Apex House- Plymouth Grove

Pre- Commencement Planning conditions

REPORT ISSUE TABLE

Purpose of Issue	Revision	Date	Prepared By	Checked By
COMMENTS- Condition 9	P01	26/01/2025	NFP	JT
COMMENTS- Condition 9	P02	12/02/2026	NFP	JT
COMMENTS- Condition 9	P03	25/03/2026	NFP	JT
COMMENTS- Condition 9	P04	07/04/2026	NFP	JT
COMMENTS- Condition 9	P05	14/04/2026	NFP	JT
COMMENTS- Condition 9	P06	29/04/2026	NFP	JT
COMMENTS- Condition 9	P07	08/06/2026	NFP	JT

First Correspondence – Received 09th January 2026.

Location: Apex House, Plymouth Grove, Manchester, M13 9LU- the site is to the southeast of Manchester City centre and is bounded to the south by Plymouth Grove and the west by Dryden Street.

REF: CDN/26/0195

Roscoe Comments – Updated comments provided on the 29th of April 2025.

1.01 Condition 9

Part A

The development shall not commence until a scheme for the drainage of surface water from that phase of the new development shall be submitted for approval in writing by the city council as the local planning authority. This shall include:

1. A finalised drainage layout showing all components, outfalls, levels and connectivity.

The updated location of the tank is close to a root protection area based on the drainage layout provided previously under 138294/FO/2023.

The following is required:

- Please include the proposed storage volume of the attenuation tank on the drainage layout.
- Please include the invert levels of the existing connection to the public combined sewer on the drainage layout.
- Please clarify whether the location of the tank provides an easement to the root protection area.

<standard comment: The applicant must present a consistent package to discharge this condition (Including all layouts and calculations). The layout and calculations must be jointly updated to account for any edits required. When preparing a resubmission, the applicant must ensure that the drainage layout and hydraulic calculations correspond, and that they can be cross-referenced for checks. This includes layout annotations and schedule printouts. >

ROSCOE Response 1.01

We acknowledge the comments provided and confirm that all points raised will be addressed as part of our resubmission.

Specifically:

- The proposed storage volume of the attenuation tank has been included in the drainage layout in Appendix A.
- The invert levels have now been added onto the latest proposed drainage drawing as provided by United Utilities.
- The tank is designed in such a way where it avoids the root protection area entirely. There is a section of drainage run shown on the layout that is expected to go through the root protection zone- this is to be hand excavated and the run will be cased in concrete to avoid root infiltration into the pipe.

1.03 Condition 9

Part A

The development shall not commence until a scheme for the drainage of surface water from that phase of the new development shall be submitted for approval in writing by the city council as the local planning authority. This shall include:
The runoff rate has been confirmed to be 5l/s; however, no information on the greenfield runoff volume compared with the proposed runoff volume has been provided.

ROSCOE Response 1.03

The 5l/s discharge rate has been confirmed at planning. We have emailed UU to confirm the discharge rate and point of discharge in writing which they have provided. The communication is attached in Appendix F.

1.04 Condition 9

Part A

The development shall not commence until a scheme for the drainage of surface water from that phase of the new development shall be submitted for approval in writing by the city council as the local planning authority. This shall include:

As per the below hydraulic calculations clause:
Please include Critical Storm Events for the 1 in 2, 1 in 30 and 1 in 100 + 45% Climate Change. Results must demonstrate no surcharge for the 1 in 2, no flooding in the 1 in 30 and no flooding of buildings for the 1 in 100 + 45% Climate Change

ROSCOE Response 1.04

We acknowledge the comment and confirm that the hydraulic calculations have been updated accordingly- they have been reattached in Appendix B.

Critical storm events for the 1 in 2, 1 in 30, and 1 in 100 year + 45% climate change scenarios have been included.

1.06 Condition 9

Part A

The development shall not commence until a scheme for the drainage of surface water from that phase of the new development shall be submitted for approval in writing by the city council as the local planning authority. This shall include:

No evidence of site investigation has been provided to rule out infiltration.

ROSCOE Response 1.06

A BRE365 soakaway test was conducted by e3p and the report with the findings was issued to us on the 14th of April 2026. The test was conducted on the 9th of April at two areas on the site- water levels did not fall below 25% of the storage depth within the required timeframe (6 hours) at either location. The failure to achieve the required drawdown indicates that the infiltration rate of the underlying soil is insufficient to allow effective drainage. The full report is attached in Appendix E.

1.07 Condition 9

Part A

The development shall not commence until a scheme for the drainage of surface water from that phase of the new development shall be submitted for approval in writing by the city council as the local planning authority. This shall include:

The applicant has provided a copy of the Planning Decision Notice only.

The following is required:
An agreement in principle from United Utilities (for the proposed connection and discharge rate of 5l/s) is required.

ROSCOE Response 1.07

We acknowledge the comment and confirm that an agreement in principle will be sought from United Utilities for the proposed connection and discharge rate of 5 l/s. we have emailed United Utilities to provide this and this will be sent over once received.

1.08 Condition 9

Part A

The development shall not commence until a scheme for the drainage of surface water from that phase of the new development shall be submitted for approval in writing by the city council as the local planning authority. This shall include:

1. Hydraulic calculation of the proposed drainage system, including all engineering parameters

Only 1 in 100+45% CC hydraulic calculation results have been provided.

The following is required:

- Please include Critical Storm Events for the 1 in 2, 1 in 30 and 1 in 100 + 45% Climate Change. Results must demonstrate no surcharge for the 1 in 2, no flooding in the 1 in 30 and no flooding of buildings for the 1 in 100 + 45% Climate Change

ROSCOE Response 1.08

We acknowledge the comment and confirm that the hydraulic calculations have been updated accordingly as part of the resubmission.

Critical storm events for the 1 in 2, 1 in 30, and 1 in 100 year + 45% climate change scenarios have been included. The updated results will demonstrate compliance with the required criteria, namely no surcharge in the 1 in 2 year event, no flooding in the 1 in 30-year event, and no flooding of buildings in the 1 in 100 year + 45% climate change event.

1.09 Condition 9

Part A

The development shall not commence until a scheme for the drainage of surface water from that phase of the new development shall be submitted for approval in writing by the city council as the local planning authority. This shall include:

Generic construction details of a flow control chamber and an attenuation tank have been provided.

The following is required:

Site-specific construction details of flow control and all SuDS elements (i.e. including site-specific levels, cover, dimensions etc).

ROSCOE Response 1.09

We acknowledge the comment and confirm that site-specific construction details for the proposed flow control and all SuDS elements have been provided in Appendix C.

These details will include site-specific levels, cover levels, dimensions, and all other relevant design information to support the proposed drainage strategy.

1.10 Condition 9

Part A

The applicant has stated "*A CCTV drainage survey is not required- there is no existing drainage within the proximity of the building- therefore no CCTV survey has been conducted*."

However, the Drainage Technical Note provided under 138294/FO/2023 (172-XOS-XX-XX-RP-C-5100) stated that "*It is proposed that both surface water and foul water is combined on site and connected to the existing 225mm drain on-site which will be used as a combined sewer connection the public system*."

The following is required:

Please provide CCTV survey and routing plan of existing drainage system to understand condition, capacity, connectivity. This should confirm the levels and condition of the existing connection to the public combined sewer if this is to be re-used.

