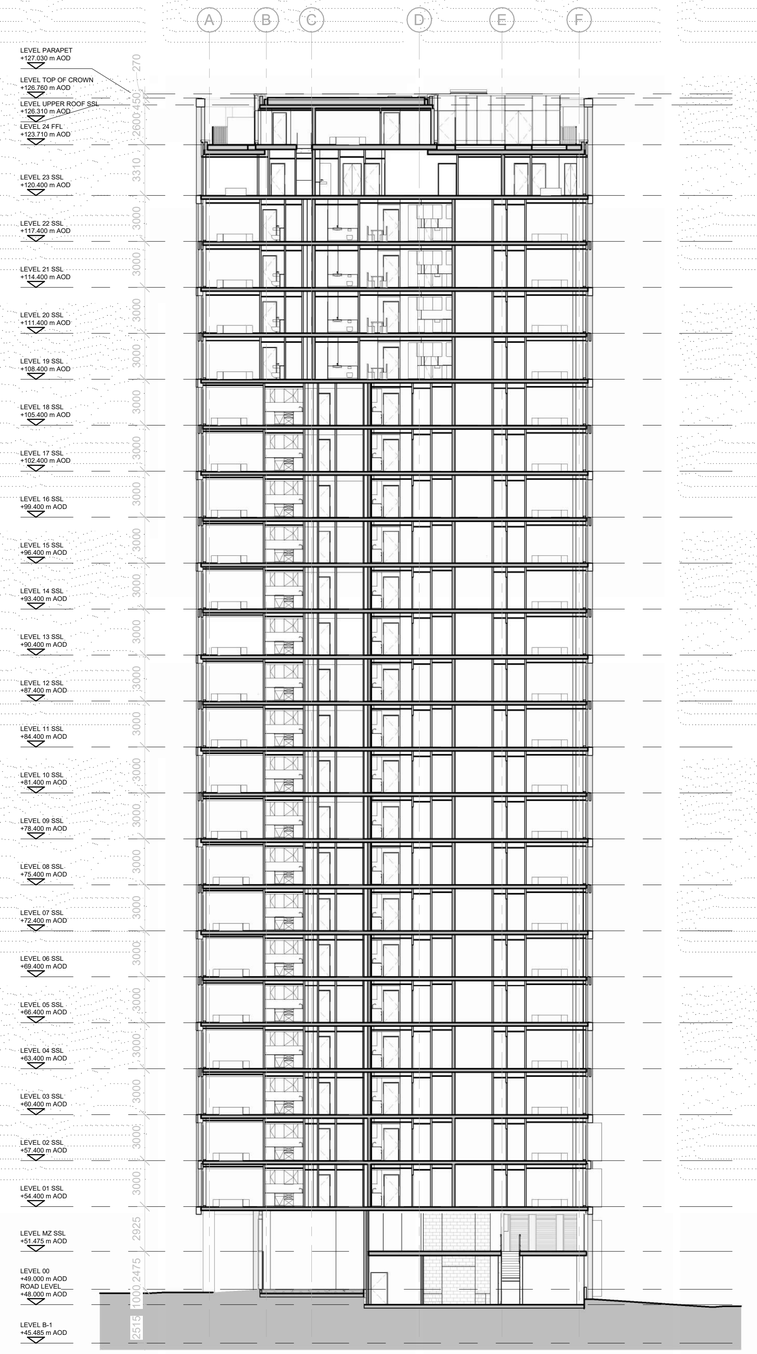
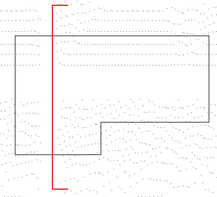


Key Plan



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Rev	Date	Description
P01	07-05-2021	First Issue
P02	21-05-2021	Stage 3 Issue
P03	30-07-2021	GA Issue - Information updated in line with design development
P04	13-08-2021	Stage 4 Issue
P05	14-01-2022	Stage 4 VE Issue

Project Title
Victoria House
Great Ancoats St,
Manchester
M4 7DB

Status
STAGE 4

Drawing Title
General Arrangement
Sections
Section BB

Project No
10122

Scale
1;200 @ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10122-SHP-Z0-A-G200-SE-BB-0001

Revision
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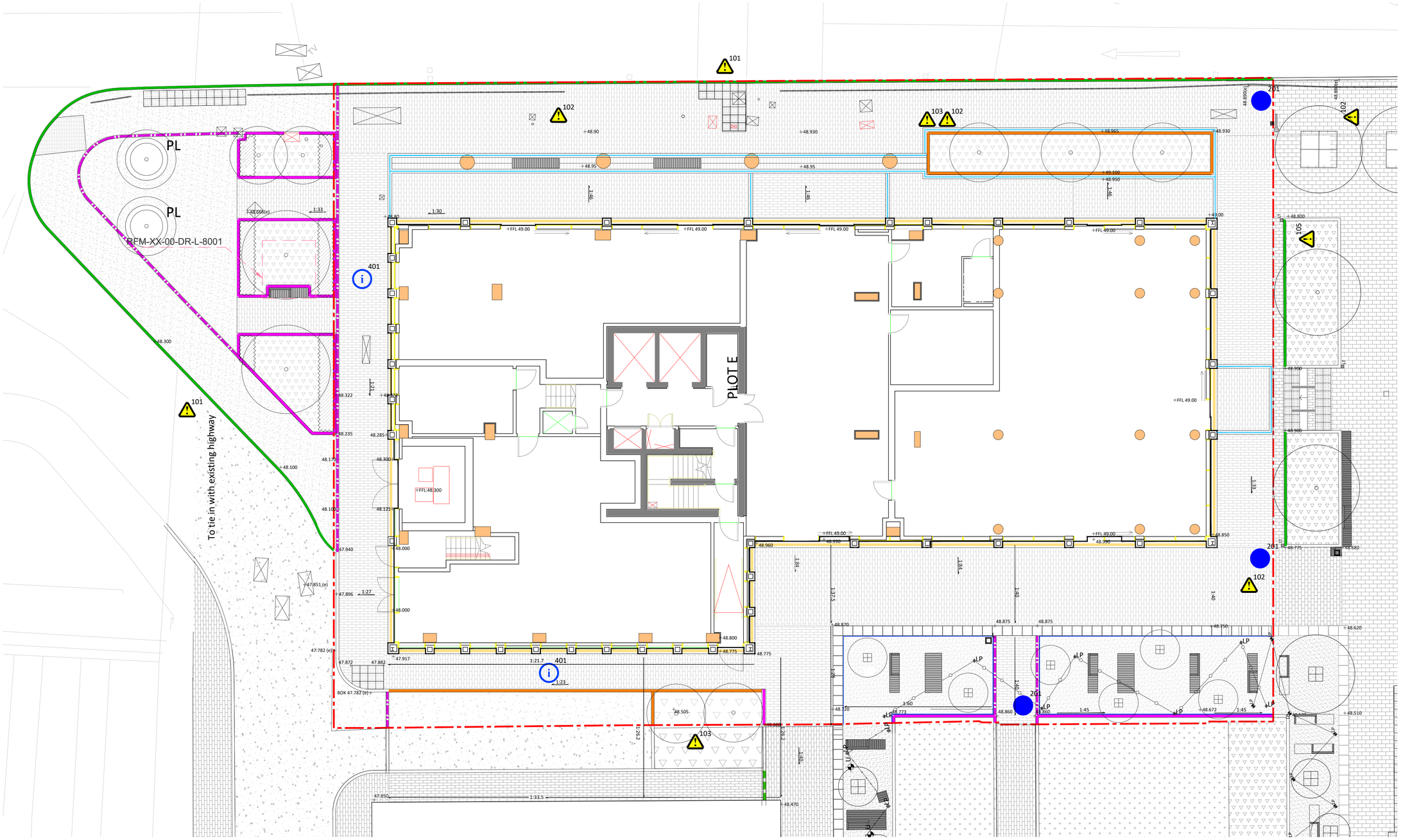


Notes

2. **All information outside red line boundary shown for contextual purpose only and is subject to a separate planning application.**
3. All dimensions in mm, unless otherwise stated.
4. Scaling from drawing if printed incorrectly may lead to errors.
5. All information outside red line boundary shown for contextual purpose only.
6. All hatch patterns are indicative only unless stated otherwise.
7. This drawing is to be read in conjunction with the following re-form landscape architecture documentation:
   - RFM-XX-00-DR-L-0001-Level 00 GA
   - RFM-XX-00-DR-L-0002-Landscape Sections
   - RFM-XX-02-DR-L-0003-Roof Garden GA
   - RFM-XX-00-DR-L-0004-Planting Strategy 1 of 2
   - RFM-XX-00-DR-L-0005-Planting Strategy 2 of 2
   - RFM-XX-00-DR-L-8001-Soft Landscape Details
   - RFM-XX-00-DR-L-8002-Typical Paving Detail
   - RFM-XX-00-DR-L-8003-Bespoke Tree Planter and Seat Detail
   - RFM-XX-00-DR-L-8003-Bespoke Vent Detail
   - RFM-XX-00-SP-L-0002-NBS spec

   AND all relevant documentation from the design team
6. Levels information on this drawing illustrates the design intent. The contractor is to check and verify all levels and dimensions against site survey information.
7. Any discrepancies in the design information are to be brought to the attention of re-form landscape architecture, in writing, prior to commencement of construction works.
8. All proprietary products shall be installed in strict accordance with manufacturers written instructions.
9. Refer to other consultants' drawings and specifications for the following design information:
   - Foundation details
   - Base course and/or sub bases design & specification
   - Waterproofing of any element
   - Levels & Drainage design and infrastructure
   - Lighting and ducting
   - Existing & proposed utilities
10. Plant quantities are to suit site areas in accordance with scheduled plant densities.
11. Any proposed plant substitution shall be agreed with the landscape architect prior to ordering.
12. NOTE: Drainage information has not been received for coordination.
13. All interface points with Adair St Hotel eg. paving, levels, alignments should all run through between the phased landscape. If any anomalies or discrepanies arise please contact the landscape architect.

Date	Description of revision	Drawn	Checked	Approved	Revision
17.02.22	Stage 4 amendments - basement reduced	SW	SW	DL	T05
22.10.21	Stage 4 update	SW	SW	DL	T04
16.08.21	Stage 4 issue	SW	SW	DL	T03
19.07.21	Levels updated. For information	SW	SW	DL	T02
14.07.21	Levels updated. For information	SW	SW	DL	T01
02.06.21	Stage 3 Issue	EB	EB	DL	PL06
28.04.21	Layout updated; revised building plan	EB	EB	MS	PL05
26.02.20	Tree planters and numbers updated	SB	DL	DL	PL04
12.02.20	Second bench removed	TD	DL	DL	PL03
28.01.20	Linework updated; revised building plan	SB	DL	DL	PL02
28.11.18	Planning Issue	OB	EB	DL	PL01

Planning application boundary

Extent of Level -01 basement

Paving type 1 - Concrete Block Paving
Kellen breccia magma. For sizes and bonding see Q24 110

Paving type 2
Macadam surfacing with buff chippings
Contractor's choice

Paving type 3: Porous Resin bound gravel
Q23 225

PCC tactile blister paving
Q25 320

Edging type 1a PCC highway kerb, 80mm upstand
Q10 110

Edging type 2a PCC conservation kerb, 120mm upstand
Q10 120

Edging type 2b PCC conservation kerb, 50mm upstand
Q10 120

Edging type 2c PCC conservation kerb, laid flush
Q10 120

Edging type 3 Steel edging
AluExcel 100mm edge
Q10 130

Edging type 4 Paving flag edge detail
500 x 500 x 80 Kellen breccia magma
Q10 150

Edging type 5 Paving sett edge detail
100 x 300 x 80 Kellen Liscio Grig
Q10 160

Edging type 6 Paving sett band detail
100 x 300 x 80 Kellen Liscio Grig
Q10 161

Proposed semi-bespoke seating platforms and benches
Q50 220

Litter bin
Q50 240

Steel columns with catenary lighting
Q50 195

Pedestrian guardrail retained
Repainted

Proposed tree in pot
Tree: RFM-XX-ZZ-DR-L-0004 and RFM-XX-ZZ-DR-L-0005
For soil spec, see Q28
For soil bulid- up, see drawing RFM-XX-00-DR-L-8001
For planter, see Q50 242

Proposed tree in hard landscape
Tree: see RFM-XX-ZZ-DR-L-0004 and RFM-XX-ZZ-DR-L-0005
For soil spec, see Q28
For soil bulid- up, see drawing RFM-XX-00-DR-L-8001
For tree grille, see Q50 262

Proposed tree in soft landscape
Tree: see RFM-XX-ZZ-DR-L-0004 & RFM-XX-ZZ-DR-L-0005
For soil spec, see Q28
For soil bulid- up, see drawing RFM-XX-00-DR-L-8001

Proposed herbaceous planting
Planting: see RFM-XX-ZZ-DR-L-0004 & RFM-XX-ZZ-DR-L-0005

Proposed pre-grown hedge planting
Planting: see RFM-XX-ZZ-DR-L-0004 & RFM-XX-ZZ-DR-L-0005

Existing service boxes and traffic signage retained

Existing above ground service boxes retained

+1.100
+1.100 TOW
Proposed levels

+1.100(e)
Existing levels

101 Warning of significant hazards or information which may be unusual or difficult to manage

201 Note to contractor to take particular action or carry out specific tasks in a particular way

301 Prohibitive action to avoid something or to refrain from a particular action

401 Significant information needed to convey to the contractor which they may need to be aware of

Scale
0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

re-form landscape architecture

Beehive Mill, Jersey Street,
Manchester M4 6JG
T: +44 (0)161 397 4953
E: info@re-formlandscape.com
W: re-formlandscape.com

Project
VICTORIA HOUSE
RF18-601

Client
FORSHAW LAND AND PROPERTY GROUP

Document title
LEVEL 00 GENERAL ARRANGEMENT

Paper size
A1

Scale
1:100

Status
FOR TENDER

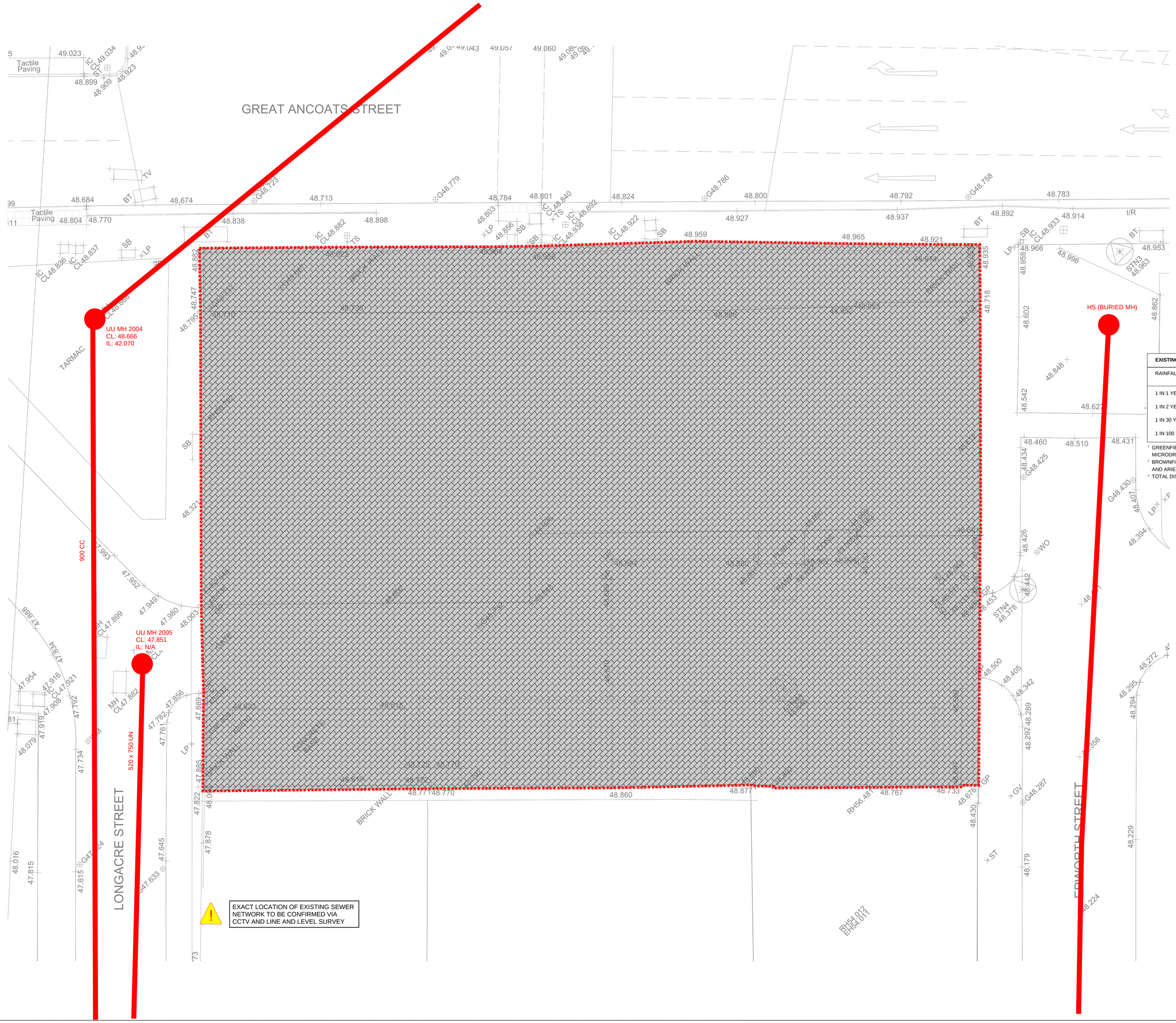
D2

Drawing number
RFM-XX-00-DR-L-0001

Revision
T05

© re-form landscape architecture

APPENDIX C
Existing Drained Area Plan



NOTES:

1. DO NOT SCALE FROM THIS DRAWING
2. THIS DRAWING IS INTENDED TO INDICATE THE EXISTING DRAINED AREAS FROM THE VICTORIA HOUSE DEVELOPMENT SITE. IT IS BASED UPON A REVIEW OF THE TOPOGRAPHICAL SURVEY, AERIAL IMAGES OF THE SITE, UNITED UTILITIES SEWER ASSET MAPS.
3. ALL EXISTING DRAINAGE IS INDICATIVE. REFER TO SURVEYS FOR ADDITIONAL INFORMATION AND DETAILS
4. FOR TOPOGRAPHICAL SURVEYS AND UTILITY SURVEY REFER TO:
   - JLP SURVEYING DRAWING S18-517 REV 00 DATED JULY 2018
   - ADD UTILITY SURVEY REF
5. EXISTING DISCHARGE RATES GIVEN HAVE BEEN CALCULATED USING MICRODRAINAGE. BROWNFIELD RUN-OFF RATES ARE BASED ON THE HARD PAVED AREAS.

