



**197-201 Mount Road,
Manchester,
M18 7GG**

DRAINAGE/SuDS MAINTENANCE SCHEDULE

9883-HBL-XX-XX-RP-D-0001

REVISION P01



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1. INTRODUCTION

- 1.1. Drainage systems require maintenance to ensure that all elements including the SuDS components operate effectively for their lifetime.
- 1.2. This typical drainage maintenance report has been prepared to accompany the Drainage Strategy for 197-201 Mount Road, Manchester, M18 7GG providing an overview of the operation and maintenance requirements for the drainage features included within the proposed drainage plan in Appendix 1:

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- 1.3. Full consideration to long term maintenance should be given, as part of the detailed design process, installation, and construction of the proposed drainage system; this report should be updated throughout the design and construction process.
- 1.4. The recommended operations and frequencies in this report are typical only and should be more frequent initially (establishment maintenance) to ensure that there are no unforeseen issues with the operation of the SuDS components and then adjusted to suit the site requirements.
- 1.5. Any specialist or proprietary products that has been specified, should be installed in accordance with the manufacturer's design and details and should be issued by the manufacturer with specific maintenance regime, which should be followed during construction period and included within the Operation and Maintenance Manual for the site.
- 1.6. Where proprietary products are specified, the manufacturer's instructions and recommendations should be followed in priority to this document unless specifically noted otherwise due to project constraints.
- 1.7. Maintenance of systems during construction and for agreed period after the development is complete, will be the responsibility of the developer/principal contractor.
- 1.8. The developer/principal contractor should take all possible measures to prevent debris of any kind entering the drainage system.
- 1.9. Any existing and permanent proposed drainage features used during construction phase should be suitably protected to accommodate construction traffic.
- 1.10. Following the main construction works any components of permanent drainage system used during should be thoroughly cleaned and surveyed before being incorporated into the final scheme drainage.
- 1.11. The developer will keep records of maintenance activities, silt removal operation for duration of the construction and agreed period post construction. This information can be used to make modification to the ongoing maintenance plan which will be adopted by the site owners/operators upon completion.
- 1.12. Detailed maintenance schedule, based on as built drainage plans, post construction CCTV surveys with supporting information from manufacturers of all drainage components/proprietary systems, will be incorporated within the Operation and Maintenance (O&M) manual for the site and should be accessible to those who undertake maintenance.
- 1.13. The Detailed Maintenance Schedule/Plan should be reviewed annually and/or when maintenance contracts are renewed. This review should apply to all types of SuDS on site but is particularly important for the soft landscape elements, as plants and trees require different periodic management techniques as they develop.
- 1.14. The drainage maintenance plan should be a living document that is reviewed periodically with references to changes on site and surroundings where may be appropriate.

2. MAINTENANCE RESPONSIBILITIES

- 2.1. Private drainage network/components including SuDS features within the curtilage of the site, during construction and for agreed period after completion:
 - **Contractor/Developer**

- 2.2. Future/long-term maintenance of private drainage network including SuDS components within the curtilage of the site:
 - **Site owners/ Private Maintenance Company**

- 2.3. Public sewers in the area.
 - **United Utilities**
 - Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

3 OVERVIEW OF MAINTENANCE

- 3.1. All drainage systems, whether piped systems or SuDS require regular maintenance, therefore a suitable maintenance strategy should be adopted to ensure that the drainage network is cleaned regularly, and the routine maintenance and cleansing regime undertaken is documented.
- 3.2. The maintenance of the SuDS system at the development should be included alongside other regular maintenance tasks and is assumed will be the responsibility of an on-site facility maintenance team.
- 3.3. A copy of final construction drainage layout (as built Drainage Plan based on post construction CCTV surveys) and detailed maintenance schedule should be provided within the Operation and Maintenance (O&M) manual for the site and should be accessible to those who undertake maintenance.
- 3.4. It is recommended that the drainage system is inspected monthly (no less than three monthly), at the same time as other routine maintenance activities, with the system also being inspected after any major storm event.
- 3.5. If any areas of significant sediment deposition are identified following major storm events, a post event clean-up operation may be required including removal of litter, vegetation, sewerage debris and any larger objects.
- 3.6. Long-term management practices should include monthly sweeping of external paved areas to remove sand and contaminants directly from paved surfaces before they become mobilised during storm events and transported to the drainage system.
- 3.7. During the winter months, drainage features such as gullies and channels should be cleared of ice, snow, debris and litter.
- 3.8. The table below gives an overview of typical maintenance tasks and the frequency with which they need to be undertaken.

Table 1: Drainage Systems - Typical Maintenance Tasks

DRAINAGE SYSTEMS - TYPICAL MAINTENANCE TASKS		
ACTIVITY	INDICATIVE FREQUENCY	TYPICAL TASKS
Establishment Maintenance.	Initial one-off requirement particularly for planting establishment, design specific.	- Weeding, - Watering.
Regular Maintenance.	Monthly to annually (For typical care of SuDS components).	- General inspection of inlets, outlets, control structures, suds components, - Litter and debris removal, - Grass cutting, weed and invasive plant control, - Shrub management (including pruning), - Shoreline vegetation management, - Aquatic vegetation management.
Occasional Maintenance.	Annually (Dependent on the design).	- Sediment management - Vegetation replacement, - Vacuum sweeping and brushing.
Remedial Maintenance.	As required (tasks to repair problems due to damage).	- Structure rehabilitation/ repair, - Infiltration surface reconditioning.

CIRIA SUDS MANUAL 2015 RECOMMENDATIONS

- 3.9. Table 2 below gives an overview of typical key SuDS components operation and maintenance activities that will be or may be required.