ROSCOE Response 1.10

We confirm that a CCTV survey of the existing drainage system has been undertaken. After reviewing the CCTV survey-we confirm that the existing connection to the public combined sewer is to be replaced for a like to like version as the current connection is in poor condition. The CCTV survey has been included in Appendix D.

Appendix A- Drainage Layout

Important CDM / H&S note

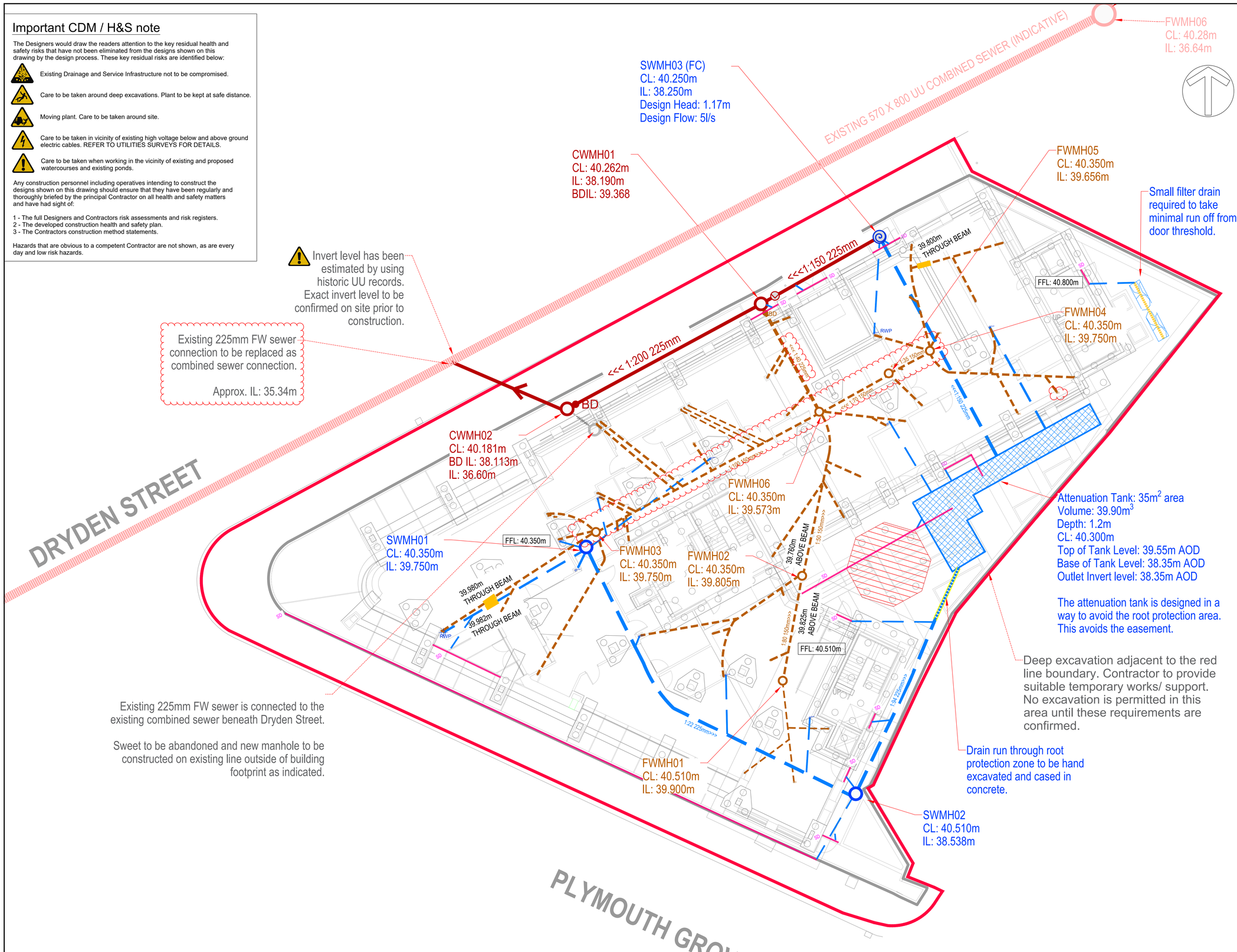
The Designers would draw the readers attention to the key residual health and safety risks that have not been eliminated from the designs shown on this drawing by the design process. These key residual risks are identified below:

- Existing Drainage and Service Infrastructure not to be compromised.
- Care to be taken around deep excavations. Plant to be kept at safe distance.
- Moving plant. Care to be taken around site.
- Care to be taken in vicinity of existing high voltage below and above ground electric cables. REFER TO UTILITIES SURVEYS FOR DETAILS.
- Care to be taken when working in the vicinity of existing and proposed watercourses and existing ponds.

Any construction personnel including operatives intending to construct the designs shown on this drawing should ensure that they have been regularly and thoroughly briefed by the principal Contractor on all health and safety matters and have had sight of:

1 - The full Designers and Contractors risk assessments and risk registers.
2 - The developed construction health and safety plan.
3 - The Contractors construction method statements.

Hazards that are obvious to a competent Contractor are not shown, as are every day and low risk hazards.



DO NOT SCALE

NOTES:

1. Foul pop-ups & RWP's shown are based upon DAY Architects drawing '144122-DAY-XX-XX-M3-A-000001'.
2. Connections to the public sewer has been agreed with United Utilities. SW Discharge rate agreed through planning and with United Utilities.
3. All drainage is to remain private and designed following Building Regulations Part H guidance.
4. Any drainage channels to be Gatic PaveSlot or similar approved.
5. Drains with less than 0.6m cover to have concrete surround.
6. Existing private drainage on the site not to be re-used to be grubbed out or removed.
7. All internal foul gullies to be fitted with non return valves.
8. Location of all surface water pick up points are subject to finalised landscape Architects levels design.
9. Attenuation tank location and size shown as per latest design calculation pack.
10. All external hardstanding designed as impermeable. Drainage design subject to change if area's of permeable surfacing are introduced.
11. Drainage design has allowed for the standard 1.2m cover from crown of pipe to ground level at the head of drainage runs in trafficked areas and 0.9m cover in pedestrian zones. All drainage depths are subject to change following detailed design and discussions with the wider construction team.
12. Depths for connections offsite are taken from historic drainage records provided by United Utilities.
13. All drainage pop ups to be 150mm diameter unless specified otherwise.
14. All external drainage to be 150mm diameter unless specified otherwise.

KEY PLAN

- Proposed Surface Water Drainage
- Gully
- Rain Water Pipe
- Surface Water Flow Control Chamber
- Proposed Foul Sewer Drainage
- Foul Pop Up
- Existing Foul Sewer Drainage
- Existing Combined Sewer Drainage
- Proposed Combined Sewer Drainage
- Crane Base Location
- Site Boundary
- Slot Drain - Gatic
- Demolished Drainage
- Cellular Attenuation Tank
- Concrete Surround
- Filter Drain
- Denotes drainage runs to pass through middle of slab downstand beam.