KEY

DEVELOPMENT BOUNDARY
TOTAL: 1323m² (0.132 ha)

SOFT LANDSCAPED AREAS
TOTAL: N/A

HARD LANDSCAPED AREAS
TOTAL: 1323m2 (0.132 ha)

EXISTING COMBINED PUBLIC SEWER

EXISTING DISCHARGE RATES

RAINFALL EVENT	GREENFIELD[1] $Q_{GREENFIELD}$	BROWNFIELD[2] $Q_{BROWNFIELD}$	TOTAL DISCHARGE[3] Q_{TOTAL}
1 IN 1 YEAR	N/A	10.6 l/s	10.6 l/s
1 IN 2 YEAR	N/A	13.5 l/s	13.5 l/s
1 IN 30 YEAR	N/A	25.7 l/s	25.7 l/s
1 IN 100 YEAR	N/A	33.7 l/s	33.7 l/s

[1] GREENFIELD CALCULATED IN ACCORDANCE WITH ICP SUDS MEAN ANNUAL METHOD WITHIN MICRODRAINAGE
[2] BROWNFIELD RUN-OFF CALCULATED USING A MICRODRAINAGE MODEL BASED ON THE TOPOGRAPHICAL AND ARIEL SITE IMAGES
[3] TOTAL DISCHARGE IS SUMMATION OF EXISTING GREENFIELD AND BROWNFIELD RUN-OFF RATES

Rev:	Description:	Date:	By:	Chkd:
P01	FOR INFORMATION	24.12.21	JB	PC

renaissance
Renaissance Associates Ltd
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

Project:
VICTORIA HOUSE, MANCHESTER

Drawing Title:
EXISTING DRAINED AREA PLAN

Status:
FOR INFORMATION

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	DEC'21	JB	JB	PC

Scale: 1:100 | Project No: 2007-04

Project - Originator - Volume - Level - Type - Role - Number: VHM-REN-00-FN-DR-C-01050 | Revision: P01

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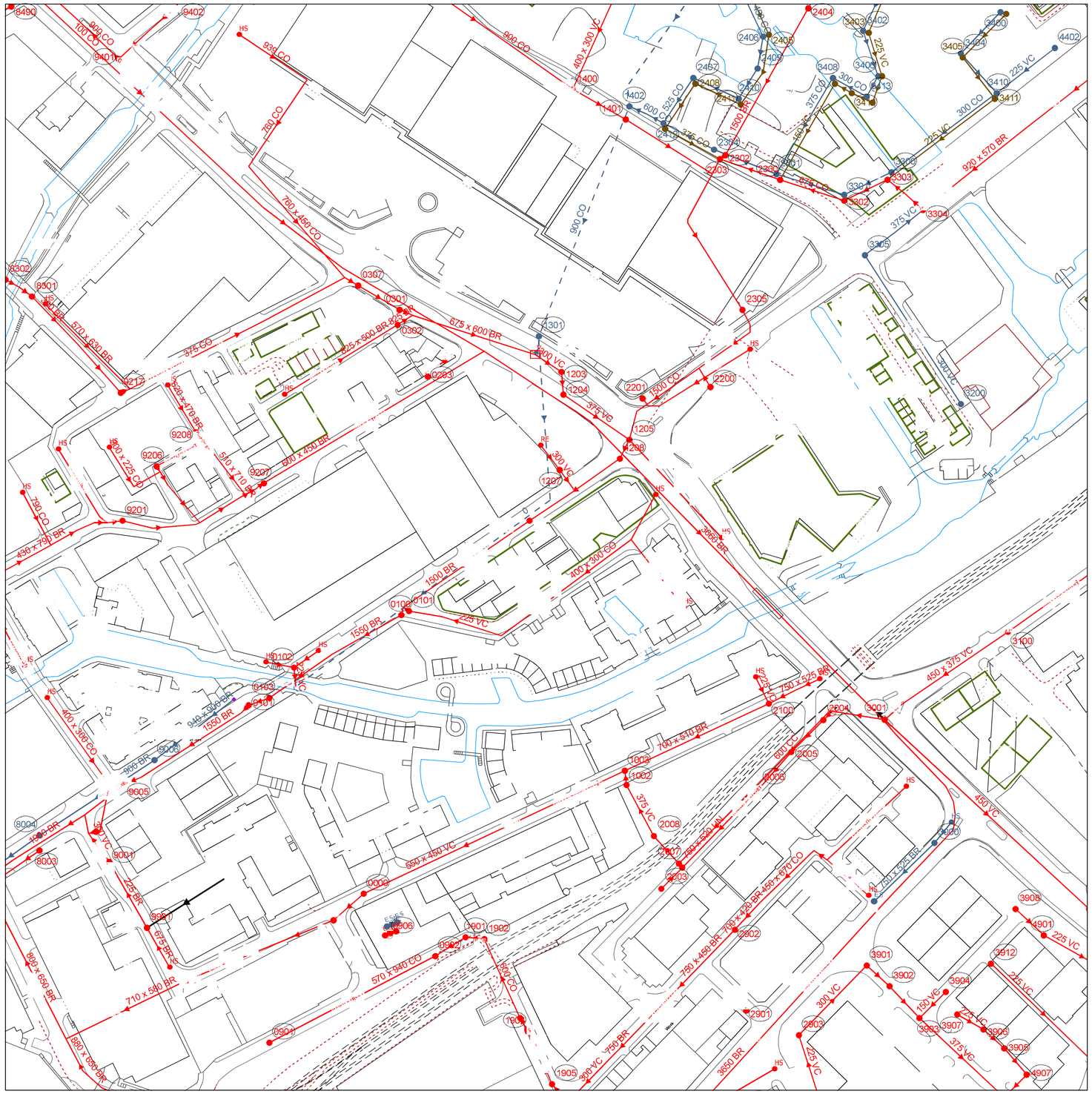
APPENDIX D
United Utilities Sewer Records



Printed By: Jodie Lloyd

Foul	Surface	Combined	Overflow	
				Manhole
				Manhole, Side Entry
				MainSewer, Public
				MainSewer, Private
				MainSewer, S104
				Rising Main, Public
				Rising Main, Private
				Rising Main, S104
				Highway Drain, Private

Foul	Surface	Combined	
			WW Site Termination
			Air Valve
			Cascade
			Non Return Valve
			Extent of Survey
			Flow Meter
			Gulley
			Hatch Box
			Head of System
			Hydrobrake / Vortex
			Inlet
			Inspection Chamber
			Bifurcation
			Catchpit
			Contaminated Surface Water
			WW Pumping Station
			Sludge Pumping Station
			Sewer Overflow
			T Junction/Saddle
			LampHole
			OilInterceptor
			PenStock
			Pump
			RoddingEye
			Soakaway
			Summit
			Valve
			Valve Chamber
			Washout Chamber
			DropShaft
			WW Treatment Works
ST		ST	Septic Tank
			Vent Column
			Network Storage Tank
			Orifice Plate
			Vortex Chamber
			Penstock Chamber
			Blind Manhole

Foul	Surface	Combined	Overflow	
				Screen Chamber
				Discharge Point
				Outfall

Sludge Main, Public
Sludge Main, Private
Sludge Main, S104

MainSewer
Rising Main
Highway Drain
Sludge Main

Control Kiosk
Unspecified

United Utilities Water Limited 2014. The plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office.Crown and United Utilities copyrights are reserved. Unauthorised reproduction will infringe these copyrights.

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helping life flow smoothly

APPENDIX E
United Utilities Correspondence

From: John Speers
To: Danny Sinclair
Subject: FW: Pre Development Enquiry for : Victoria House Manchester M4 7DB UU reference Number : 4200038008
Date: 17 November 2021 10:44:19
Attachments: image002.png
image003.png
image001.png
image007.png
image004.png
image006.png
image008.png
image009.png
image010.png
image011.png

Regards

John

John Speers
Head of Flood Risk & Drainage
0151 227 1462
07841 832 409
johnspeers@ajpltd.co.uk
1 Dale St, Liverpool, L2 2ET

From: Perry, Graham <Graham.Perry@uuplc.co.uk>
Sent: 06 April 2021 22:47
To: John Speers <johnSpeers@ajpstructeng.com>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: FW: Pre Development Enquiry for : Victoria House Manchester M4 7DB UU reference Number : 4200038008

Hello John

Given the minor encroachment of the building I would have no objection to relaxing the minimum offset from 3m to 2.5m on the corner of the building. I would however ask that a pre and post CTV survey is carried out to confirm condition before and after works have been completed.

Thanks

Graham Perry

Graham Perry
Development Engineer
Developer Services
M: 07557 577548
T: 01925 679405

Water for the North West
unitedutilities.com

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From: Wastewater Developer Services
Sent: 23 March 2021 16:20
To: Perry, Graham <Graham.Perry@uuplc.co.uk>
Subject: Pre Development Enquiry for : Victoria House Manchester M4 7DB UU reference Number : 4200038008

Hi Graham,

Please find customer repeat below for your attention.

Kind Regards,

Louise Dack
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 01925 233063 (33063 internal)
unitedutilities.com

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

---

From: John Speers [mailto:johnSpeers@ajpstructeng.com]
Sent: 23 March 2021 15:00
To: Perry, Graham <Graham.Perry@uuplc.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: RE: Pre Development Enquiry for : Victoria House Manchester M4 7DB UU reference Number : 4200038008

Afternoon Graham,

Regarding the below pre-dev response and in particular the required easement, the building layout that has planning approval could accommodate an easement of 2.5m to the centreline of the existing UU sewer. The contiguous piled wall used to create the single storey basement will be installed using the contiguous flight auger replacement method. This pile installation method is widely accepted as creating the lowest levels of vibration to neighbouring assets and structures.

Considering the minimal easement to the existing property (see survey extract below) and the proposed piling method we would ask that the slightly reduced easement of 2.5m be considered.

Regards

John

John Speers CEng MICE
Senior Civil Engineer

Alan Johnston Partnership LLP

Due to the current climate AJP have implemented home working measures, to ensure we continue to deliver our services. As such, I am contactable on my mobile number below.

Tel: 0151 227 1462 | Mobile: 07841832409
4th Floor, 1 Dale Street | Liverpool, L2 2ET | johnspeers@ajpstructeng.com | www.ajpstructeng.com

Certificate No. 7917
ISO 9001
ISO 14001

KM 674098

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A list of members' names is available for inspection at our registered office: 1 Dale Street, Liverpool, L2 2ET

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From: Perry, Graham <Graham.Perry@uuplc.co.uk>
Sent: 18 March 2021 22:08
To: John Speers <johnSpeers@ajpstructeng.com>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Pre Development Enquiry for : Victoria House Manchester M4 7DB UU reference Number : 4200038008

Dear Sirs

Pre Development Enquiry for: Victoria House Manchester M4 7DB UU reference Number : 4200038008

-

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 3723223 or refer to the link below:

https://www.unitedutilities.com/builders-developers/working-near-our-assets/

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

Our preferred point of discharge would be to the 520mm x750mm diameter public combined sewer within Longacre Street located to the north of your proposed development at an unrestricted rate.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.
This is outlined as follows, in order of priority:

1. **into the ground (infiltration);**
2. **to a surface waterbody;**
3. **to a surface water sewer or highway drain;**
4. **to a combined sewer.**

For guidance, The North West SuDS Pro-Forma provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:
https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

https://www.gov.uk/government/publications/groundwater-protection-position-statements

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 520mm x750mm diameter public combined sewer within Longacre Street located north of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 11l/s.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure

that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Basements

We have noted that you intend to construct a basement under the proposed building so you must ensure that protective measures are installed to prevent the ingress of sewerage from surcharging within the sewer and overland flooding

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the pubic sewerage network under any circumstances

Existing Waste water Assets within the Vicinity of the Site

I have noted your comment that there is a 600mm combined sewer passing the north east corner of the development and you intend to install pile foundations within 2m of the sewer.

I am afraid that in this instance an absolute minimum of a 3m easement must be maintained to prevent damaging the sewer from the piling operation. Could I therefore suggest that you review and amend the layout of the building.

Also whilst carrying out the piling operation you must ensure that no vibration is imparted into the ground to prevent damage to the sewers in the immediate vicinity.

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address: DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:
https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/

Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-connections/

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don't hesitate to contact us further.

Kind regards,

Graham Perry

Graham Perry
Development Engineer
Developer Services
M: 07557 577548
T: 01925 679405
unitedutilities.com

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S106 Part 1 'Application to connect to a public sewer' Approval Notice

United Utilities Reference Number:	**EC5751**
Applicant details	
Applicant name	**Renaissance Associates Ltd**
Applicant address *(including postcode)*	**77 Dale Street** **Manchester** **M1 2HG**
Applicant email	**henrywilkinson@renaissance-ltd.com**
Site details: The site / property which is proposed for connection to the public sewer	
Site address *(including postcode)*	**Great Ancoats St M1 2BG 4200048953**

APPROVED

Your application for connection to the public sewer has been approved, to be made via a new connection:

To a private drain	☐	You may appoint your contractor and advise your appointed building control body (who should inspect the work). United Utilities should be advised when this work is complete.
Direct to the public sewer	☒	**Further action required** You may now appoint an appropriately qualified contractor. Your appointed contractor is responsible for obtaining authorisation to work on a public sewer. (The S106 Part 2 application form **'Request for permission to work on a public sewer'** is available on our website; unitedutilities.com).

Mode of connection approved	**Saddle**					
Sewer connection type	Foul	☐	Surface water	☐	Combined	☒

This approval is valid for 12 months from the date below.
This approval does not grant access to third party land, permission should be sought if required between applicant and land owner
If the new connection renders access unsafe or is otherwise detrimental to the manhole or sewer, a new/upgraded manhole will be requested.

Comments

Approval granted for combined connection via saddle connection on existing UU sewer which runs along Great Ancoates Street.

Saddle connections should be core drilled with care taken to ensure the core does not fall into the public sewer. Please see details included in the Sewer Connection Pack.

Developer Services Inspector	**Marcus Jones**
Contact number	**07823553970**
Date	**28/04/2022**

United Utilities Water Ltd
Developer Services & Metering
Second Floor, Grasmere House,
Lingley Mere Business Park,
Warrington
WA5 3LP

Telephone: 0345 072 6067
Wastewaterdeveloperservices@uuplc.co.uk

Your Reference	EC5751
Our Reference	4200048953
Date	29/04/2022

Dear Sir/Madam,

Location:	Great Ancoats St M1 2BG

Section 106 Water Industry Act 1991

I refer to your recent application to make a connection to the public sewerage system for the purpose of draining the above property. '**Application to connect to a public sewer'** (**Part 1**) has been approved and you may now appoint your contractor to carry out this work.

If it is your intention to make a connection direct to the public sewer then your contractor must complete the **Request for permission to work on the public sewer (Part 2)** of the application for approval prior to commencing the works. Please click on the link for further guidance and information.

***Please note:** It is important that your contractor/ground workers meet the requirements set out in the guidance on our website.

http://www.unitedutilities.com/connecting-public-sewer.aspx

**If the connection is to a lateral or drain only, you will need the approval of the Local Authority Building Inspector following which you may then proceed with this work.

