

Calcinotto

Calcinotto

civil and structural engineers

114378

Unit 9, Saltbox, Bognor Regis
Drainage Management and Maintenance Report

23rd May 2022
Revision 1.0

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1 Background

This document has been produced to aid and inform the maintenance and inspection regimen required to maintain the performance of the foul and surface water drainage systems designed to serve the proposed development over the lifetime of the finished site.

The guidance highlighted within this report has been referenced from the CIRIA document C753 SuDS Manual and CIRIA RP992.

- A detailed breakdown of the 'Drainage Components, Inspection & Maintenance Regime Can be viewed in Appendix A.
- A drawing showing the site drainage proposals can be view in Appendix B.

2 Description

2.1 Drainage Infrastructure

The development comprises of the following:

- Car Showroom and Sales Facility.
- Car parking for 227 vehicles.
- Dry/Wet Valet Building
- Permeable paved parking bays to the western side of the site
- A below ground corrugated steel pipe attenuation tank, vortex flow control and bypass/washdown separators.
- New drainage infrastructure.

The proposed drainage layout can be viewed on drawings 114378-CAL-XX-XX-DR-D-0100 and 0101 included within Appendix B.

2.1.1 Foul Drainage

The development is served by a network of 100mm and 150mm diameter foul water pipework. The system will discharge into an existing 150mm diameter stub connection into the wider Saltbox development foul drainage system located on the northern site boundary, of which some capacity had been allocated for Unit 9 at outline planning for the wider development.

The proposed foul water drainage system contains an element which will need to be inspected and maintained, as outlined in Appendix A, to retain the performance of the system. This element is as follows:

Washdown and Silt Separator – The site drainage proposals specify a 19,000 litre Klargester Washdown and Silt Separator unit to be located within the foul drainage system downstream of the valet building and upstream of the building foul water main sewer line.

Klargester maintenance guidelines suggests the following approach to maintaining the separator: -

- Separators should be inspected at least every six months or more frequently if experience dictates. A log should be maintained detailing any silt removal or cleaning carried out. A specimen maintenance log is included in the appendices.
- Every site is different, in respect to the amount and type of silt generated by the drain design and installation. Frequently, the construction programme itself generates large and perhaps unusual quantities of silt and grit. We do recommend that following the initial installation, an inspection of the separator contents be made to check that building rubble has not entered the unit. Further inspections at 3 and 6 months should be made so as to be able to assess the volumes of silt accumulated. The inspection and emptying programme can then be defined following the first 6 months site experience. We recommend leaving a maximum interval between inspections of 6 months.

2.1.2 Surface Water Drainage

The development is served by a network of 100mm up to 375mm diameter pipework. The system will discharge into an existing 450mm diameter surface water sewer located within the site boundary which forms part of the wider development site surface water drainage system prior to discharge into a tributary of the Aldingbourne Rife. The connection into the site wide drainage system will be managed by a hydrobrake flow control device, that will limit the off-site flow to a maximum of 2.46 l/s, in accordance with the agreed outline planning permission surface water drainage strategy. The surface water system will work via gravity alone.

The proposed surface water drainage system contains several principal elements which will need to be individually inspected and maintained, as outlined in Appendix A, to retain the performance of the system. These elements are as follows:

Permeable Paving – The permeable paved aisles have been designed to act as both a drainage collection system and an attenuation system. The permeable paving will not be allowed to infiltrate to ground due to the existing on-site conditions.

Flow Control Device – A Hydrobrake vortex flow control has been used to manage the proposed surface water drainage system. The flow control device will be built into the Tubosider steel corrugated pipe tank and will therefore share its maintenance with the tank with regards to the removal of silt.

Corrugated Steel Pipe Tank – The primary storage method uses a Tubosider tank located beneath the western side of the car park. This tank will provide sufficient storage for a 1:100 year + 40% climate change storm event. The flow control device is to be accommodated within one of the access chambers to the tank.