REV	DATE	BY	DESCRIPTION	CHK	APP
C02	08.06.26	NP	ISSUED FOR CONSTRUCTION	JT	JC
C01	03.06.26	NP	ISSUED FOR CONSTRUCTION	JT	JC
P08	07.04.26	NP	REVISED STAGE 4 ISSUE BASED ON NEW CCTV SURVEY INFORMATION	JT	JC
P07	23.01.26	NP	REVISED STAGE 4 ISSUE BASED ON NEW POP UP LOCATIONS	JT	JC
P06	11.12.25	KT	STAGE 4 ISSUE	JT	JC

DRAWING STATUS: CONSTRUCTION

Roscoe
CIVIL & STRUCTURAL ENGINEERS
INSPIRING BUILT ENVIRONMENTS

CLIENT: PLYMOUTH GROVE PROPERTY DEVELOPMENTS

ARCHITECT: DAY ARCHITECTURAL LTD

PROJECT: APEX HOUSE
PLYMOUTH GROVE

TITLE: PROPOSED DRAINAGE PLAN

SCALE @ A1:	CHECKED:		APPROVED:
1:150	JT		JT
PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
25406	NP	NP	JULY 2025

DRAWING No: P662-ROS-ZZ-XX-DR-C-0501 REV: C02

Appendix B- Updated Infodrainage Calculations

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Phase	Roscoe Engineering:		

Catchment Area

Type : Catchment Area

Area (ha)	0.032

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Catchment Area (1)

Type : Catchment Area

Area (ha)	0.034

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Catchment Area (2)

Type : Catchment Area

Area (ha)	0.041

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Catchment Area (3)

Type : Catchment Area

Area (ha)	0.017

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Catchment Area (4)

Type : Catchment Area

Area (ha)	0.017

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Phase	Roscoe Engineering:		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
Manhole	Manhole	385092.442	396535.029	40.350	0.600	39.750	Circular	1.200
Manhole (1)	Manhole	385111.750	396517.412	40.510	1.575	38.935	Circular	1.200
Manhole (2)	Manhole	385113.065	396557.010	40.250	2.000	38.250	Circular	1.200
Manhole (3)	Manhole	385104.726	396552.216	40.262	2.072	38.190	Circular	1.200
Manhole (4)	Manhole	385091.210	396544.850	40.181	2.068	38.113	Circular	1.200

Name	Lock
Manhole	None
Manhole (1)	None
Manhole (2)	None
Manhole (3)	None
Manhole (4)	None

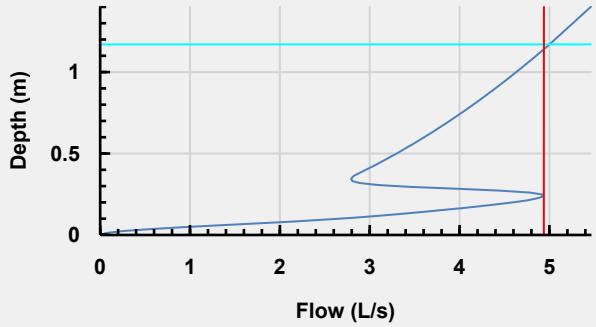
Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
Manhole	Inlet	Catchment Area	(None)	No Restriction
Manhole (1)	Inlet	Pipe	(None)	No Restriction
	Inlet (1)	Catchment Area (1)	(None)	No Restriction
Manhole (2)	Inlet	Pipe (2)	(None)	No Restriction
	Inlet (1)	Catchment Area (2)	(None)	No Restriction
Manhole (3)	Inlet	Pipe (3)	(None)	No Restriction
	Inlet (1)	Catchment Area (3)	(None)	No Restriction
Manhole (4)	Inlet	Pipe (4)	(None)	No Restriction
	Inlet (1)	Catchment Area (4)	(None)	No Restriction

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
Manhole	Outlet	Pipe	Free Discharge
Manhole (1)	Outlet	Pipe (1)	Free Discharge
Manhole (2)	Outlet	Pipe (3)	Hydro-Brake®

Invert Level (m)	38.250
Design Depth (m)	1.170
Design Flow (L/s)	5.0
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐
Unit Reference	CHE-0098-5000-1170-5000



Junction	Outlet Name	Outgoing Connection	Outlet Type
Manhole (3)	Outlet	Pipe (4)	Free Discharge

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Phase	Roscoe Engineering:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe	27.690	Pipe	33.975		0.6	225	40.350	39.750
Pipe (1)	23.004	Pipe	39.323		0.6	225	40.510	38.935
Pipe (2)	19.942	Pipe	199.424		0.6	225	39.550	38.350
Pipe (3)	9.619	Pipe	160.314		0.6	225	40.250	38.250
Pipe (4)	15.392	Pipe	200.000		0.6	225	40.262	38.190

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)	Culvert Type	Culvert Entrance	Wall Thickness (mm)
Pipe	40.510	38.935		None		(None)	(None)	0
Pipe (1)	39.550	38.350		None		(None)	(None)	0
Pipe (2)	40.250	38.250		None		(None)	(None)	0
Pipe (3)	40.262	38.190		None	5.5	(None)	(None)	0
Pipe (4)	40.181	38.113		None		(None)	(None)	0

Name	Material	Trench Width (mm)	Bedding Material	Surrounding Material
Pipe		0		
Pipe (1)		0		
Pipe (2)		0		
Pipe (3)		0		
Pipe (4)		0		

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Manhole Schedule Storm Phase: Phase	Roscoe Engineering:		

Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole	40.350 39.750	Diameter / Length: 1.200					Manhole
E:385092.442 N:396535.029	0.600		{a} Pipe	Pipe	39.750	Diam/Width:225	Not Applicable
Manhole (1)	40.510 38.935	Diameter / Length: 1.200	{1} Pipe	Pipe	38.935	Diam/Width:225	Manhole
E:385111.750 N:396517.412	1.575		{a} Pipe (1)	Pipe	38.935	Diam/Width:225	Not Applicable
Manhole (2)	40.250 38.250	Diameter / Length: 1.200	{1} Pipe (2)	Pipe	38.250	Diam/Width:225	Manhole
E:385113.065 N:396557.010	2.000		{a} Pipe (3)	Pipe	38.250	Diam/Width:225	Not Applicable
Manhole (3)	40.262 38.190	Diameter / Length: 1.200	{1} Pipe (3)	Pipe	38.190	Diam/Width:225	Manhole
E:385104.726 N:396552.216	2.072		{a} Pipe (4)	Pipe	38.190	Diam/Width:225	Not Applicable
Manhole (4)	40.181 38.113	Diameter / Length: 1.200	{1} Pipe (4)	Pipe	38.113	Diam/Width:225	Manhole
E:385091.210 N:396544.850	2.068						Not Applicable

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Phase	Roscoe Engineering:		

Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	1.200
Min. Slope (1:X)	500.00
Max. Slope (1:X)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Pipe Size Library

Default

Add. Increment (mm)	75
Max. Diameter (mm)	0

Diameter (mm)	Min. Slope (1:X)	Max. Slope (1:X)
100	0.00	0.00
150	0.00	0.00

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Phase	Roscoe Engineering:		

Manhole Options

Apply Offset	☐

Manhole Size Library

Default

Diameter / Width

Connection (mm)	Diameter / Length (m)	Width (m)
0	1.200	0.000
375	1.350	0.000
500	1.500	0.000
750	1.800	0.000

