

Drainage Maintenance Strategy

for

59 Upper Chorlton Road

for

Armistead Property Limited

Quality Management

Job No	12830		
Project	59 Upper Chorlton Road		
Location	Manchester		
Title	Drainage Maintenance Strategy		
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Rev	Date	Issue / Purpose/ Comment	Prepared	Checked
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Maintenance Strategy

General

This document has been prepared to provide a maintenance methodology to the surface water drainage elements proposed for this development. If any discrepancies from manufactures guidance are encountered, the proprietary system guidance should be adopted.

The surface water strategy is composed of linear drainage channels, filter drains, gravel pits & Geo cellular infiltration tanks with a connecting pipe network, manholes & inspection chambers. Refer to drawings UCR-MaG-ZZ-00-DR-C-00100 P3 for the as constructed drainage layout.

Any man-entry into the system and silt removal should be carried out by trained personnel with adequate personal protective equipment. Approved safety procedures must be followed in accordance with the Health and Safety Act.

This drainage system's maintenance will be the responsibility of the project developer or by an appointed maintenance company and as such an appropriated maintenance regime should be implemented.

Drainage Design Philosophy

The general principal of the surface water drainage strategy is to collect the runoff from the roofs of the main building and direct it to a number of new RWPs that will drop down to a new surface water network on either side. The access road will drain to the parking bays that will be constructed in a permeable surfacing and allow infiltration direct to the underlying sand. The new drainage will then outfall to a geocellular soakaway chamber in the centre of the rear car park.

Full calculations have been carried out and show no flooding up to and including the 100yr + 40% climate change storm event.

The proposed foul water drainage system detailed on Marston & Grundy drainage drawings has been designed to drain by gravity and discharge into the existing UU sewer on Upper Chorlton.

The drainage system for the new development has been designed adequately with suitable gradients, silt pits, catchpits and access points to reduce the requirement for maintenance other than periodic inspections, unless a blockage occurs. On completion of the main drainage installation during the development works a full CCTV drainage survey will be completed to confirm that the as built drainage installation is fully operational and in good working order.

Health, Safety and Welfare

All those responsible for maintenance should take appropriate health, safety and welfare precautions for all activities including lone working, if relevant, and risk assessments should always be undertaken. The site's infrastructure Health and Safety File should be consulted before carrying out any works either inside or outside of the development's boundary and information regarding the location of existing utilities passed on to operatives.

The requirements of the Health and Safety at Work Act 1974 and The Construction (Design and Management) Regulations 2015 should be adhered to and any residual risks identified in the Health and Safety File should be managed and information passed on to maintenance operatives through task specific risk assessments.

Operation and Maintenance

There are three types of maintenance activities associated with surface water drainage systems. The SuDS Manual, CIRIA C753, defines these as:

Regular Maintenance – *'basic tasks undertaken on a frequent and predictable schedule' including vegetation management, litter and debris removal, and inspections.'*

Occasional Maintenance – *'tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).'*

Remedial Maintenance – *'intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.'*

Specific maintenance needs should be monitored and maintenance schedules adjusted to suit the location and condition of the drainage feature in question.

Operation and Maintenance Activity	SuDS Component					
	Piped Network / Inspection Chambers	Attenuation Basins	Swale / Ditch	Permeable Paving	Geocellular Infiltration / Attenuation Tanks	Proprietary Treatment Systems
Regular Maintenance						
Inspection	■	■	■	■	■	■
Litter And Debris Removal	■	■	■	■	□	□
Grass Cutting		■	■		□	
Weed And Invasive Plant Control		□				
Shrub Management (Including Pruning)		□	□			
Shoreline Vegetation Management		□				
Aquatic Vegetation Management		□				
Occasional Maintenance						
Sediment Management ¹	■	■	■	■	■	■
Vegetation Replacement		□	□			
Vacuum Sweeping And Brushing				■		
Remedial Maintenance						
Structure Rehabilitation / Repair	□	□	□	□	□	
Infiltration Surface Reconditioning				□	□	
■ Will be required □ May be required ■ ¹ Sediment should be collected and managed in pre-treatment systems, upstream of the main device.						