Gravel Strip – There is a narrow gravel margin proposed to the building line which will contain a perforated pipe outfall to the site surface water drainage system. This margin will act as an overflow into the drainage system should the car park pipes flood and overflow towards the building line.

Road Gully's (With internal smart sponges) – The road gully's serving the eastern side of the car park are to be installed with smart gully adaptors which will contain smart sponges. These sponges will filter out any hydrocarbons picked up from the car park preventing them from reaching the off-site drainage system.

The proposed surface water drainage system has been designed to minimise the risk of any flooding occurring on-site by using the range of recommended storm return periods. Where appropriate for more extreme long-term events an allowance for climate change has also been allowed for to protect the site over the lifetime of the development.

Design storm return periods used:

1 in 1 Year Storm

1 in 30 Year Storm + 20% Climate Change Allowance

1 in 100 Year Storm + 40% Climate Change Allowance

In addition to the attenuation storage provided for the design storm return periods listed above, some additional storage space is available within the permeable paving for an extreme exceedance event. This will ensure that all run-off is retained within the site only.

3 Maintenance Items

The following is a list of components included within the foul and surface water drainage system which will need to be regularly inspected and maintained:

- Foul and Surface Water Pipework
- Foul and Surface Water Chambers
- Permeable Block Paved Car Park Isles
- Corrugated Steel Pipe Attenuation Tank
- Gravel Drainage Margin
- Flow Control Chambers
- Bypass and Silt Separators
- Gully Pots and Drainage Channel Deep Sump Units

Refer to Appendix A for the recommended frequency of inspection works.

This will be a live document and any changes to inspection periods should be recorded and a reason given for future reference.

Appropriate safety fencing and barriers should be erected during any servicing and maintenance works on any part of the drainage system to ensure the safety of all site users, visitors as well as the maintenance staff carrying out the works. Timing for these works should be programmed in with notifications given to the site users.

Schedule of Changes

This schedule has been provided to enable those responsible for the maintenance of the drainage systems to document changes made to the actions and frequencies of maintenance, in direct response to changing site / drainage conditions:

Drainage Feature	Change of Action	Change of Frequency	Comments

5 Conclusion

The maintenance guidelines are live documents and will be monitored through the lifetime of the development and will be amended and addressed as necessary.

Any changes to the schedule are to be recorded in the Schedule of Chambers Table included.

The occupier (Richmond Motor Group) will have direct responsibility for the maintenance and management of the Unit 9 site foul and surface water drainage system within their site boundary including ensuring compliance with any regulatory requirement with regards to the quality of surface water drainage.

A Drainage Components Inspection & Maintenance Regime

SuDS Components Operation and Maintenance Activities

Operation and Maintenance Activity	SuDS Component												
	NOTE: Only components highlighted in BLUE are relevant to this project.												
	Pond	Wetland	Detention Basin	Infiltration Basin	Soakaway	Infiltration Trench	Filter Drain	Attenuation Storage	Permeable Paving	Swale / Bioretention / Trees	Gravel Margin 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				○	○	○	○		○	○			

¹ Sediment should be collected and managed in pre-treatment systems, upstream of the main device

Legend: ● Will be required ○ May be required

General Foul and Surface Water Drainage Maintenance

Piped Network/Chambers Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	The entire on-site foul and surface water drainage system should be visually inspected by lifting all manhole covers and checking the silt traps of catchpits, sump units and gullys.	Every six months
	The entire on-site foul and surface water drainage system should be CCTV surveyed to identify any damage, blockages or silt build-up. Any obstructions to be jet cleaned and any damage repaired.	Every 5 Years
Remedial Maintenance	Any identified blockages within the drainage system to inspected via a CCTV survey, jet cleaned and repaired if necessary.	As required

Piped Network/Chambers

Piped Network/Chambers Maintenance Schedule	Required Action	Typical 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

Corrugated Steel Pipe Storage Tank

Cellular Storage Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action.	Monthly for three months, then annually.
	Remove debris from catchment surface (where may cause risks to performance)	Annually or as required
Remedial Maintenance	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 and after large storm events
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required
Structure Rehabilitation/Repair	Regular maintenance and monitoring to identify if repair and/or replacement of storage units is required.	As required
The SuDS Manual Table 21.3: Operation and maintenance requirements for attenuation storage tanks.		