Additional Sizing

Connection (mm)	900
Diameter / Length (m)	0.900
Width (m)	0.000

Depth

Depth (m)	Diameter / Length (m)	Width (m)
0.000	1.050	0.000
1.500	1.200	0.000

Access

Depth (m)	Ladder Protrusion (mm)
0.000	130
3.000	230

Benching Requirements

Landing Width (mm)	500
Benching Width (mm)	225

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Roscoe Engineering:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FSR: 2 years: +0 %: 15 mins: Summer	0.03	6.2	2.740
Catchment Area (1)	FSR: 2 years: +0 %: 15 mins: Summer	0.03	6.7	2.925
Catchment Area (2)	FSR: 2 years: +0 %: 15 mins: Summer	0.04	8.0	3.517
Catchment Area (3)	FSR: 2 years: +0 %: 15 mins: Summer	0.02	3.3	1.460
Catchment Area (4)	FSR: 2 years: +0 %: 15 mins: Summer	0.02	3.3	1.457

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FSR: 30 years: +0 %: 15 mins: Summer	0.03	11.8	5.182
Catchment Area (1)	FSR: 30 years: +0 %: 15 mins: Summer	0.03	12.6	5.535
Catchment Area (2)	FSR: 30 years: +0 %: 15 mins: Summer	0.04	15.1	6.654
Catchment Area (3)	FSR: 30 years: +0 %: 15 mins: Summer	0.02	6.3	2.763
Catchment Area (4)	FSR: 30 years: +0 %: 15 mins: Summer	0.02	6.3	2.754

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +45 %: 15 mins: Summer	0.03	22.1	9.715
Catchment Area (1)	FSR: 100 years: +45 %: 15 mins: Summer	0.03	23.6	10.378
Catchment Area (2)	FSR: 100 years: +45 %: 15 mins: Summer	0.04	28.4	12.467
Catchment Area (3)	FSR: 100 years: +45 %: 15 mins: Summer	0.02	11.8	5.183
Catchment Area (4)	FSR: 100 years: +45 %: 15 mins: Summer	0.02	11.8	5.168

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Manhole	FSR: 2 years: +0 %: 15 mins: Summer	40.350	39.750	39.790	0.040	6.2	0.045	0.000	6.1	2.741	OK
Manhole (1)	FSR: 2 years: +0 %: 15 mins: Summer	40.510	38.935	38.993	0.058	12.7	0.066	0.000	12.2	5.688	OK
Manhole (2)	FSR: 2 years: +0 %: 60 mins: Summer	40.250	38.250	38.537	0.287	5.0	0.324	0.000	4.9	15.168	Surcharged
Manhole (3)	FSR: 2 years: +0 %: 30 mins: Summer	40.262	38.190	38.257	0.067	6.7	0.076	0.000	6.6	12.964	OK
Manhole (4)	FSR: 2 years: +0 %: 15 mins: Summer	40.181	38.113	38.166	0.053	9.8	0.000	0.000	10.0	8.625	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Manhole	FSR: 30 years: +0 %: 15 mins: Summer	40.350	39.750	39.805	0.055	11.8	0.062	0.000	11.5	5.183	OK
Manhole (1)	FSR: 30 years: +0 %: 15 mins: Summer	40.510	38.935	39.017	0.082	24.2	0.093	0.000	23.4	10.702	OK
Manhole (2)	FSR: 30 years: +0 %: 60 mins: Summer	40.250	38.250	38.880	0.630	9.0	0.712	0.000	4.9	24.487	Surcharged
Manhole (3)	FSR: 30 years: +0 %: 15 mins: Summer	40.262	38.190	38.276	0.086	11.2	0.097	0.000	10.8	7.577	OK
Manhole (4)	FSR: 30 years: +0 %: 60 mins: Winter	40.181	38.113	38.168	0.055	10.8	0.000	0.000	10.8	30.962	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Manhole	FSR: 100 years: +45 %: 15 mins: Summer	40.350	39.750	39.826	0.076	22.1	0.085	0.000	21.7	9.740	OK
Manhole (1)	FSR: 100 years: +45 %: 120 mins: Winter	40.510	38.935	39.526	0.591	14.6	0.668	0.000	14.4	42.517	Surcharged
Manhole (2)	FSR: 100 years: +45 %: 120 mins: Winter	40.250	38.250	39.524	1.274	9.0	1.440	0.000	5.1	62.472	Surcharged
Manhole (3)	FSR: 100 years: +45 %: 15 mins: Summer	40.262	38.190	38.290	0.100	14.8	0.113	0.000	14.3	11.347	OK
Manhole (4)	FSR: 100 years: +45 %: 60 mins: Winter	40.181	38.113	38.169	0.056	15.5	0.000	0.000	15.5	47.181	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Tank	FSR: 2 years: +0 %: 60 mins: Summer	38.538	38.538	0.188	0.188	7.6	6.249	0.000	0.000	3.8	9.326	84.337	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Tank	FSR: 30 years: +0 %: 60 mins: Summer	38.880	38.880	0.530	0.530	19.7	17.633	0.000	0.000	4.7	14.058	55.807	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Tank	FSR: 100 years: +45 %: 120 mins: Winter	39.525	39.525	1.175	1.175	19.0	39.056	0.000	0.000	4.8	37.042	2.116	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe	FSR: 2 years: +0 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	40.350	39.790	0.049	2.741	0.9	0.07	6.1	OK
Pipe (1)	FSR: 2 years: +0 %: 15 mins: Summer	Pipe	Manhole (1)	Tank	40.510	38.993	0.098	5.688	1.5	0.15	12.2	OK
Pipe (2)	FSR: 2 years: +0 %: 15 mins: Summer	Pipe	Tank	Manhole (2)	39.550	38.514	0.213	2.905	0.1	0.12	4.2	OK
Pipe (3)	FSR: 2 years: +0 %: 60 mins: Summer	Pipe	Manhole (2)	Manhole (3)	40.250	38.537	0.059	15.084	0.6	0.12	4.9	Surcharged
Pipe (4)	FSR: 2 years: +0 %: 30 mins: Summer	Pipe	Manhole (3)	Manhole (4)	40.262	38.257	0.058	12.964	0.8	0.18	6.6	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe	FSR: 30 years: +0 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	40.350	39.805	0.068	5.183	1.1	0.13	11.5	OK
Pipe (1)	FSR: 30 years: +0 %: 15 mins: Summer	Pipe	Manhole (1)	Tank	40.510	39.017	0.209	10.702	1.6	0.28	23.4	OK
Pipe (2)	FSR: 30 years: +0 %: 60 mins: Summer	Pipe	Tank	Manhole (2)	39.550	38.880	0.225	11.326	0.1	0.13	4.7	Surcharged
Pipe (3)	FSR: 30 years: +0 %: 60 mins: Winter	Pipe	Manhole (2)	Manhole (3)	40.250	38.879	0.064	21.829	0.6	0.12	4.9	Surcharged
Pipe (4)	FSR: 30 years: +0 %: 15 mins: Summer	Pipe	Manhole (3)	Manhole (4)	40.262	38.276	0.069	7.577	1.0	0.29	10.8	OK