Extract From The Suds Manual Table 32.1: Typical Key Suds Components Operation And Maintenance Activities.

Piped Network / Inspection Chambers / Catchpits

Piped network components require regular inspection and maintenance to ensure that the individual components continue to operate as designed, both in terms of hydraulic capacity and potential pollutant removal. All the gullies, inspection chambers and catchpits will therefore be inspected and cleaned regularly.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then six monthly
	Debris removal from catchment surface / gratings (where may cause risks to performance)	Monthly (and after large storms)
	Remove sediment from trapped sumps, manholes and catchpits.	Annually or as required
Remedial Maintenance	Repair / rehabilitation of gratings, inlets and outlets	As required
Monitoring	Inspect / check all gratings, trapped sumps, manholes and catchpits to ensure that they are in good condition and operating as designed	Annually and after large storm events
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of features or pipework is required.	As required

Operation And Maintenance Of Piped Network / Inspection Chambers

Soakaway / Attenuation Tanks

Geocellular tanks are modular storage systems made with plastic units. These units can be assembled in different shapes to achieved the required volume and usually on multiple layers.

Generally, the units have 95% of voids content and are used to create an efficient below ground structure to store surface water.

Table 2 sets out the recommended maintenance actions and frequency, refer to manufacture's guidance notes.

Maintenance Schedule	Required action	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 the surface of filter for blockages by sediment, algae or other matter; remove and replace surface infiltration medium as required.	Annually.
	Remove sediments from pre-treatment structures and/or internal forebays.	Annually, or as required.
Remedial Actions	Repair/rehabilitate inlets, outlets, 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 the tank for sediment build-up and remove if necessary.	Every 5 years or as required.

Operation & Maintenance Requirements For Attenuation Storage Tanks

Porous Paved Area

The following Table 7 sets out the recommended maintenance actions and frequency for porous paved area.

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surfaces from adjacent impermeable areas as this are is most likely to collect the most sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas.	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements.
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the surface.	As required
	Remedial works to any depressions, rutting and cracked considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping.	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Inspect for evidence of poor operation and/or weed growth -if required, take remedial action	Three-monthly, 48 hours after large storms in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor inspection chambers	Annually

Operation & Maintenance Requirements Porous Paved Areas

DRAINAGE NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS, SPECIFICATIONS AND DOCUMENTATION.
- THE POSITION, SIZE AND LEVELS OF ALL DRAINS ARE TO BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS AND ANY DISCREPANCIES REPORTED IMMEDIATELY TO THE ENGINEER.
- DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
- THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
- ALL PRIVATE DRAINAGE WITHIN THE SITE IS TO COMPLY WITH THE REQUIREMENTS OF THE RELEVANT BRITISH/EUROPEAN STANDARD AND THE BUILDING REGULATIONS PART H. CONCRETE PROTECTION TO PIPEWORK IS TO BE PROVIDED AS FOLLOWS:
 - ALL PIPEWORK WITHIN PEDESTRIAN/SOFT AREAS WITH LESS THAN 600MM COVER.
 - ALL PIPEWORK SUBJECT TO VEHICULAR OVERRUN WITH LESS THAN 1.2M COVER.
- ALL PIPEWORK WITHIN MANHOLES ARE TO BE LAID SOFFIT TO SOFFIT (U.N.O.). ALL CHAMBER INVERT LEVELS ARE FOR THE OUTGOING PIPE LEVELS. BACKDROP PIPEWORK SHALL BE CONNECTED AT SOFFIT TO SOFFIT WITH THE RODDING ACCESS LEVEL SPECIFIED.
- ANY GRADIENTS OF DRAINS INDICATED ARE INDICATIVE ONLY AND THE CONTRACTOR SHALL INSTALL THE DRAINS TO THE SPECIFIED LEVELS SHOWN FOR EACH MANHOLE (U.N.O.). CATCHPIT INVERT LEVELS ARE FOR THE OUTGOING PIPE WITH THE SUMP LEVEL SPECIFIED SEPARATELY.
- CO-ORDINATE SETTING OUT INFORMATION FOR MANHOLES IS TO THE INTERSECTION THE DRAINS AND NOT THE CENTRE OF THE MANHOLE.

