RCD

Proposed carwash
Widewater Place
Moorhall Road
Uxbridge
UB9 6NS

FRA and Drainage Strategy Report

Rev	Date	Purpose/Status	Document Ref.	QA
A	03.06.2026	For approval	First issue	RAC/STC
B	27.07.2026	For approval	Amended to suit LLFA comments.	RAC/STC
C				
D				
E				

Disclaimer

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Executive Summary

RCD Consultants Ltd has been appointed to design the surface water and foul water drainage aspects of the proposed carwash at Widewater Place, Moor Hall Road, Uxbridge, UB9 6NS.

This flood risk assessment has been completed in accordance with the National Planning Policy Framework (NPPF), the Ciria SUDS Manual (C753), the Planning Practice Guidance (Flood Risk and Coastal change) the London Plan and the Hillingdon Council Sustainable drainage requirements and SuDS.

The site is Brownfield with an area of approximately 0.007Ha (70m^2). It is an existing carpark and is therefore 100% impermeable.

A carwash facility is proposed that will replace seven existing parking spaces therefore the impermeable areas will be like for like and there will be no increase in volume of runoff, other than that for Climate change.

It is advised that a combination of Sustainable Drainage Systems (SUDS) is used to reduce the risk of surface water flooding within and beyond the development site boundaries.

The flood warning information services website confirms that the site is located in Flood zone 1 and therefore not at risk of flooding. There is a high risk of surface water flooding, most likely caused in the extreme lowest parts of the carpark and central aisles associated with the linear channels. The website confirms that the risk of flooding to depths of 20cm and above is very low.

The BGS website shows the superficial deposits to be Alluvium over bedrock of the Seaford Chalk formation. Alluvium has very poor infiltration characteristics and the risk of groundwater leaching will be very low.

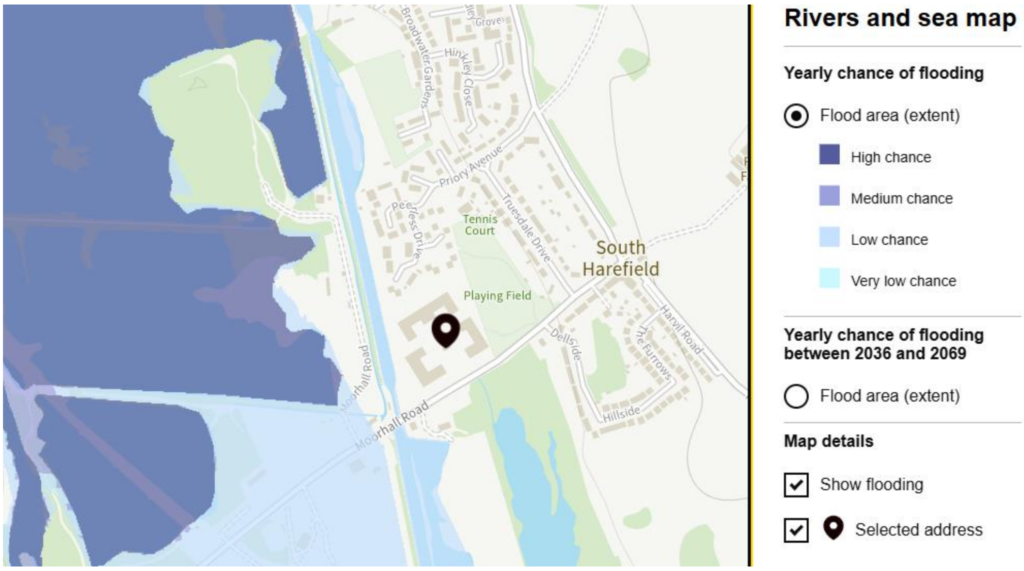
There is no risk of flooding from any other sources.

To accord with LLFA drainage requirements a flood exceedance plan is provided showing the route flood water will take in the unlikely event of SUDS failure.

1.0 Flood Risk

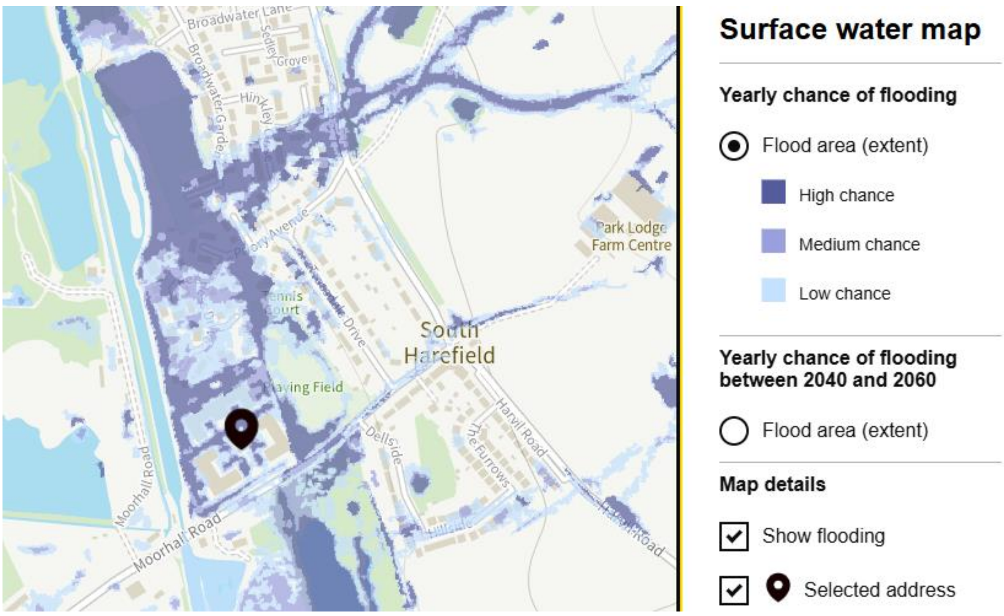
1.1 Flooding from Rivers

The flood warning information services website confirms that the site is located in Flood zone 1 and therefore not at risk of flooding.



