
MANAGEMENT AND MAINTENANCE OF ON-SITE DRAINAGE SYSTEMS

1 Barkham Road
Wokingham
Berkshire
RG41 2XR

September 2023

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Issue	Copies	Distribution	Format	Date	Status
1	1	Gary Fish, Cleanslate Ltd	By email only: gary.fish@cleanslate ltd.com	21 September 2023	Final

1.0 EXECUTIVE SUMMARY

- 1.1 This residential development is served by the following surface water drainage systems:
- a) Permeable access way and a lined permeable car park formed of free draining stone and permeable concrete paving.
 - b) Surface water attenuation incorporating lined permeable pavements with a vortex flow control.
 - c) Carrier drains and perforated water collection pipes.
- 1.2 The surface water drainage system is designed to accommodate a M100 plus 40% storm event without surface flooding in accordance with the National Planning Policy Framework.
- 1.3 The storm drainage system will ensure that surface water discharge is restricted to 2.1 litres per second for the worst case M100 plus 40% storm event.
- 1.4 The foul water drainage is designed in accordance with the requirements of the Building Regulations Part 'H'.
- 1.5 Effective regular maintenance is important to ensure drainage systems operate as intended.

2.0 ADVISED MAINTENANCE SCHEDULE

2.1 Permeable Pavements

- a) Remove silt, litter and vegetation growth from surfaces.
Frequency: November, following leaf fall
April
- b) Observe and record areas of notable ponding during prolonged rainfall. This may imply the permeable surface is contaminated and requires vacuum cleaning.
- c) Hydrocarbon spills require urgent action to prevent pollution to subsoils and local watercourses. If severe the Fire Brigade and Environment Agency should be informed without delay.

2.2 Surface Water Carrier and Distribution Pipe System

- a) Remove silt, litter and vegetation from gullies, inspection chambers, manholes and catchpits. Ensure that surface water drains are free flowing.
Frequency: November, following leaf fall
April

2.3 Foul Water Carrier Drain System

- a) Remove debris from inspection chambers and manholes. Ensure that the foul drains are free flowing.
Frequency: Annually
- b) Periodic jetting or rodding of pipework as required to clear blockages.

2.4 The Contractor will maintain the proposed drainage system during construction and until the handing over of the site.

2.5 Upon completion, management of the drainage facilities (where not adopted) will be passed on to an appointed management company.

2.6 The following maintenance schedule details the typical tasks to be undertaken at different intervals.

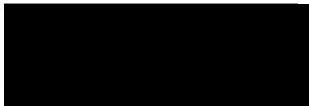
Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Manage vegetation and remove nuisance plants	As required
	Litter and debris removal – catchpits	As required
	Remove sediment and debris from silt trap chambers, channel drains and inlet chambers	6 monthly
	Visual inspection of permeable paving for defects and settlement	Annually
	Sweeping/brushing of permeable paving	Annually
	Surface and foul water pipework – jetting/rodding	Every 2 years or as required
Corrective Maintenance	Remove debris/blockages to silt traps/channel drains	As required
	Repairs to access chambers/manhole covers	As required
	Replace any broken permeable blocks/surface, remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipes and gullies for blockages, standing water and clear	As required

3.0 FURTHER REFERENCE

The SUDs Manual CIRIA C753

The Building Regulations Part 'H'