If this connection connects a property to the public sewer for the first time, you need to tell us

0345 672 2888 (for customers who don't have a water meter)

0345 672 2999 (for customers with a water meter)

***Please Note: -** This approval is valid for 12 months from the date of this letter.

Should you require further information please call 0345 072 6067.

Yours faithfully,

Louise Dack.

For Developer Services and Metering

Henry Wilkinson

From: Jones, Marcus <Marcus.Jones@uuplc.co.uk>
Sent: 09 May 2022 15:41
To: Henry Wilkinson; Wastewater Developer Services
Subject: FW: CUSTOMER QUERY - Victoria House Section 106 Application Part 1 EC5751 / 4200048953

Hi Henry,

Its ok to proceed as per the drawings submitted, just an error with the street name I have logged this and its ok to commence with the works.

Regards,

United Utilities
Water for the North West

Marcus Jones
Developer Services Inspector (Salford, Manchester and Trafford)
Developer Services & Metering
Customer Services
T:07823553970
unitedutilities.com

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From: Wastewater Developer Services
Sent: 09 May 2022 11:10
To: Jones, Marcus <Marcus.Jones@uuplc.co.uk>
Subject: CUSTOMER QUERY - Victoria House Section 106 Application Part 1 EC5751 / 4200048953

Morning Marcus,

Please see email below from customer.

I have checked and this is showing as Great Ancoats Street on the application form, I am unsure of the plans.

Here is the link to Sharepoint:

https://uusp/asset/Connections/Shared%20Documents/Forms/AllItems.aspx?View=%7B8f78e441%2D145c%2D4015%2D9ad0%2D241ba39e2af9%7D&RootFolder=%2Fasset%2FConnections%2FShared%20Documents%2FEC%2FEC5401%2D%20EC5800%2FEC5751%20Great%20Ancoats%20St%20M1%202BG%204200048953&SortField=Modified&SortDir=Desc

Kind Regards,

Louise Dack
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 01925 233063 (33063 internal)
unitedutilities.com

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---

From: Henry Wilkinson [mailto:HenryWilkinson@renaissance-ltd.com]
Sent: 09 May 2022 09:31
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Cc: Gary Robinson <garyrobinson@renaissance-ltd.com>
Subject: RE: Victoria House Section 106 Application Part 1 EC5751

EXTERNAL EMAIL This email originated outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Marcus,

After reviewing the information below, it seems that the approval notice is for a connection to your sewer in Great Ancoats Street. Would this need to be amended if we are to connect to a sewer within Longacre Street as per our supporting information?

Thanks,

Henry Wilkinson | Graduate Engineer
MEng

Carvers Warehouse, 77 Dale Street
Manchester, M1 2HG

e: henrywilkinson@renaissance-ltd.com
t: 0161 393 6509
w: www.renaissance-ltd.com

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Renaissance Associates Ltd trading as Renaissance, a company incorporated in England and Wales under Company Number: 08149019, Registered Office: Carvers Warehouse, 77 Dale Street, Manchester, M1 2HG, UK

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 29 April 2022 10:24
To: Henry Wilkinson <HenryWilkinson@renaissance-ltd.com>
Subject: Victoria House Section 106 Application Part 1 EC5751

Good Morning Henry,

Please find attached the part 1 approval notice from our Engineer for the sewer connection at Victoria House.

APPENDIX F
Drainage Plans

DRAWING LEGEND

- PLANNING BOUNDARY
- FOUL WATER DRAINAGE (110mm DIAMETER UNO)
- FOUL WATER RISING MAIN TO BUILDING SERVICES ENGINEERS DETAILS
- FOUL WATER PUMPING STATION. REFER TO SPECIFICATION BELOW
- G — TRAPPED FLOOR GULLY. ACO GULLY 157, STAINLESS STEEL 304, VERTICAL OUTLET, 200mm

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RENAISSANCE, ARCHITECTS, LANDSCAPE ARCHITECTS AND BUILDING SERVICES ENGINEERS DRAWINGS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE BELOW GROUND DRAINAGE SPECIFICATION SP-C-00050 AND DETAILS SHOWN ON DRAWING SERIES C-03100.
3. FOR ALL ABOVE GROUND DRAINAGE AND ASSOCIATED PUMPS REFER TO BUILDING SERVICES AND ARCHITECT'S DRAWINGS.
4. ALL BELOW GROUND DRAINAGE WORKS TO BE IN ACCORDANCE WITH RELEVANT BUILDING REGULATIONS AND SEWER SECTOR GUIDANCE APPENDIX C- DESIGN AND CONSTRUCTION GUIDANCE. IF DISCREPANCIES ARE NOTED BETWEEN SSG AND DRAWINGS THESE SHOULD BE BROUGHT TO THE ATTENTION OF RENAISSANCE FOR REVIEW.
5. RWPs, SVPs, SSs, FLOOR GULLEYS & CHANNEL DRAINS ARE TO HAVE RODDABLE ACCESS POINTS ABOVE GROUND FLOOR TO BUILDING SERVICES DETAILS.
6. THE CONTRACTOR IS TO UNDERTAKE A FULL CCTV SURVEY AT COMPLETION OF THE PROJECT TO DEMONSTRATE THAT THE DRAINAGE IS CLEAN. ANY DEFECTS ARE TO BE CORRECTED BY THE CONTRACTOR PRIOR TO HANDOVER OF THE SYSTEM TO THE CLIENT.
7. THE CONTRACTOR IS TO KEEP A RECORD SET OF THE AS INSTALLED DRAINAGE ON SITE AND PROVIDE THIS TO RENAISSANCE UPON COMPLETION OF THE WORKS TO ALLOW FOR PRODUCTION OF A 'FINAL CONSTRUCTION' ISSUE DRAWING.
8. DURING THE WORKS, ALTERATIONS TO THE DRAINAGE LAYOUT ARE TO BE MARKED UP BY THE CONTRACTOR AND AGREED WITH RENAISSANCE IN WRITING.
9. MANHOLE COVERS ARE TO BE IN ACCORDANCE WITH BS EN 124 FOR THE RATING INDICATED IN THE MANHOLE SCHEDULE. THE CONTRACTOR IS TO SUBMIT DETAILS FOR THE PROPOSED MANHOLE COVERS TO THE ENGINEER AND LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION.
10. ALL INTERNAL COVERS TO BE RECESSED AND TRIPLE SEALED
11. COVER SLABS MUST CARRY THE BSI KITEMARK. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOAD BEARING REDUCING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO REQUIRED SIZE.
12. ALL SEWERS TO BE BSI KITEMARK (CERTIFIED TO WIS 4-35-01)
13. ALL CONCRETE PIPES TO BE TO ES EN 1916 CLASS 120 (54kN/m).
14. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF THE WATER INDUSTRY SPECIFICATION 4-08092 (TABLE A2).
15. IF PLASTIC PIPES ARE TO BE USED THEN THE FOLLOWING MUST APPLY:
    A. BSI KITEMARK (CERTIFIED TO BS EN 13476-1 AND WIS 4-35-01)
    B. PIPES LESS THAN OR EQUAL TO 500mm DIA
    C. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF THE WATER INDUSTRY SPECIFICATION 4-08092 (TABLE A2)
17. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100mm DIA. 40kN/m, 150mm DIA. 40kN/m, 225mm DIA. 45kN/m AND 300mm DIA. 72kN/m.
18. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS 120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476.
19. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVIDING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
20. SEWER PIPES TO BE LAID IN MAXIMUM 3 METER LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER PIPES, AND THIS IS AGREED BY THE CONTRACTOR WITH THE PIPE MANUFACTURER.
21. RAINWATER PIPE LOCATIONS ARE INDICATIVE AND SUBJECT TO CONFIRMATION FROM ARCHITECT/ BUILDING SERVICES ENGINEER. THIS MAY IMPACT PIPE SIZES SUBJECT TO LOCATIONS.
22. ALL CHANNEL LOCATIONS, MANHOLE AND DRAINAGE LOCATIONS SUBJECT TO RECEIPT OF CONFIRMATION OF FLOW RATE / DISCHARGE UNITS BY BUILDING SERVICES ENGINEER.
23. ALL BELOW GROUND SYTEMS ARE TO BE VENTED WITHIN THE ABOVE GROUND DRAINAGE TO THE BUILDING SERVICES ENGINEERS DETAILS.

SVP & RWP SETTING OUT

SVP, RWP AND GULLY LOCATIONS ARE INDICATIVE FOR DETAILED SETTING OUT REFER TO ARCHITECTS/ BUILDING SERVICES ENGINEERS DRAWINGS. ALL CAPILLARY DRAINAGE IS IN ABEYANCE UNTIL SETTING OUT OF ALL SVPs, STACKS AND RWPs IS CONFIRMED BY THE ARCHITECT AND BUILDING SERVICES ENGINEER

ALL CONNECTIONS BETWEEN ABOVE GROUND DRAINAGE AND BELOW GROUND DRAINAGE TO BE SIZED TO SUIT ABOVE GROUND DRAINAGE.

FOUL WATER PUMPING STATION SPECIFICATION

292 LITRE SINGLE SEWAGE PUMPING STATION
CHAMBER SIZE: 610mm x 1000mm HDPE
COVER: ECOGRID ALUMINIUM TRIPLE-SEAL RECESS MANHOLE COVER - 600 x 600 x 41mm
RISING MAIN: 63mm MDPE CONNECTOR TO CONNECT TO DISCHARGE PIPEWORK. CONNECTION TO DISCHARGE PIPE TO BE TRAPPED TO ABOVE GROUND DRAINAGE DESIGNERS DETAILS
INLET: 2 NUMBER 110mm INLET SEAL
PUMP: DAB FEKA VS750 AUTO FOUL PUMP WITH ON PUMP OR SIMILAR APPROVED WITH INTEGRAL FLOAT
INTERNAL: 2" PIPEWORK AND FITTINGS INCLUDING BACKWATER VALVE
ALARM: TO BE INCLUDED

NOTE:
1. THERE MUST BE A MINIMUM OF 450MM BELOW THE BOTTOM OF THE INLET PIPE TO THE BASE OF THE CHAMBER TO ALLOW FOR THE PUMP TO OPERATE.
2. INLETS TO BE CUT ON SITE AND SEALED
3. ALLOW FOR MAINTENANCE ACCESS OF PUMP STATION. REFER TO PUMP STATION MAINTENANCE REQUIREMENTS.

FOUL WATER PUMPING STATION

FOUL WATER PUMPING STATION TO SPECIALIST SUPPLIERS DESIGN AND DETAIL. ALARM TO BE PROVIDED. CONTRACTOR TO AGREE MAINTENANCE REQUIREMENTS WITH PUMPING STATION SUPPLIER.
RISING MAIN LENGTH TO BE CONFIRMED ON SITE. CONNECTION OF RIING MAIN INTO ABOVE GROUND DRAINAGE TO BUILDING SERVICES ENGINEERS DETAILS

POWER SUPPLY TO BUILDING SERVICES DETAILS. VENT PIPE AND ALARM LOCATION TO BE SPECIFIED BY ARCHITECT.

ELECTRICAL FEED TO ALARM TO BUILDING SERVICES DETAILS.

PRINCIPLES OF BASEMENT DRAINAGE DESIGN AND OPERATION

THE BELOW GROUND DRAINAGE INDICATED IS BASED UPON NORMAL OPERATION i.e. GENERAL CLEANING, WASHDOWN AND SPILLAGES ON THE BASEMENT FLOOR. HIGH CAPACITY FLOWS ARE NOT PERMITTED AS THESE WILL EXCEED THE PUMP CAPACITY AND RESULT IN FLOODING OF THE BASEMENT.

THE BUILDING MANAGERS ARE TO MANAGE AND OPERATE THE SPACES TO ENSURE THAT THE BASEMENT PUMP IS NOT OVERLOADED.

SPRINKLER TANK OPERATION AND DRAIN-DOWN

NO ALLOWANCE HAS BEEN MADE WITHIN THE DESIGN FOR THE BASEMENT FLOODING OR DRAIN-DOWN OF THE SPRINKLER TANK. WATER ASSOCIATED WITH EMPTYING OR TESTING OF THE SPRINKLER TANK IS TO BE MANAGED SEPARATELY AND IS NOT TO DISCHARGE INTO THE BASEMENT DRAINAGE. MANAGEMENT STRATEGY IS TO BE CONFIRMED BY

IF BUNDING IS REQUIRED AROUND THE SPRINKLER TANKS THE LOCATION AND EXTENT SHOULD BE ADVISED BY THE ARCHITECT AND BUILDING SERVICES ENGINEER AND ALLOWANCES MADE FOR A REINFORCED MASONRY BUND WALL.

BASEMENT DRAINAGE CONCRETE ENCASEMENT

ALLOW FOR ALL DRAINAGE, INCLUDING INSPECTION CHAMBERS, GULLIES AND PIPES TO BE CONCRETE ENCASED AND CAST INTO BASEMENT SLAB.

Rev:	Description:	Date:	By:	Chkd:
C01	CONSTRUCTION ISSUE	03.05.22	HW	KG

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Renaissance Associates Ltd
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

Project:

VICTORIA HOUSE, MANCHESTER

Drawing Title:

BASEMENT BELOW GROUND DRAINAGE PLAN

Status:

STAGE 5

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	APR'22	HW	HW	KG

Scale: 1:100 @ A1 | Project No: 2007-04

Project:	Originator:	Volume:	Level:	Type:	Role:	Category/Number:	Rev:
VHM-	REN -	00 -	FN -	DR -	C -	01090 -	C01

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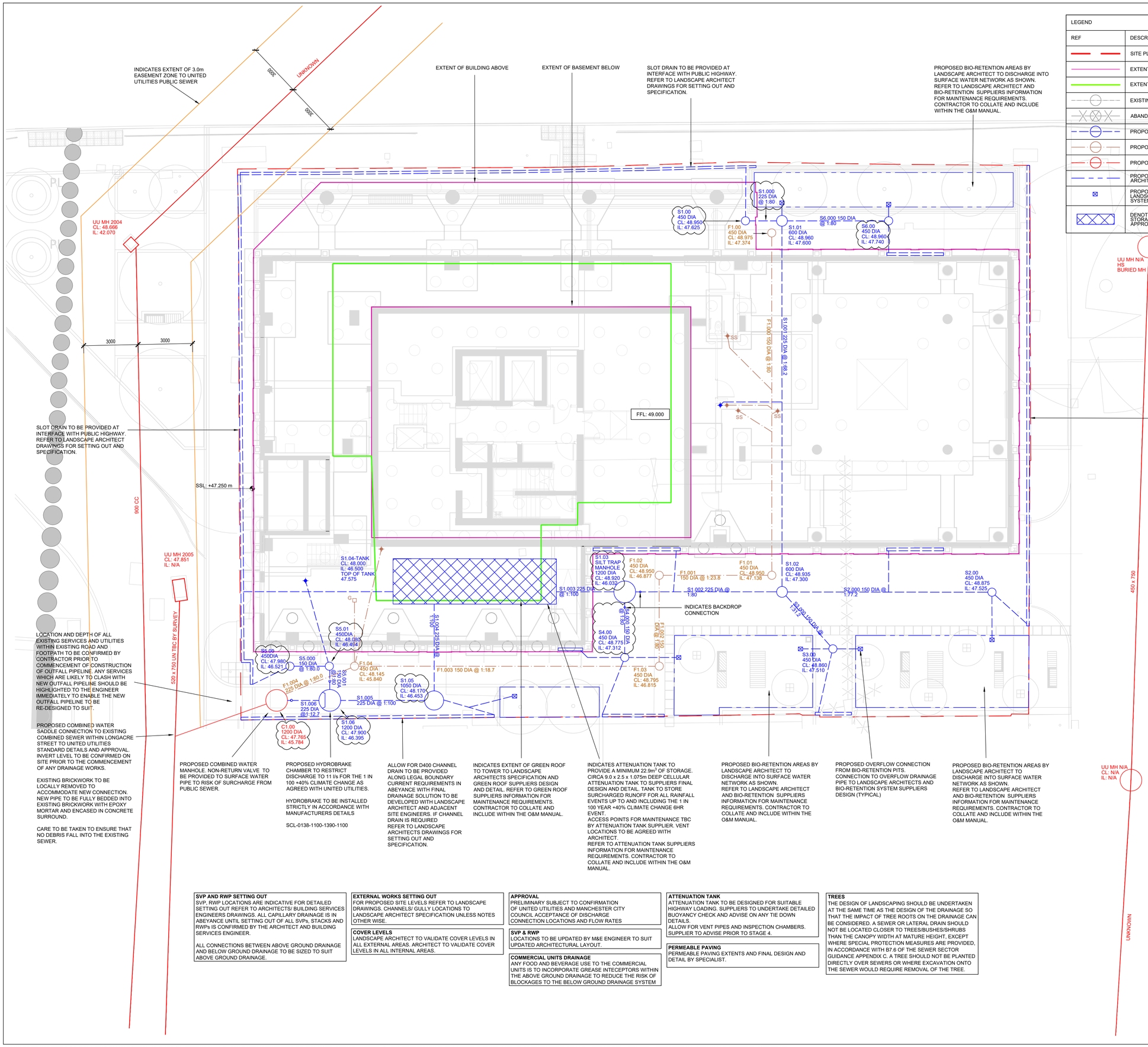