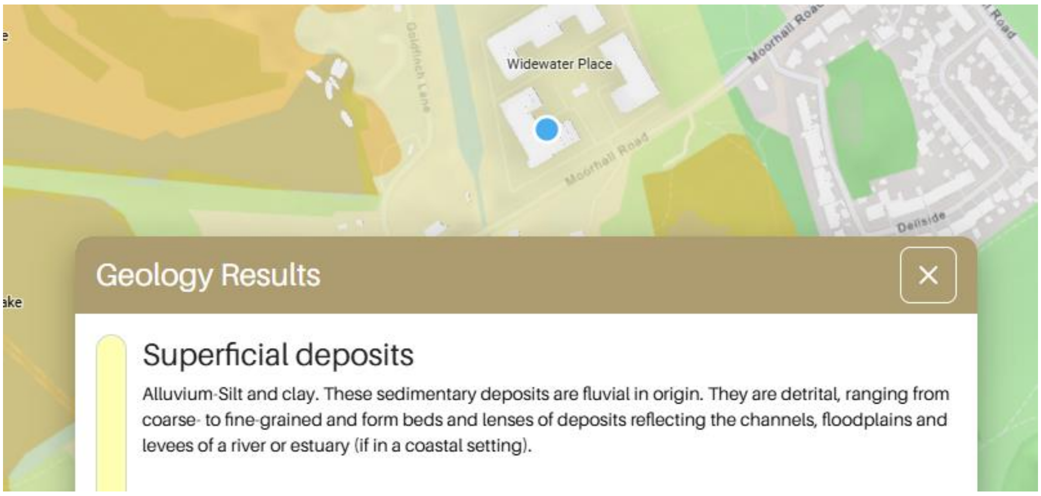
1.2 Flooding from Surface water

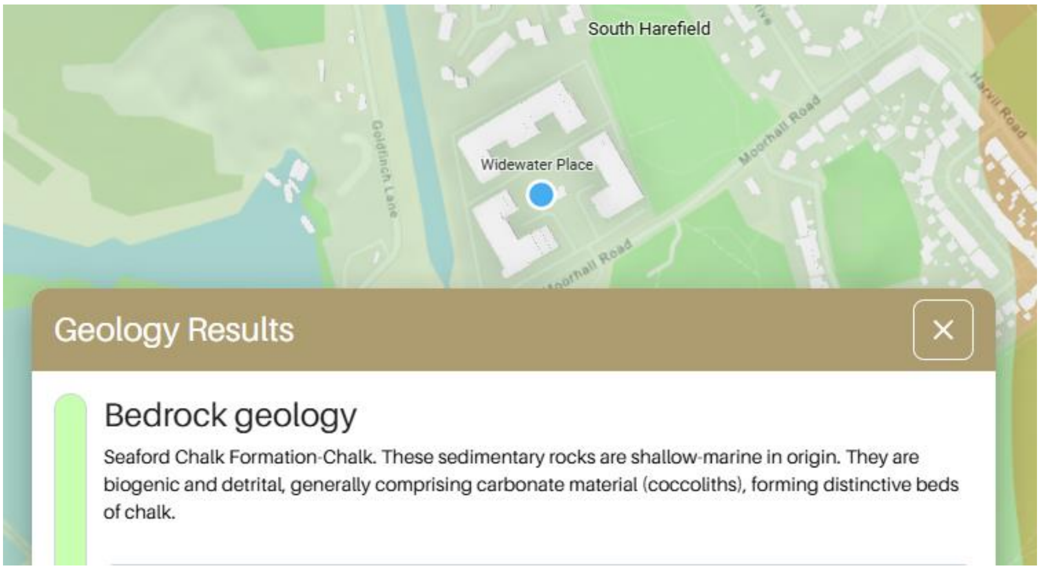
The flood warning information services website confirms that the site has a high risk of surface water flooding, most likely caused in the extreme lowest parts of the carpark and central aisles associated with the linear channels. The website confirms that the risk of flooding to depths of 20cm and above is very low.



1.3 Flooding from Groundwater

The BGS website shows the superficial deposits to be Alluvium over bedrock of the Seaford Chalk formation. Alluvium has very poor infiltration characteristics and the risk of groundwater leaching will be very low.





1.4 Flooding from Sewers

The existing sewers are maintained privately, and the public sewers are maintained by Thames Water Utilities so the risk of flooding is low.

1.5 Historic Flooding events

There are no recorded incidents of flooding within the Hillingdon SFRA.

2.0 Existing Drainage

The site is Brownfield with an area of approximately 0.007Ha ($70m^2$). It is an existing carpark and is therefore 100% impermeable.

The nearest watercourse is the Grand Union Canal approximately 50m west from the site.

There are public sewers in Moorhall Road and private foul and surface water within the carpark.

The BGS website shows the superficial deposits to be Alluvium over bedrock of the Seaford Chalk formation. Alluvium has very poor infiltration characteristics and the risk of groundwater leaching will be very low.

3.0 Proposed Drainage Strategy

A carwash facility is proposed that will replace seven existing parking spaces therefore the impermeable areas will be like for like and there will be no increase in volume of runoff, other than that for Climate change.

Roof drainage will be collected via a network of pipes and surface water will discharge to the existing private surface water sewer. Discharge will be restricted to as close to Greenfield rates as possible to comply with the London Plan. Attenuation will be provided by cellular storage tanks

The Drainage Strategy Layout is shown in Appendix A.

3.1 Surface Water Drainage

Pre-development surface water calculations are shown in Appendix B and post-development surface water calculations are shown in Appendix D.

In accordance with Ciria 753, SUDS Manual, flooding is permitted above ground during the 1 in 100 year storm event + 40% climate change allowance but all flood water is to be contained within the site boundaries. A flood exceedance plan shown in Appendix E indicates the routes water will take in the unlikely event of SUDS failure.

3.1.2 Standards

The performance of the surface water drainage system will be designed to BS EN 752 Parts 3 and 4, and the most current issue of Part H of the Building Regulations.

The materials specification for the scheme will be in accordance with the Highways Agency Specification for Highway Works. For the purposes of the indicative design, the following material types have been assumed:

- Drainage pipes up to 300mm diameter – Vitrified clayware, plastic pipes will be permitted subject to ground conditions.
- Manholes and chambers - Precast concrete with concrete surround or PPIC
- Chamber covers – Class D400 infill type in hard paved areas.
- Pipe bedding - Imported granular material.
- Pipe Trench backfill - Selected as dug or imported material.
- Manholes should be located at every change of alignment or gradient; at the head of all sewers; at every junction of a public sewer.

The drainage shall be designed utilising the following criteria:

- Minimum flow velocity 1.0m/s for self-cleansing
- Standard pipe roughness “Ks” of 0.6.

3.1.3 Existing and proposed site run-off flows and volumes

A summary of the existing and proposed peak flows are detailed in Table 1 below and include the 40% climate change allowance for the worst case 1 in 100 year storm event.

Return Period	Greenfield l/s	Pre-development l/s	Post-development l/s
1 in 2 year	0.02	1.2	0.1
1 in 30 years (+35% CC)	0.1	3.4	0.2
1 in 100 years (+40% CC)	0.1	4.4	0.3

Table 1: Summary of Existing and Proposed Surface Water Flows

The pre-development surface water flow calculations are shown in Appendix B and the post-development calculations are shown in Appendix D.

Return Period	Greenfield m^3	Pre-development m^3	Post-development m^3
1 in 2 year	0.3	0.5	1.5
1 in 30 years (+35% CC)	1.1	1.5	5.0
1 in 100 years (+40% CC)	1.4	1.9	6.2

Table 2: Summary of Existing and Proposed Surface Water Volumes

The pre-development surface water flow calculations are shown in Appendix B and the post-development calculations are shown in Appendix D.

Greenfield volumes are based upon the corresponding average rainfall intensities for the worst-case 15minute (0.25) summer storms a Greenfield coefficient of 0.5, i.e. 0.25 x 0.5 x 29.302 x 75 /1000 = 0.27m^3 for the 1 in 2 year storm event.

Pre-development flows and volumes discharge at unrestricted rates to the existing surface water sewer.

3.2 Foul Water Drainage

Foul drainage from the carwash will be collected via pipes and will discharge to the existing private foul sewer. A petrol interceptor will be installed to remove contaminants.

In accordance with Sewers for Adoption average flows will be 0.25l/s.

3.2.1 Standards

The performance of the foul drainage system has been designed to Sewers for Adoption, BS EN 752 Parts 3 and 4, and the most current issue of Part H of the Building Regulations. The main criteria used are as follows.

- Drainage pipes up to 100mm diameter – Vitrified clayware, plastic pipes will be permitted subject to ground conditions.
- Manholes and chambers - Precast concrete with concrete surround or PPIC
- Chamber covers – Class D400 infill type in higher quality paved areas.
- Class D400 standard type in all other road / parking areas.
- Class C250 standard type in all footpath areas.
- Pipe bedding - Imported granular material.
- Pipe Trench backfill - Selected as dug or imported material.
- Manholes should be located at every change of alignment or gradient; at the head of all sewers; at every junction of a public sewer.

The drainage shall be designed utilizing the following criteria:

- Minimum flow velocity 0.75m/s for self-cleansing
- Standard pipe roughness “Ks” of 1.5.

4.0 Attenuation

It is proposed that Sustainable Urban Drainage Systems (SUDS) will be the primary consideration for surface water management. There are several different methods that may be used to provide sufficient attenuation of the surface water described in Section 5 below.

Attenuation should be positioned as close to the outfall as possible and would control the surface water discharge from the site. Implementation of one or all of the SUDS methods outlined in Section 5 of this report is highly recommended to reduce the requirement for below ground storage.

The proposed drainage design includes a geo-cellular storage tank.

5.0 Sustainable Urban Drainage Systems (SUDS)

The objective of SUDS is to minimise the impacts of the development on the quantity and quality of site runoff and maximise amenity and biodiversity opportunities. Surface water SUDS will be designed and installed in accordance with NPPF and associated technical guidance and associated CIRIA documents.

The mix of SUDS to be used is determined by the conditions on site, in this case a development with areas of external space which can be utilised for SUDS. The methodology of surface water control is to slow the entry of the surface water into the system by using flow control devices (orifice), then retain the runoff by using below ground storage (geo-cellular storage tank) that will release surface water into the watercourse. The reduced impact of the development upon the drainage infrastructure will therefore reduce the potential for flooding.

5.1 Infiltration Devices

Infiltration devices drain water directly into the ground. Infiltration trenches and soakaways are more practicable for urban sites with limited space available. Infiltration devices can be integrated into and form part of the landscaped areas.

Infiltration trenches are completely below ground, and water should not occur on the surface.