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Roscoe Engineering:		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe	FSR: 100 years: +45 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	40.350	39.826	0.106	9.740	1.3	0.24	21.7	OK
Pipe (1)	FSR: 100 years: +45 %: 15 mins: Summer	Pipe	Manhole (1)	Tank	40.510	39.135	0.225	19.377	1.6	0.53	44.2	OK
Pipe (2)	FSR: 100 years: +45 %: 60 mins: Winter	Pipe	Tank	Manhole (2)	39.550	39.495	0.225	9.736	0.1	0.13	4.8	Surcharged
Pipe (3)	FSR: 100 years: +45 %: 120 mins: Winter	Pipe	Manhole (2)	Manhole (3)	40.250	39.524	0.062	56.272	0.6	0.12	5.1	Surcharged
Pipe (4)	FSR: 100 years: +45 %: 15 mins: Summer	Pipe	Manhole (3)	Manhole (4)	40.262	38.290	0.076	11.347	1.2	0.39	14.3	OK



Phase
FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Manhole (4)			10.0	8.625
TOTAL	28.0	12.098	10.0	8.625

Phase
FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Manhole (4)			17.1	10.331
TOTAL	52.3	22.888	17.1	10.331

Phase
FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Manhole (4)			26.4	16.515
TOTAL	98.7	42.910	26.4	16.515

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:		



Catchment Area
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	6.2
Total Inflow Volume (m³)	2.740

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	1.4
10	6.2
15	1.5
20	0.0
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:		



Catchment Area (1)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	6.7
Total Inflow Volume (m³)	2.925

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	1.4
10	6.7
15	1.6
20	0.0
25	0.0
30	0.0

Apex House, Plymouth Grove:	Date:		
100 year + 45% CC	10/12/2025		
	Designed by:	Checked by:	Approved By:
	Adnan Yusuf		
Report Details:	Roscoe Engineering:		
Type: Inflow Results Storm Phase: Phase			

Catchment Area (2)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	8.0
Total Inflow Volume (m³)	3.517

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	1.7
10	8.0
15	1.9
20	0.0
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:		



Catchment Area (3)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	3.3
Total Inflow Volume (m³)	1.460

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	0.7
10	3.3
15	0.8
20	0.0
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:		

Catchment Area (4)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	3.3
Total Inflow Volume (m³)	1.457

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	0.7
10	3.3
15	0.8
20	0.0
25	0.0
30	0.0



Manhole

Type : Manhole

Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	1.4	0.019	0.021	0.000	1.3
10	6.2	0.040	0.045	0.000	6.1
15	1.5	0.022	0.025	0.000	1.8
20	0.0	0.008	0.009	0.000	0.2
25	0.0	0.001	0.002	0.000	0.0
30	0.0	0.001	0.001	0.000	0.0



Manhole (1)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Manhole

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	2.7	0.031	0.035	0.000	2.5
10	12.7	0.058	0.066	0.000	12.2
15	3.4	0.032	0.036	0.000	4.0
20	0.2	0.012	0.014	0.000	0.6
25	0.0	0.004	0.004	0.000	0.0
30	0.0	0.003	0.003	0.000	0.0



Manhole (2) Type : Manhole

Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 60 mins: Summer

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	0.5	0.029	0.033	0.000	0.2
10	0.8	0.056	0.063	0.000	0.6
15	1.2	0.074	0.084	0.000	1.0
20	2.0	0.099	0.112	0.000	1.7
25	2.8	0.134	0.152	0.000	2.5
30	4.7	0.180	0.204	0.000	3.5
35	5.0	0.249	0.281	0.000	4.5
40	4.9	0.287	0.324	0.000	4.9
45	4.8	0.282	0.319	0.000	4.9
50	4.6	0.262	0.296	0.000	4.7
55	4.2	0.239	0.271	0.000	4.4
60	3.9	0.217	0.245	0.000	4.1
65	3.3	0.191	0.216	0.000	3.6
70	2.8	0.163	0.185	0.000	3.1
75	2.3	0.138	0.156	0.000	2.6
80	1.2	0.101	0.115	0.000	1.7
85	0.6	0.067	0.076	0.000	0.8
90	0.4	0.050	0.056	0.000	0.5
95	0.2	0.040	0.045	0.000	0.3
100	0.2	0.034	0.038	0.000	0.2
105	0.1	0.029	0.033	0.000	0.2
110	0.1	0.025	0.029	0.000	0.1
115	0.1	0.023	0.026	0.000	0.1
120	0.1	0.021	0.024	0.000	0.1



Manhole (3)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 30 mins: Summer

Type : Manhole

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	0.7	0.019	0.022	0.000	0.4
10	2.0	0.036	0.040	0.000	1.8
15	5.3	0.059	0.067	0.000	5.1
20	6.7	0.067	0.076	0.000	6.6
25	5.5	0.061	0.069	0.000	5.6
30	5.2	0.059	0.067	0.000	5.2
35	4.5	0.055	0.062	0.000	4.6
40	4.0	0.052	0.058	0.000	4.0
45	3.4	0.048	0.054	0.000	3.5
50	2.9	0.044	0.050	0.000	3.0
55	2.4	0.040	0.045	0.000	2.4
60	1.3	0.030	0.034	0.000	1.4



Manhole (4)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Manhole

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	1.9	0.017	0.000	0.000	2.0
10	9.8	0.042	0.000	0.000	10.0
15	6.4	0.052	0.000	0.000	6.4
20	4.6	0.053	0.000	0.000	4.6
25	4.0	0.050	0.000	0.000	4.0
30	3.5	0.047	0.000	0.000	3.5



Tank
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 60 mins: Summer

Type : Tank

Tables

Time (mins)	Total Inflow (L/s)	Depth(m)	Resident Volume(m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	0.6	0.002	0.042	0.000	0.0
10	1.0	0.009	0.300	0.000	0.1
15	1.2	0.017	0.555	0.000	0.4
20	1.6	0.024	0.780	0.000	0.9
25	3.1	0.035	1.163	0.000	0.8
30	7.6	0.080	2.648	0.000	-0.5
35	7.6	0.149	4.955	0.000	0.3
40	3.8	0.188	6.249	0.000	2.8
45	1.9	0.183	6.110	0.000	3.7
50	1.3	0.163	5.450	0.000	3.8
55	1.1	0.141	4.692	0.000	3.6
60	0.9	0.118	3.948	0.000	3.3
65	0.2	0.094	3.137	0.000	3.3
70	0.0	0.067	2.233	0.000	2.8
75	0.0	0.043	1.453	0.000	2.3
80	0.0	0.027	0.896	0.000	1.2
85	0.0	0.019	0.644	0.000	0.6
90	0.0	0.015	0.508	0.000	0.4
95	0.0	0.013	0.422	0.000	0.2
100	0.0	0.011	0.362	0.000	0.2
105	0.0	0.010	0.318	0.000	0.1
110	0.0	0.008	0.283	0.000	0.1
115	0.0	0.008	0.254	0.000	0.1
120	0.0	0.007	0.229	0.000	0.1

Pipe

Type : Pipe

Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.025	1.3
10	0.049	6.1
15	0.027	1.8
20	0.010	0.2
25	0.003	0.0
30	0.002	0.0

Pipe (1)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Pipe

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.019	2.5
10	0.070	12.2
15	0.098	4.0
20	0.081	0.6
25	0.059	0.0
30	0.043	0.0



Pipe (2)
Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Pipe

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.039	0.1
10	0.133	-3.1
15	0.213	2.8
20	0.198	4.2
25	0.163	3.7
30	0.132	3.2

Pipe (3)