- COVER LEVELS OF THE MANHOLES ARE PROVISIONAL AND SUBJECT TO ADJUSTMENT ON SITE TO SUIT THE FINISHED GROUND LEVELS. ALL EXTERNAL WORKS CONSTRUCTION AREAS TO BE AS LOCATED BY THE ARCHITECT.
- MANHOLE COVERS AND FRAMES ARE TO BE IN ACCORDANCE WITH THE RELEVANT BRITISH/EUROPEAN STANDARD AND THE FOLLOWING:
 - VEHICULAR AREAS: CLASS E600 & D400, DOUBLE TRIANGULAR, 150MM DEEP DUCTILE IRON COVER AND FRAME WITH THREE POINT COVER SEATING, BADGED FW OR SW FOR FOUL OR SURFACE WATER DRAINAGE.
 - PEDESTRIAN AREAS: CLASS B125/C250, 100MM DEEP, BADGED FW OR SW FOR FOUL OR SURFACE WATER DRAINAGE.
- DOUBLE SEAL MANHOLE COVERS AND FRAMES ARE TO BE USED ON INTERNAL FOUL WATER DRAINAGE CHAMBERS. FINISH TO BE CONFIRMED BY THE ARCHITECT.
- HEAVY DUTY COVER SLABS ARE TO BE USED WITHIN VEHICULAR TRAFFICKED AREAS.
- GULLY GRATINGS AND STEEL CHANNEL COVERS ARE TO BE IN ACCORDANCE WITH THE RELEVANT BRITISH/EUROPEAN STANDARD AS FOLLOWS:
 - AREAS SUBJECT TO VEHICULAR OVERRUN: CLASS D400 MINIMUM.
 - AREAS NOT SUBJECT TO REGULAR VEHICLE OVERRUN (ADJACENT TO KERBS ETC): CLASS C250.
 - GULLY GRATINGS ADJACENT TO KERBS SHALL BE HINGED ON THE SIDE OF THE TRAFFIC DIRECTION (LEFT HAND SIDE).
- POSITIONS AND SIZES OF ABOVE GROUND FOUL AND SURFACE WATER DRAINAGE CONNECTIONS ARE TO BE CONFIRMED PRIOR TO CONSTRUCTION WITH THE ARCHITECT AND M&E ENGINEER.
- DIAMETER OF PCC MANHOLES VARIES WITH PIPE SIZE, AND IS TO BE IN ACCORDANCE WITH THE TABLES SHOWN ON THE ACCOMPANYING MARSTON & GRUNDY STANDARD DETAILS DRAWINGS.
- ALL BRICKWORK IN CONNECTION WITH DRAINAGE IS TO BE SOLID CLASS B ENGINEERING BRICK TO THE RELEVANT BRITISH/EUROPEAN STANDARD.