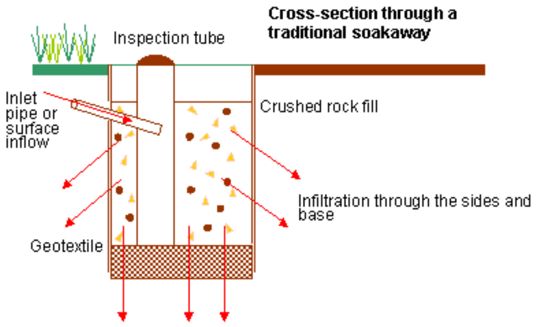


Figure 1 – Typical cross section through infiltration trench

Advantages – Reduces the volume of runoff, effective at pollutant removal, contributes to ground water recharge, simple and cost effective.

Disadvantages – Potentially high failure rates, comprehensive ground investigations required, offset from foundations (min. 5m away), risk of ground water pollution, reduced performance during prolonged wet periods.

Suitable for use – No, the British Geological Survey website indicates that the site is underlain by Alluvium superficial deposits that are known to have very poor infiltration characteristics.

5.2 Brown/Green Roofs

Green roofs comprise a multi-layered system that covers the roof of a building or podium structure with vegetation cover/landscaping over a drainage layer. They are designed to intercept and retain precipitation, increasing the time of concentration and reducing the volume of runoff and attenuation peak flows. Green roofs can be anything from a thin growing layer of sedums and mosses to plants, shrubs and large trees.

These roofs vary in specification and can be designed to attract bird and invertebrate species. Referring to CIRIA document C644, green and brown roofs also participate in attenuating rainwater. This would reduce the requirement for below ground storage attenuation on the site.

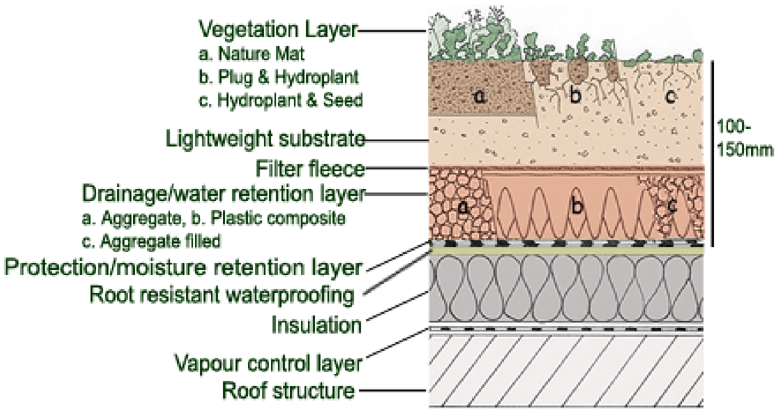


Figure 2 – Typical section through green roof build up

Advantages – Mimic greenfield state of building footprint, good removal of pollutants, ecological and amenity benefits, improve air quality, insulates building.

Disadvantages – Costs, increased structural loading, roof height, design, maintenance and exposure may preclude use.

Suitable for use – No, the types of roof proposed is not suitable to support a Green Roof.

5.3 Rainwater Harvesting

These tanks act as mini-storage chambers for surface water, reducing the extent of underground storage required. They provide a source of water for plant irrigation, washing machines and for flushing toilets.

Harvested rainwater is stored below ground and pumped to provide a substitute for potable mains water reducing both the site discharge and water consumption.

Figure 4 – Rainwater Harvesting

Advantages – Provided source control of storm water runoff, reduces demand on mains water.

Disadvantages – Costs, Risk to public health, use dependant on demand requirements and seasonal rainfall characteristics, maintenance of pumps & control systems.

Suitable for use – **No,** the cost of installing a rainwater harvesting tank will make the project unviable.

5.4 Porous Paving

Porous pavement is an alternative to conventional paving in which water permeates through the paved structure rather than draining off it. The surface water will be held in a reservoir structure (high void content sub-base) under the pavement for subsequent delayed discharge or infiltration into the sub-strata below.

The porous paving can be materials such as gravel, grasscrete, porous (no fines) concrete, concrete blocks or porous asphalt. Pollutant removal rates have been shown to be high, as the majority of the removal occurs as a result of the filtration of the water through the aggregate sub-base.

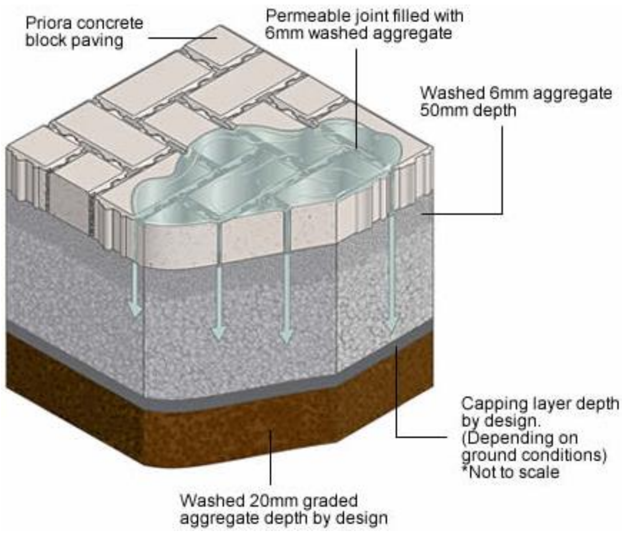


Figure 3 – Typical section through porous paving

Advantages – Effective in removing pollutants, lined systems can be used to avoid infiltration, reduces volume and rate of surface water runoff, suitable for high density developments. Mimics existing Greenfield conditions by filtering into the surrounding soft landscaped areas.

Disadvantages – Costs, used for low traffic volumes, low axel loads and speeds, risk of long-term clogging due to poor maintenance.

Suitable for use – **No,** this is a carwash are that needs to drain to a treatment system.

5.5 Below Ground Attenuation

Attenuation involves the storing of surface water within pipework or underground tanks prior to controlled discharge into the public system. Attenuation tanks can also provide off line storage.

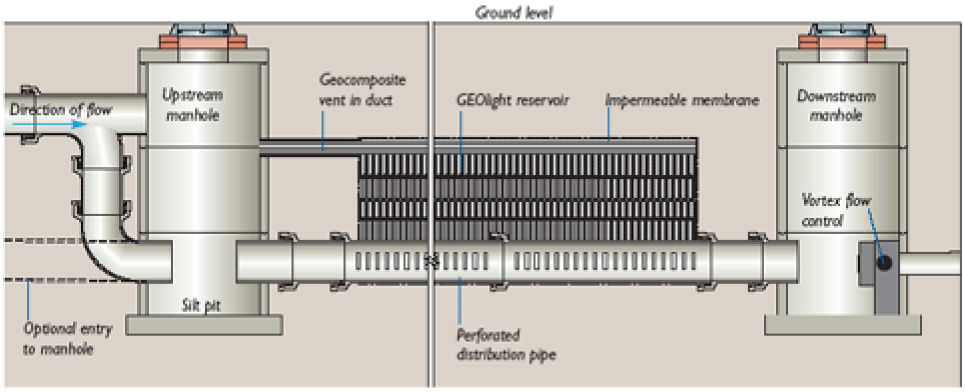


Figure 5 – Typical section through below ground attenuation chamber (cellular storage)

Advantages – Effective storage of surface water, can be used below trafficked areas, can be used below public open areas, minimum maintenance.

Disadvantages – No water quality treatment.

Suitable for use – Yes, cellular storage tanks are proposed.

5.6 Wetlands

Wetlands provide both stormwater attenuation and treatment. They comprise shallow ponds and marshy areas, covered in aquatic vegetation. Wetlands provide settlement of sediment and remove contaminants.

Advantages – Effective storage of surface water, good pollutant removal, ecological and amenity benefits.

Disadvantages – Requires large surface area. Health & Safety issues associated with large bodies of water.

Suitable for use – **No,** this is an existing carpark that will be reused as a carwash area.

5.7 Swales

Swales are vegetated drainage structures up to 500mm deep and used to provide flow control through attenuation. They can be used for infiltration, where possible.

Advantages – Can be incorporated into landscaping, good removal of contaminants, reduces discharge rates. Low costs.

Disadvantages – Requires large surface area. Limits extent of trees used in landscaping. Health & Safety issues associated with large bodies of water following heavy rainfall.

Suitable for use – **No,** this is an existing carpark that will be reused as a carwash area.

5.8 Ponds/Rain gardens

Ponds or rain gardens are irregular shaped vegetated drainage structures used to provide flow control through attenuation. They can be used for infiltration, where possible.

Advantages – Can be incorporated into landscaping, good removal of contaminants, reduces discharge rates. Low costs.