Permeable Pavements

Permeable Pavement Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over the whole surface). Care should be taken in adjusting vacuuming equipment to avoid removal of jointing material if present. Any lost material should be replaced	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers' recommendations – pay particular attention to areas where water runs from adjacent impermeable areas, as this area is most likely to collect the most sediment
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weed or management using glyphosate applied directly to the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Maintenance	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structured 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 and filtration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, forty-eight hours after large rainfall events in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually
The SuDS Manual Table 20.15: Operation and maintenance requirements for pervious pavements		

Bypass and Wash-down Separators

P.T.S. Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspection of the accumulated oil / silt build-up within the PTS and removal if necessary	Annually or as required
	Physical inspection of the PTS including all mechanical parts and maintenance as required	Annually or as required
	All electrical equipment such as alarms and management systems to be services	Annually or as required
	The entire PTS is to be emptied and given a general inspection to test the integrity and performance of the system. Following the inspection, the PTS is to be re-filled with clean water.	Every 5 Years
Remedial Maintenance	Repair/rehabilitate inlets, outlets, overflows and vents.	As required
	The PTS system is to be emptied as soon as a significant amount of oil / silt has built-up. The retained materials are to be removed and the PTS re-filled with clean water. This is to be done immediately if an alarm system is triggered.	As required
	Any coalescing devices to be checked and replaced as necessary	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

Road Gully's with Smart Gully's Adaptors

P.T.S. Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspection of the silt build-up within the road gully sumps and removal if necessary	Annually or as required
	Inspection of the smart sponges housed within the Smart gully's adaptors and replacement if necessary	Annually or as required
Remedial Maintenance	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
	Regular maintenance and monitoring to identify if repair and/or replacement of features or pipework is required.	As required
Monitoring	The smart sponges should be weighed to determine when they require replacement. Once the smart sponges reach 2-3 times their original starting weight of 0.5 kg (Due to absorbing hydrocarbons) they must be replaced.	Annually or as required
Structure Rehabilitation/Repair	Regular maintenance and monitoring to identify if repair and/or replacement of features or pipework is required.	As required

B Proposed Drainage Plans

NORTH

Drainage Legend

- Site Boundary
- Existing Private SW Sewer (& Manhole)
- Existing Private FW Sewer (& Manhole)
- Proposed Private SW Sewer (& Manhole)
- Proposed Private FW Sewer (& Manhole)
- 4500 Trapped Gully with Smart Sponge Filter
- Square Trapped Yard Gully + Shallow Bucket
- Rodding Eye
- Rainwater collection Pipe (with Access)
- Gatic Facade Drain or Similar (Revolving door drain to Architect spec)
- Stub Stack
- Soil & Vent Pipe
- Perforated Distributor / Collection Pipe
- ACO M1000 Drainage Channel (with Sump Unit)
- Porous Paving (Finish to Architect Spec)

Refer to architects / M&E drawings for exact positions of internal connections and RWPS.