Table 2: Typical key SuDS components operation and maintenance activities

TYPICAL KEY SuDS COMPONENTS OPERATION AND MAINTENANCE ACTIVITIES – Ciria C753													
OPERATION AND MAINTENANCE ACTIVITY	SuDS COMPONENTS												
	Pond	Wetland	Detention basin	Infiltration basin	Soakaway	Infiltration trench	Filter drain	Modular storage	Pervious pavement	Swale/bioretention/trees	Filter strip	Green roofs	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													

CIRIA SUDS MANUAL 2015 RECOMMENDATIONS

Key:

 Will be required

 May be required

Notes: ¹ Sediment should be collected and managed in pre-treatment systems, upstream if the main device.

4 SITE DRAINAGE COMPONENTS

4.1. SuDS components included within the development of the Extra Care Apartment Blocks, as presented on the Drainage Plan included within Appendix 1 aim to:

- Control the flow, volume and frequency of water leaving the site,
- Prevent pollution by intercepting silt and cleaning runoff from hard surfaces.
- Provide attractive surroundings for the community
- Create opportunity for wildlife.

4.2. The following components have been included within the drainage design for the proposed development:

- **Inlets, outlets structures, pipes** - are often conveyance pipes protected with mesh guards. They should be free from obstruction at all times to allows free flows through the SuDS.
- **Access points, inspection chambers, manholes, rodding eyes, silt traps** – are used on bends or where pipes come together to allow for cleaning of the system if necessary.
- **Permeable Surfaces** - are permeable block pavings, porous asphalt or resin surfaces, that allow water to percolate to subbase storage layer and either infiltrate to ground or to be discharged at controlled rate to downstream drainage component or outfall.
- **Suds flow control structures** – are usually small orifices in control chambers, slots, or V-notches in weirs. They usually near the surface, so are accessible and easy maintain, They maybe in baskets, in small chambers or in the open.
- **Flood routes (exceedance routes)** - allow water volumes exceeding the capacity of the SuDS system to allow water to be collected on surface in exceedance area or pass safely though the site.

4.3 The Suds within the site have been designed for easy maintenance to comprise:

- **Regular day to day care – Monitoring and Regular Maintenance** such as litter collection, grass cutting and checking the inlets and outlets where water enters and leaves a SuDS feature or piped network via gullies and drainage channels.
- **Occasional tasks / Maintenance** – removing silt that builds up in any of the proposed SuDS features and/ or silt traps.
- **Remedial works/ Maintenance** - repairing damage where necessary.

4.3. Typical SuDS Maintenance Inspection Checklist is included within **Appendix 2**, this checklist will be developed through the design and construction phase as may be necessary.

4.4. Maintenance Inspection Checklist should be used by the contractor and by the organisation responsible for the long-term maintenance of the SuDS system as a recording process to facilitate consistent inspection of the condition of the drainage system on site.

4.5. Inspections should comply with all relevant health and safety legislation (the Management of Health and Safety at work Regulations 1999) including the development of risk assessment for working close to or in water.

4.6. Photographic records of the inspection are recommended as this can pick up any long-term changes that might not be apparent on a single visit, especially if inspections are carried out by different member of staff.

Inlets, outlets, gratings, drainage channels and gullies.

- 4.7. Inlets and outlets to be inspected monthly for damage, blockage, and silt accumulation. Remove all debris and silt from apron where present. Strim 1m area around structure where in grass or sweep to ensure unrestricted access.
- 4.8. Gratings – inspect monthly to check for damage, blockages, and silt accumulation. Remove all debris and silt from apron below grating where present. Evaluate requirements to rod, jet pipe run at each inspection and annually after leaf fall. Strim 1m area around structure where in grass.
- 4.9. Channels and gullies should be inspected and cleaned in accordance with the manufacturer's details. Channel units can be cleaned using a high-pressure hose; this can be fed into the channel system through access units strategically placed along the channel run. The throat section of channel units should be kept clear at all times to ensure uninterrupted flow of surface water into the drainage channel and any debris within the throat should be removed.
- 4.10. Locking bolts should be replaced and sufficiently tightened, taking care that the bolt heads do not stand above the top surface of the cover or grate. If covers are allowed to move within their frame, this may cause damage to the frame or seating.
- 4.11. Sediment\material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols; especially where run-off is taken from potentially contaminated area such as the car park channels.

Table 3: Inlets, outlets, gratings, drainage channels and gullies - Typical Maintenance

INLETS, OUTLETS, GRATINGS, DRAINAGE CHANNELS AND GULLIES – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Monitoring (to be undertaken more frequently within the first year of operation and adjusted as required).	Initial Inspection.	Half yearly and after large storms.
Regular inspection/ maintenance.	Litter/debris removal.	Monthly or as required.
	Inspect and remove vegetation/weed growth near channel runs.	Monthly or as required.
	Inspect for evidence of poor operation and/or weed growth. If required, take remedial action. Inspect silt accumulation rates and establish appropriate brushing frequencies. Silt can also be caused by adjacent landscaping areas which should be reprofiled to provide a flat area or berm adjacent to the paving.	Every 3 months, 24-48 hours after large storm.
Remedial Maintenance.	Inspect access/outlet boxes and rod through poorly performing channels and outlets as initial remediation.	As required.

Pipes.