Disadvantages – Requires large surface area. Limits extent of trees used in landscaping. Health & Safety issues associated with large bodies of water following heavy rainfall.

Suitable for use – **No,** this is an existing carpark that will be reused as a carwash area.

6.0 Proposed SUDS solution

It is advised that a combination of Sustainable Drainage Systems (SUDS) is used to increase the time of concentration of the water before it discharges to the receiving surface water sewer.

The proposed drainage design includes a cellular storage tank that has been designed to attenuate the worst case 1 in 100 year storm event with a 40% climate change allowance.

Surface water discharge to the sewer will be restricted by an orifice plate flow control chamber to a maximum rate of 0.8l/s during the worst case 1 in 100 year storm event with a 40% climate change allowance.

7.0 Management and Maintenance of SUDS

The owner will be responsible for completion of routine maintenance of all SUDS features.

Refer to the SUDS operation and maintenance schedules in Appendix F.

8.0 Contamination mitigation

The British Geological Survey website indicates that the site is underlain by Alluvium superficial deposits that are known to have very poor infiltration characteristics.

The site lies above a principal bedrock aquifer, a secondary A superficial deposit aquifer and the Groundwater vulnerability is medium-high.

Ciria 753 Chapter 26 Mitigation indices:

Pre-development pollution indices:

Brownfield Commercial carpark use is identified in Table 26.2 as medium pollution hazard level;

Roofs: Total Solids = 0.7, Metals = 0.6 and Hydrocarbons = 0.7

The mitigation index is therefore MI = 0.6 + 0.5x0.7 + 0.5x0.7 = 1.3

Post-development

A commercial roof use is identified in Table 26.2 as low pollution hazard level;

Roofs: Total Solids = 0.3, Metals = 0.2 and Hydrocarbons = 0.05

The mitigation index is therefore MI = 0.2 + 0.5x0.2 + 0.5x0.05 = 0.45

The calculations show that the mitigation indices have been reduced therefore further mitigation is not required with regards to water quality.

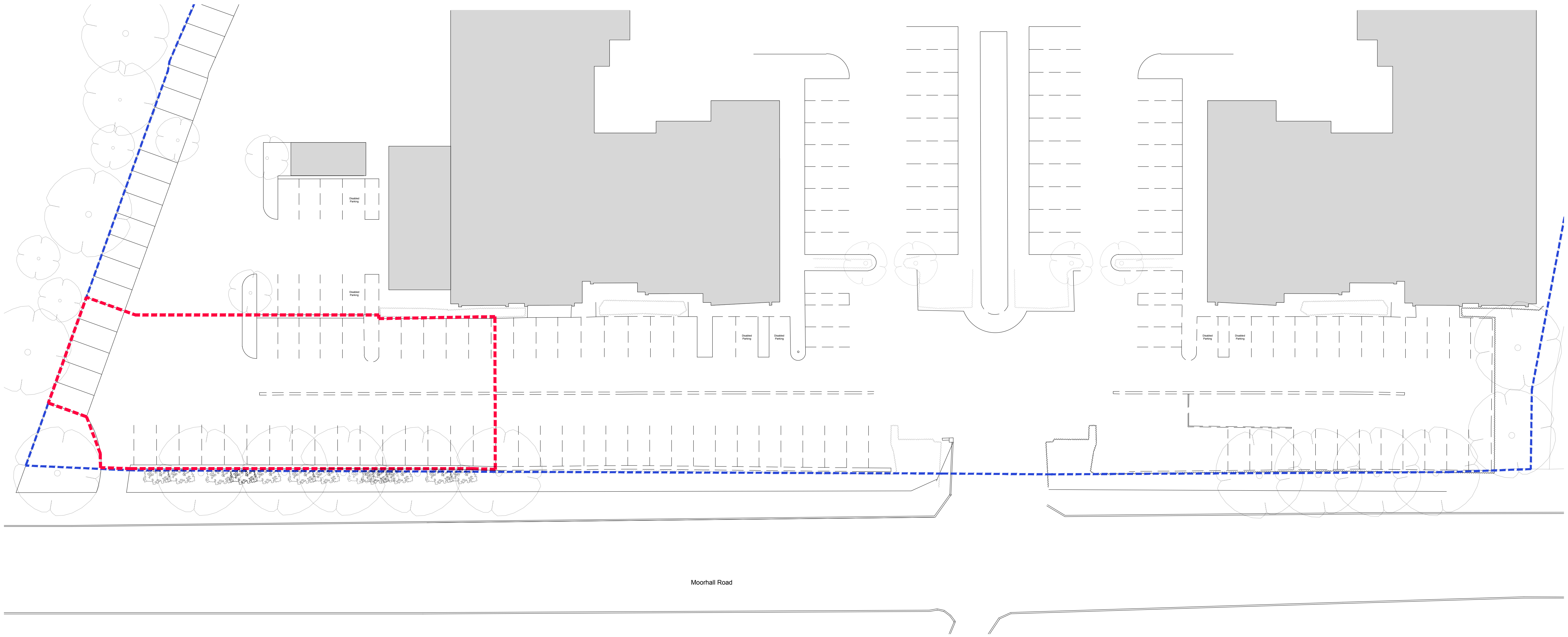
Table 26.5 Risk matrix

Element Number	Description	Risk Score	Weighting Factor	Score
1	Pollution Hazard Traffic Density	1	15	15
2	Average annual rainfall	2	15	30
3	Type of SUDS	2	15	30
4	Unsaturated zone depth	1	20	20
5	Flow through sub-soils	1	20	20
6	Unsaturated zone material	1	10	10
7	Soil organic matter	1	5	5
8	Unsaturated zone ph	1	5	5
Total				**135**

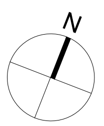
Based upon the above table the risk to groundwater is low as the total value is less than 180.

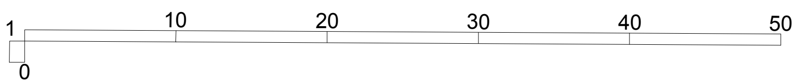
Appendix A

Site layout



Existing Site plan
1:500





Revisions		Date
Rev B - Issued for information	-	17.12.25
Rev A - Issued to client	-	02.12.25

PROJECT TITLE: **Widewater Place, Moorhall Road, Uxbridge**

DRWG TITLE: **Existing site plan**

DRWG No: **2540_P001**

REV: **B**

SCALE: **1:100@A3** DATE: **02.12.25**

DRWG STATUS : **Information**

jorges salman architects

a: 103/105 Brighton Rd Coulsdon, Surrey, CR5 2NG
t: 0208 6432716 e: enquiry@jorgessalman.com w:www.jorgessalman.com
Jorges Salman Architects Limited – Company Registration Number: 9081435

Appendix B

Pre-Development surface water calculations

Greenfield runoff rate estimation tool

hr wallingford

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

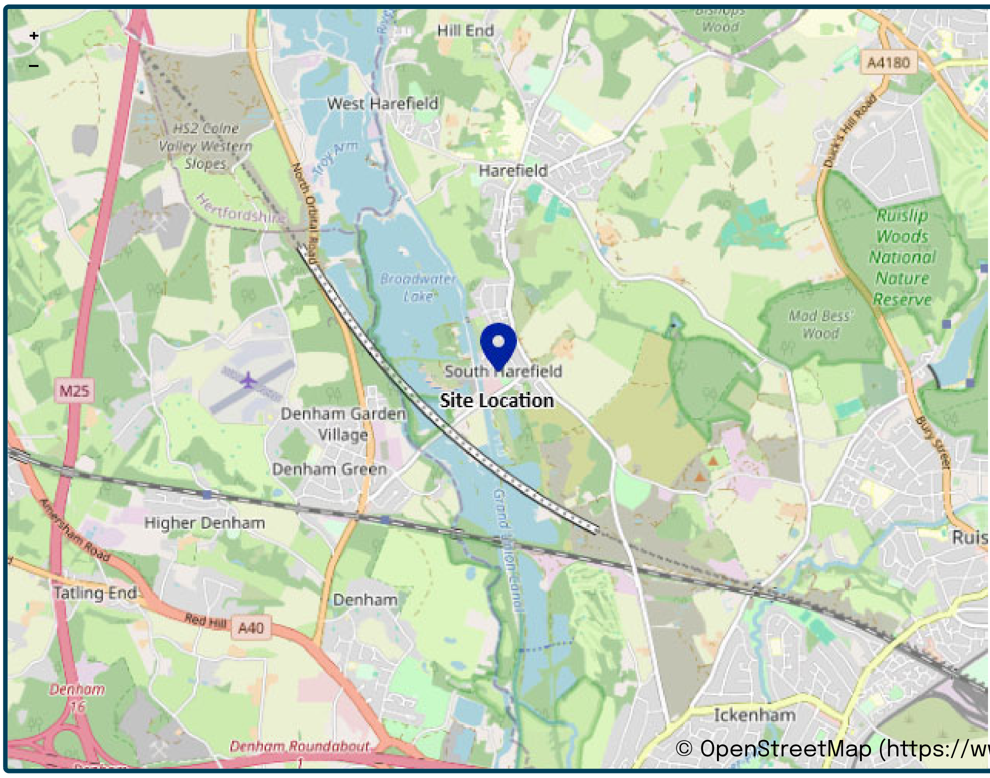
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	02/06/2026
Calculated by	RAY CLARK
Reference	1111-2605
Model version	2.2.3