LEGEND	
REF	DESCRIPTION
	SITE PLANNING BOUNDARY
	EXTENT OF BUILDING ABOVE
	EXTENT OF GREEN ROOF ABOVE
	EXISTING COMBINED WATER PUBLIC SEWER
	ABANDONED PRIVATE DRAINAGE
	PROPOSED SURFACE WATER SEWER
	PROPOSED FOUL WATER SEWER
	PROPOSED COMBINED WATER SEWER
	PROPOSED BIO-RETENTION AREA TO LANDSCAPE ARCHITECTS DETAILS
	PROPOSED OVERFLOW DRAINAGE PIPE TO LANDSCAPE ARCHITECT AND BIO-RETENTION SYSTEM SUPPLIERS DETAILS
	DENOTES EXTENT OF BELOW GROUND CELLULAR STORAGE TANK BY ALDERBURGH OR EQUALLY APPROVED

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RENAISSANCE, ARCHITECTS, LANDSCAPE ARCHITECTS AND BUILDING SERVICES ENGINEERS DRAWINGS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE BELOW GROUND DRAINAGE SPECIFICATION SP-C-00050, MANHOLE SCHEDULE ON DRAWING C-01301 AND DETAILS SHOWN ON DRAWING SERIES C-03301 & C-03311 TO C-03312.
3. THE FINAL CONNECTION TO THE PUBLIC SEWER IS SUBJECT TO UNITED UTILITIES APPROVAL AND IS TO BE IN ACCORDANCE WITH THEIR AGREED DETAILS.
4. FOR ALL ABOVE GROUND DRAINAGE AND ASSOCIATED PUMPS REFER TO BUILDING SERVICES AND ARCHITECT'S DRAWINGS.
5. ALL BELOW GROUND DRAINAGE WORKS TO BE IN ACCORDANCE WITH RELEVANT BUILDING REGULATIONS AND SEWER SECTOR GUIDANCE APPENDIX C- DESIGN AND CONSTRUCTION GUIDANCE. IF DISCREPANCIES ARE NOTED BETWEEN SSG AND DRAWINGS THESE SHOULD BE BROUGHT TO THE ATTENTION OF RENAISSANCE FOR REVIEW.
6. RWPs, SVPs, SSs AND FLOOR GULLEYS ARE TO HAVE RODDABLE ACCESS POINTS ABOVE GROUND FLOOR TO BUILDING SERVICES DETAILS. ALL FLOOR GULLEYS AND RWP'S ARE TO BE TRAPPED.
7. ALL GULLY AND CHANNEL DRAIN LOCATIONS INDICATIVE.REFER TO ARCHITECT AND LANDSCAPE ARCHITECT DRAWINGS FOR SETTING OUT AND SPECIFICATION.
8. ALL FOUL AND SURFACE WATER DRAINAGE TO BE 150mm DIA UNLESS NOTED OTHERWISE.
9. THE ATTENUATION TANK AND FLOW CONTROL ARE TO BE TO SUPPLIERS DESIGN AND DETAILS. INSTALLATION IS TO BE IN ACCORDANCE WITH THE SUPPLIERS REQUIREMENTS.
10. SEWERS TO BE LAID IN CLASS S BEDDING (150mm GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THAN; 1.2m IN HIGHWAYS OR VERGES, OR LESS THAN 0.9m IN PEDESTRIAN AREAS, THEN A 150mm CONCRETE SLAB SHOULD BE PROVIDED ABOVE THE GRANULAR BED AND SURROUND. REFER TO DETAILS SHEETS.
11. THE CONTRACTOR IS TO UNDERTAKE A FULL CCTV SURVEY AT COMPLETION OF THE PROJECT TO DEMONSTRATE THAT THE DRAINAGE IS CLEAN. ANY DEFECTS ARE TO BE CORRECTED BY THE CONTRACTOR PRIOR TO HANDOVER OF THE SYSTEM TO THE CLIENT.
12. THE CONTRACTOR IS TO KEEP A RECORD SET OF THE AS INSTALLED DRAINAGE ON SITE AND PROVIDE THIS TO RENAISSANCE UPON COMPLETION OF THE WORKS TO ALLOW FOR PRODUCTION OF A 'FINAL CONSTRUCTION' ISSUE DRAWING.
13. DURING THE WORKS ALTERATIONS TO THE DRAINAGE LAYOUT ARE TO BE MARKED UP BY THE CONTRACTOR AND AGREED WITH RENAISSANCE IN WRITING.
14. THE CHAMBER SIZE OF PCC MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
15. MANHOLE COVERS ARE TO BE ACCORDANCE WITH BS EN 124 FOR THE RATING INDICATED IN THE MANHOLE SCHEDULE. THE CONTRACTOR IS TO SUBMIT DETAILS FOR THE PROPOSED MANHOLE COVERS TO THE ENGINEER AND LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION.
16. COVER SLABS MUST CARRY THE BSI KITEMARK. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOAD BEARING REDUCING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO REQUIRED SIZE.
17. ALL SEWERS TO BE BSI KITEMARK (CERTIFIED TO WIS 4-35-01)
18. ALL CONCRETE PIPES TO BE TO ES EN 1916 CLASS 120 (54kN/m).
19. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF THE WATER INDUSTRY SPECIFICATION 4-08092 (TABLE A2).
20. IF PLASTIC PIPES ARE TO BE USED THEN THE FOLLOWING MUST APPLY:
    A. BSI KITEMARK (CERTIFIED TO BS EN 13476-1 AND WIS 4-35-01)
    B. PIPES LESS THAN OR EQUAL TO 500mm DIA
    C. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE
    D. REQUIREMENTS OF THE WATER INDUSTRY SPECIFICATION 4-08092 (TABLE A2)
17. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100mm DIA. 40kN/m, 150mm DIA. 40kN/m, 225mm DIA. 45kN/m AND 300mm DIA. 72kN/m.
18. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS 120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476.
19. SULPHATE RESISTANT CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVIDING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
20. SEWER PIPES TO BE LAID IN MAXIMUM 3 METER LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER PIPES, AND THIS IS AGREED BY THE CONTRACTOR WITH THE PIPE MANUFACTURER.
21. ALLOW FOR ALL EXISTING DRAINAGE ON SITE TO BE GRUBBED UP AND BACKFILLED. ANY CONNECTIONS FROM THE SITE TO THE PUBLIC SEWER TO THE SITE ARE TO BE CAPPED AND GROUTED.

SVP AND RWP SETTING OUT
SVP, RWP LOCATIONS ARE INDICATIVE FOR DETAILED SETTING OUT REFER TO ARCHITECTS/ BUILDING SERVICES ENGINEERS DRAWINGS. ALL CAPILLARY DRAINAGE IS IN ABEYANCE UNTIL SETTING OUT OF ALL SVPs, STACKS AND RWPs IS CONFIRMED BY THE ARCHITECT AND BUILDING SERVICES ENGINEER.

ALL CONNECTIONS BETWEEN ABOVE GROUND DRAINAGE AND BELOW GROUND DRAINAGE TO BE SIZED TO SUIT ABOVE GROUND DRAINAGE.

EXTERNAL WORKS SETTING OUT
FOR PROPOSED SITE LEVELS REFER TO LANDSCAPE DRAWINGS. CHANNELS/ GULLY LOCATIONS TO LANDSCAPE ARCHITECT SPECIFICATION UNLESS NOTES OTHER WISE.

COVER LEVELS
LANDSCAPE ARCHITECT TO VALIDATE COVER LEVELS IN ALL EXTERNAL AREAS. ARCHITECT TO VALIDATE COVER LEVELS IN ALL INTERNAL AREAS.

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

SVP & RWP
LOCATIONS TO BE UPDATED BY M&E ENGINEER TO SUIT UPDATED ARCHITECTURAL LAYOUT.

COMMERCIAL UNITS DRAINAGE
ANY FOOD AND BEVERAGE USE TO THE COMMERCIAL UNITS IS TO INCORPORATE GREASE INTECEPTORS WITHIN THE ABOVE GROUND DRAINAGE TO REDUCE THE RISK OF BLOCKAGES TO THE BELOW GROUND DRAINAGE SYSTEM

ATTENUATION TANK
ATTENUATION TANK TO BE DESIGNED FOR SUITABLE HIGHWAY LOADING. SUPPLIERS TO UNDERTAKE DETAILED BUOYANCY CHECK AND ADVISE ON ANY TIE DOWN DETAILS.
ALLOW FOR VENT PIPES AND INSPECTION CHAMBERS. SUPPLIER TO ADVISE PRIOR TO STAGE 4.

PERMEABLE PAVING
PERMEABLE PAVING EXTENTS AND FINAL DESIGN AND DETAIL BY SPECIALIST.

TREES
THE DESIGN OF LANDSCAPING SHOULD BE UNDERTAKEN AT THE SAME TIME AS THE DESIGN OF THE DRAINAGE SO THAT THE IMPACT OF TREE ROOTS ON THE DRAINAGE CAN BE CONSIDERED. A SEWER OR LATERAL DRAIN SHOULD NOT BE LOCATED CLOSER TO TREES/BUSHES/SHRUBS THAN THE CANOPY WIDTH AT MATURE HEIGHT, EXCEPT WHERE SPECIAL PROTECTION MEASURES ARE PROVIDED, IN ACCORDANCE WITH B7.6 OF THE SEWER SECTOR GUIDANCE APPENDIX C. A TREE SHOULD NOT BE PLANTED DIRECTLY OVER SEWERS OR WHERE EXCAVATION ONTO THE SEWER WOULD REQUIRE REMOVAL OF THE TREE.

Rev:	Description:	Date:	By:	Chkd:
C02	ADJUSTED MANHOLE INVERT LEVELS	25.05.22	HW	KG
C01	CONSTRUCTION ISSUE	18.05.22	HW	KG

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Renaissance Associates Ltd
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

Project:
VICTORIA HOUSE MANCHESTER

Drawing Title:
BELOW GROUND DRAINAGE PLAN

Status:
CONSTRUCTION

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	MAY'22	HW	HW	KG

Scale: 1:100 | Project No: 2007-04

Project – Originator – Volume – Level – Type – Role – Number: VHM-REN-00-FN-DR-C-01100 | Revision: C02

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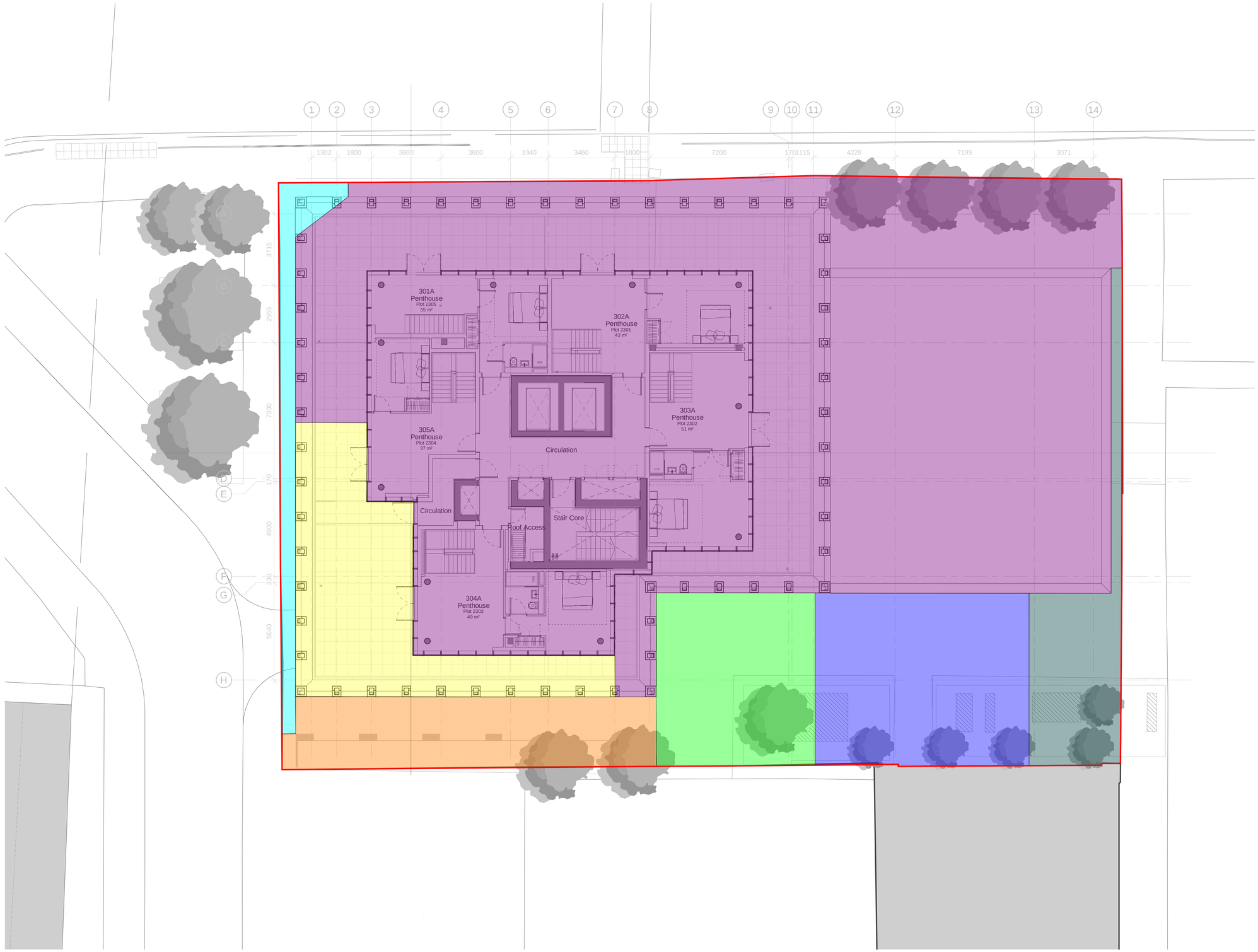
APPENDIX G
Microdrainage Proposed Network Calculations



NOTES

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH
   -EXISTING IMPERMEABLE AREA PLAN
   -PROPOSED BELOW GROUND DRAINAGE DRAWING
   -MICRODRAINAGE MODEL AND CALCULATION OUTPUTS

PROPOSED IMPERMEABLE AREA SUMMARY		
MANHOLE	HATCH	AREA (ha)
S1.01		0.0906
S2.00		0.0051
S3.00		0.0098
S1.03		0.0075
S1.05		0.0070
S5.00		0.0030
S5.01		0.0100
	TOTAL	0.1330

PERMEABLE AREA

SITEWIDE TOTAL AREA	
HATCH	AREA (ha)
IMPERMEABLE AREA	0.1330
TOTAL	0.1330

Rev:	Description:	Date:	By:	Chkd:
P01	FOR INFORMATION	00.00.22	HW	XX

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Renaissance Associates Ltd
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

Project:

VICTORIA HOUSE, MANCHESTER

Drawing Title:

PROPOSED DRAINED AREAS PLAN

Status:

STAGE 3

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	MAR'22	HW	--	PC

Scale:	Project No:
1:100	2007-04

Project - Originator - Volume - Level - Type - Role - Number:	Revision:
VHM-REN-00-FN-DR-C-01060	P01

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.359	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.102	4-8	0.031

Total Area Contributing (ha) = 0.133

Total Pipe Volume (m³) = 2.305

Network Design Table for Storm

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	2.015	0.025	80.0	0.082	5.00	0.0	0.600	o	225	Pipe/Conduit	🔓
S1.001	20.443	0.300	68.1	0.003	0.00	0.0	0.600	o	225	Pipe/Conduit	🔓
S2.000	11.566	0.150	77.2	0.005	5.00	0.0	0.600	o	150	Pipe/Conduit	🔓

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.02	47.625	0.082	0.0	0.0	0.0	1.46	58.2	11.1
S1.001	50.00	5.24	47.600	0.085	0.0	0.0	0.0	1.59	63.1	11.5
S2.000	50.00	5.17	47.525	0.005	0.0	0.0	0.0	1.15	20.2	0.7