- 4.12. Pipes are proprietary products, and the materials can vary across the site and as such where used the manufacturer's recommendations should be followed. All manufacturer's products data sheets and recommendations should be included within the Operation and Maintenance (O&M) manual for the site and should be accessible to those who undertake maintenance.
- 4.13. Pipes are intended to be the main conveyance across the development and where oversized they form the attenuation volume required by the limitation of the discharge rate. They are intended to be dry except for during rainfall events. These have been designed to be self-cleaning where possible for smaller diameter pipes, and for larger diameters the risk is reduced due to the overall pipe size.
- 4.14. Access for maintenance is provided through access chambers and manholes.
- 4.15. Regular inspection and maintenance is important to identify areas which may have been obstructed and may not be functioning correctly.

Table 4: Pipes - Typical Maintenance

PIPES – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Monitoring (to be undertaken more frequently within the first year of operation and adjusted as required).	Initial Inspection should be as part of the post construction CCTV survey.	Post construction CCTV survey.
Regular inspection/maintenance.	Inspect for evidence of poor operation by assessing water level in access chambers. If required, take remedial action.	Every 3 months, 24-48 hours after large storm.
Remedial Maintenance.	Rod through poorly performing pipe runs as initial remediation.	As required.
	If poor performance continuous jet and CCTV survey.	As required.
	Seek advice as to remediation techniques suitable for the type of performance issue, location, pipe material.	As required.

Access points - inspection chambers and manholes.

- 4.16. Access points have been located at the head of each run, at a change in direction and at a change of pipe size in accordance with Building Regulations Part H.
- 4.17. Inspect monthly and after major storms during year 1 to check for damage and blockages.
- 4.18. Annual inspection after leaf fall thereafter removing all accumulated debris and silt. Check control tubes flow freely.
- 4.19. The appropriate health and safety equipment must be used when accessing manholes. Confined space certificates must be held by any personnel entering a manhole and the appropriate permits should be obtained from the Maintenance Manager prior to any access.

Silt traps and sump units.

- 4.20. Maintenance to be undertaken strictly according to manufacturer's specification and details. As a general guide, the following typical maintenance schedule is presented within table below:

Table 5: Silt Traps and sump units - Typical Maintenance

SILT TRAPS – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Routine maintenance.	Inspection	Monthly.
	Litre/debris removal.	Monthly or as required.
Occasional Maintenance.	Sediment removal - Silt baskets, catchpits should be emptied and/or filters changed.	6 monthly or as required.
Remedial Maintenance.	Repair (as a result of damage).	As required.

Flow control units.

- 4.21. The flow control unit is intended for flood control and flow restriction and access or maintenance has been provided by locating it within manhole chambers.
- 4.22. Maintenance to be undertaken **strictly according to manufacturer's specification and details**. As a general guide, the following typical maintenance schedule is presented within table below:

Table 7: Flow Control Units

FLOW CONTROL UNITS – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Monitoring (to be undertaken more regularly within the first year of operation and adjusted as required)	Inspect inlets for blockages, and clear if required. If faults persist jetting and CCTV survey may be required.	Post construction CCTV survey. Monthly and, 24-48 hours after large storm.
Routine maintenance.	Inspection and identification of areas not operating correctly. If required, take remedial action.	Monthly for 3 months, then quarterly.
	Littre/debris removal.	Monthly or as required.
Occasional Maintenance	Sediment removal	6 monthly or as required.
Remedial Maintenance	Repair (as a result of damage)	As required.

Overflows and flood routes.

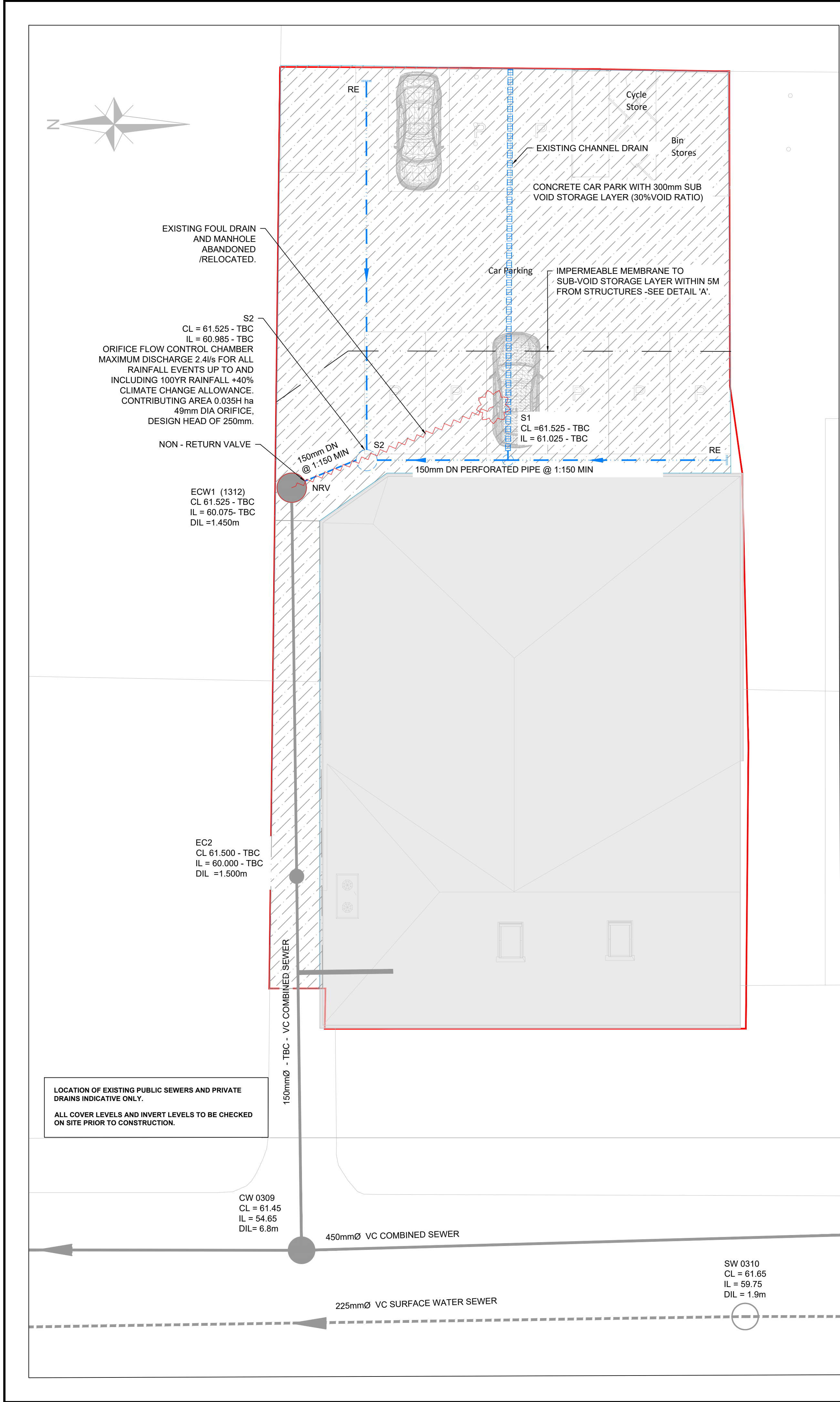
- 4.23. Overflows are overland access weirs, through gratings or within chambers and should be kept clear at all times to protect areas from flooding, they allow onward flow when part of the SuDS system is blocked.
- 4.24. Flood routes (exceedance routes) allow water volumes that exceed the capacity of the SuDS system to pass though or round the site without causing damage to property. These routes should be clear of obstructions at all times.