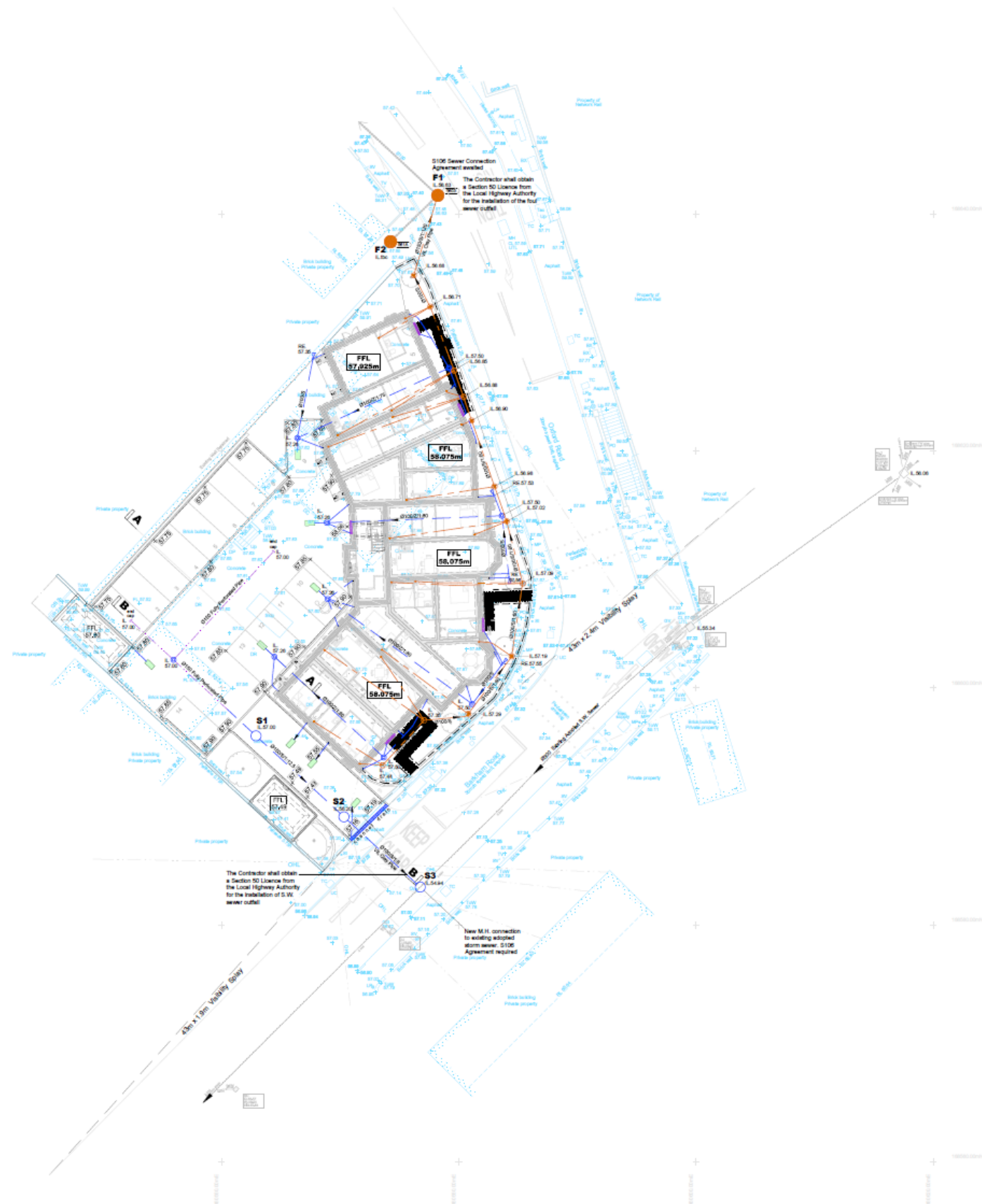
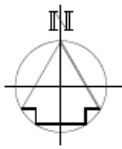
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Date: 21 September 2023

APPENDIX A

Drainage Layout



OUTSTANDING DESIGN ISSUES :

- 2 No. S106 Sewer Connection Agreements
- Permission for On Highway Works (S275 Agreement)
- Precise RWP Locations
- Precise Foul Outlet Locations
- Location of services in Barkham Road and Oxford Road