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S3.000	4.207	0.135	31.2	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	8.663	0.108	80.0	0.004	0.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	3.621	0.045	80.0	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	3.164#	0.032	100.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.004	4.781#	0.048	100.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.005	5.732	0.057	100.0	0.007	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.000	2.170	0.027	80.0	0.002	5.00	0.0	0.600	o	150	Pipe/Conduit	
S5.001	1.885	0.024	80.0	0.016	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.006	2.755	0.217	12.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S3.000	50.00	5.04	47.510	0.007	0.0	0.0	0.0	1.81	32.0	0.9
S1.002	50.00	5.34	47.300	0.101	0.0	0.0	0.0	1.46	58.2	13.7
S4.000	50.00	5.05	47.312	0.007	0.0	0.0	0.0	1.12	19.9	0.9
S1.003	50.00	5.38	46.532	0.108	0.0	0.0	0.0	1.31	52.0	14.6
S1.004	50.00	5.44	46.500	0.108	0.0	0.0	0.0	1.31	52.0	14.6
S1.005	50.00	5.51	46.453	0.115	0.0	0.0	0.0	1.31	52.0	15.6
S5.000	50.00	5.03	46.521	0.002	0.0	0.0	0.0	1.12	19.9	0.3
S5.001	50.00	5.06	46.494	0.018	0.0	0.0	0.0	1.12	19.9	2.4
S1.006	50.00	5.52	46.395	0.133	0.0	0.0	0.0	3.69	146.8	18.0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.082	0.082	0.082
1.001	-	-	100	0.003	0.003	0.003
2.000	-	-	100	0.005	0.005	0.005
3.000	-	-	100	0.007	0.007	0.007
1.002	-	-	100	0.004	0.004	0.004
4.000	-	-	100	0.007	0.007	0.007
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.007	0.007	0.007
5.000	-	-	100	0.002	0.002	0.002
5.001	-	-	100	0.016	0.016	0.016
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.133	0.133	0.133

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.006	S	47.765	46.178	0.000	0	0

Simulation Criteria for Storm

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

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	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)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.359		

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Summary Wizard of 15 minute 1 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	24	47.712	-0.138	0.000	0.31			9.4	OK
S1.001	S1.01	24	47.662	-0.163	0.000	0.17			9.6	OK
S2.000	S2.00	24	47.542	-0.133	0.000	0.03			0.6	OK
S3.000	S3.00	24	47.528	-0.132	0.000	0.03			0.8	OK
S1.002	S1.02	24	47.376	-0.149	0.000	0.25			11.4	OK
S4.000	S4.00	24	47.336	-0.126	0.000	0.06			0.8	OK
S1.003	S1.03	28	46.633	-0.124	0.000	0.41			12.3	OK
S1.004	S1.04	31	46.591	-0.135	0.000	0.31		8	9.4	OK*
S1.005	S1.05	30	46.581	-0.097	0.000	0.27			9.1	OK
S5.000	S5.00	30	46.574	-0.097	0.000	0.02			0.2	OK
S5.001	S5.01	30	46.574	-0.070	0.000	0.16			1.8	OK
S1.006	S1.06	30	46.573	-0.047	0.000	0.15			10.1	OK

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Summary Wizard of 30 minute 1 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	27	47.707	-0.143	0.000	0.29			8.6	OK
S1.001	S1.01	27	47.659	-0.166	0.000	0.16			8.9	OK
S2.000	S2.00	27	47.542	-0.133	0.000	0.03			0.5	OK
S3.000	S3.00	27	47.527	-0.133	0.000	0.03			0.7	OK
S1.002	S1.02	27	47.373	-0.152	0.000	0.23			10.5	OK
S4.000	S4.00	27	47.335	-0.127	0.000	0.06			0.7	OK
S1.003	S1.03	29	46.627	-0.130	0.000	0.38			11.2	OK
S1.004	S1.04	30	46.591	-0.135	0.000	0.29		10	9.0	OK*
S1.005	S1.05	31	46.580	-0.097	0.000	0.27			9.0	OK
S5.000	S5.00	31	46.574	-0.097	0.000	0.02			0.2	OK
S5.001	S5.01	31	46.574	-0.070	0.000	0.15			1.6	OK
S1.006	S1.06	31	46.573	-0.047	0.000	0.15			10.2	OK

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Summary Wizard of 60 minute 1 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	35	47.696	-0.154	0.000	0.22			6.6	OK
S1.001	S1.01	35	47.651	-0.174	0.000	0.12			6.8	OK
S2.000	S2.00	35	47.540	-0.135	0.000	0.02			0.4	OK
S3.000	S3.00	35	47.526	-0.134	0.000	0.02			0.6	OK
S1.002	S1.02	35	47.363	-0.162	0.000	0.17			8.1	OK
S4.000	S4.00	35	47.332	-0.130	0.000	0.04			0.6	OK
S1.003	S1.03	35	46.614	-0.143	0.000	0.29			8.6	OK
S1.004	S1.04	36	46.578	-0.148	0.000	0.26		14	7.9	OK*
S1.005	S1.05	36	46.561	-0.116	0.000	0.25			8.3	OK
S5.000	S5.00	36	46.556	-0.115	0.000	0.01			0.2	OK
S5.001	S5.01	36	46.556	-0.088	0.000	0.12			1.3	OK
S1.006	S1.06	36	46.555	-0.066	0.000	0.14			9.3	OK

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Summary Wizard of 120 minute 1 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	41	47.683	-0.167	0.000	0.15			4.6	OK
S1.001	S1.01	41	47.643	-0.182	0.000	0.08			4.7	OK
S2.000	S2.00	41	47.536	-0.139	0.000	0.02			0.3	OK
S3.000	S3.00	41	47.522	-0.138	0.000	0.02			0.4	OK
S1.002	S1.02	41	47.352	-0.173	0.000	0.12			5.6	OK
S4.000	S4.00	41	47.329	-0.133	0.000	0.03			0.4	OK
S1.003	S1.03	41	46.600	-0.157	0.000	0.20			6.0	OK
S1.004	S1.04	41	46.565	-0.160	0.000	0.18		23	5.7	OK*
S1.005	S1.05	41	46.526	-0.152	0.000	0.18			6.0	OK
S5.000	S5.00	41	46.529	-0.142	0.000	0.01			0.1	OK
S5.001	S5.01	41	46.524	-0.120	0.000	0.09			1.0	OK
S1.006	S1.06	41	46.514	-0.106	0.000	0.11			6.9	OK

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Summary Wizard of 180 minute 1 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	46	47.677	-0.173	0.000	0.12			3.6	OK
S1.001	S1.01	46	47.637	-0.188	0.000	0.06			3.7	OK
S2.000	S2.00	46	47.533	-0.142	0.000	0.01			0.2	OK
S3.000	S3.00	46	47.519	-0.141	0.000	0.01			0.3	OK
S1.002	S1.02	46	47.346	-0.179	0.000	0.10			4.4	OK
S4.000	S4.00	46	47.327	-0.135	0.000	0.02			0.3	OK
S1.003	S1.03	46	46.591	-0.166	0.000	0.16			4.7	OK
S1.004	S1.04	46	46.558	-0.168	0.000	0.15		31	4.5	OK*
S1.005	S1.05	46	46.512	-0.165	0.000	0.14			4.8	OK
S5.000	S5.00	46	46.527	-0.144	0.000	0.01			0.1	OK
S5.001	S5.01	46	46.520	-0.124	0.000	0.07			0.8	OK
S1.006	S1.06	46	46.497	-0.123	0.000	0.08			5.5	OK

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Summary Wizard of 240 minute 1 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	49	47.672	-0.178	0.000	0.10			3.0	OK
S1.001	S1.01	49	47.634	-0.191	0.000	0.05			3.1	OK
S2.000	S2.00	49	47.532	-0.143	0.000	0.01			0.2	OK
S3.000	S3.00	49	47.518	-0.142	0.000	0.01			0.3	OK
S1.002	S1.02	49	47.342	-0.183	0.000	0.08			3.7	OK
S4.000	S4.00	49	47.326	-0.136	0.000	0.02			0.3	OK
S1.003	S1.03	49	46.586	-0.171	0.000	0.13			3.9	OK
S1.004	S1.04	49	46.553	-0.173	0.000	0.12		40	3.8	OK*
S1.005	S1.05	49	46.505	-0.173	0.000	0.12			4.1	OK
S5.000	S5.00	49	46.526	-0.145	0.000	0.01			0.1	OK
S5.001	S5.01	49	46.517	-0.126	0.000	0.06			0.6	OK
S1.006	S1.06	49	46.487	-0.134	0.000	0.07			4.7	OK

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Summary Wizard of 360 minute 1 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	53	47.666	-0.184	0.000	0.08			2.3	OK
S1.001	S1.01	53	47.629	-0.196	0.000	0.04			2.4	OK
S2.000	S2.00	53	47.530	-0.145	0.000	0.01			0.1	OK
S3.000	S3.00	53	47.516	-0.144	0.000	0.01			0.2	OK
S1.002	S1.02	53	47.336	-0.189	0.000	0.06			2.8	OK
S4.000	S4.00	53	47.322	-0.140	0.000	0.01			0.2	OK
S1.003	S1.03	53	46.580	-0.177	0.000	0.10			3.0	OK
S1.004	S1.04	53	46.547	-0.178	0.000	0.10		59	3.0	OK*
S1.005	S1.05	53	46.499	-0.179	0.000	0.09			3.1	OK
S5.000	S5.00	53	46.525	-0.146	0.000	0.01			0.1	OK
S5.001	S5.01	53	46.514	-0.129	0.000	0.05			0.5	OK
S1.006	S1.06	53	46.474	-0.147	0.000	0.06			3.6	OK

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Summary Wizard of 15 minute 2 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	18	47.725	-0.125	0.000	0.41			12.1	OK
S1.001	S1.01	18	47.671	-0.154	0.000	0.22			12.4	OK
S2.000	S2.00	18	47.544	-0.131	0.000	0.04			0.7	OK
S3.000	S3.00	18	47.530	-0.130	0.000	0.05			1.0	OK
S1.002	S1.02	18	47.388	-0.137	0.000	0.32			14.7	OK
S4.000	S4.00	18	47.340	-0.122	0.000	0.08			1.0	OK
S1.003	S1.03	23	46.649	-0.108	0.000	0.53			15.9	OK
S1.004	S1.04	26	46.626	-0.099	0.000	0.33		7	10.2	OK*
S1.005	S1.05	26	46.623	-0.055	0.000	0.29			9.7	OK
S5.000	S5.00	26	46.617	-0.054	0.000	0.03			0.3	OK
S5.001	S5.01	26	46.617	-0.027	0.000	0.20			2.2	OK
S1.006	S1.06	26	46.616	-0.004	0.000	0.16			10.6	OK

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Summary Wizard of 30 minute 2 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	20	47.720	-0.130	0.000	0.37			11.1	OK
S1.001	S1.01	20	47.668	-0.157	0.000	0.20			11.5	OK
S2.000	S2.00	20	47.544	-0.131	0.000	0.04			0.7	OK
S3.000	S3.00	20	47.529	-0.131	0.000	0.04			0.9	OK
S1.002	S1.02	20	47.383	-0.142	0.000	0.29			13.6	OK
S4.000	S4.00	20	47.338	-0.124	0.000	0.07			0.9	OK
S1.003	S1.03	24	46.643	-0.114	0.000	0.48			14.5	OK
S1.004	S1.04	25	46.629	-0.097	0.000	0.31		8	9.5	OK*
S1.005	S1.05	25	46.625	-0.053	0.000	0.28			9.4	OK
S5.000	S5.00	25	46.619	-0.052	0.000	0.02			0.2	OK
S5.001	S5.01	25	46.619	-0.025	0.000	0.18			1.9	OK
S1.006	S1.06	25	46.618	-0.003	0.000	0.16			10.6	OK

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Summary Wizard of 60 minute 2 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	28	47.706	-0.144	0.000	0.28			8.4	OK
S1.001	S1.01	28	47.658	-0.167	0.000	0.15			8.7	OK
S2.000	S2.00	28	47.542	-0.133	0.000	0.03			0.5	OK
S3.000	S3.00	28	47.527	-0.133	0.000	0.03			0.7	OK
S1.002	S1.02	28	47.372	-0.153	0.000	0.22			10.3	OK
S4.000	S4.00	28	47.334	-0.128	0.000	0.05			0.7	OK
S1.003	S1.03	30	46.626	-0.131	0.000	0.37			11.0	OK
S1.004	S1.04	28	46.601	-0.124	0.000	0.28		11	8.7	OK*
S1.005	S1.05	28	46.595	-0.083	0.000	0.27			9.0	OK
S5.000	S5.00	28	46.589	-0.082	0.000	0.02			0.2	OK
S5.001	S5.01	28	46.588	-0.056	0.000	0.15			1.6	OK
S1.006	S1.06	28	46.587	-0.033	0.000	0.16			10.3	OK

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Summary Wizard of 120 minute 2 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	37	47.691	-0.159	0.000	0.19			5.7	OK
S1.001	S1.01	37	47.648	-0.177	0.000	0.10			5.9	OK
S2.000	S2.00	37	47.539	-0.136	0.000	0.02			0.3	OK
S3.000	S3.00	37	47.525	-0.135	0.000	0.02			0.5	OK
S1.002	S1.02	37	47.358	-0.167	0.000	0.15			7.0	OK
S4.000	S4.00	37	47.330	-0.132	0.000	0.04			0.5	OK
S1.003	S1.03	37	46.608	-0.149	0.000	0.25			7.5	OK
S1.004	S1.04	37	46.574	-0.151	0.000	0.23		22	7.2	OK*
S1.005	S1.05	37	46.549	-0.128	0.000	0.23			7.6	OK
S5.000	S5.00	37	46.544	-0.127	0.000	0.01			0.1	OK
S5.001	S5.01	37	46.544	-0.100	0.000	0.11			1.2	OK
S1.006	S1.06	37	46.543	-0.078	0.000	0.13			8.7	OK

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Summary Wizard of 180 minute 2 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	42	47.683	-0.167	0.000	0.15			4.5	OK
S1.001	S1.01	42	47.642	-0.183	0.000	0.08			4.6	OK
S2.000	S2.00	42	47.536	-0.139	0.000	0.01			0.3	OK
S3.000	S3.00	42	47.522	-0.138	0.000	0.02			0.4	OK
S1.002	S1.02	42	47.351	-0.174	0.000	0.12			5.5	OK
S4.000	S4.00	42	47.329	-0.133	0.000	0.03			0.4	OK
S1.003	S1.03	42	46.599	-0.158	0.000	0.20			5.9	OK
S1.004	S1.04	42	46.565	-0.160	0.000	0.18		30	5.6	OK*
S1.005	S1.05	43	46.525	-0.152	0.000	0.18			6.0	OK
S5.000	S5.00	42	46.529	-0.142	0.000	0.01			0.1	OK
S5.001	S5.01	42	46.524	-0.120	0.000	0.09			1.0	OK
S1.006	S1.06	43	46.514	-0.106	0.000	0.10			6.9	OK

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Summary Wizard of 240 minute 2 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	45	47.677	-0.173	0.000	0.12			3.7	OK
S1.001	S1.01	45	47.638	-0.187	0.000	0.07			3.8	OK
S2.000	S2.00	45	47.534	-0.141	0.000	0.01			0.2	OK
S3.000	S3.00	45	47.520	-0.140	0.000	0.01			0.3	OK
S1.002	S1.02	45	47.347	-0.178	0.000	0.10			4.5	OK
S4.000	S4.00	45	47.328	-0.134	0.000	0.02			0.3	OK
S1.003	S1.03	45	46.592	-0.165	0.000	0.16			4.9	OK
S1.004	S1.04	45	46.559	-0.167	0.000	0.15		39	4.7	OK*
S1.005	S1.05	45	46.515	-0.163	0.000	0.15			5.0	OK
S5.000	S5.00	45	46.527	-0.144	0.000	0.01			0.1	OK
S5.001	S5.01	45	46.521	-0.123	0.000	0.07			0.8	OK
S1.006	S1.06	45	46.500	-0.120	0.000	0.09			5.8	OK

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Summary Wizard of 360 minute 2 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	50	47.671	-0.179	0.000	0.09			2.8	OK
S1.001	S1.01	50	47.632	-0.193	0.000	0.05			2.9	OK
S2.000	S2.00	50	47.532	-0.143	0.000	0.01			0.2	OK
S3.000	S3.00	50	47.517	-0.143	0.000	0.01			0.2	OK
S1.002	S1.02	50	47.340	-0.185	0.000	0.07			3.5	OK
S4.000	S4.00	50	47.325	-0.137	0.000	0.02			0.2	OK
S1.003	S1.03	50	46.584	-0.173	0.000	0.12			3.7	OK
S1.004	S1.04	50	46.551	-0.174	0.000	0.12		57	3.6	OK*
S1.005	S1.05	50	46.503	-0.175	0.000	0.11			3.9	OK
S5.000	S5.00	50	46.525	-0.146	0.000	0.01			0.1	OK
S5.001	S5.01	50	46.517	-0.127	0.000	0.06			0.6	OK
S1.006	S1.06	50	46.484	-0.136	0.000	0.07			4.5	OK