Notes:

- This drawing is to be read in conjunction with all relevant architects, engineers and specialist sub-contractors drawings and the specification.
- All setting out to be in accordance with the schedules, any discrepancies between the engineers and the architects drawings to be referred to the architect before proceeding. Dimensions must not be scaled.
- All private drainage is to be in accordance with BS EN 752-1-2-3-4, BS EN 1295-1, BS EN 1610 and all relevant sections of approved document H of the building regulations (2015 Edition).
- Where drainage pipework is to be flexibly jointed extra strength vitrified clay it should be to BS EN 295-1, Hepworth 'Supersleve' or equivalent.
- Where drainage pipework is plastic i.e. PVC-U it shall be to BS EN 1401-1 Csm or equivalent. Private pipework to be type SN4 and all adoptable pipework to be type SN8.
- Where drainage pipework is cast iron it shall be to BS EN 877 and for ductile iron it shall be to BS EN 598.
- All concrete pipework, shall be to BS EN 1916 and BS 5911-1. Manholes and fittings shall be to BS 5911 parts 3 and 4 and BS EN 1917.
- Where drains pass through foundations or connect to manholes, flexible pipe joints are to be provided within 150mm of the face of the structure and within a further 600mm to form a rocker pipe.
- Where pipes pass through screen walls, footings or retaining walls, lintels are to be provided.
- Where pipelines pass within 1.0m of buildings or walls the foundations are to be taken down below the bottom of the trench. Where pipelines are more than 1.0m away from foundations the trench shall be backfilled with concrete up to a point that meets a 45° angle line taken from the bottom corner of the nearest foundation.
- Where depth to invert does not exceed 600mm and the pipe size does not exceed 100mm diameter, 300mm dia. polypropylene access chambers may be used. Elsewhere, proprietary polypropylene or precast concrete manholes are to be used.
- Where connections are to be made to existing manholes / sewers, invert levels, pipe sizes and orientation should be checked prior to the commencement of the works and any variance reported to the engineer immediately. Where connections are to be made on or off site the contractor is to check the line and level of any services / mains, to ensure that no clashes exist prior to works commencing.
- Where pipelines cross, each is to be surrounded with grade ST4 mass concrete for a distance not less than 1.0m centred on the crossing point. Length of surround to be extended as necessary to within 150mm of the next nearest flexible joints.
- For private drainage, concrete protection is to be provided where the effective cover to the crown of the pipe(s) is less than 1.2m in trafficked areas and 0.6m in soft landscaped or pedestrianised areas.
- The contractor is to ensure that protective measures are taken to ensure that drainage pipework and fittings are not damaged by site traffic prior to oversite filling operations being completed around buildings.
- The top run of each private foul drainage network is to be laid to falls no slacker than 1:40, the head of each run is to be vented to atmosphere in accordance with approved document H.
- All surface water drainage to be min 100mm dia, laid at a gradient no slacker than 1:40. And all foul water drainage to be min 100mm dia, unless stated otherwise.
- The contractor is to ensure that all pipework connections are arranged to direct flows down or into the main channel in the direction of the main flow. Where necessary 3/4 bends are to be used on oblique connections inside the manhole benching where sufficient room exists or the pipelines on oblique connections are arranged outside the chamber to be able to divert flows down the main channel. Connections brought in perpendicular to the main channel are not acceptable.
- The contractor is to ensure that when preformed polypropylene manhole bases are used that they are orientated such that the main flow is through the main channel of the base. This should be achieved by incorporating long radius bends outside of the manhole.
- The contractors attention is drawn to the need to ensure that any trenches excavated through previously compacted filled areas, in particular under the building footprint and immediately adjacent around the outside, are re-compacted to ensure localised differential settlement does not occur.
- Where new connections are to be made into existing manholes or sewers, all invert levels, pipe orientation and sizes should be checked on-site prior to the commencement of the works, with any variance reported to the engineer once identified. Where new connections are to be made either on or off-site, the contractor is to check the line and level of any existing services / mains, to ensure that no clashes exist prior to the works commencing.
- Porous paving surface finish 'to the architects spec'. Any alteration to the extents of the porous paving may have an adverse affect upon the Surface water drainage design and must therefore be discussed with the engineer.
- Contractor to allow for threshold channel drainage to building access points where required by Architect.
- Unscheduled inspection chambers are to be minimum 300mm dia. non-access shallow inspection chambers to provide rodding access into building. Invert level provided on plan.
- Existing foul and surface water invert levels taken from Greenhatch survey 41405A.T. Any variance from these levels are to be notified to the drainage engineer prior to works commencing.
- All pipes to be laid soffit to soffit unless otherwise specified within the manhole schedule.
- All direct pipe connections to be made using oblique 45 degree junctions.
- Perforated pipe ends in permeable paving to be capped.
- Manhole references denoted as 'CP' to have catch pits.