Notes

- This drawing is to be read in conjunction with all relevant Architects and Engineers drawings and specifications.
- Dimensions are in millimetres unless noted otherwise.
- Original topographic survey undertaken by Survey Solutions in January 2019. For full topographic survey information see Survey Solutions drawing No. 230010v01. All levels based on O.S. Datum by GPS.
- Existing levels shown thus: $\text{---} \cdot \text{---} \cdot \text{---}$
- Before excavation commences, the Contractor shall ascertain the depths, sizes and locations of all services to be crossed. Any conflicts in levels between new works and existing services shall be notified to the Engineer.
- All drainage shall be in accordance with Building Regulations 2015: Part H & W.S.A. Sewers for Adoption 7th edition.
- Details of existing sewers & drains shall be confirmed by the contractor on site prior to the commencement of works.
- Sewers of different diameters shall be laid soffit to soffit in manholes, unless backdrops are detailed.
- Private drains passing through walls and footings are to be sleeved and a 600mm length of roller pipe shall be laid on each side of the wall or footing. Where under building shall have a type 'T' bed and surround, unless depth below underside of slab is less than 300mm where a 150mm bed and surround of concrete is to be used. Where pipe passes beneath foundations 600mm length roller pipes shall be laid on each side. Below is shown a typical detail of a pipe sleeved through a foundation.

- Manhole (M.H.) covers and inspection chamber (I.C.) shall be adjusted to suit final surface levels.
- Where trench foundation levels lie above original levels, levels shall be made up with either well compacted layers of G.O. Type 1 or m/s G.T. concrete.
- For positions of SVPs stub stacks and rainwater pipes see detailed Architects layouts.
- Minimum gradients for pipes where no gradient is shown shall be 1:80.
- Dimensions of M.H. on private drains and sewers to be in accordance with requirements of the Building Regulations.
- Drainage trenches lower than foundations:
 - Where drainage trench is within 1.0 distance of a building the trench is to be filled with concrete m/s G.T. up to the level of the foundation, in accordance with Building Regulation 2002: Part H, diagram 5.
 - Where drainage trench is distance 'A' from footing and the depth of trench below foundation level is greater than 'A' the lower trench shall be filled with concrete m/s G.T. 2 such that the top level of concrete fill is no less than (A - 150mm) below foundation level. Notes a) and b) are represented diagrammatically below.

- Pipe materials shall be:
 - For external private drain runs:
 - Clay pipes, extra strength or super strength in accordance with BS EN 259: 1991
 - UPVC pipes in accordance with BS 4880 & BS 5481: 1982 (flexible pipes)
 - Drainage from pipe work in accordance with BS EN 588, as detailed in drawings with high performance joints or equivalent.
- For adaptable sewer/highway drains, see longitudinal sections.
- Definition of rigid and flexible pipes shall be as Building Regulations Part H, table 7.
- Flexible pipes - Where private flexible pipes have more than 600mm cover under vehicular areas and more than 500mm cover under gardens, bedding and backfill shall be Type G as shown on drawing STD 01.05. For special protection where pipes are laid with less cover see notes below:
 - Where private flexible pipes have less than 600mm cover under vehicular areas, a reinforced concrete bedding shall be used (see Type 'Y' drawing STD 01.05)
 - Where private flexible pipes have less than 600mm cover under gardens, concrete bedding shall be used (see drawing STD 01.05) as shown on drawing STD 01.05.
- Rigid pipes - Bedding and backfill shall be Type 'D' as shown on drawing STD 01.05, except on lengths where special protection is required (see notes below).
 - Where 100mm private rigid pipes have less than 400mm cover under vehicular areas, a Type 'Z' concrete surround shall be used (see drawing STD 01.05) Reference Building Regulations 2002: Part H.
 - Where 100mm private rigid pipes have less than 300mm cover under garden areas, a Type 'Z' concrete surround shall be used (see drawing STD 01.05) Reference Building Regulations 2002: Part H.
 - Where 150mm private rigid pipes have less than 600mm cover under any areas, a Type 'Z' concrete surround shall be used (see drawing STD 01.05) Reference Building Regulations 2002: Part H.
- Private storm and foul drainage connections shall be detailed by the Architect.
- Flexible and rigid pipe lengths shall not exceed 3m.
- All external rainwater down pipes shall discharge through a proprietary bottle gully as shown on drawing STD 01.02.
- Trenches below existing carriageways and parking areas shall be reinstated with G.O.S. Type 1 material in accordance with standard detail STD 02.05.
- Channel drains shall be Acc Multidrain MD180 with 0.5% in built gradient, or equivalent. They shall discharge via a sump by Acc or equivalent. Grating shall be Inaugnat Class D400. To be installed in accordance with manufacturer's instructions.
- All utility covers & frames within the extent of the works shall be adjusted as necessary. The Contractor shall ensure that all services within vehicular areas have appropriate grade covers & frames as shown below:

Vehicular areas:	D400	Pedestrian areas:	D125
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- Where drains are to be abandoned they shall be removed or filled by grouting in accordance with The Civil Engineering Specification for the Water Industry - 6th Edition, clause 5.23. Drainage runs shall be CCTV surveyed prior to being abandoned to ascertain whether any 'false' junctions exist.
- Redundant / abandoned gullies, soakaways and manholes shall be broken out to a depth of 600mm then filled with well compacted Type 3F4B/5 rapping material.

REV	DESCRIPTION	CHECKED	DATE
P6	ADPT. CHAMBER LAYOUT ADDED AT POINT FIVE INTERSECTION	-	PP-19-06-23
P5	ADPT. CHAMBER LAYOUT ADDED IN BARKHAM ROAD	-	PP-07-06-23
P4	EXISTING STORM SEWER IN BARKHAM ROAD SHOWN IN DETAIL	-	PP-08-06-23
P3	FOUL SEWER OUTFALL CONNECTION CHANGE TO CHAMBER P1	-	PP-05-06-23
P2	FOUL OUTLET LOCATIONS UPDATED TO ACCORD WITH ARCHITECTS DETAILS	-	PP-04-06-23

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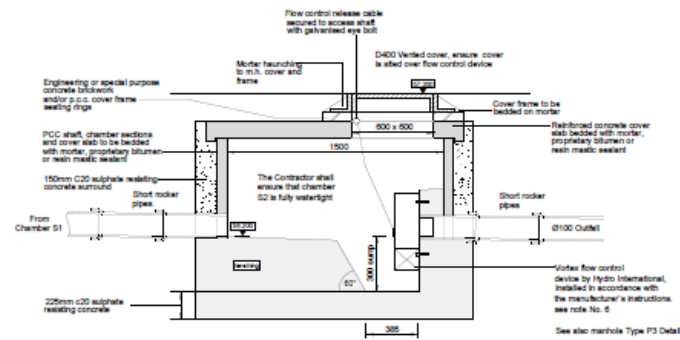
CLIENT
Cleantate Limited

PROJECT
**1 Barkham Road
Wokingham
Drainage General Arrangement**

DRAWN BY PF	CHECKED BY VC	DESIGNED BY PF
SCALE @ A1 Plan 1:200	© DATE Nov, 2022	STATUS Preliminary
JOB NO. 32617	DRAWING NO. EX.01	REVISION P6

APPENDIX B

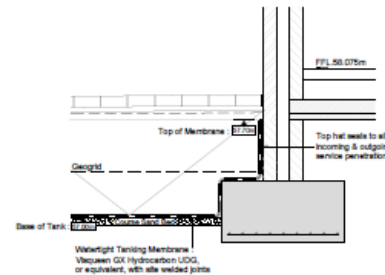
Drainage Sections



FLOW CONTROL CHAMBER S2

Scale 1:25

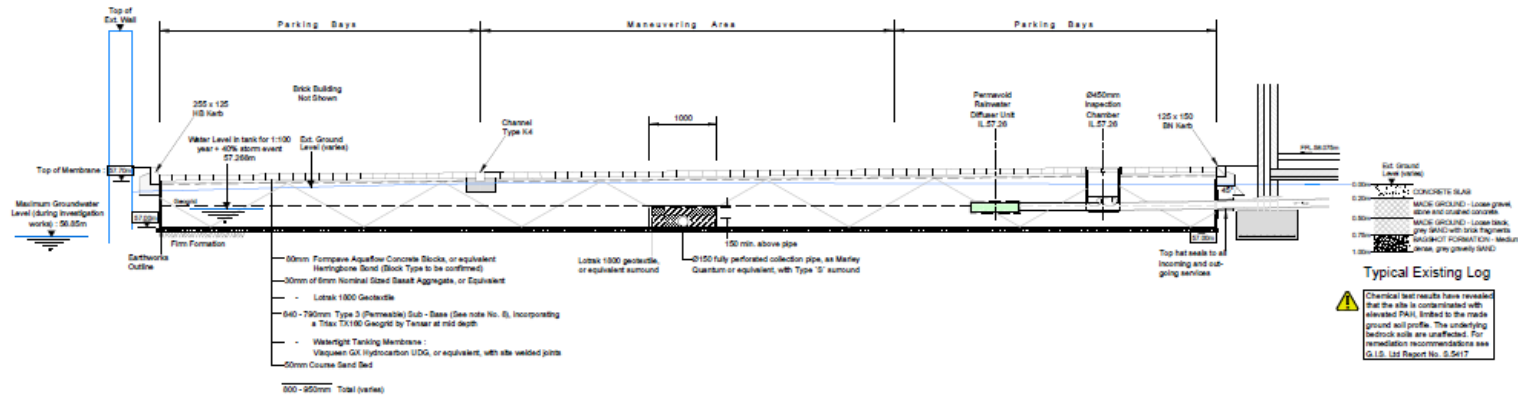
A CPM Group Limited or equivalent, precast hydro-broke chamber base unit may be installed