Location

Site name	PROPOSED CAR WASH
Site location	WIDEWATER PLACE



Site easting (British National Grid)	505100
Site northing (British National Grid)	188768

Site details

Total site area (ha)	0.007	ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	651 mm		
BFIHOST19scaled	0.43		
QMed-QBar conversion	1.136		1.136
QMed (l/s)	0.02 l/s		
QBar (FEH statistical 2025) (l/s)	0.02 l/s		

Growth curve factors

	My value		Map value
Hydrological region	6		6
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	0.02 l/s
Flow rate 2 year (l/s)	0.02 l/s
Flow rate 10 years (l/s)	0.04 l/s
Flow rate 30 years (l/s)	0.1 l/s
Flow rate 100 years (l/s)	0.1 l/s
Flow rate 200 years (l/s)	0.1 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100	150

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Depth (m)
✓	1	0.007	5.00	30.000	Manhole	Adoptable	100	0.800
✓	EXSMH	0.000		30.000	Manhole	Adoptable	100	0.850

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	EXSMH	5.000	0.600	29.200	29.150	0.050	100.0	100	5.11	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.769	6.0	1.3	0.700	0.750	0.007	31	0.605

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	5.000	100.0	100	Circular	30.000	29.200	0.700	30.000	29.150	0.750

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	100	Manhole	Adoptable	EXSMH	100	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	30.000	0.800	100	Manhole	Adoptable	0	1.000	29.200	100	Circular
EXSMH	30.000	0.850	100	Manhole	Adoptable	1	1.000	29.150	100	Circular

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	10080	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Maximum Cover Depth (m)	3.000
Node Losses	✓	Backdrops	✓
Link Size	✓	Minimum Backdrop Height (m)	
Minimum Diameter (mm)	150	Maximum Backdrop Height (m)	1.500
Link Length	✓	Full Bore Velocity	✓
Maximum Length (m)	100.000	Minimum Full Bore Velocity (m/s)	
Coordinates	✓	Maximum Full Bore Velocity (m/s)	3.000
Accuracy (m)	1.000	Proportional Velocity	✓
Crossings	✓	Return Period (years)	
Cover Depth	✓	Minimum Proportional Velocity (m/s)	0.750
Minimum Cover Depth (m)		Maximum Proportional Velocity (m/s)	3.000

Approval Settings

Surcharged Depth	✓	Time to Half Empty	x
Return Period (years)		Discharge Rates	✓
Maximum Surcharged Depth (m)	0.100	Discharge Volume	✓
Flooding	✓	100 year 360 minute (m^3)	
Return Period (years)	30		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	103.552	29.302	30 year 120 minute summer	81.783	21.613
2 year 15 minute winter	72.668	29.302	30 year 120 minute winter	54.335	21.613
2 year 30 minute summer	66.619	18.851	30 year 180 minute summer	63.011	16.215
2 year 30 minute winter	46.750	18.851	30 year 180 minute winter	40.959	16.215
2 year 60 minute summer	43.991	11.625	30 year 240 minute summer	49.549	13.094
2 year 60 minute winter	29.226	11.625	30 year 240 minute winter	32.919	13.094
2 year 120 minute summer	32.696	8.641	30 year 360 minute summer	37.092	9.545
2 year 120 minute winter	21.722	8.641	30 year 360 minute winter	24.111	9.545
2 year 180 minute summer	26.819	6.901	30 year 480 minute summer	28.548	7.544
2 year 180 minute winter	17.433	6.901	30 year 480 minute winter	18.966	7.544
2 year 240 minute summer	21.824	5.767	30 year 600 minute summer	22.886	6.260
2 year 240 minute winter	14.499	5.767	30 year 600 minute winter	15.637	6.260
2 year 360 minute summer	16.930	4.357	30 year 720 minute summer	20.009	5.363
2 year 360 minute winter	11.005	4.357	30 year 720 minute winter	13.447	5.363
2 year 480 minute summer	13.296	3.514	30 year 960 minute summer	15.908	4.189
2 year 480 minute winter	8.834	3.514	30 year 960 minute winter	10.538	4.189
2 year 600 minute summer	10.814	2.958	30 year 1440 minute summer	11.008	2.950
2 year 600 minute winter	7.389	2.958	30 year 1440 minute winter	7.398	2.950
2 year 720 minute summer	9.564	2.563	30 year 2160 minute summer	7.530	2.081
2 year 720 minute winter	6.427	2.563	30 year 2160 minute winter	5.189	2.081
2 year 960 minute summer	7.745	2.040	30 year 2880 minute summer	6.090	1.632
2 year 960 minute winter	5.131	2.040	30 year 2880 minute winter	4.093	1.632
2 year 1440 minute summer	5.491	1.472	30 year 4320 minute summer	4.495	1.175
2 year 1440 minute winter	3.690	1.472	30 year 4320 minute winter	2.960	1.175
2 year 2160 minute summer	3.874	1.071	30 year 5760 minute summer	3.677	0.941
2 year 2160 minute winter	2.669	1.071	30 year 5760 minute winter	2.380	0.941
2 year 2880 minute summer	3.215	0.862	30 year 7200 minute summer	3.134	0.799
2 year 2880 minute winter	2.161	0.862	30 year 7200 minute winter	2.023	0.799
2 year 4320 minute summer	2.472	0.646	30 year 8640 minute summer	2.760	0.704
2 year 4320 minute winter	1.628	0.646	30 year 8640 minute winter	1.781	0.704
2 year 5760 minute summer	2.090	0.535	30 year 10080 minute summer	2.492	0.636
2 year 5760 minute winter	1.353	0.535	30 year 10080 minute winter	1.608	0.636
2 year 7200 minute summer	1.831	0.467	100 year 15 minute summer	386.771	109.443
2 year 7200 minute winter	1.182	0.467	100 year 15 minute winter	271.418	109.443
2 year 8640 minute summer	1.652	0.421	100 year 30 minute summer	253.545	71.744
2 year 8640 minute winter	1.066	0.421	100 year 30 minute winter	177.926	71.744
2 year 10080 minute summer	1.523	0.389	100 year 60 minute summer	168.661	44.572
2 year 10080 minute winter	0.983	0.389	100 year 60 minute winter	112.054	44.572
30 year 15 minute summer	300.376	84.996	100 year 120 minute summer	105.543	27.892
30 year 15 minute winter	210.790	84.996	100 year 120 minute winter	70.120	27.892
30 year 30 minute summer	195.135	55.216	100 year 180 minute summer	81.266	20.912
30 year 30 minute winter	136.937	55.216	100 year 180 minute winter	52.825	20.912
30 year 60 minute summer	128.916	34.069	100 year 240 minute summer	64.018	16.918
30 year 60 minute winter	85.649	34.069	100 year 240 minute winter	42.532	16.918

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year 360 minute summer	48.140	12.388	100 year 2160 minute winter	6.636	2.662
100 year 360 minute winter	31.292	12.388	100 year 2880 minute summer	7.693	2.062
100 year 480 minute summer	37.190	9.828	100 year 2880 minute winter	5.170	2.062
100 year 480 minute winter	24.708	9.828	100 year 4320 minute summer	5.548	1.451
100 year 600 minute summer	29.864	8.169	100 year 4320 minute winter	3.654	1.451
100 year 600 minute winter	20.405	8.169	100 year 5760 minute summer	4.451	1.139
100 year 720 minute summer	26.121	7.001	100 year 5760 minute winter	2.881	1.139
100 year 720 minute winter	17.555	7.001	100 year 7200 minute summer	3.735	0.953
100 year 960 minute summer	20.721	5.456	100 year 7200 minute winter	2.411	0.953
100 year 960 minute winter	13.726	5.456	100 year 8640 minute summer	3.247	0.828
100 year 1440 minute summer	14.258	3.821	100 year 8640 minute winter	2.096	0.828
100 year 1440 minute winter	9.582	3.821	100 year 10080 minute summer	2.900	0.740
100 year 2160 minute summer	9.631	2.662	100 year 10080 minute winter	1.872	0.740