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Summary Wizard of 15 minute 30 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	8	47.775	-0.075	0.000	0.77			22.9	OK
S1.001	S1.01	8	47.702	-0.123	0.000	0.41			23.7	OK
S2.000	S2.00	8	47.553	-0.122	0.000	0.08			1.4	OK
S3.000	S3.00	8	47.539	-0.121	0.000	0.09			2.0	OK
S1.002	S1.02	8	47.429	-0.096	0.000	0.61			28.3	OK
S4.000	S4.00	9	47.350	-0.112	0.000	0.15			2.0	OK
S1.003	S1.03	16	46.846	0.089	0.000	0.98			29.3	SURCHARGED
S1.004	S1.04	16	46.834	0.109	0.000	0.33		11	10.1	SURCHARGED*
S1.005	S1.05	17	46.826	0.149	0.000	0.31			10.3	SURCHARGED
S5.000	S5.00	17	46.818	0.147	0.000	0.04			0.4	SURCHARGED
S5.001	S5.01	17	46.818	0.174	0.000	0.46			5.0	SURCHARGED
S1.006	S1.06	17	46.816	0.196	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 30 minute 30 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	9	47.765	-0.085	0.000	0.71			21.2	OK
S1.001	S1.01	9	47.697	-0.128	0.000	0.38			22.0	OK
S2.000	S2.00	9	47.551	-0.124	0.000	0.07			1.3	OK
S3.000	S3.00	9	47.538	-0.122	0.000	0.08			1.8	OK
S1.002	S1.02	9	47.422	-0.103	0.000	0.56			26.2	OK
S4.000	S4.00	10	47.348	-0.114	0.000	0.14			1.8	OK
S1.003	S1.03	14	46.869	0.112	0.000	0.89			26.6	SURCHARGED
S1.004	S1.04	14	46.865	0.140	0.000	0.32		14	9.9	SURCHARGED*
S1.005	S1.05	14	46.861	0.183	0.000	0.30			10.3	SURCHARGED
S5.000	S5.00	14	46.855	0.184	0.000	0.03			0.4	SURCHARGED
S5.001	S5.01	14	46.855	0.211	0.000	0.40			4.4	SURCHARGED
S1.006	S1.06	14	46.855	0.234	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 60 minute 30 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	12	47.742	-0.108	0.000	0.54			16.0	OK
S1.001	S1.01	12	47.683	-0.142	0.000	0.29			16.6	OK
S2.000	S2.00	12	47.547	-0.128	0.000	0.05			1.0	OK
S3.000	S3.00	12	47.534	-0.126	0.000	0.06			1.4	OK
S1.002	S1.02	13	47.403	-0.122	0.000	0.43			19.8	OK
S4.000	S4.00	13	47.344	-0.118	0.000	0.10			1.4	OK
S1.003	S1.03	18	46.829	0.072	0.000	0.69			20.5	SURCHARGED
S1.004	S1.04	18	46.824	0.098	0.000	0.32		15	9.8	SURCHARGED*
S1.005	S1.05	18	46.818	0.140	0.000	0.30			10.0	SURCHARGED
S5.000	S5.00	18	46.815	0.144	0.000	0.03			0.3	SURCHARGED
S5.001	S5.01	18	46.814	0.171	0.000	0.30			3.3	SURCHARGED
S1.006	S1.06	18	46.811	0.191	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 120 minute 30 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	21	47.718	-0.132	0.000	0.36			10.8	OK
S1.001	S1.01	21	47.667	-0.158	0.000	0.20			11.2	OK
S2.000	S2.00	21	47.543	-0.132	0.000	0.04			0.7	OK
S3.000	S3.00	21	47.529	-0.131	0.000	0.04			0.9	OK
S1.002	S1.02	21	47.382	-0.143	0.000	0.29			13.4	OK
S4.000	S4.00	21	47.338	-0.124	0.000	0.07			0.9	OK
S1.003	S1.03	20	46.712	-0.045	0.000	0.47			14.0	OK
S1.004	S1.04	20	46.707	-0.018	0.000	0.30		14	9.2	OK*
S1.005	S1.05	20	46.700	0.023	0.000	0.29			9.7	SURCHARGED
S5.000	S5.00	20	46.694	0.023	0.000	0.02			0.2	SURCHARGED
S5.001	S5.01	20	46.694	0.050	0.000	0.21			2.2	SURCHARGED
S1.006	S1.06	20	46.693	0.072	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 180 minute 30 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	29	47.706	-0.144	0.000	0.28			8.4	OK
S1.001	S1.01	29	47.658	-0.167	0.000	0.15			8.7	OK
S2.000	S2.00	29	47.542	-0.133	0.000	0.03			0.5	OK
S3.000	S3.00	29	47.527	-0.133	0.000	0.03			0.7	OK
S1.002	S1.02	29	47.372	-0.153	0.000	0.22			10.3	OK
S4.000	S4.00	29	47.334	-0.128	0.000	0.05			0.7	OK
S1.003	S1.03	27	46.635	-0.122	0.000	0.37			11.0	OK
S1.004	S1.04	24	46.630	-0.095	0.000	0.28		15	8.7	OK*
S1.005	S1.05	24	46.626	-0.052	0.000	0.27			9.3	OK
S5.000	S5.00	24	46.620	-0.051	0.000	0.02			0.2	OK
S5.001	S5.01	24	46.620	-0.024	0.000	0.16			1.8	OK
S1.006	S1.06	24	46.618	-0.002	0.000	0.16			10.6	OK

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Summary Wizard of 240 minute 30 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	32	47.698	-0.152	0.000	0.23			6.9	OK
S1.001	S1.01	32	47.652	-0.173	0.000	0.12			7.1	OK
S2.000	S2.00	32	47.540	-0.135	0.000	0.02			0.4	OK
S3.000	S3.00	32	47.526	-0.134	0.000	0.03			0.6	OK
S1.002	S1.02	32	47.365	-0.160	0.000	0.18			8.5	OK
S4.000	S4.00	32	47.332	-0.130	0.000	0.04			0.6	OK
S1.003	S1.03	32	46.616	-0.141	0.000	0.30			9.0	OK
S1.004	S1.04	32	46.590	-0.135	0.000	0.27		32	8.3	OK*
S1.005	S1.05	32	46.580	-0.098	0.000	0.26			8.8	OK
S5.000	S5.00	32	46.574	-0.097	0.000	0.01			0.2	OK
S5.001	S5.01	32	46.574	-0.070	0.000	0.14			1.5	OK
S1.006	S1.06	32	46.572	-0.048	0.000	0.15			10.1	OK

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Summary Wizard of 360 minute 30 year Summer I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	39	47.687	-0.163	0.000	0.17			5.1	OK
S1.001	S1.01	39	47.646	-0.179	0.000	0.09			5.3	OK
S2.000	S2.00	39	47.537	-0.138	0.000	0.02			0.3	OK
S3.000	S3.00	39	47.523	-0.137	0.000	0.02			0.4	OK
S1.002	S1.02	39	47.355	-0.170	0.000	0.14			6.3	OK
S4.000	S4.00	39	47.330	-0.132	0.000	0.03			0.4	OK
S1.003	S1.03	39	46.604	-0.153	0.000	0.23			6.7	OK
S1.004	S1.04	39	46.571	-0.154	0.000	0.22		54	6.7	OK*
S1.005	S1.05	39	46.541	-0.137	0.000	0.21			7.1	OK
S5.000	S5.00	39	46.537	-0.134	0.000	0.01			0.1	OK
S5.001	S5.01	39	46.535	-0.109	0.000	0.10			1.1	OK
S1.006	S1.06	39	46.533	-0.087	0.000	0.12			8.2	OK

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Summary Wizard of 15 minute 100 year Summer I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	2	47.902	0.052	0.000	1.39			41.4	SURCHARGED
S1.001	S1.01	2	47.748	-0.077	0.000	0.75			42.9	OK
S2.000	S2.00	2	47.566	-0.109	0.000	0.14			2.5	OK
S3.000	S3.00	4	47.553	-0.107	0.000	0.15			3.5	OK
S1.002	S1.02	4	47.544	0.019	0.000	1.11			51.5	SURCHARGED
S4.000	S4.00	7	47.365	-0.097	0.000	0.27			3.6	OK
S1.003	S1.03	8	47.294	0.537	0.000	1.76			52.7	SURCHARGED
S1.004	S1.04	8	47.291	0.565	0.000	0.33		22	10.1	SURCHARGED*
S1.005	S1.05	8	47.288	0.611	0.000	0.31			10.4	SURCHARGED
S5.000	S5.00	8	47.290	0.619	0.000	0.06			0.6	SURCHARGED
S5.001	S5.01	8	47.289	0.646	0.000	0.82			8.9	SURCHARGED
S1.006	S1.06	8	47.288	0.667	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 30 minute 100 year Summer I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	4	47.893	0.043	0.000	1.29			38.6	SURCHARGED
S1.001	S1.01	3	47.739	-0.086	0.000	0.70			40.1	OK
S2.000	S2.00	4	47.561	-0.114	0.000	0.13			2.4	OK
S3.000	S3.00	5	47.548	-0.112	0.000	0.14			3.3	OK
S1.002	S1.02	5	47.522	-0.003	0.000	1.00			46.4	OK
S4.000	S4.00	5	47.411	-0.051	0.000	0.25			3.3	OK
S1.003	S1.03	4	47.411	0.654	0.000	1.59			47.4	SURCHARGED
S1.004	S1.04	4	47.407	0.681	0.000	0.31		28	9.6	SURCHARGED*
S1.005	S1.05	4	47.403	0.725	0.000	0.30			10.0	SURCHARGED
S5.000	S5.00	4	47.398	0.727	0.000	0.05			0.6	SURCHARGED
S5.001	S5.01	4	47.398	0.754	0.000	0.73			7.9	SURCHARGED
S1.006	S1.06	4	47.396	0.776	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 60 minute 100 year Summer I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	5	47.803	-0.047	0.000	0.99			29.5	OK
S1.001	S1.01	5	47.717	-0.108	0.000	0.53			30.6	OK
S2.000	S2.00	6	47.556	-0.119	0.000	0.10			1.8	OK
S3.000	S3.00	6	47.543	-0.117	0.000	0.11			2.5	OK
S1.002	S1.02	6	47.451	-0.074	0.000	0.78			36.4	OK
S4.000	S4.00	3	47.428	-0.034	0.000	0.19			2.5	OK
S1.003	S1.03	3	47.427	0.670	0.000	1.25			37.2	SURCHARGED
S1.004	S1.04	3	47.423	0.698	0.000	0.32		37	10.0	SURCHARGED*
S1.005	S1.05	3	47.419	0.742	0.000	0.30			10.3	SURCHARGED
S5.000	S5.00	3	47.413	0.742	0.000	0.04			0.5	SURCHARGED
S5.001	S5.01	3	47.413	0.769	0.000	0.53			5.8	SURCHARGED
S1.006	S1.06	3	47.412	0.792	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 120 minute 100 year Summer I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	10	47.760	-0.090	0.000	0.67			20.0	OK
S1.001	S1.01	10	47.693	-0.132	0.000	0.36			20.7	OK
S2.000	S2.00	10	47.550	-0.125	0.000	0.07			1.2	OK
S3.000	S3.00	10	47.537	-0.123	0.000	0.07			1.7	OK
S1.002	S1.02	10	47.417	-0.108	0.000	0.53			24.6	OK
S4.000	S4.00	11	47.347	-0.115	0.000	0.13			1.7	OK
S1.003	S1.03	7	47.339	0.582	0.000	0.85			25.4	SURCHARGED
S1.004	S1.04	7	47.335	0.609	0.000	0.32		42	9.8	SURCHARGED*
S1.005	S1.05	7	47.330	0.653	0.000	0.31			10.3	SURCHARGED
S5.000	S5.00	7	47.325	0.654	0.000	0.03			0.3	SURCHARGED
S5.001	S5.01	7	47.325	0.681	0.000	0.37			4.0	SURCHARGED
S1.006	S1.06	7	47.324	0.703	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 180 minute 100 year Summer I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	13	47.739	-0.111	0.000	0.51			15.4	OK
S1.001	S1.01	13	47.681	-0.144	0.000	0.28			15.9	OK
S2.000	S2.00	13	47.547	-0.128	0.000	0.05			0.9	OK
S3.000	S3.00	13	47.533	-0.127	0.000	0.06			1.3	OK
S1.002	S1.02	14	47.400	-0.125	0.000	0.41			18.9	OK
S4.000	S4.00	14	47.343	-0.119	0.000	0.10			1.3	OK
S1.003	S1.03	9	47.181	0.424	0.000	0.65			19.5	SURCHARGED
S1.004	S1.04	9	47.177	0.452	0.000	0.31		33	9.5	SURCHARGED*
S1.005	S1.05	9	47.174	0.497	0.000	0.30			10.0	SURCHARGED
S5.000	S5.00	9	47.170	0.499	0.000	0.03			0.3	SURCHARGED
S5.001	S5.01	9	47.170	0.526	0.000	0.28			3.1	SURCHARGED
S1.006	S1.06	9	47.169	0.548	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 240 minute 100 year Summer I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	17	47.727	-0.123	0.000	0.42			12.6	OK
S1.001	S1.01	17	47.672	-0.153	0.000	0.23			13.0	OK
S2.000	S2.00	17	47.545	-0.130	0.000	0.04			0.8	OK
S3.000	S3.00	17	47.531	-0.129	0.000	0.05			1.1	OK
S1.002	S1.02	17	47.390	-0.135	0.000	0.33			15.5	OK
S4.000	S4.00	17	47.340	-0.122	0.000	0.08			1.1	OK
S1.003	S1.03	11	47.017	0.260	0.000	0.54			16.2	SURCHARGED
S1.004	S1.04	11	47.013	0.287	0.000	0.32		27	9.8	SURCHARGED*
S1.005	S1.05	11	47.010	0.333	0.000	0.30			10.2	SURCHARGED
S5.000	S5.00	11	47.011	0.340	0.000	0.02			0.3	SURCHARGED
S5.001	S5.01	11	47.010	0.366	0.000	0.24			2.6	SURCHARGED
S1.006	S1.06	11	47.008	0.388	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 360 minute 100 year Summer I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	25	47.711	-0.139	0.000	0.31			9.3	OK
S1.001	S1.01	25	47.662	-0.163	0.000	0.17			9.7	OK
S2.000	S2.00	25	47.542	-0.133	0.000	0.03			0.6	OK
S3.000	S3.00	25	47.528	-0.132	0.000	0.03			0.8	OK
S1.002	S1.02	25	47.376	-0.149	0.000	0.25			11.5	OK
S4.000	S4.00	25	47.336	-0.126	0.000	0.06			0.8	OK
S1.003	S1.03	19	46.750	-0.007	0.000	0.40			12.1	OK
S1.004	S1.04	19	46.742	0.017	0.000	0.30		24	9.2	SURCHARGED*
S1.005	S1.05	19	46.737	0.060	0.000	0.29			9.7	SURCHARGED
S5.000	S5.00	19	46.732	0.061	0.000	0.02			0.2	SURCHARGED
S5.001	S5.01	19	46.731	0.088	0.000	0.18			2.0	SURCHARGED
S1.006	S1.06	19	46.730	0.109	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 15 minute 1 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	23	47.714	-0.136	0.000	0.33			9.8	OK
S1.001	S1.01	23	47.664	-0.161	0.000	0.18			10.0	OK
S2.000	S2.00	23	47.543	-0.132	0.000	0.03			0.6	OK
S3.000	S3.00	23	47.529	-0.131	0.000	0.04			0.8	OK
S1.002	S1.02	23	47.378	-0.147	0.000	0.26			11.9	OK
S4.000	S4.00	23	47.337	-0.125	0.000	0.06			0.8	OK
S1.003	S1.03	26	46.636	-0.121	0.000	0.43			12.9	OK
S1.004	S1.04	29	46.599	-0.126	0.000	0.30		8	9.3	OK*
S1.005	S1.05	29	46.592	-0.086	0.000	0.28			9.4	OK
S5.000	S5.00	29	46.586	-0.085	0.000	0.02			0.2	OK
S5.001	S5.01	29	46.585	-0.058	0.000	0.17			1.9	OK
S1.006	S1.06	29	46.584	-0.036	0.000	0.16			10.3	OK

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Summary Wizard of 30 minute 1 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	31	47.703	-0.147	0.000	0.26			7.8	OK
S1.001	S1.01	31	47.656	-0.169	0.000	0.14			8.1	OK
S2.000	S2.00	31	47.541	-0.134	0.000	0.03			0.5	OK
S3.000	S3.00	31	47.527	-0.133	0.000	0.03			0.7	OK
S1.002	S1.02	31	47.369	-0.156	0.000	0.21			9.5	OK
S4.000	S4.00	31	47.333	-0.129	0.000	0.05			0.7	OK
S1.003	S1.03	31	46.622	-0.135	0.000	0.34			10.2	OK
S1.004	S1.04	33	46.589	-0.136	0.000	0.28		11	8.6	OK*
S1.005	S1.05	33	46.579	-0.099	0.000	0.26			8.8	OK
S5.000	S5.00	33	46.573	-0.098	0.000	0.02			0.2	OK
S5.001	S5.01	33	46.573	-0.071	0.000	0.14			1.5	OK
S1.006	S1.06	33	46.571	-0.049	0.000	0.15			10.1	OK