Type : Pipe

Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 60 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.011	0.1
10	0.021	0.6
15	0.027	1.0
20	0.034	1.6
25	0.043	2.5
30	0.052	3.4
35	0.059	4.5
40	0.059	4.9
45	0.058	4.9
50	0.056	4.7
55	0.054	4.4
60	0.052	4.1
65	0.048	3.7
70	0.045	3.2
75	0.041	2.6
80	0.034	1.7
85	0.024	0.9
90	0.018	0.5
95	0.015	0.3
100	0.013	0.2
105	0.011	0.2
110	0.010	0.1
115	0.009	0.1
120	0.008	0.1

Pipe (4)

Type : Pipe

Critical by Return Period: FSR: 2 years: Increase Rainfall (%): +0: 30 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.014	0.4
10	0.031	1.8
15	0.049	5.1
20	0.058	6.6
25	0.057	5.6
30	0.056	5.2
35	0.054	4.6
40	0.051	4.0
45	0.047	3.5
50	0.044	3.0
55	0.040	2.4
60	0.030	1.4

Catchment Area
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	11.8
Total Inflow Volume (m³)	5.182

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	2.6
10	11.8
15	2.8
20	0.0
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:		

Catchment Area (1)
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	12.6
Total Inflow Volume (m³)	5.535

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	2.8
10	12.6
15	3.0
20	0.1
25	0.0
30	0.0

Catchment Area (2)
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	15.1
Total Inflow Volume (m³)	6.654

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	3.3
10	15.1
15	3.6
20	0.1
25	0.0
30	0.0

Catchment Area (3)
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	6.3
Total Inflow Volume (m³)	2.763

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	1.4
10	6.3
15	1.5
20	0.0
25	0.0
30	0.0

Catchment Area (4)
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	6.3
Total Inflow Volume (m³)	2.754

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	1.4
10	6.3
15	1.5
20	0.0
25	0.0
30	0.0



Manhole

Type : Manhole

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	2.6	0.026	0.029	0.000	2.5
10	11.8	0.055	0.062	0.000	11.5
15	2.8	0.029	0.033	0.000	3.2
20	0.0	0.010	0.011	0.000	0.3
25	0.0	0.001	0.002	0.000	0.0
30	0.0	0.001	0.001	0.000	0.0



Manhole (1)

Type : Manhole

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	5.2	0.042	0.048	0.000	4.9
10	24.2	0.082	0.093	0.000	23.4
15	6.2	0.042	0.048	0.000	7.2
20	0.4	0.015	0.017	0.000	0.8
25	0.0	0.005	0.005	0.000	0.0
30	0.0	0.003	0.004	0.000	0.0

Manhole (2)

Type : Manhole

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 60 mins: Summer

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	1.0	0.047	0.053	0.000	0.4
10	1.7	0.088	0.100	0.000	1.4
15	2.7	0.126	0.143	0.000	2.3
20	3.0	0.143	0.162	0.000	2.7
25	4.0	0.180	0.204	0.000	3.5
30	8.9	0.283	0.320	0.000	4.9
35	9.0	0.457	0.516	0.000	3.0
40	4.1	0.579	0.654	0.000	3.4
45	3.6	0.620	0.701	0.000	3.5
50	3.6	0.630	0.712	0.000	3.6
55	3.5	0.630	0.712	0.000	3.6
60	3.5	0.625	0.707	0.000	3.5
65	3.4	0.608	0.687	0.000	3.5
70	3.3	0.579	0.654	0.000	3.4
75	3.2	0.550	0.622	0.000	3.3
80	3.1	0.521	0.589	0.000	3.2
85	3.0	0.494	0.558	0.000	3.1
90	2.9	0.467	0.528	0.000	3.0
95	2.8	0.441	0.498	0.000	2.9
100	2.8	0.415	0.470	0.000	2.9
105	2.7	0.391	0.442	0.000	2.8
110	2.7	0.366	0.414	0.000	2.9
115	3.4	0.339	0.383	0.000	3.6
120	4.7	0.299	0.339	0.000	4.9



Manhole (3)
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Type : Manhole

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	3.3	0.044	0.050	0.000	2.8
10	11.2	0.086	0.097	0.000	10.8
15	4.6	0.057	0.064	0.000	4.9
20	3.2	0.046	0.053	0.000	3.3
25	3.1	0.045	0.051	0.000	3.1
30	3.0	0.044	0.050	0.000	3.0



Manhole (4)
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 60 mins: Winter

Type : Manhole

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	0.7	0.008	0.000	0.000	0.7
10	2.2	0.024	0.000	0.000	2.3
15	3.6	0.035	0.000	0.000	3.7
20	5.1	0.039	0.000	0.000	5.1
25	7.7	0.044	0.000	0.000	7.8
30	10.8	0.051	0.000	0.000	10.8
35	8.9	0.040	0.000	0.000	8.9
40	7.5	0.042	0.000	0.000	7.5
45	5.8	0.043	0.000	0.000	5.8
50	4.9	0.044	0.000	0.000	4.9
55	4.7	0.044	0.000	0.000	4.7
60	4.3	0.045	0.000	0.000	4.3
65	3.5	0.047	0.000	0.000	3.5
70	3.4	0.046	0.000	0.000	3.4
75	3.3	0.045	0.000	0.000	3.3
80	3.2	0.045	0.000	0.000	3.2
85	3.1	0.044	0.000	0.000	3.1
90	3.0	0.044	0.000	0.000	3.0
95	2.9	0.043	0.000	0.000	2.9
100	2.9	0.042	0.000	0.000	2.9
105	2.8	0.042	0.000	0.000	2.8
110	2.8	0.042	0.000	0.000	2.8
115	3.6	0.047	0.000	0.000	3.6
120	4.9	0.055	0.000	0.000	4.9

Apex House, Plymouth Grove:	Date:		
100 year + 45% CC	10/12/2025		
	Designed by:	Checked by:	Approved By:
	Adnan Yusuf		
Report Details:	Roscoe Engineering:		
Type: Stormwater Control Results Storm Phase: Phase			



Tank
Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 60 mins: Summer

Type : Tank

Tables

Time (mins)	Total Inflow (L/s)	Depth(m)	Resident Volume(m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	1.3	0.004	0.108	0.000	0.0
10	1.9	0.018	0.587	0.000	0.5
15	2.3	0.029	0.948	0.000	1.3
20	3.1	0.044	1.451	0.000	1.0
25	6.1	0.080	2.657	0.000	0.1
30	17.2	0.181	6.015	0.000	-3.3
35	19.7	0.354	11.772	0.000	-5.3
40	7.5	0.479	15.938	0.000	-0.4
45	3.6	0.520	17.290	0.000	1.5
50	2.5	0.530	17.631	0.000	2.1
55	2.0	0.530	17.633	0.000	2.3
60	1.7	0.525	17.474	0.000	2.4
65	0.4	0.509	16.948	0.000	3.4
70	0.0	0.480	15.973	0.000	3.3
75	0.0	0.451	15.003	0.000	3.2
80	0.0	0.422	14.057	0.000	3.1
85	0.0	0.394	13.136	0.000	3.0
90	0.0	0.368	12.241	0.000	2.9
95	0.0	0.341	11.373	0.000	2.8
100	0.0	0.316	10.531	0.000	2.8
105	0.0	0.292	9.712	0.000	2.7
110	0.0	0.267	8.900	0.000	2.7
115	0.0	0.240	8.013	0.000	3.4
120	0.0	0.202	6.704	0.000	4.7