Table 8: Overflows and flood routes

OVERFLOWS AND FLOOD ROUTES – TYPICAL MAINTENANCE		
MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Regular Maintenance	Overflows – remove any accumulated grass cuttings or other debris on top of grass weirs or stone- filled baskets overflows.	Monthly
	Overflows - Jet the pipes leading from overflow structures annually and check by running water though the overflow. Check free flow at next SuDS feature – inlet to basin or chamber.	Annually and after large storms.
	Flood routes - make visual inspection. Check route is not blocked by new fences, walls, soil or other rubbish. Remove as necessary.	Monthly
Remedial Maintenance	Overflows - if overflow is not clear than dismantle the structure and reassemble to design detail.	As required.

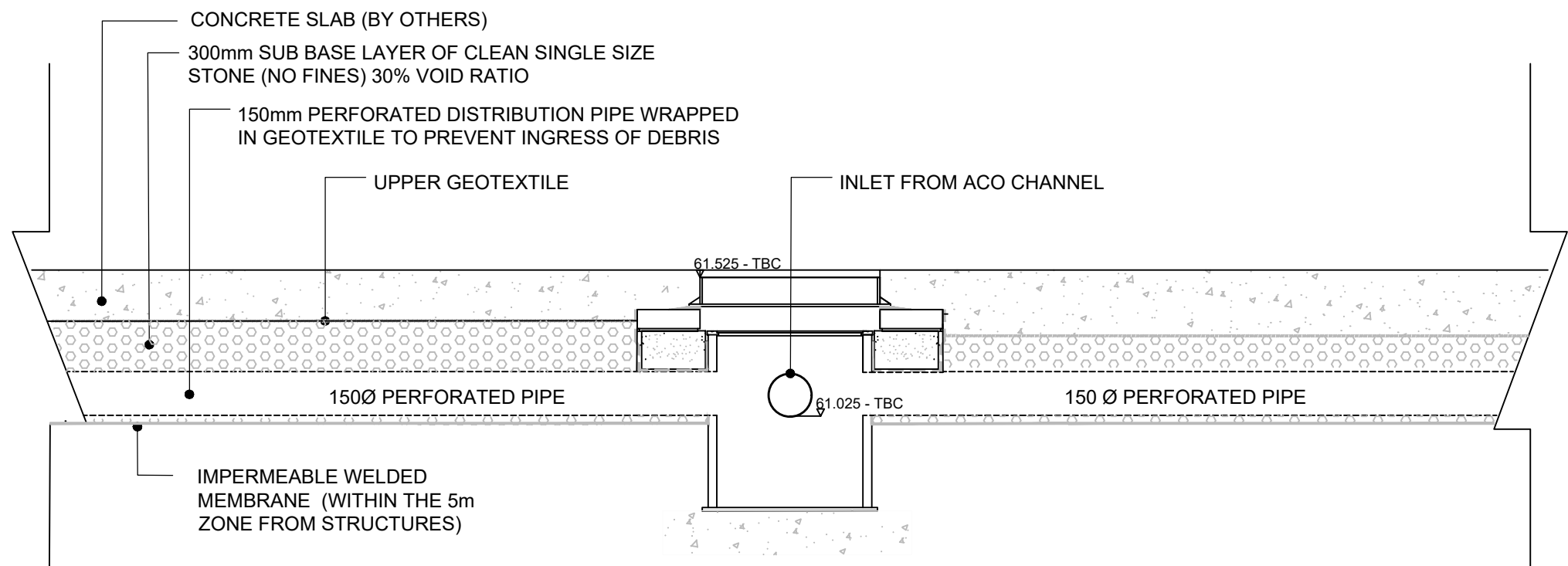
APPENDIX 1 – PROPOSED DRAINAGE STRATEGY PLAN

9883-HBL-XX-XX-DR-D-0002 (P02).