F	05.05.22	Site Plan Updated. Drainage Remains Unchanged Per Rev F
G	04.04.22	Further amendments to address LLFA comments.
E	15.03.22	Amended to pick up LLFA comments.
D	02.03.22	Issued for Condition 12 Approval
C	24.02.22	Bypass separator levels amended.
B	10.02.22	Tubosider tank added S18 and S21 removed.
A	08.02.22	Construction Issue
Rev	Date	Description



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Client:
RICHMOND MOTOR GROUP

Project Title:
Saltbox

Drawing Title:
**Drainage Layout
Sheet 1 of 2**

Drawing Status:
Construction

Originator No.	Rev by	Chk by	Scale
114378	DB	PW	1:250 @A1

PROJECT ORIGINATOR ZONE LEVEL TYPE ROLE NO	Revision
114378-CAL-XX-XX-DR-D-0100	G

Notes:

1. This drawing is to be read in conjunction with all relevant architects, engineers and specialist sub-contractors drawings and the specification.
2. All setting out to be in accordance with the schedules. any discrepancies between the engineers and the architects drawings to be referred to the architect before proceeding. Dimensions must not be scaled.
3. All private drainage is to be in accordance with BS EN 752-1-2-3-4, BS EN 1295-1, BS EN 1610 and all relevant sections of approved document H of the building regulations (2015 Edition).
4. Where drainage pipework is to be flexibly jointed extra strength vitrified clay it should be to BS EN 295-1, Hepworth 'Supersleve' or equivalent.
5. Where drainage pipework is plastic i.e. PVC-U it shall be to BS EN 1401-1 Osma or equivalent. Private pipework to be type SN4 and all adoptable pipework to be type SN8.
6. Where drainage pipework is cast iron it shall be to BS EN 877 and for ductile iron it shall be to BS EN 598.
7. All concrete pipework, shall be to BS EN 1916 and BS 5911-1. Manholes and fittings shall be to BS 5911 parts 3 and 4 and BS EN 1917.
8. All materials for adoptable drainage are to be Kitemarked as appropriate.
9. Where drains pass through foundations or connect to manholes, flexible pipe joints are to be provided within 150mm of the face of the structure and within a further 600mm to form a rocker pipe.
10. Where depth to invert does not exceed 600mm and the pipe size does not exceed 100mm diameter, 300mm dia. polypropylene access chambers may be used. Elsewhere, proprietary polypropylene or precast concrete manholes are to be used.
11. Where connections are to be made to existing manholes / sewers, invert levels, pipe sizes and orientation should be checked prior to the commencement of the works and any variance reported to the engineer immediately. Where connections are to be made on or off site the contractor is to check the line and level of any services / mains, to ensure that no clashes exist prior to works commencing.
12. Where pipelines cross, each is to be surrounded with grade ST4 mass concrete for a distance not less than 1.0m centred on the crossing point. Length of surround to be extended as necessary to within 150mm of the next nearest flexible joints.
13. For private drainage, concrete protection is to be provided where the effective cover to the crown of the pipe(s) is less than 1.2m in trafficked areas and 0.6m in soft landscaped or pedestrianised areas.