Pipe

Type : Pipe

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.034	2.5
10	0.068	11.5
15	0.036	3.2
20	0.012	0.3
25	0.003	0.0
30	0.002	0.0

Pipe (1)

Type : Pipe

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.029	4.9
10	0.129	23.4
15	0.209	7.2
20	0.205	0.8
25	0.187	0.0
30	0.173	0.0

Pipe (2)

Type : Pipe

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 60 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.026	0.0
10	0.053	0.5
15	0.078	1.3
20	0.094	1.0
25	0.130	0.1
30	0.225	-3.3
35	0.225	-5.3
40	0.225	-0.4
45	0.225	1.5
50	0.225	2.1
55	0.225	2.3
60	0.225	2.4
65	0.225	3.4
70	0.225	3.3
75	0.225	3.2
80	0.225	3.1
85	0.225	3.0
90	0.225	2.9
95	0.225	2.8
100	0.225	2.8
105	0.225	2.7
110	0.225	2.7
115	0.225	3.4
120	0.225	4.7

Pipe (3)

Type : Pipe

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 60 mins: Winter

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.015	0.2
10	0.031	1.3
15	0.041	2.4
20	0.047	2.9
25	0.055	3.8
30	0.064	4.9
35	0.052	2.9
40	0.052	3.3
45	0.051	3.5
50	0.050	3.5
55	0.050	3.6
60	0.049	3.5
65	0.047	3.5
70	0.047	3.4
75	0.046	3.3
80	0.045	3.2
85	0.045	3.1
90	0.044	3.0
95	0.043	2.9
100	0.043	2.9
105	0.042	2.8
110	0.043	2.9
115	0.049	3.7
120	0.057	4.9

Pipe (4)

Type : Pipe

Critical by Return Period: FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.036	2.8
10	0.069	10.8
15	0.049	4.9
20	0.046	3.3
25	0.044	3.1
30	0.044	3.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:		

Catchment Area
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	22.1
Total Inflow Volume (m³)	9.715

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	4.9
10	22.1
15	5.4
20	0.1
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025			
	Designed by: Adnan Yusuf	Checked by:	Approved By:	
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:			

Catchment Area (1)
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	23.6
Total Inflow Volume (m³)	10.378

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	5.2
10	23.6
15	5.7
20	0.1
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025			
	Designed by: Adnan Yusuf	Checked by:	Approved By:	
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:			

Catchment Area (2)
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	28.4
Total Inflow Volume (m³)	12.467

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	6.2
10	28.4
15	6.9
20	0.1
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025			
	Designed by: Adnan Yusuf	Checked by:	Approved By:	
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:			

Catchment Area (3)
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	11.8
Total Inflow Volume (m³)	5.183

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	2.6
10	11.8
15	2.9
20	0.1
25	0.0
30	0.0

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Inflow Results Storm Phase: Phase	Roscoe Engineering:		



Catchment Area (4)
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Type : Catchment Area

Inflow

Max. Inflow (L/s)	11.8
Total Inflow Volume (m³)	5.168

Tables

Time (mins)	Total Inflow (L/s)
0	0.0
5	2.6
10	11.8
15	2.8
20	0.1
25	0.0
30	0.0



Manhole

Type : Manhole

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	4.9	0.035	0.039	0.000	4.7
10	22.1	0.076	0.085	0.000	21.7
15	5.4	0.037	0.042	0.000	6.0
20	0.1	0.012	0.013	0.000	0.5
25	0.0	0.003	0.003	0.000	0.0
30	0.0	0.002	0.003	0.000	0.0



Manhole (1)

Type : Manhole

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 120 mins: Winter

Apex House, Plymouth Grove:	Date:		
100 year + 45% CC	10/12/2025		
	Designed by:	Checked by:	Approved By:
	Adnan Yusuf		
Report Details:	Roscoe Engineering:		
Type: Junction Results Storm Phase: Phase			

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	0.9	0.018	0.020	0.000	0.7
10	2.2	0.027	0.031	0.000	2.1
15	2.6	0.027	0.031	0.000	2.6
20	2.6	0.027	0.031	0.000	2.6
25	2.7	0.028	0.032	0.000	2.7
30	3.2	0.030	0.034	0.000	3.2
35	4.3	0.034	0.038	0.000	4.2
40	5.9	0.039	0.044	0.000	5.8
45	8.1	0.045	0.051	0.000	7.9
50	10.5	0.051	0.058	0.000	10.3
55	12.8	0.058	0.065	0.000	12.7
60	14.5	0.062	0.070	0.000	14.4
65	14.6	0.163	0.184	0.000	12.0
70	12.9	0.303	0.343	0.000	11.7
75	10.6	0.418	0.473	0.000	10.1
80	8.2	0.502	0.568	0.000	7.9
85	6.1	0.555	0.627	0.000	5.9
90	4.4	0.582	0.658	0.000	4.3
95	3.3	0.591	0.668	0.000	3.3
100	2.8	0.589	0.666	0.000	2.8
105	2.6	0.583	0.659	0.000	2.7
110	2.6	0.576	0.651	0.000	2.6
115	2.3	0.566	0.641	0.000	2.3
120	1.1	0.546	0.618	0.000	1.2
125	0.1	0.512	0.579	0.000	0.3
130	0.0	0.471	0.533	0.000	0.2
135	0.0	0.431	0.487	0.000	0.2
140	0.0	0.392	0.443	0.000	0.3
145	0.0	0.354	0.401	0.000	0.3
150	0.0	0.317	0.359	0.000	0.3
155	0.0	0.281	0.318	0.000	0.3
160	0.0	0.246	0.278	0.000	0.4
165	0.0	0.212	0.240	0.000	0.4
170	0.0	0.180	0.203	0.000	0.5
175	0.0	0.148	0.168	0.000	0.5
180	0.0	0.117	0.133	0.000	0.5
185	0.0	0.087	0.099	0.000	0.5
190	0.0	0.058	0.065	0.000	0.5
195	0.0	0.028	0.032	0.000	0.4
200	0.0	0.005	0.006	0.000	0.0
205	0.0	0.003	0.004	0.000	0.0
210	0.0	0.003	0.003	0.000	0.0
215	0.0	0.002	0.003	0.000	0.0
220	0.0	0.002	0.003	0.000	0.0
225	0.0	0.002	0.002	0.000	0.0
230	0.0	0.002	0.002	0.000	0.0
235	0.0	0.002	0.002	0.000	0.0
240	0.0	0.002	0.002	0.000	0.0



Manhole (2)
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 120 mins: Winter

Type : Manhole

Apex House, Plymouth Grove:	Date:		
100 year + 45% CC	10/12/2025		
	Designed by:	Checked by:	Approved By:
	Adnan Yusuf		
Report Details:	Roscoe Engineering:		
Type: Junction Results Storm Phase: Phase			