- ALL PRECAST CONCRETE PIPES, CHAMBER PRODUCTS AND ROAD GULLIES SHALL BE TO THE RELEVANT BRITISH/EUROPEAN STANDARD AND SHOULD BE KITE-MARKED/CE-MARKED ACCORDINGLY.
- INSITU CONCRETE GRADES TO BE AS STATED ON THE DRAWINGS. DESIGN CHEMICAL CLASS FOR ALL PRECAST CONCRETE PRODUCTS SHALL BE DC4 UNLESS AGREED OTHERWISE.
- ALL BELOW GROUND PLASTIC/GRP TANKS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. THEY SHALL BE PROVIDED WITH SUFFICIENT CONCRETE SURROUND TO COUNTER FLOATATION AND SHALL HAVE A WALL THICKNESS ADEQUATE TO RESIST THE HIGHEST GROUND WATER LEVEL WHICH COULD BE ENCOUNTERED AT THEIR LOCATION.
- ALL EXISTING DRAINAGE/STRUCTURES TO BE ABANDONED SHALL BE BROKEN OUT AND REMOVED FROM SITE, THE EXCAVATION SHALL BE BACKFILLED WITH A SUITABLE GRANULAR MATERIAL TO THE REQUIRED LEVEL. ALTERNATIVELY, DEEP DRAINS MAY BE CLEANED AND GROUTED WITH A 1:10 CEMENTITIOUS GROUT, WITH STRUCTURES BROKEN DOWN 1M BELOW FINISHED GROUND LEVEL AND BACKFILLED WITH A SUITABLE GRANULAR MATERIAL.
- WHERE UTILITY/LAND DRAINAGE TRENCHES ETC CROSS OVER DRAINAGE TRENCHES, THE CONTRACTOR SHALL CONSTRUCT AN IMPERMEABLE BARRIER TO PREVENT GROUNDWATER INFILTRATING INTO THE DRAINAGE TRENCH.
- UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE. NO DEBRIS SHALL BE PERMITTED TO ENTER THE EXISTING DRAINAGE SYSTEM.
- ALL WORKS ARE ASSUMED TO BE WITHIN PUBLIC HIGHWAY OR WITHIN LAND OWNERS LANDS & NO WORKS ARE REQUIRED ON THIRD PARTY LAND OWNERS PROPERTY.
- ALL RWP, GULLY AND CHANNEL CONNECTIONS SHALL BE 150MM DIA U.N.O. WASTE/SOIL STACK CONNECTIONS SHALL BE 100MM DIA. UNO AND SHALL HAVE INTERNAL ABOVE GROUND RODDING EYES OR LARGE ACCESS FITTINGS IN ACCORDANCE WITH BUILDING REGULATIONS.