WATERPROOF MEMBRANE

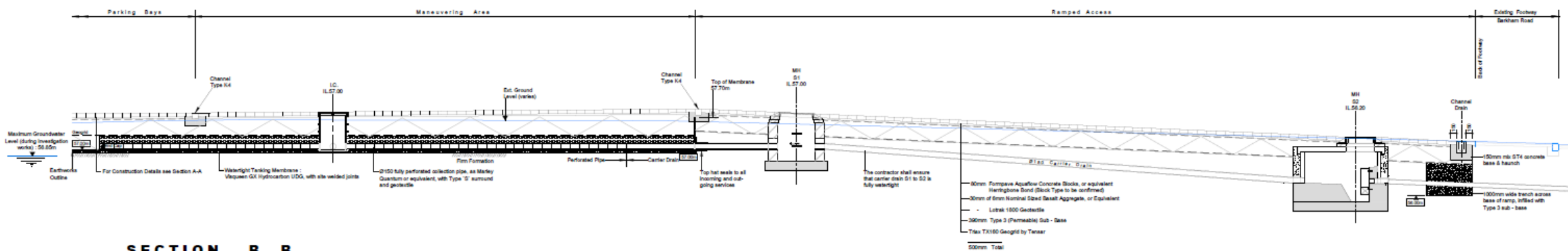
Scale 1:25

Detail showing waterproof membrane adjacent to the new building



SECTION A - A

Scale : 1:50



SECTION B - B

Scale : 1:50

Rocker Pipes and Pipe Bedding Not Shown

NOTES

- This drawing to be read in conjunction with all relevant Architects and Engineers drawings and specifications.
- Dimensions are in millimetres unless noted otherwise.
- For General Notes see the General Arrangement Drawings.
- All works & clause references are to The Specification for Highway Works (HS02) as at Jan. 2022.
- Pavement formations shall be inspected and any soft or deleterious material shall be removed and replaced with well compacted coarse capping material. The resultant formation shall be proof rolled.
- Hydro - Brake flow control device shall be supplied by Hydro International. Telephone : 01275 - 878371
Design Head : 1.0m
Design Flow : 2.1 l/sec
Hydro - Brake Outlet ref. T8C
Hydro - Brake Type : MDA
Anticipated Diameter : 57mm
- Earthwork outlines are indicative only.
- The Type 3 sub - base shall be tested and certified to ensure that it has a void ratio of no less than 35%.
Void Ratio : The ratio of the volume of voids to the volume of solids

P3 IMP. CHAMBER LID/GR. ACCESS TO BOTTOM OF
P2 MIN. COVER OVER REDUCED DEPTH TRENCH

PF-19-08-22
PF-24-08-22

REV DESCRIPTION CHECKED DATE

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CLIENT
Cleanslate Limited

PROJECT
1 Barkham Road

Wokingham

Sections

DRAWN BY
PF

CHECKED BY
VC

DESIGNED BY
PF

SCALE @ A1
As Shown

@ DATE
Jan, 2023

STATUS
Preliminary

JOB NO.
32617

DRAWING NO.
EX.03

REVISION
P3