14. The contractor is to ensure that protective measures are taken to ensure that drainage pipework and fittings are not damaged by site traffic prior to oversite filling operations being completed around buildings.
15. The top run of each private foul drainage network is to be laid to falls no slacker than 1:40. the head of each run is to be vented to atmosphere in accordance with approved document H.
16. All surface water drainage to be min 100mm dia, laid at a gradient no slacker than 1/80. And all foul water drainage to be min 100mm dia. unless stated otherwise.
17. The contractor is to ensure that all pipework connections are arranged to direct flows down or into the main channel in the direction of the main flow. Where necessary 3/4 bends are to be used on oblique connections inside the manhole benching where sufficient room exists or the pipelines on oblique connections are arranged outside the chamber to be able to divert flows down the main channel. Connections brought in perpendicular to the main channel are not acceptable. Where possible the main channel flow shall be from any connections with WC's to ensure a flush through the main channel is achieved.
18. The contractor is to ensure that when preformed polypropylene manhole bases are used that they are orientated such that the main flow is through the main channel of the base, this should be achieved by incorporating long radius bends outside of the manhole.
19. The contractors attention is drawn to the need to ensure that any trenches excavated through previously compacted filled areas, in particular under the building footprint and immediately around the outside, are re-compacted to ensure localised differential settlement does not occur.
20. Where new connections are to be made into existing manholes or sewers, all invert levels, pipe orientation and sizes should be checked on-site prior to the commencement of the works, with any variance reported to the engineer once identified. Where new connections are to be made either on or off-site, the contractor is to check the line and level of any existing services / mains, to ensure that no clashes exist prior to the works commencing.
21. Porous paving surface finish 'to the architects spec'. Any alteration to the extents of the porous paving may have an adverse affect upon the Surface water drainage design and must therefore be discussed with the engineer.
22. Contractor to allow for threshold channel drainage to building access points where required by Architect.
23. The rising main should be laid with a minimum Cover of 1.2m within trafficked areas and 0.9m within pedestrianised areas.
24. The private rising main trench is to have a warning tape fitted. Allow for 1.0m of tape coiled inside the pump chamber at the upstream end.
25. Unscheduled inspection chambers are to be minimum 300mm dia. non-access shallow inspection chambers to provide rodding access into building. Invert level provided on plan.
26. Existing foul and surface water invert levels taken from Greenhatch survey 14405A.T. Any variance from these levels are to be notified to the drainage engineer prior to works commencing.
27. All pipes to be laid soffit to soffit unless otherwise specified within the manhole schedule.