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Summary Wizard of 60 minute 1 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	38	47.689	-0.161	0.000	0.18			5.3	OK
S1.001	S1.01	38	47.647	-0.178	0.000	0.10			5.5	OK
S2.000	S2.00	38	47.538	-0.137	0.000	0.02			0.3	OK
S3.000	S3.00	38	47.524	-0.136	0.000	0.02			0.5	OK
S1.002	S1.02	38	47.356	-0.169	0.000	0.14			6.6	OK
S4.000	S4.00	38	47.330	-0.132	0.000	0.03			0.5	OK
S1.003	S1.03	38	46.606	-0.151	0.000	0.23			7.0	OK
S1.004	S1.04	38	46.572	-0.154	0.000	0.22		19	6.8	OK*
S1.005	S1.05	38	46.542	-0.136	0.000	0.21			7.2	OK
S5.000	S5.00	38	46.537	-0.134	0.000	0.01			0.1	OK
S5.001	S5.01	38	46.536	-0.108	0.000	0.10			1.1	OK
S1.006	S1.06	38	46.534	-0.086	0.000	0.13			8.2	OK

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Summary Wizard of 120 minute 1 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	47	47.676	-0.174	0.000	0.12			3.5	OK
S1.001	S1.01	47	47.636	-0.189	0.000	0.06			3.6	OK
S2.000	S2.00	47	47.533	-0.142	0.000	0.01			0.2	OK
S3.000	S3.00	47	47.519	-0.141	0.000	0.01			0.3	OK
S1.002	S1.02	47	47.346	-0.179	0.000	0.09			4.2	OK
S4.000	S4.00	47	47.327	-0.135	0.000	0.02			0.3	OK
S1.003	S1.03	47	46.590	-0.167	0.000	0.15			4.5	OK
S1.004	S1.04	47	46.557	-0.168	0.000	0.15		34	4.5	OK*
S1.005	S1.05	47	46.512	-0.166	0.000	0.14			4.8	OK
S5.000	S5.00	47	46.527	-0.144	0.000	0.01			0.1	OK
S5.001	S5.01	47	46.520	-0.124	0.000	0.07			0.8	OK
S1.006	S1.06	47	46.496	-0.124	0.000	0.08			5.5	OK

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Summary Wizard of 180 minute 1 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	52	47.670	-0.180	0.000	0.09			2.6	OK
S1.001	S1.01	52	47.631	-0.194	0.000	0.05			2.7	OK
S2.000	S2.00	52	47.531	-0.144	0.000	0.01			0.2	OK
S3.000	S3.00	52	47.517	-0.143	0.000	0.01			0.2	OK
S1.002	S1.02	52	47.339	-0.186	0.000	0.07			3.3	OK
S4.000	S4.00	52	47.324	-0.138	0.000	0.02			0.2	OK
S1.003	S1.03	52	46.583	-0.174	0.000	0.12			3.5	OK
S1.004	S1.04	52	46.550	-0.175	0.000	0.11		50	3.5	OK*
S1.005	S1.05	52	46.502	-0.176	0.000	0.11			3.7	OK
S5.000	S5.00	52	46.525	-0.146	0.000	0.01			0.1	OK
S5.001	S5.01	52	46.516	-0.128	0.000	0.05			0.6	OK
S1.006	S1.06	52	46.481	-0.139	0.000	0.06			4.2	OK

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Summary Wizard of 240 minute 1 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	54	47.665	-0.185	0.000	0.07			2.2	OK
S1.001	S1.01	54	47.629	-0.196	0.000	0.04			2.3	OK
S2.000	S2.00	54	47.530	-0.145	0.000	0.01			0.1	OK
S3.000	S3.00	54	47.516	-0.144	0.000	0.01			0.2	OK
S1.002	S1.02	54	47.335	-0.190	0.000	0.06			2.7	OK
S4.000	S4.00	54	47.322	-0.140	0.000	0.01			0.2	OK
S1.003	S1.03	54	46.579	-0.178	0.000	0.10			2.9	OK
S1.004	S1.04	54	46.546	-0.179	0.000	0.09		65	2.9	OK*
S1.005	S1.05	54	46.498	-0.180	0.000	0.09			3.0	OK
S5.000	S5.00	54	46.524	-0.147	0.000	0.00			0.1	OK
S5.001	S5.01	54	46.514	-0.130	0.000	0.04			0.5	OK
S1.006	S1.06	54	46.472	-0.148	0.000	0.05			3.5	OK

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Summary Wizard of 360 minute 1 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	56	47.659	-0.191	0.000	0.06			1.7	OK
S1.001	S1.01	56	47.626	-0.199	0.000	0.03			1.7	OK
S2.000	S2.00	56	47.529	-0.146	0.000	0.01			0.1	OK
S3.000	S3.00	56	47.514	-0.146	0.000	0.01			0.1	OK
S1.002	S1.02	56	47.330	-0.195	0.000	0.04			2.0	OK
S4.000	S4.00	56	47.320	-0.142	0.000	0.01			0.1	OK
S1.003	S1.03	56	46.572	-0.185	0.000	0.07			2.2	OK
S1.004	S1.04	56	46.539	-0.186	0.000	0.07		98	2.2	OK*
S1.005	S1.05	56	46.491	-0.187	0.000	0.07			2.3	OK
S5.000	S5.00	56	46.524	-0.147	0.000	0.00			0.0	OK
S5.001	S5.01	56	46.512	-0.132	0.000	0.03			0.4	OK
S1.006	S1.06	56	46.461	-0.159	0.000	0.04			2.7	OK

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Summary Wizard of 15 minute 2 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	16	47.728	-0.122	0.000	0.43			12.7	OK
S1.001	S1.01	16	47.673	-0.152	0.000	0.23			13.0	OK
S2.000	S2.00	16	47.545	-0.130	0.000	0.04			0.8	OK
S3.000	S3.00	16	47.531	-0.129	0.000	0.05			1.1	OK
S1.002	S1.02	16	47.390	-0.135	0.000	0.33			15.4	OK
S4.000	S4.00	16	47.341	-0.121	0.000	0.08			1.1	OK
S1.003	S1.03	22	46.653	-0.104	0.000	0.56			16.6	OK
S1.004	S1.04	22	46.642	-0.083	0.000	0.30		7	9.4	OK*
S1.005	S1.05	22	46.639	-0.039	0.000	0.28			9.5	OK
S5.000	S5.00	22	46.633	-0.038	0.000	0.03			0.3	OK
S5.001	S5.01	22	46.633	-0.011	0.000	0.20			2.2	OK
S1.006	S1.06	22	46.631	0.011	0.000	0.16			10.7	SURCHARGED

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Summary Wizard of 30 minute 2 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	22	47.715	-0.135	0.000	0.34			10.1	OK
S1.001	S1.01	22	47.664	-0.161	0.000	0.18			10.4	OK
S2.000	S2.00	22	47.543	-0.132	0.000	0.03			0.6	OK
S3.000	S3.00	22	47.529	-0.131	0.000	0.04			0.9	OK
S1.002	S1.02	22	47.379	-0.146	0.000	0.27			12.3	OK
S4.000	S4.00	22	47.337	-0.125	0.000	0.06			0.9	OK
S1.003	S1.03	25	46.636	-0.121	0.000	0.44			13.2	OK
S1.004	S1.04	23	46.631	-0.094	0.000	0.29		9	9.0	OK*
S1.005	S1.05	23	46.627	-0.050	0.000	0.27			9.3	OK
S5.000	S5.00	23	46.622	-0.049	0.000	0.02			0.2	OK
S5.001	S5.01	23	46.621	-0.022	0.000	0.17			1.9	OK
S1.006	S1.06	23	46.620	0.000	0.000	0.16			10.6	OK

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Summary Wizard of 60 minute 2 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	33	47.697	-0.153	0.000	0.23			6.8	OK
S1.001	S1.01	33	47.652	-0.173	0.000	0.12			7.1	OK
S2.000	S2.00	33	47.540	-0.135	0.000	0.02			0.4	OK
S3.000	S3.00	33	47.526	-0.134	0.000	0.03			0.6	OK
S1.002	S1.02	33	47.364	-0.161	0.000	0.18			8.4	OK
S4.000	S4.00	33	47.332	-0.130	0.000	0.04			0.6	OK
S1.003	S1.03	34	46.616	-0.141	0.000	0.30			8.9	OK
S1.004	S1.04	34	46.586	-0.140	0.000	0.27		17	8.2	OK*
S1.005	S1.05	34	46.574	-0.104	0.000	0.26			8.7	OK
S5.000	S5.00	34	46.568	-0.103	0.000	0.01			0.2	OK
S5.001	S5.01	34	46.568	-0.076	0.000	0.13			1.4	OK
S1.006	S1.06	34	46.566	-0.054	0.000	0.15			10.0	OK

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Summary Wizard of 120 minute 2 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	43	47.682	-0.168	0.000	0.14			4.3	OK
S1.001	S1.01	43	47.642	-0.183	0.000	0.08			4.5	OK
S2.000	S2.00	43	47.535	-0.140	0.000	0.01			0.3	OK
S3.000	S3.00	43	47.521	-0.139	0.000	0.02			0.4	OK
S1.002	S1.02	43	47.351	-0.174	0.000	0.12			5.3	OK
S4.000	S4.00	43	47.328	-0.134	0.000	0.03			0.4	OK
S1.003	S1.03	43	46.598	-0.159	0.000	0.19			5.7	OK
S1.004	S1.04	43	46.565	-0.161	0.000	0.18		33	5.6	OK*
S1.005	S1.05	42	46.525	-0.152	0.000	0.18			6.0	OK
S5.000	S5.00	43	46.529	-0.142	0.000	0.01			0.1	OK
S5.001	S5.01	43	46.524	-0.120	0.000	0.09			0.9	OK
S1.006	S1.06	42	46.514	-0.106	0.000	0.11			6.9	OK

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Summary Wizard of 180 minute 2 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	48	47.674	-0.176	0.000	0.11			3.3	OK
S1.001	S1.01	48	47.635	-0.190	0.000	0.06			3.4	OK
S2.000	S2.00	48	47.533	-0.142	0.000	0.01			0.2	OK
S3.000	S3.00	48	47.519	-0.141	0.000	0.01			0.3	OK
S1.002	S1.02	48	47.345	-0.180	0.000	0.09			4.0	OK
S4.000	S4.00	48	47.327	-0.135	0.000	0.02			0.3	OK
S1.003	S1.03	48	46.589	-0.168	0.000	0.14			4.3	OK
S1.004	S1.04	48	46.556	-0.169	0.000	0.14		48	4.3	OK*
S1.005	S1.05	48	46.510	-0.168	0.000	0.14			4.6	OK
S5.000	S5.00	48	46.526	-0.145	0.000	0.01			0.1	OK
S5.001	S5.01	48	46.519	-0.125	0.000	0.07			0.7	OK
S1.006	S1.06	48	46.494	-0.126	0.000	0.08			5.3	OK

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Summary Wizard of 240 minute 2 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	51	47.670	-0.180	0.000	0.09			2.7	OK
S1.001	S1.01	51	47.632	-0.193	0.000	0.05			2.8	OK
S2.000	S2.00	51	47.531	-0.144	0.000	0.01			0.2	OK
S3.000	S3.00	51	47.517	-0.143	0.000	0.01			0.2	OK
S1.002	S1.02	51	47.339	-0.186	0.000	0.07			3.3	OK
S4.000	S4.00	51	47.324	-0.138	0.000	0.02			0.2	OK
S1.003	S1.03	51	46.583	-0.174	0.000	0.12			3.5	OK
S1.004	S1.04	51	46.551	-0.175	0.000	0.11		64	3.5	OK*
S1.005	S1.05	51	46.502	-0.175	0.000	0.11			3.8	OK
S5.000	S5.00	51	46.525	-0.146	0.000	0.01			0.1	OK
S5.001	S5.01	51	46.516	-0.128	0.000	0.05			0.6	OK
S1.006	S1.06	51	46.482	-0.138	0.000	0.07			4.3	OK

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Summary Wizard of 360 minute 2 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	55	47.663	-0.187	0.000	0.07			2.0	OK
S1.001	S1.01	55	47.628	-0.197	0.000	0.04			2.1	OK
S2.000	S2.00	55	47.530	-0.145	0.000	0.01			0.1	OK
S3.000	S3.00	55	47.515	-0.145	0.000	0.01			0.2	OK
S1.002	S1.02	55	47.333	-0.192	0.000	0.05			2.5	OK
S4.000	S4.00	55	47.321	-0.141	0.000	0.01			0.2	OK
S1.003	S1.03	55	46.577	-0.180	0.000	0.09			2.7	OK
S1.004	S1.04	55	46.545	-0.181	0.000	0.09		97	2.7	OK*
S1.005	S1.05	55	46.496	-0.182	0.000	0.08			2.8	OK
S5.000	S5.00	55	46.524	-0.147	0.000	0.00			0.0	OK
S5.001	S5.01	55	46.513	-0.131	0.000	0.04			0.4	OK
S1.006	S1.06	55	46.469	-0.151	0.000	0.05			3.3	OK

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Summary Wizard of 15 minute 30 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	6	47.780	-0.070	0.000	0.80			24.0	OK
S1.001	S1.01	6	47.705	-0.120	0.000	0.43			24.7	OK
S2.000	S2.00	7	47.553	-0.122	0.000	0.08			1.5	OK
S3.000	S3.00	7	47.540	-0.120	0.000	0.09			2.1	OK
S1.002	S1.02	7	47.433	-0.092	0.000	0.64			29.5	OK
S4.000	S4.00	8	47.351	-0.111	0.000	0.15			2.1	OK
S1.003	S1.03	13	46.895	0.138	0.000	1.03			30.8	SURCHARGED
S1.004	S1.04	13	46.891	0.166	0.000	0.33		12	10.1	SURCHARGED*
S1.005	S1.05	13	46.890	0.213	0.000	0.31			10.4	SURCHARGED
S5.000	S5.00	13	46.887	0.216	0.000	0.04			0.4	SURCHARGED
S5.001	S5.01	13	46.887	0.243	0.000	0.45			4.9	SURCHARGED
S1.006	S1.06	13	46.886	0.266	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 30 minute 30 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	11	47.756	-0.094	0.000	0.64			19.1	OK
S1.001	S1.01	11	47.691	-0.134	0.000	0.35			19.8	OK
S2.000	S2.00	11	47.550	-0.125	0.000	0.06			1.2	OK
S3.000	S3.00	11	47.536	-0.124	0.000	0.07			1.6	OK
S1.002	S1.02	11	47.414	-0.111	0.000	0.51			23.6	OK
S4.000	S4.00	12	47.347	-0.115	0.000	0.12			1.6	OK
S1.003	S1.03	12	46.920	0.163	0.000	0.80			24.1	SURCHARGED
S1.004	S1.04	12	46.916	0.190	0.000	0.33		15	10.1	SURCHARGED*
S1.005	S1.05	12	46.913	0.236	0.000	0.31			10.3	SURCHARGED
S5.000	S5.00	12	46.907	0.236	0.000	0.03			0.3	SURCHARGED
S5.001	S5.01	12	46.906	0.263	0.000	0.35			3.8	SURCHARGED
S1.006	S1.06	12	46.905	0.285	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 60 minute 30 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	15	47.728	-0.122	0.000	0.43			13.0	OK
S1.001	S1.01	15	47.674	-0.151	0.000	0.24			13.5	OK
S2.000	S2.00	15	47.545	-0.130	0.000	0.04			0.8	OK
S3.000	S3.00	15	47.531	-0.129	0.000	0.05			1.1	OK
S1.002	S1.02	15	47.391	-0.134	0.000	0.34			16.0	OK
S4.000	S4.00	15	47.341	-0.121	0.000	0.08			1.1	OK
S1.003	S1.03	17	46.834	0.077	0.000	0.56			16.7	SURCHARGED
S1.004	S1.04	17	46.830	0.104	0.000	0.31		16	9.7	SURCHARGED*
S1.005	S1.05	16	46.827	0.149	0.000	0.30			10.1	SURCHARGED
S5.000	S5.00	16	46.822	0.151	0.000	0.02			0.3	SURCHARGED
S5.001	S5.01	16	46.822	0.178	0.000	0.24			2.7	SURCHARGED
S1.006	S1.06	16	46.821	0.200	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 120 minute 30 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	30	47.705	-0.145	0.000	0.27			8.2	OK
S1.001	S1.01	30	47.657	-0.168	0.000	0.15			8.5	OK
S2.000	S2.00	30	47.541	-0.134	0.000	0.03			0.5	OK
S3.000	S3.00	30	47.527	-0.133	0.000	0.03			0.7	OK
S1.002	S1.02	30	47.371	-0.154	0.000	0.22			10.1	OK
S4.000	S4.00	30	47.334	-0.128	0.000	0.05			0.7	OK
S1.003	S1.03	21	46.658	-0.099	0.000	0.36			10.7	OK
S1.004	S1.04	21	46.654	-0.072	0.000	0.29		16	8.8	OK*
S1.005	S1.05	21	46.649	-0.029	0.000	0.28			9.4	OK
S5.000	S5.00	21	46.643	-0.028	0.000	0.02			0.2	OK
S5.001	S5.01	21	46.643	-0.001	0.000	0.16			1.7	OK
S1.006	S1.06	21	46.641	0.021	0.000	0.16			10.7	SURCHARGED