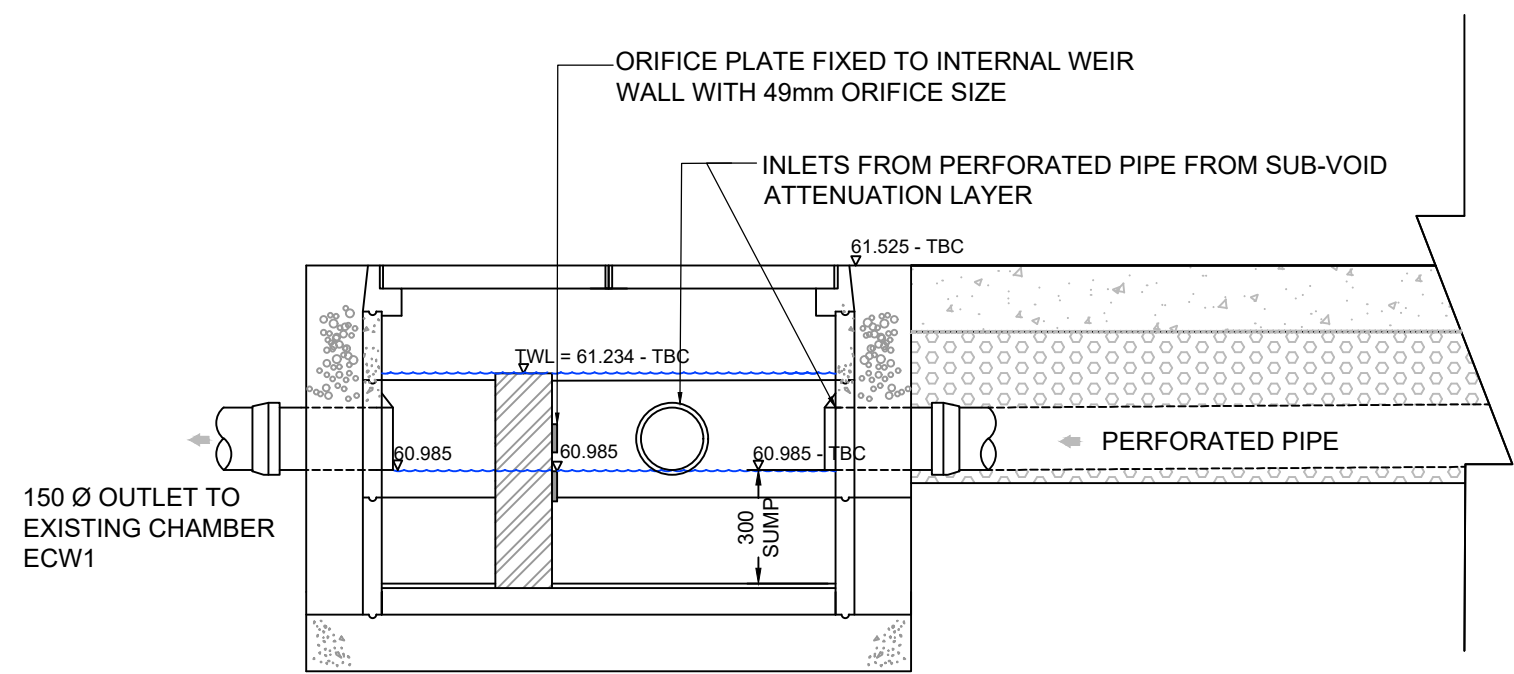


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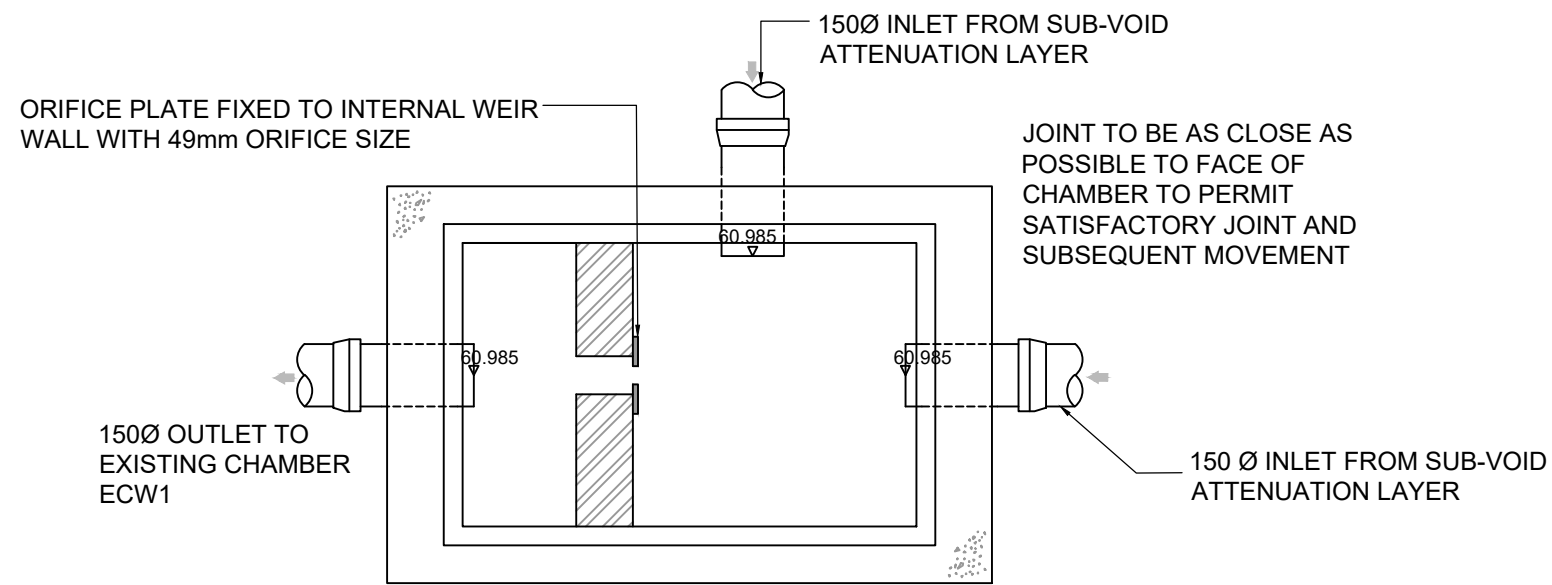
- SITE BOUNDARY - 745 m² (0.0745ha)
- ROOF AREAS (EXISTING BUILDING) - 391 m² (0.0391ha)
- PROPOSED HARDSTANDING AREA - 354 m² (0.0354ha)
CONCRETE SLAB (BY OTHERS) WITH 300mm SUB-BASE ATTENUATION LAYER, TYPE 3 SUB-BASE (DOT Type 3), PURE CRUSHED GRANITE, LIMESTONE OR CLEAN CRUSHED CONCRETE (30% MINIMUM VOID).
- PERFORATED SURFACE WATER DISTRIBUTION PIPE WRAPPED IN GEOTEXTILE
- PROPOSED SURFACE WATER PIPE
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED RODDING EYE
- CHANNEL DRAIN
- DRAIN TO BE ABANDONED
- EXISTING SURFACE WATER
- EXISTING FOUL WATER
- EXISTING COMBINED WATER
- EXISTING SURFACE WATER MANHOLE
- EXISTING FOUL WATER MANHOLE
- EXISTING COMBINED WATER MANHOLE