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	29.231	0.031	1.2	0.0003	0.0000	OK
15 minute summer	EXSMH	10	29.180	0.030	1.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	EXSMH	1.2	0.578	0.194	0.0101	0.5

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	29.258	0.058	3.4	0.0005	0.0000	OK
15 minute summer	EXSMH	10	29.203	0.053	3.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	EXSMH	3.4	0.755	0.559	0.0224	1.5

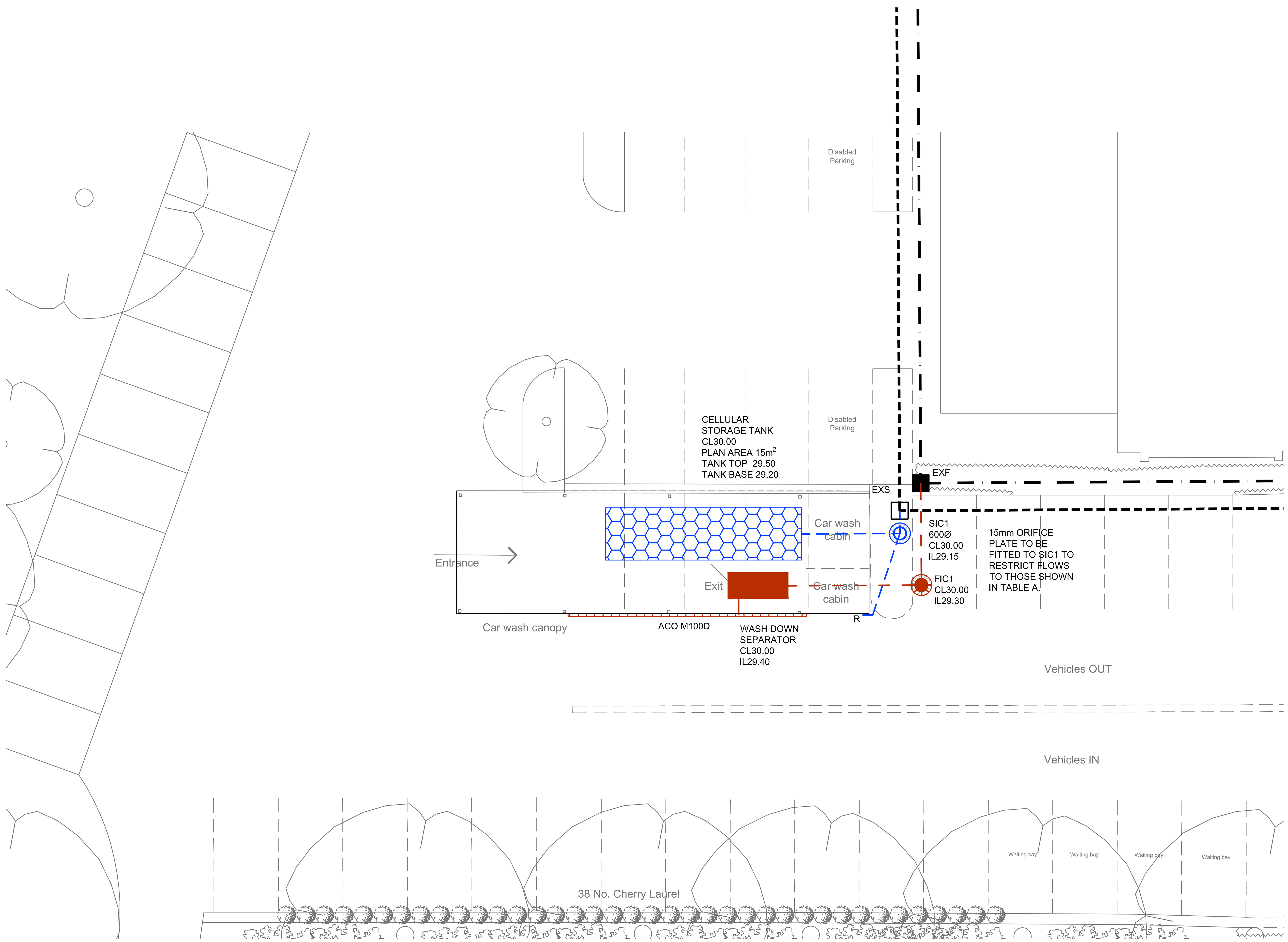
Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	29.269	0.069	4.4	0.0006	0.0000	OK
15 minute summer	EXSMH	10	29.213	0.063	4.4	0.0000	0.0000	OK

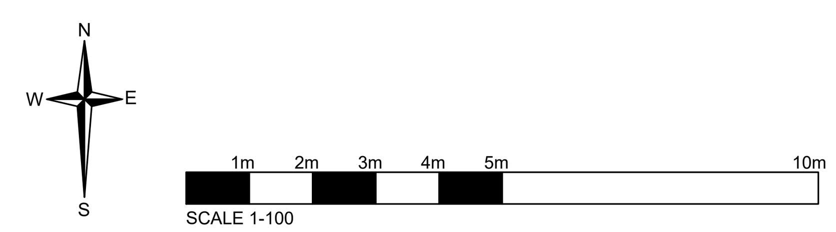
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	EXSMH	4.4	0.797	0.721	0.0273	1.9

Appendix C

Drainage Layout



DRAWING LEGEND	
SURFACE WATER DRAINAGE	
EXS	EXISTING SURFACE WATER MANHOLE
	EXISTING SURFACE WATER SEWER
SIC	INSPECTION CHAMBER CP DENOTES CATCHPIT
	SURFACE WATER SEWER
R	RAINWATER PIPE
FOUL WATER DRAINAGE	
EXF	EXISTING FOUL MANHOLE
	EXISTING PUBLIC FOUL WATER SEWER
FIC	INSPECTION CHAMBER
	FOUL WATER SEWER
	LINEAR CHANNEL



NOTES

CONTRACTORS MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK ON SHOP DRAWINGS

DO NOT SCALE FROM THIS DRAWING

NOTES

1. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE.

2. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING DRAWINGS AND CALCULATIONS ASSOCIATED WITH THIS PROJECT.

3. ALL COMPONENTS AND MATERIALS ARE TO BE MANUFACTURED AND SUPPLIED IN ACCORDANCE WITH THE RELEVANT BRITISH STANDARDS, AND LAID AND BACKFILLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND THE RELEVANT BRITISH STANDARDS.

4. THE CONTRACTOR SHALL, BEFORE COMMENCING THE WORKS, VERIFY ALL SITE AND SETTING OUT DIMENSIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRUE AND PROPER SETTING OUT OF THE WORKS AND FOR THE CORRECTNESS OF THE POSITION, LEVELS, DIMENSIONS, AND ALIGNMENT OF ALL PARTS OF THE WORKS.

5. ALL BUILDING DRAINAGE TO BE INSTALLED AND TESTED IN COMPLIANCE WITH THE BUILDING REGULATIONS 2000 DRAINAGE AND WASTE DISPOSAL APPROVED DOCUMENT H 2002 EDITION.