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Summary Wizard of 180 minute 30 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	36	47.694	-0.156	0.000	0.21			6.2	OK
S1.001	S1.01	36	47.650	-0.175	0.000	0.11			6.4	OK
S2.000	S2.00	36	47.540	-0.135	0.000	0.02			0.4	OK
S3.000	S3.00	36	47.525	-0.135	0.000	0.02			0.5	OK
S1.002	S1.02	36	47.361	-0.164	0.000	0.16			7.6	OK
S4.000	S4.00	36	47.331	-0.131	0.000	0.04			0.5	OK
S1.003	S1.03	36	46.611	-0.146	0.000	0.27			8.1	OK
S1.004	S1.04	35	46.581	-0.144	0.000	0.26		43	7.9	OK*
S1.005	S1.05	35	46.568	-0.109	0.000	0.25			8.4	OK
S5.000	S5.00	35	46.563	-0.108	0.000	0.01			0.1	OK
S5.001	S5.01	35	46.562	-0.081	0.000	0.12			1.3	OK
S1.006	S1.06	35	46.561	-0.059	0.000	0.15			9.7	OK

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Summary Wizard of 240 minute 30 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	40	47.686	-0.164	0.000	0.17			5.0	OK
S1.001	S1.01	40	47.645	-0.180	0.000	0.09			5.2	OK
S2.000	S2.00	40	47.537	-0.138	0.000	0.02			0.3	OK
S3.000	S3.00	40	47.523	-0.137	0.000	0.02			0.4	OK
S1.002	S1.02	40	47.354	-0.171	0.000	0.13			6.2	OK
S4.000	S4.00	40	47.329	-0.133	0.000	0.03			0.4	OK
S1.003	S1.03	40	46.603	-0.154	0.000	0.22			6.6	OK
S1.004	S1.04	40	46.570	-0.155	0.000	0.21		61	6.6	OK*
S1.005	S1.05	40	46.540	-0.138	0.000	0.21			7.0	OK
S5.000	S5.00	40	46.536	-0.135	0.000	0.01			0.1	OK
S5.001	S5.01	40	46.534	-0.110	0.000	0.10			1.1	OK
S1.006	S1.06	40	46.532	-0.088	0.000	0.12			8.1	OK

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Summary Wizard of 360 minute 30 year Winter I+0% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	44	47.677	-0.173	0.000	0.12			3.7	OK
S1.001	S1.01	44	47.638	-0.187	0.000	0.07			3.8	OK
S2.000	S2.00	44	47.534	-0.141	0.000	0.01			0.2	OK
S3.000	S3.00	44	47.520	-0.140	0.000	0.01			0.3	OK
S1.002	S1.02	44	47.347	-0.178	0.000	0.10			4.6	OK
S4.000	S4.00	44	47.328	-0.134	0.000	0.02			0.3	OK
S1.003	S1.03	44	46.592	-0.165	0.000	0.16			4.9	OK
S1.004	S1.04	44	46.560	-0.166	0.000	0.16		90	4.9	OK*
S1.005	S1.05	44	46.516	-0.161	0.000	0.15			5.2	OK
S5.000	S5.00	44	46.527	-0.144	0.000	0.01			0.1	OK
S5.001	S5.01	44	46.521	-0.123	0.000	0.07			0.8	OK
S1.006	S1.06	44	46.502	-0.118	0.000	0.09			6.0	OK

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Summary Wizard of 15 minute 100 year Winter I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	1	47.912	0.062	0.000	1.45			43.4	SURCHARGED
S1.001	S1.01	1	47.754	-0.071	0.000	0.78			44.7	OK
S2.000	S2.00	1	47.571	-0.104	0.000	0.14			2.6	OK
S3.000	S3.00	1	47.563	-0.097	0.000	0.16			3.7	OK
S1.002	S1.02	3	47.556	0.031	0.000	1.16			53.9	SURCHARGED
S4.000	S4.00	4	47.412	-0.050	0.000	0.28			3.7	OK
S1.003	S1.03	5	47.409	0.652	0.000	1.83			54.8	SURCHARGED
S1.004	S1.04	5	47.402	0.677	0.000	0.32		25	9.8	SURCHARGED*
S1.005	S1.05	5	47.397	0.719	0.000	0.30			10.2	SURCHARGED
S5.000	S5.00	5	47.397	0.726	0.000	0.06			0.7	SURCHARGED
S5.001	S5.01	5	47.396	0.752	0.000	0.82			8.9	SURCHARGED
S1.006	S1.06	5	47.393	0.772	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 30 minute 100 year Winter I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	3	47.896	0.046	0.000	1.17			34.9	SURCHARGED
S1.001	S1.01	4	47.730	-0.095	0.000	0.63			36.2	OK
S2.000	S2.00	3	47.563	-0.112	0.000	0.12			2.1	OK
S3.000	S3.00	2	47.561	-0.099	0.000	0.13			3.0	OK
S1.002	S1.02	1	47.558	0.033	0.000	0.93			43.3	SURCHARGED
S4.000	S4.00	2	47.544	0.082	0.000	0.22			3.0	SURCHARGED
S1.003	S1.03	2	47.543	0.786	0.000	1.48			44.4	SURCHARGED
S1.004	S1.04	2	47.539	0.813	0.000	0.30		31	9.1	SURCHARGED*
S1.005	S1.05	2	47.533	0.856	0.000	0.28			9.4	SURCHARGED
S5.000	S5.00	2	47.529	0.858	0.000	0.05			0.5	SURCHARGED
S5.001	S5.01	2	47.529	0.885	0.000	0.63			6.8	SURCHARGED
S1.006	S1.06	2	47.527	0.907	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 60 minute 100 year Winter I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	7	47.778	-0.072	0.000	0.80			23.9	OK
S1.001	S1.01	7	47.703	-0.122	0.000	0.43			24.7	OK
S2.000	S2.00	5	47.559	-0.116	0.000	0.08			1.5	OK
S3.000	S3.00	3	47.559	-0.101	0.000	0.09			2.0	OK
S1.002	S1.02	2	47.558	0.033	0.000	0.63			29.4	SURCHARGED
S4.000	S4.00	1	47.550	0.088	0.000	0.15			2.0	SURCHARGED
S1.003	S1.03	1	47.549	0.792	0.000	1.01			30.2	SURCHARGED
S1.004	S1.04	1	47.545	0.819	0.000	0.32		38	9.8	SURCHARGED*
S1.005	S1.05	1	47.540	0.862	0.000	0.30			10.2	SURCHARGED
S5.000	S5.00	1	47.534	0.863	0.000	0.03			0.4	SURCHARGED
S5.001	S5.01	1	47.534	0.890	0.000	0.42			4.6	SURCHARGED
S1.006	S1.06	1	47.532	0.912	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 120 minute 100 year Winter I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	14	47.738	-0.112	0.000	0.51			15.1	OK
S1.001	S1.01	14	47.680	-0.145	0.000	0.27			15.7	OK
S2.000	S2.00	14	47.547	-0.128	0.000	0.05			0.9	OK
S3.000	S3.00	14	47.533	-0.127	0.000	0.06			1.3	OK
S1.002	S1.02	12	47.407	-0.118	0.000	0.40			18.6	OK
S4.000	S4.00	6	47.399	-0.063	0.000	0.10			1.3	OK
S1.003	S1.03	6	47.399	0.642	0.000	0.64			19.2	SURCHARGED
S1.004	S1.04	6	47.395	0.669	0.000	0.32		43	9.8	SURCHARGED*
S1.005	S1.05	6	47.391	0.713	0.000	0.31			10.3	SURCHARGED
S5.000	S5.00	6	47.385	0.714	0.000	0.03			0.3	SURCHARGED
S5.001	S5.01	6	47.385	0.741	0.000	0.28			3.0	SURCHARGED
S1.006	S1.06	6	47.384	0.764	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 180 minute 100 year Winter I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	19	47.721	-0.129	0.000	0.38			11.3	OK
S1.001	S1.01	19	47.669	-0.156	0.000	0.21			11.8	OK
S2.000	S2.00	19	47.544	-0.131	0.000	0.04			0.7	OK
S3.000	S3.00	19	47.530	-0.130	0.000	0.04			1.0	OK
S1.002	S1.02	19	47.384	-0.141	0.000	0.30			14.0	OK
S4.000	S4.00	19	47.338	-0.124	0.000	0.07			1.0	OK
S1.003	S1.03	10	47.142	0.385	0.000	0.49			14.6	SURCHARGED
S1.004	S1.04	10	47.138	0.413	0.000	0.32		35	9.8	SURCHARGED*
S1.005	S1.05	10	47.134	0.456	0.000	0.30			10.1	SURCHARGED
S5.000	S5.00	10	47.128	0.457	0.000	0.02			0.2	SURCHARGED
S5.001	S5.01	10	47.128	0.484	0.000	0.22			2.4	SURCHARGED
S1.006	S1.06	10	47.127	0.507	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 240 minute 100 year Winter I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	26	47.710	-0.140	0.000	0.31			9.2	OK
S1.001	S1.01	26	47.661	-0.164	0.000	0.17			9.5	OK
S2.000	S2.00	26	47.542	-0.133	0.000	0.03			0.6	OK
S3.000	S3.00	26	47.528	-0.132	0.000	0.03			0.8	OK
S1.002	S1.02	26	47.375	-0.150	0.000	0.24			11.3	OK
S4.000	S4.00	26	47.335	-0.127	0.000	0.06			0.8	OK
S1.003	S1.03	15	46.855	0.098	0.000	0.40			11.9	SURCHARGED
S1.004	S1.04	15	46.851	0.125	0.000	0.30		27	9.4	SURCHARGED*
S1.005	S1.05	15	46.846	0.169	0.000	0.29			9.9	SURCHARGED
S5.000	S5.00	15	46.841	0.170	0.000	0.02			0.2	SURCHARGED
S5.001	S5.01	15	46.841	0.197	0.000	0.18			2.0	SURCHARGED
S1.006	S1.06	15	46.839	0.219	0.000	0.17			10.9	SURCHARGED

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Summary Wizard of 360 minute 100 year Winter I+40% for Storm

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1.00	34	47.697	-0.153	0.000	0.23			6.7	OK
S1.001	S1.01	34	47.652	-0.173	0.000	0.12			7.0	OK
S2.000	S2.00	34	47.540	-0.135	0.000	0.02			0.4	OK
S3.000	S3.00	34	47.526	-0.134	0.000	0.03			0.6	OK
S1.002	S1.02	34	47.364	-0.161	0.000	0.18			8.3	OK
S4.000	S4.00	34	47.332	-0.130	0.000	0.04			0.6	OK
S1.003	S1.03	33	46.616	-0.141	0.000	0.30			8.9	OK
S1.004	S1.04	27	46.607	-0.119	0.000	0.27		56	8.4	OK*
S1.005	S1.05	27	46.601	-0.077	0.000	0.27			9.0	OK
S5.000	S5.00	27	46.595	-0.076	0.000	0.01			0.2	OK
S5.001	S5.01	27	46.595	-0.049	0.000	0.13			1.5	OK
S1.006	S1.06	27	46.593	-0.027	0.000	0.16			10.4	OK

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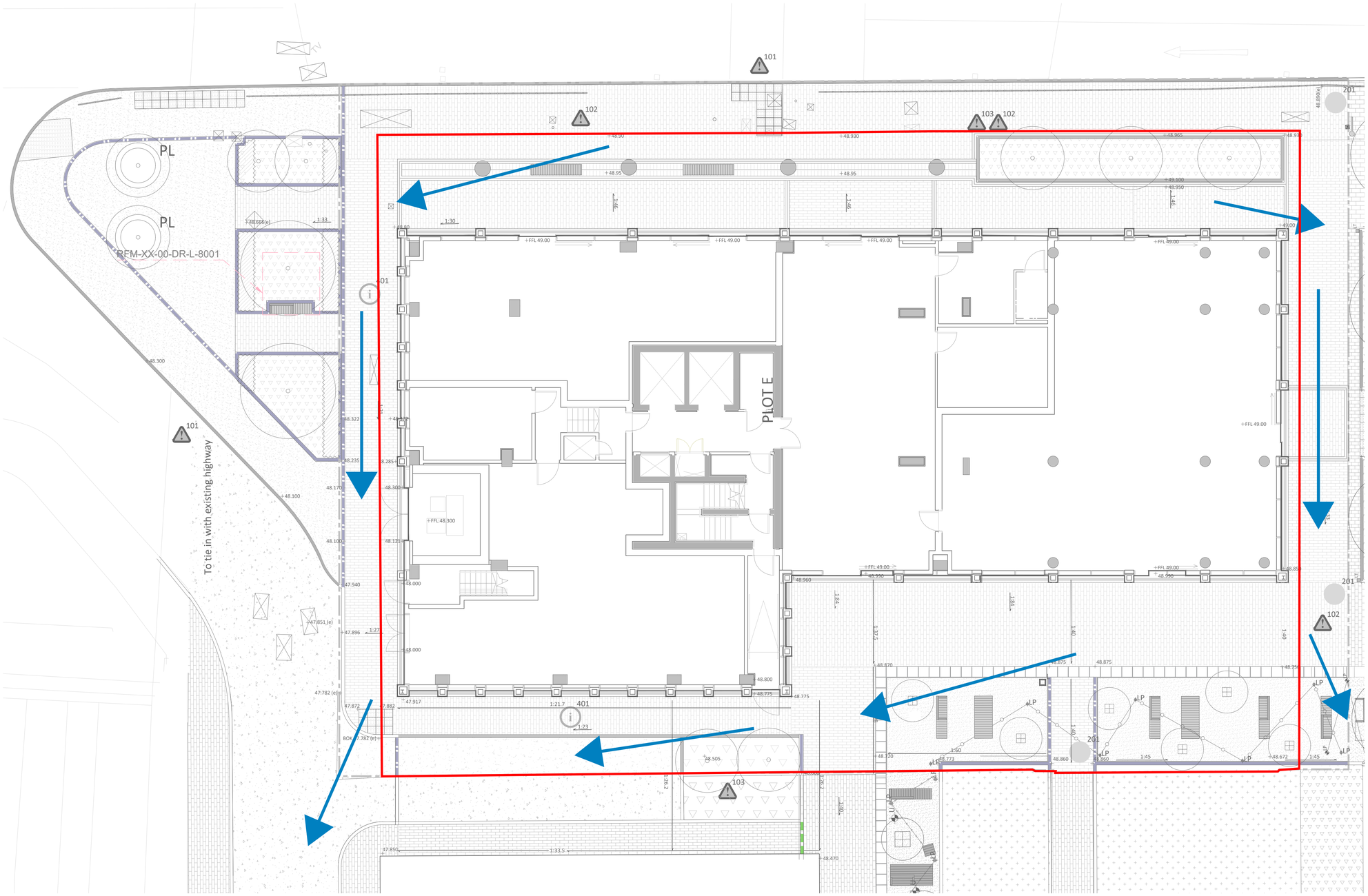
APPENDIX H
Overland Flood Routes



NOTES:

GENERAL NOTES

1. THIS DRAWING IS INTENDED TO OUTLINE THE KNOWN CIVIL AND STRUCTURAL ENGINEERING SITE CONSTRAINTS.
2. DO NOT SCALE FROM THIS DRAWING
3. FOR FURTHER DETAILS OF ITEMS NOTED ON THIS DRAWING, REFER TO ARCHITECTURAL AND CIVIL AND STRUCTURAL INFORMATION

OVERLAND FLOOD RISK
OVERLAND FLOOD ROUTING MIMICS THE EXISITNG SCENARIO WITH OVERLAND SURFACE FLOWS. DIRECTED AROUND BUILDING AS IS CURRENTLY THE CASE WITH THE EXISTING BUILDING. THEREFORE THE NEW BUILDING DOES NOT INCREASE THE FLOODING RISK TO ADJACENT PROPERTIES OR THE HIGHWAY.

Rev:	Description:	Date:	By:	Chkd:
P01	FOR INFORMATION	24.05.22	HW	

renaissance

Renaissance Associates Ltd
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

Project:

VICTORIA HOUSE, MANCHESTER

Drawing Title:

OVERLAND FLOOD ROUTES

Status:

FOR INFORMATION

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	MAY'22	HW		

Scale:	Project No:
1:100	2007-04

Project:	Originator:	Volume:	Level:	Type:	Role:	Category/Number:	Rev:
VHM-REN-00-00-SK-C-220523							

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