TYPICAL DETAILS FOR PERFORATED PIPE WITHIN CAR PARK SUB - BASE STORAGE LAYER
SCALE 1:20



SECTION AA



S2 - FLOW CONTROL CHAMBER DETAIL WITH 300mm DEEP SUMP
RIGID MATERIAL CONSTRUCTION FOR USE IN AREAS SUBJECT TO VEHICLE LOADING
SCALE 1:20

TABLE 1	
IMPERMEABLE AREAS COMPARISON	
SITE AREA	750 SQ M
EXISTING HARDSTANDING	394 SQ M
PROPOSED HARDSTANDING	354 SQ M

TABLE 2			
PEAK STORM WATER RUNOFF RATE			
	Q1 L/S	Q30 L/S	Q100 L/S
PREDEVELOPMENT UNATTENUATED DISCHARGE RATE FROM EXISTING CAR PARK AREA OF 394 SQ M	4.8	11.2	14.1
PROPOSED REDUCTION IN RUNOFF RATE POST DEVELOPMENT	50%	50%	50%
Q (L/S) BASED ON 50% REDUCTION	2.4	5.6	7.1
PROPOSED DISCHARGE RATES FROM ATTENUATED CAR PARK AREA	2.4	2.4	2.4

DO NOT SCALE FROM THIS DRAWING

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT

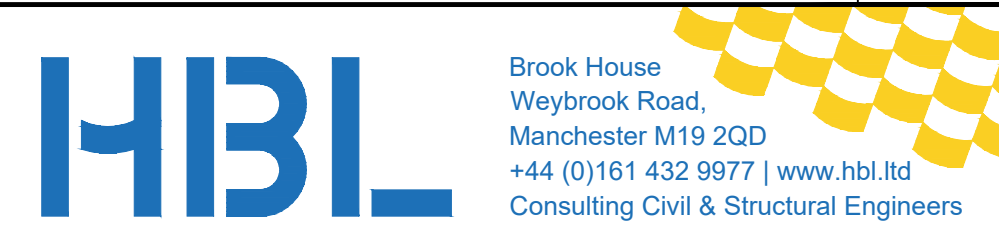
NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS AND SPECIFICATIONS.
- THE DRAINAGE CONTRACTOR IS RESPONSIBLE TO MAKING AN APPLICATION TO ANY SEWERAGE UNDERTAKER PRIOR TO CONSTRUCTION OF ANY CONNECTION INTO A PUBLIC MANHOLE.
- THE ENGINEER IS TO BE NOTIFIED OF ANY DISCREPANCIES TO THE DETAILS SHOWN ON THE DRAINAGE AND ANY UNRECORDED CONNECTIONS NOT SHOWN ON THE DRAWINGS.
- THE CONTRACTOR IS RESPONSIBLE FOR CHECKING DIMENSIONS AND LEVELS AND FOR CONFIRMING THE GIVEN LEVEL OF OUTFALL INTO PUBLIC SEWER, WATERCOURSE OR OTHER OUTFALL PRIOR TO CONSTRUCTION WORKS COMMENCING.
- UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT AUTHORITIES ALL DRAWINGS ISSUED ARE AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR COMMENCE SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK.
- TO PROTECT THE DRAINAGE SYSTEM FROM CONSTRUCTION SITE DERBIES, THE CONTRACTOR SHALL ENSURE THAT STOPPERS ARE SECURELY PLACED IN ALL CONNECTIONS IMMEDIATELY UPSTREAM OF THE TANK, ONLY TO BE REMOVED ONCE THE FINAL CLEANING OF THE ROADS/ DRAINAGE HAS BEEN COMPLETED.
- THE DESIGN IS BASED ON THE INFORMATION AVAILABLE ON THE DATE OF ISSUE FROM OTHER PARTIES (E.G. ARCHITECT AND M&E ENGINEER). IT IS SUBJECT TO CHANGE RESULTING FROM UPDATES TO THE AVAILABLE INFORMATION FROM OTHERS.
- NEW DRAINS AND SEWERS TO BE AS FOLLOWS:
9.1. CONSTRUCTION AND MATERIALS OF PRIVATE SURFACE, FOUL & COMBINED WATER SEWERAGE SYSTEM TO BE IN ACCORDANCE WITH 'BUILDING REGULATIONS - APPROVED DOCUMENT H' & 'BS EN 752:2017 DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS'
9.2. CONSTRUCTION AND MATERIALS OF PUBLIC SURFACE, FOUL & COMBINED WATER SEWERS TO BE IN ACCORDANCE WITH 'DESIGN & CONSTRUCTION GUIDANCE, SEWERAGE SECTOR GUIDANCE APPENDIX C' AND IN ACCORDANCE WITH LOCAL SEWERAGE UNDERTAKER
9.3. MINIMUM PIPE SIZE FOR ADAPTABLE SURFACE WATER DRAINAGE IS 150mmDN
9.3.1. 100mmDN AT MIN 1:100 FOR 10 DWELLINGS OR LESS
9.3.2. 150mmDN AT MIN 1:150 FOR GREATER THAN 10 DWELLINGS
9.4. MINIMUM PIPE SIZE FOR ADAPTABLE FOUL WATER DRAINAGE IS 100mmDN
9.4.1. 100mmDN 1:40 WHERE GREATER THAN 10 DWELLINGS OR LESS AND NO WC
9.4.2. 100mmDN 1:80 WHERE GREATER THAN 10 DWELLINGS AND AT LEAST 1 WC
9.5. ALL ROAD GULLY PIPEWORK SPURS TO BE 150mmDN UNLESS OTHERWISE SPECIFIED
- LOAD CLASS SELECTION TO COMPLY WITH BS EN 124.
10.1. LOAD CLASS A15 - AREAS INACCESSIBLE TO MOTOR VEHICLES
10.2. LOAD CLASS B125 - FOOTWAYS, PEDESTRIAN AREAS ETC
10.3. LOAD CLASS D250 - GULLY TOPS IN KERBSIDE CHANNELS OF ROADS
10.4. LOAD CLASS D400 - CARRIAGEWAYS OF ROADS (HEAVY DUTY)
10.5. LOAD CLASS E600 - AREAS IMPOSING HIGH WHEEL LOADS