6. SMALL LIGHTWEIGHT ACCESS COVERS SHOULD BE SECURED (FOR EXAMPLE WITH SCREWS) TO DETER UNAUTHORISED ACCESS.

7. ALL ABOVE GROUND DRAINAGE TO INCORPORATE RODDING ACCESS FACILITIES.

8. INSITU CONCRETE FOR USE IN GENERAL DRAINAGE WORKS, GRADE TO BS: 5328.

9. FOR INTERNAL DRAINAGE POSITIONS REFER TO ARCHITECT'S CURRENT WORKING DRAWINGS.

10. FOR LANDSCAPING SURFACE MATERIAL FINISHES REFER TO ARCHITECT'S CURRENT WORKING DRAWINGS.

11. ALL PIPES TO BE 100mm DIAMETER UNLESS NOTED OTHERWISE.

TABLE A

STORM EVENT (1 IN)	GREENFIELD FLOW RATE l/s	PRE-DEVELOPMENT FLOW RATE l/s	POST-DEVELOPMENT FLOW RATE l/s
2	0.02	1.2	0.1
30 (+35%CC)	0.1	3.4	0.2
100 (+40%CC)	0.1	4.4	0.3

REV	AMENDMENT	DATE	CHKD
P2	PRELIMINARY ISSUE	27.07.2026	RAC
P1	PRELIMINARY ISSUE	16.01.2026	RAC

DRAWING STATUS
PRELIMINARY

RCD

RCD CONSULTANTS LTD
EMAIL: ray@rcd-consultants.com

CLIENT

PROJECT
PROPOSED CARWASH
WIDEWATER PLACE
MOORHALL ROAD, UXBRIDGE

DRAWING TITLE
DRAINAGE LAYOUT

CIVILS

SCALE	DRAWN BY	CHECKED	DATE
1:100 @ A1 1:200 @ A3	STC	RAC	JAN 2026

DRAWING NUMBER	REVISION
1111-2605-CIV-10	P2

Appendix D

Post-Development surface water calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100	150

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Depth (m)
✓	SIC1	0.007	5.00	30.000	Manhole	Adoptable	600	0.800
✓	EXSMH	0.000		30.000	Manhole	Adoptable	100	0.850

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SIC1	EXSMH	5.000	0.600	29.200	29.150	0.050	100.0	100	5.11	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.769	6.0	1.3	0.700	0.750	0.007	31	0.605

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	5.000	100.0	100	Circular	30.000	29.200	0.700	30.000	29.150	0.750

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SIC1	600	Manhole	Adoptable	EXSMH	100	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections		Link	IL (m)	Dia (mm)	Link Type
SIC1	30.000	0.800	600	Manhole	Adoptable		0	1.000	29.200	100	Circular
EXSMH	30.000	0.850	100	Manhole	Adoptable		1	1.000	29.150	100	Circular

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	10080	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	40	0	0

Node SIC1 Online Orifice Control

Flap Valve	x	Invert Level (m)	29.200	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.015		

Node SIC1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	29.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	220

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	15.0	0.0	0.300	15.0	0.0	0.301	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m^3)	
Full Bore Velocity	✓		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	103.552	29.302
2 year 15 minute winter	72.668	29.302
2 year 30 minute summer	66.619	18.851
2 year 30 minute winter	46.750	18.851
2 year 60 minute summer	43.991	11.625
2 year 60 minute winter	29.226	11.625
2 year 120 minute summer	32.696	8.641
2 year 120 minute winter	21.722	8.641
2 year 180 minute summer	26.819	6.901
2 year 180 minute winter	17.433	6.901
2 year 240 minute summer	21.824	5.767
2 year 240 minute winter	14.499	5.767
2 year 360 minute summer	16.930	4.357
2 year 360 minute winter	11.005	4.357
2 year 480 minute summer	13.296	3.514
2 year 480 minute winter	8.834	3.514
2 year 600 minute summer	10.814	2.958
2 year 600 minute winter	7.389	2.958
2 year 720 minute summer	9.564	2.563
2 year 720 minute winter	6.427	2.563
2 year 960 minute summer	7.745	2.040
2 year 960 minute winter	5.131	2.040
2 year 1440 minute summer	5.491	1.472
2 year 1440 minute winter	3.690	1.472
2 year 2160 minute summer	3.874	1.071
2 year 2160 minute winter	2.669	1.071
2 year 2880 minute summer	3.215	0.862
2 year 2880 minute winter	2.161	0.862
2 year 4320 minute summer	2.472	0.646
2 year 4320 minute winter	1.628	0.646
2 year 5760 minute summer	2.090	0.535
2 year 5760 minute winter	1.353	0.535
2 year 7200 minute summer	1.831	0.467

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 7200 minute winter	1.182	0.467
2 year 8640 minute summer	1.652	0.421
2 year 8640 minute winter	1.066	0.421
2 year 10080 minute summer	1.523	0.389
2 year 10080 minute winter	0.983	0.389
30 year +35% CC 15 minute summer	405.507	114.745
30 year +35% CC 15 minute winter	284.567	114.745
30 year +35% CC 30 minute summer	263.432	74.542
30 year +35% CC 30 minute winter	184.865	74.542
30 year +35% CC 60 minute summer	174.037	45.993
30 year +35% CC 60 minute winter	115.626	45.993
30 year +35% CC 120 minute summer	110.407	29.177
30 year +35% CC 120 minute winter	73.352	29.177
30 year +35% CC 180 minute summer	85.065	21.890
30 year +35% CC 180 minute winter	55.294	21.890
30 year +35% CC 240 minute summer	66.891	17.677
30 year +35% CC 240 minute winter	44.440	17.677
30 year +35% CC 360 minute summer	50.075	12.886
30 year +35% CC 360 minute winter	32.550	12.886
30 year +35% CC 480 minute summer	38.539	10.185
30 year +35% CC 480 minute winter	25.605	10.185
30 year +35% CC 600 minute summer	30.895	8.451
30 year +35% CC 600 minute winter	21.110	8.451
30 year +35% CC 720 minute summer	27.012	7.240
30 year +35% CC 720 minute winter	18.154	7.240
30 year +35% CC 960 minute summer	21.476	5.655
30 year +35% CC 960 minute winter	14.226	5.655
30 year +35% CC 1440 minute summer	14.860	3.983
30 year +35% CC 1440 minute winter	9.987	3.983
30 year +35% CC 2160 minute summer	10.166	2.810
30 year +35% CC 2160 minute winter	7.005	2.810
30 year +35% CC 2880 minute summer	8.222	2.204
30 year +35% CC 2880 minute winter	5.526	2.204
30 year +35% CC 4320 minute summer	6.068	1.587
30 year +35% CC 4320 minute winter	3.996	1.587
30 year +35% CC 5760 minute summer	4.964	1.271
30 year +35% CC 5760 minute winter	3.213	1.271
30 year +35% CC 7200 minute summer	4.231	1.079
30 year +35% CC 7200 minute winter	2.731	1.079
30 year +35% CC 8640 minute summer	3.726	0.951
30 year +35% CC 8640 minute winter	2.405	0.951
30 year +35% CC 10080 minute summer	3.364	0.858
30 year +35% CC 10080 minute winter	2.171	0.858
100 year +40% CC 15 minute summer	541.480	153.220
100 year +40% CC 15 minute winter	379.986	153.220
100 year +40% CC 30 minute summer	354.963	100.442
100 year +40% CC 30 minute winter	249.096	100.442
100 year +40% CC 60 minute summer	236.126	62.401
100 year +40% CC 60 minute winter	156.876	62.401
100 year +40% CC 120 minute summer	147.760	39.049
100 year +40% CC 120 minute winter	98.168	39.049
100 year +40% CC 180 minute summer	113.772	29.277

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC 180 minute winter	73.955	29.277
100 year +40% CC 240 minute summer	89.625	23.685
100 year +40% CC 240 minute winter	59.545	23.685
100 year +40% CC 360 minute summer	67.396	17.343
100 year +40% CC 360 minute winter	43.809	17.343
100 year +40% CC 480 minute summer	52.066	13.760
100 year +40% CC 480 minute winter	34.592	13.760
100 year +40% CC 600 minute summer	41.810	11.436
100 year +40% CC 600 minute winter	28.567	11.436
100 year +40% CC 720 minute summer	36.570	9.801
100 year +40% CC 720 minute winter	24.577	9.801
100 year +40% CC 960 minute summer	29.009	7.639
100 year +40% CC 960 minute winter	19.216	7.639
100 year +40% CC 1440 minute summer	19.961	5.350
100 year +40% CC 1440 minute winter	13.415	5.350
100 year +40% CC 2160 minute summer	13.483	3.726
100 year +40% CC 2160 minute winter	9.290	3.726
100 year +40% CC 2880 minute summer	10.770	2.887
100 year +40% CC 2880 minute winter	7.238	2.887
100 year +40% CC 4320 minute summer	7.768	2.031
100 year +40% CC 4320 minute winter	5.115	2.031
100 year +40% CC 5760 minute summer	6.231	1.595
100 year +40% CC 5760 minute winter	4.033	1.595
100 year +40% CC 7200 minute summer	5.229	1.334
100 year +40% CC 7200 minute winter	3.375	1.334
100 year +40% CC 8640 minute summer	4.546	1.160
100 year +40% CC 8640 minute winter	2.934	1.160
100 year +40% CC 10080 minute summer	4.060	1.036
100 year +40% CC 10080 minute winter	2.621	1.036