G	19.04.22	S22 manhole type amended to reflect built in chamber.
F	04.04.22	Further amendments to address LLFA comments.
E	15.03.22	Amended to pick up LLFA comments.
D	02.03.22	Issued for Condition 12 Approval
C	24.02.22	S11 amended.
B	10.02.22	Tubosider tank added S18 and S21 removed.
A	08.02.22	Construction Issue
Rev.	Date	Description



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Client

RICHMOND MOTOR GROUP

Project Title

Saltbox

Drawing Title

Drainage Layout

Sheet 2 of 2

Drawing Status

Construction

Originator No.	Rev by	CHK by	Scale
114378	DB	PW	NTS @A1

PROJECT ORIGINATOR ZONE LEVEL TYPE ROLE NO.	Revision
114378-CAL-XX-XX-DR-D-0101	G

Node ID	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	MH Type	Connections	Link ID	IL (m)	Dia (mm)	Cover Type
S1	493987.503	101566.187	2.784	0.970	1200	PCC Rings (Catchpit)	 0	S1.000	1.814	225	D400
S3	493982.341	101586.310	2.953	1.231	1200	PCC Rings (Catchpit)	 0 10	S1.000 S1.001	1.722 1.722	225 375	D400
S5	493969.018	101573.728	2.715	0.515	150	Rodding Eye	 0	S3.000	2.200	100	Rodding Eye
S6	493941.865	101566.794	2.715	0.704	450	PP Inspection Chamber	 0 10	S3.000 S3.001	2.011 2.011	150 150	B125
S7	493911.789	101559.106	2.715	0.896	450	PP Inspection Chamber	 0 10	S3.001 S3.002	1.819 1.819	150 150	B125
S8	493903.294	101566.222	2.687	1.237	1200	PCC Rings (Catchpit)	 0 1 2 3 4 5	S1.001 S3.002 S5.000 S6.000 S1.002	1.450 1.725 1.612 1.500 1.450	375 150 100 100 375	D400
S9	493864.964	101567.472	2.500	0.784	450	PP Inspection Chamber	 0	S7.000	1.716	100	B125
S10	493905.645	101559.137	2.600	0.750	450	PP Inspection Chamber	 0	S5.000	1.850	100	B125
S11	493889.040	101559.066	2.780	1.430	1200	PCC Rings (Catchpit)	 0 1 2	S1.002 S7.000	1.350 1.550	375 100	D400
S13	493975.485	101571.247	2.715	0.615	150	Rodding Eye	 0	S8.000	2.100	150	Rodding Eye
S14	493982.255	101544.587	2.846	0.954	600	PP Inspection Chamber	 0 10	S8.000 S8.001	1.992 1.916	150 225	B125
S15	493952.938	101536.840	2.684	0.944	600	PP Inspection Chamber	 0 10	S8.001 S8.002	1.779 1.779	225 225	B125
S16	493921.024	101528.738	2.699	1.199	600	PP Inspection Chamber	 0 10	S8.002 S8.003	1.662 1.587	225 300	B125
S17	493911.361	101547.078	2.568	0.750	450	PP Inspection Chamber	 0	S9.000	1.818	100	D400
S19	493874.290	101531.171	2.576	0.750	450	PP Inspection Chamber	 0	S10.000	1.826	100	D400
S20	493975.807	101577.062	2.650	0.750	450	PP Inspection Chamber	 0	S2.000	1.900	100	D400
S22	493886.816	101525.369	2.806	1.506	1200	Tubosider Built-In Access Chamber (with Hydrobrake)	 0 1 2 3 4 5	S1.003 S6.003 S7.000 S8.000 RWP S1.004	1.300 1.300 1.490 1.584 1.990 1.300	Tank 300 100 100 100 100 150	D400
S23	493929.865	101565.367	2.600	0.750	450	PP Inspection Chamber	 0	S4.000	1.850	100	D400
S24	493904.928	101570.521	2.700	0.750	450	PP Inspection Chamber	 0	S6.000	1.950	100	D400
SW900	493878.000	101523.000	2.707	1.457	Existing MH	Existing MH	 0 10	S1.004 EX PIPE	1.270 1.250	300 450	D400

* CP - Catchpit arrangement, depth in schedule does not include minimum 450mm catchpit depth
N.B. Recessed covers and frames to manholes/chambers in feature paved areas
S2, S4, S12, S18 and S21 manholes omitted and no longer required.
EXSW900 amend cover level to suit new proposed external levels.
Tubosider covers to be vented in line with manufactures recommendations

Node ID	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	MH Type	IL (m)	Dia (mm)	Cover
F1	493958.339	101539.574	2.700	0.580	450	PP Inspection Chamber	2.120	100	D400
F2	493945.966	101536.352	2.700	0.840	450	PP Inspection Chamber	1.860	150	D400
F3	493908.956	101524.671	2.400	0.850	450	PP Inspection Chamber	1.550	100	B125
F4	493917.778	101526.992	2.400	0.950	450	PP Inspection Chamber	1.450	100	B125
F5	493919.612	101529.489	2.700	1.330	450	PP Inspection Chamber	1.370	150	B125
F6	493910.799	101558.230	2.700	1.630	450	PP Inspection Chamber	1.070	150	B125
F7	493902.906	101579.925	3.050	2.210	1200	PCC Rings	0.840	150	B125

- Recessed covers and frames to manholes/chambers in feature paved areas