10.6. LOAD CLASS F900 - AREAS IMPOSING PARTICULARLY HIGH WHEEL LOADS
- ALL FOUL DRAINS BENEATH BUILDINGS AND FROM SOIL VENT PIPES, GULLIES AND WC CONNECTIONS BE 100mmDN AT A GRADIENT NOT LESS THAN OF 1:40.
- ALL FOUL CONNECTIONS TO BE FULLY TRAPPED AND EACH FOUL CONNECTION TO A BRANCH DRAIN TO HAVE FULL RODDING ACCESS (E.G. LOW-LEVEL RODDING ACCESS).
- RAINWATER DOWN PIPES ARE TO CONNECT TO A DRAIN VIA A REST BEND.
- WHERE DRAINAGE IS COMBINED A 'P' TRAP MUST BE PROVIDED ABOVE PROPOSED FLOOR SLAB LEVEL.
- MINIMUM DEPTH OF COVER TO THE CROWN OF GRAVITY PIPES WITHOUT PROTECTION SHOULD BE AS FOLLOWS (IN ACCORDANCE WITH 'DESIGN & CONSTRUCTION GUIDANCE, SEWERAGE SECTOR GUIDANCE APPENDIX C')
15.1. 350mm - DOMESTIC GARDENS AND PATHWAYS WITHOUT ANY POSSIBILITY OF VEHICULAR ACCESS
15.2. 500mm - DOMESTIC DRIVEWAYS, PARKING AREAS AND YARDS WITH HEIGHT RESTRICTIONS TO PREVENT ENTRY BY VEHICLES WITH A GROSS WEIGHT IN EXCESS OF 7.5 TONNES
15.3. 900mm - DOMESTIC DRIVEWAYS, PARKING AREAS AND NARROW STREETS WITH LIMITED ACCESS FOR VEHICLES WITH A GROSS WEIGHT IN EXCESS OF 7.5 TONNES
15.4. 900mm - AGRICULTURAL LAND & PUBLIC OPEN SPACE
15.5. 1200mm - HIGHWAYS AND PARKING AREAS WITH UNRESTRICTED ACCESS TO VEHICLE WITH A GROSS WEIGHT IN EXCESS OF 7.5 TONNES.
- BACKFILL TO DRAINAGE TRENCHES UNDER CARRIAGEWAYS TO BE TYPE 1 SUB-BASE MATERIAL. ELSEWHERE BACKFILL TO BE FREE DRAINING READILY AVAILABLE COMPACTABLE MATERIAL FREE FROM RUBBISH, ORGANIC MATTER, FROZEN SOIL, CLAY LUMPS AND LARGE STONES. TO BE COMPACTED IN LAYERS NOT EXCEEDING 250mm THICK
- A FLEXIBLE JOINT SHALL BE PROVIDED AS CLOSE AS IS FEASIBLE TO THE OUTSIDE FACE OF ANY STRUCTURE INTO WHICH A PIPE IS BUILT. COMPATIBLE WITH THE SATISFACTORY COMPLETION AND SUBSEQUENT MOVEMENTS OF THE JOINT. LENGTH OF THE NEXT PIPE (ROCKER PIPE) IS TO BE IN ACCORDANCE WITH THE TABLE BELOW
17.1. 150-600mmDN - 600mm LONG ROCKER PIPE
17.2. 601-750mmDN - 1000mm LONG ROCKER PIPE
17.3. 751mmDN AND ABOVE - 1250mm LONG ROCKER PIPE
- PIPE CROSSOVERS TO HAVE MINIMUM OF 300mm CLEARANCE BETWEEN OUTSIDE TOP OF THE LOWER PIPE AND OUTSIDE BOTTOM OF THE UPPER PIPE. WHERE THIS CANNOT BE ACHIEVED A SEPARATION, CONCRETE SURROUND IS TO BE FORMED WHICH WILL EXTEND NOT LESS THE 1000mm EACH SIDE OF THE CROSSING POINT. THE EXTENT OF THE CONCRETE SHOULD BE WITHIN 150mm OF A FLEXIBLE PIPE JOINT. THE CONCRETE SPECIFICATION SHOULD BE IN ACCORDANCE WITH THE STANDARD DETAILS FOR PIPE BED AND SURROUND AS ISSUED BY THE ENGINEER.
- CONCRETE MIXES INDICATED ON THIS DRAWING ARE DESIGNATED MIXES CONFORMING TO BS 8500-1:2006. ALL CONCRETE TO BE SULPHATE RESISTANT. CONTRACTOR SHOULD ALLOWANCE FOR CARRYING OUT TESTING ON-SITE TO CONFIRM SULPHATE LEVEL CLASSIFICATION.
- ALL PRIVATE MANHOLES AND INSPECTION CHAMBERS TO BE CONSTRUCTED IN ACCORDANCE WITH 'BUILDING REGULATIONS - APPROVED DOCUMENT H' & 'BS EN 752:2017 DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS'
- ALL MANHOLES AND INSPECTION CHAMBERS TO BE ADOPTED TO BE CONSTRUCTED IN ACCORDANCE WITH 'IN ACCORDANCE WITH 'DESIGN & CONSTRUCTION GUIDANCE, SEWERAGE SECTOR GUIDANCE APPENDIX C' AND IN ACCORDANCE WITH LOCAL SEWERAGE UNDERTAKER.
- CCTV SURVEY OF ALL THE DRAINAGE SHOULD BE CARRIED OUT ON COMPLETION OF THE BUILDING WORKS AND PASSED ON TO THE CLIENT.
- ANY EXISTING DRAINAGE INFRASTRUCTURE TO BE RETAINED TO HAVE NEW COVERS AND FRAMES TO SUIT NEW LEVELS AND SURFACING.