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
240 minute summer	SIC1	156	29.264	0.064	0.4	0.9251	0.0000	OK
15 minute summer	EXSMH	1	29.150	0.000	0.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m^3)
240 minute summer	SIC1	Orifice	EXSMH	0.1	1.5

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	SIC1	172	29.428	0.228	1.3	3.3116	0.0000	SURCHARGED
15 minute summer	EXSMH	1	29.150	0.000	0.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
240 minute summer	SIC1	Orifice	EXSMH	0.2	5.0

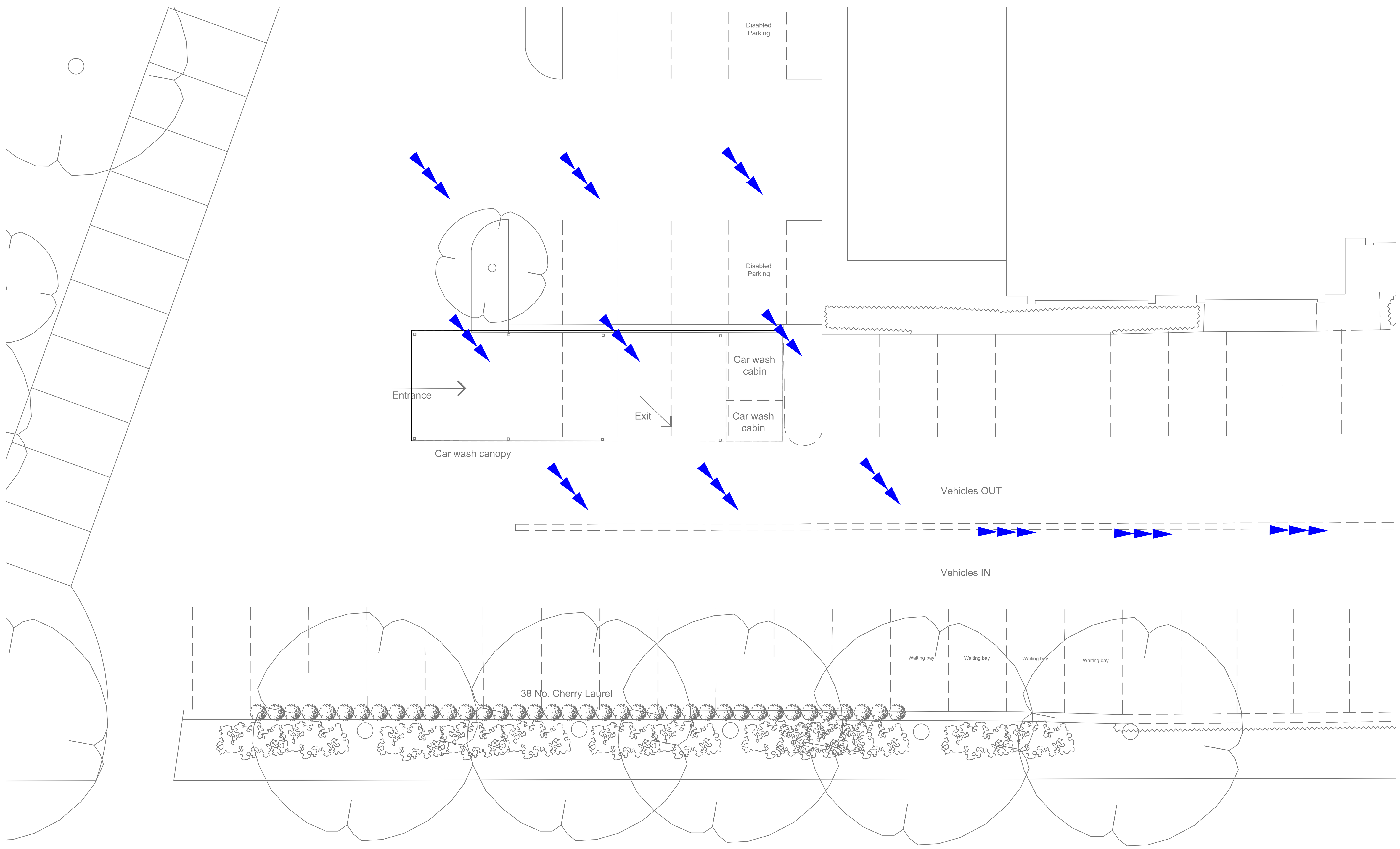
Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

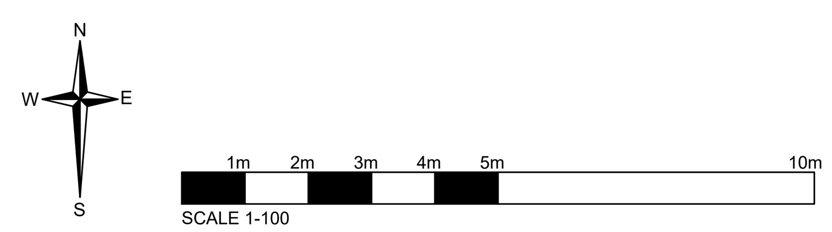
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	SIC1	164	29.606	0.406	1.4	4.3970	0.0000	SURCHARGED
15 minute summer	EXSMH	1	29.150	0.000	0.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	SIC1	Orifice	EXSMH	0.3	6.2

Appendix E

Flood exceedance plan





NOTES

CONTRACTORS MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK ON SHOP DRAWINGS

DO NOT SCALE FROM THIS DRAWING

EXISTING AND PROPOSED FLOOD EXCEEDANCE ROUTE

REV	AMENDMENT	DATE	CHKD
P1	PRELIMINARY ISSUE	02.06.2026	RAC

DRAWING STATUS

PRELIMINARY

RCD

RCD CONSULTANTS LTD
EMAIL: ray@rcd-consultants.com

CLIENT

PROJECT

PROPOSED CARWASH
WIDEWATER PLACE
MOORHALL ROAD, UXBRIDGE

DRAWING TITLE

FLOOD EXCEEDANCE PLAN

CIVILS

SCALE	DRAWN BY	CHECKED	DATE
1:100 @ A1 1:200 @ A3	STC	RAC	JUN 2026

DRAWING NUMBER	REVISION
1111-2605-CIV-12	P1

Appendix F

SUDS operation and maintenance schedules

Operation and Maintenance Schedule - Cellular Storage Tank		
Maintenance Schedule	**Required action**	**Typical frequency**
Regular maintenance	Clean all gutters and downpipes.	Annually.
	Check for sediment build-up or debris in the upstream chambers and the pipe running through the cellular storage tank. Remove all debris and sediment.	Annually.
Occassional Maintenance	Clean all gutters and downpipes. Check for sediment build-up or debris in the upstream chambers and the pipe running through the cellular storage tank. Remove all debris and sediment.	As required based upon inspections.
Remedial Actions	Reconstruct cellular storage tank and/or replace or clean void fill, if performace deteriorates or failure occurs.	As required based upon inspections.
	Replacement of damaged geotextile (will require reconstruction of cellular storage tank).	As required based upon inspections.
Monitoring	Inspect catch pits and note rate of sediment accumulation.	Monthly in first year and then annually, increase frequency of regular mantenancence if heavy siltation occurs more frequently.
	Check cellular storage tank to ensure emptying is occurring.	Annually.

Operation and Maintenance Schedule - Flow Control Chamber		
Maintenance Schedule	**Required action**	**Typical frequency**
Regular maintenance	Clean all gutters and downpipes.	Annually
	Inspect for sedment and debris in the chamber and remove.	Six monthly.
	Clean the orifice plate and hole.	As recommended by manufacturer
Remedial Actions	Replace malfunctioning parts or structures	As required.
Monitoring	Inspect for evidence of poor operation.	Six monthly.
	Inspect orifice plate and esablish appropriate replacement frequencies	Six monthly.
	Inspect sediment accumulation rates and establish appropriate removal frequencies.	Monthly during first half year of operation, then every six months

Operation and Maintenance Schedule - catchpit		
Maintenance Schedule	**Required action**	**Typical frequency**
Regular maintenance	Clean all gutters and downpipes.	Annually
	Inspect for sedment and debris in the chamber and remove.	Six monthly
Occassional Maintenance	Inspect for sedment and debris in the chamber.	As required based upon inspections.
Remedial Actions	Replace chamber if damaged.	As required.
Monitoring	Inspect catchpit and take note of sedimentation.	Monthly in first year and then annually, increase frequency of regular mantenancence if heavy siltation occurs more frequently.