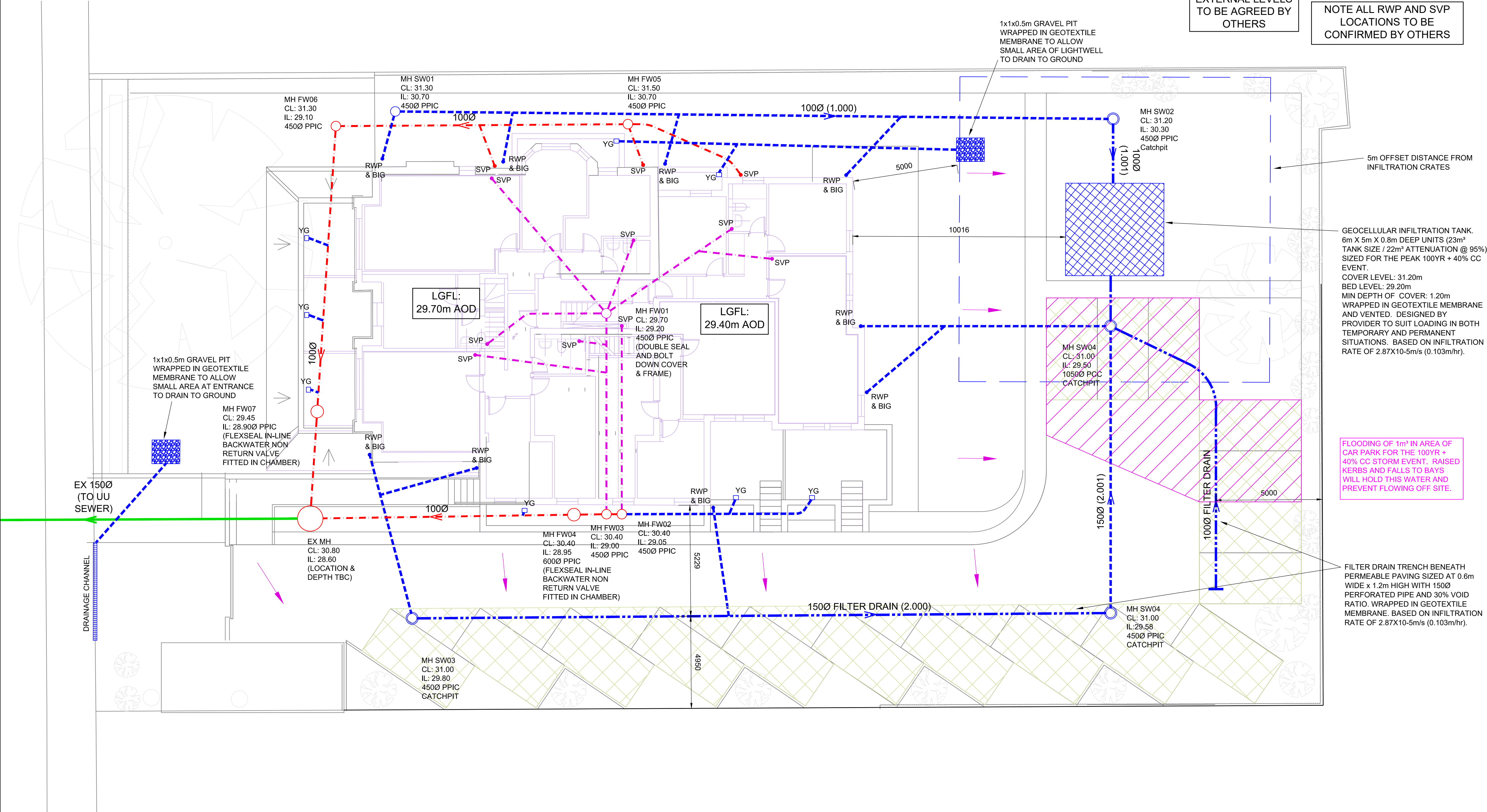
- DESIGN ASSUMES THAT NO WATER AUTHORITY SEWERS OR OTHER DRAINAGE SYSTEMS REQUIRE MODIFICATION, DIVERSION OR ABANDONING.
- BACKFILL TO ALL DRAINAGE TRENCHES TO BE CLASS 6F1 MATERIAL.
- ALL WORKS WITHIN THE PUBLIC HIGHWAY TO BE REINSTATED TO HIGHWAY AUTHORITY REQUIREMENTS.
- NO DEEP ROOTING TREES/VEGETATION SHOULD BE PLANTED WITHIN 5.0M OF ANY DRAINAGE WORKS.
- ALL WPC'S, SRWP'S AND RWP'S ARE SHOWN INDICATIVELY. LOCATIONS SHALL BE CONFIRMED BY OTHERS.
- ALL MANHOLES LESS THAN 1.5M DEEP ARE CONSIDERED AS NONE MAN ENTRY AND SHALL BE MAINTAINED FROM GROUND LEVEL.

ALL PIPEWORK TO BE 100Ø UNLESS NOTED OTHERWISE

LOCATIONS, DEPTH AND SIZE OF ALL EXISTING DRAINAGE TBC PRIOR TO WORKS COMMENCING

EXTERNAL LEVELS TO BE AGREED BY OTHERS

NOTE ALL RWP AND SVP LOCATIONS TO BE CONFIRMED BY OTHERS



NOTES

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KEY

- EXISTING COMBINED WATER DRAINAGE
- PROPOSED FOUL WATER DRAINAGE
- PROPOSED BASEMENT FOUL WATER DRAINAGE
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED LAND DRAIN
- PROPOSED PERMEABLE SURFACING
- RWP RAINWATER PIPE
- SVP SOIL VENT PIPE
- BIG BACK INLET GULLY
- RG ROAD GULLY
- YG YARD GULLY
- RE RODDING EYE
- SG SUMP GULLY FOR DRAINAGE CHANNEL
- EXCEEDANCE FLOOD ARROW

P3	DRAINAGE LAYOUT UPDATED TO SUIT MCC COMMENTS	PG	09.03.22	MD
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WHALLEY RANGE, MANCHESTER**

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DRAINAGE GA

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