P02	SEP22	ES	REVISED BASED ON SITE NOTES		ALS
REV.	DATE	DRAWN	DESCRIPTION		CHKD
STATUS DESCRIPTION					APPRD
FOR INFORMATION					S2

FOR INFORMATION

S2



PROJECT			
MOUNT ROAD - DRAINAGE DESIGN			
DRAWING TITLE			
PROPOSED DRAINAGE PLAN CAR PARK			
CLIENT			
TEJA SINGH			
HBL REF.	DATE	SCALE(S)	
9883	SEPTEMBER 2022	1:100	A1
DRAWN	CHECKED	APPROVED	
AD/ES	ALS	ALS	
DRAWING No.			REV.
9883-HBL-XX-XX-DR-D-0002			P02

APPENDIX 2 – TYPICAL MAINTENANCE INSPECTION CHECKLIST

SuDS Maintenance Inspection Checklist

General Information:

Site ID :			
Site location and co-ordinates (GIS if appropriate)			
Elements forming the SuDS scheme		Approved drawing reference(s)	
Inspection frequency		Approved specification reference	
Type of development		Specific purpose of any parts of the scheme (eg. biodiversity, wildlife and visual aspects)	

Inspection date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed

General inspection items								
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?								
Is there any evidence of accidental spillages, oils, poor water quality, odours or nuisance insects?								
Have any health and safety risks been identified to either the public or maintenance operatives?								

SuDS Maintenance Inspection Checklist								
Inspection date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Silt/sediment accumulation								
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of swales, basins and within proprietary devices)? If yes, state depth (mm) and extent. Is removal required? If yes, state waste disposal requirements and confirm that all waste management requirements have been complied with (consult environmental regulator).								
Is surface clogging visible (potentially problematic where water has to soak into the underlying construction or ground (e.g., under-drained swale or infiltration basin)?								

SuDS Maintenance Inspection Checklist									
Inspection date									
	Details	Y/N	Action Required	Date Completed		Details	Y/N	Action Required	Date Completed
System blockages and litter build-up									
Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?)									
Is there any evidence of any other clogging or blockage of outlets or drainage paths?									

SuDS Maintenance Inspection Checklist									
Inspection date									
	Details	Y/N	Action Required	Date Completed		Details	Y/N	Action Required	Date Completed
Vegetation									
Is the vegetation condition satisfactory (density, weed growth, coverage etc)? (Check against approved planting regime.)									
Does any part of the system require weeding, pruning, or mowing? (Check against maintenance frequency stated in approved design.)									
Is there any evidence of invasive species becoming established? If yes, state action required									

SuDS Maintenance Inspection Checklist								
Inspection date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Infrastructure								
Are any check dams or weirs in good condition?								
Is there evidence of any accidental damage to the system (e.g., wheel ruts?)								
Is there any evidence of cross connections or other unauthorised inflows?								
Is there any evidence of tampering with the flow controls?								
Are there any other matters that could affect the performance of the system in relation to the design objectives for hydraulic, water quality, biodiversity, and visual aspects? (Specify.)								

SuDS Maintenance Inspection Checklist								
Inspection date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Other observations								
Information appended (e.g., photos)								

SuDS Maintenance Inspection Checklist								
Inspection date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Suitability of current maintenance regime								
Continue as current								
Increase maintenance								
Decrease maintenance								