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	0.6	0.031	0.035	0.000	0.2
10	1.6	0.079	0.089	0.000	1.1
15	2.8	0.127	0.143	0.000	2.4
20	2.8	0.141	0.159	0.000	2.7
25	3.1	0.153	0.174	0.000	3.0
30	3.4	0.168	0.190	0.000	3.2
35	3.9	0.190	0.215	0.000	3.6
40	4.5	0.226	0.256	0.000	4.2
45	5.2	0.283	0.321	0.000	4.9
50	6.5	0.378	0.428	0.000	2.8
55	7.9	0.516	0.584	0.000	3.2
60	9.0	0.679	0.768	0.000	3.7
65	9.0	0.834	0.943	0.000	4.1
70	8.0	0.975	1.103	0.000	4.5
75	6.6	1.093	1.237	0.000	4.7
80	5.2	1.181	1.335	0.000	4.9
85	5.2	1.236	1.398	0.000	5.0
90	5.1	1.264	1.430	0.000	5.1
95	5.1	1.274	1.440	0.000	5.1
100	5.1	1.272	1.439	0.000	5.1
105	5.1	1.266	1.432	0.000	5.1
110	5.0	1.259	1.424	0.000	5.1
115	5.0	1.250	1.413	0.000	5.1
120	4.9	1.229	1.390	0.000	5.0
125	4.8	1.195	1.351	0.000	4.9
130	4.7	1.154	1.305	0.000	4.8
135	4.6	1.114	1.260	0.000	4.8
140	4.5	1.075	1.216	0.000	4.7
145	4.4	1.037	1.173	0.000	4.6
150	4.4	1.000	1.131	0.000	4.5
155	4.3	0.964	1.091	0.000	4.4
160	4.2	0.929	1.051	0.000	4.3
165	4.1	0.895	1.013	0.000	4.3
170	4.1	0.863	0.976	0.000	4.2
175	4.0	0.832	0.940	0.000	4.1
180	3.9	0.801	0.906	0.000	4.0
185	3.8	0.771	0.872	0.000	4.0
190	3.8	0.741	0.838	0.000	3.9
195	3.7	0.712	0.805	0.000	3.8
200	3.6	0.681	0.770	0.000	3.7
205	3.5	0.649	0.734	0.000	3.6
210	3.4	0.618	0.699	0.000	3.5
215	3.3	0.588	0.665	0.000	3.4
220	3.2	0.559	0.632	0.000	3.3
225	3.1	0.530	0.599	0.000	3.3
230	3.1	0.502	0.568	0.000	3.2
235	3.0	0.475	0.537	0.000	3.1
240	2.9	0.449	0.507	0.000	3.0



Manhole (3) Type : Manhole

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	5.4	0.059	0.067	0.000	5.1
10	14.8	0.100	0.113	0.000	14.3
15	7.0	0.070	0.079	0.000	7.5
20	4.3	0.054	0.062	0.000	4.5
25	4.2	0.053	0.060	0.000	4.2
30	4.1	0.052	0.059	0.000	4.1

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Junction Results Storm Phase: Phase	Roscoe Engineering:		



Manhole (4)

Type : Manhole

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 60 mins: Winter

Tables

Time (mins)	Total Inflow (L/s)	Depth (m)	Volume (m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	1.7	0.016	0.000	0.000	1.8
10	4.6	0.036	0.000	0.000	4.6
15	5.7	0.041	0.000	0.000	5.7
20	8.3	0.046	0.000	0.000	8.4
25	11.6	0.047	0.000	0.000	11.5
30	14.6	0.046	0.000	0.000	14.7
35	15.5	0.050	0.000	0.000	15.5
40	12.5	0.051	0.000	0.000	12.5
45	9.3	0.051	0.000	0.000	9.3
50	7.6	0.052	0.000	0.000	7.6
55	7.2	0.052	0.000	0.000	7.2
60	6.4	0.054	0.000	0.000	6.4
65	5.1	0.056	0.000	0.000	5.1
70	4.9	0.055	0.000	0.000	4.9
75	4.8	0.055	0.000	0.000	4.8
80	4.7	0.054	0.000	0.000	4.7
85	4.7	0.054	0.000	0.000	4.7
90	4.6	0.053	0.000	0.000	4.6
95	4.5	0.053	0.000	0.000	4.5
100	4.4	0.052	0.000	0.000	4.4
105	4.3	0.052	0.000	0.000	4.3
110	4.2	0.051	0.000	0.000	4.2
115	4.2	0.051	0.000	0.000	4.2
120	4.1	0.050	0.000	0.000	4.1

Apex House, Plymouth Grove: 100 year + 45% CC	Date: 10/12/2025		
	Designed by: Adnan Yusuf	Checked by:	Approved By:
Report Details: Type: Stormwater Control Results Storm Phase: Phase	Roscoe Engineering:		



Tank
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 120 mins: Winter

Type : Tank

Tables

Time (mins)	Total Inflow (L/s)	Depth(m)	Resident Volume(m³)	Flooded Volume (m³)	Total Outflow (L/s)
0	0.0	0.000	0.000	0.000	0.0
5	0.7	0.002	0.049	0.000	0.0
10	2.1	0.014	0.435	0.000	0.3
15	2.6	0.028	0.932	0.000	1.2
20	2.6	0.042	1.399	0.000	1.2
25	2.7	0.055	1.813	0.000	1.4
30	3.2	0.069	2.278	0.000	1.4
35	4.2	0.090	2.985	0.000	1.2
40	5.8	0.126	4.165	0.000	0.8
45	7.9	0.183	6.092	0.000	0.2
50	13.6	0.277	9.213	0.000	-3.2
55	16.8	0.414	13.782	0.000	-4.1
60	19.0	0.576	19.167	0.000	-4.6
65	16.4	0.732	24.342	0.000	-4.3
70	14.8	0.874	29.067	0.000	-3.0
75	11.5	0.993	33.026	0.000	-1.4
80	7.9	1.081	35.942	0.000	0.1
85	5.9	1.136	37.761	0.000	1.4
90	4.3	1.165	38.731	0.000	2.4
95	3.3	1.175	39.056	0.000	3.1
100	2.8	1.173	39.007	0.000	3.4
105	2.7	1.167	38.808	0.000	3.4
110	2.6	1.160	38.578	0.000	3.4
115	2.3	1.151	38.271	0.000	3.6
120	1.2	1.131	37.629	0.000	4.3
125	0.3	1.097	36.492	0.000	4.8
130	0.2	1.056	35.134	0.000	4.7
135	0.2	1.016	33.800	0.000	4.6
140	0.3	0.977	32.508	0.000	4.5
145	0.3	0.939	31.250	0.000	4.4
150	0.3	0.902	30.024	0.000	4.4
155	0.3	0.866	28.826	0.000	4.3
160	0.4	0.831	27.658	0.000	4.2
165	0.4	0.797	26.521	0.000	4.1
170	0.5	0.764	25.440	0.000	4.1
175	0.5	0.733	24.396	0.000	4.0
180	0.5	0.702	23.376	0.000	3.9
185	0.5	0.672	22.374	0.000	3.8
190	0.5	0.643	21.384	0.000	3.8
195	0.4	0.613	20.398	0.000	3.7
200	0.0	0.582	19.385	0.000	3.6
205	0.0	0.551	18.329	0.000	3.5
210	0.0	0.520	17.296	0.000	3.4
215	0.0	0.489	16.288	0.000	3.3
220	0.0	0.460	15.307	0.000	3.2
225	0.0	0.431	14.351	0.000	3.1
230	0.0	0.403	13.422	0.000	3.1
235	0.0	0.376	12.519	0.000	3.0
240	0.0	0.350	11.628	0.000	2.9

Pipe

Type : Pipe

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.045	4.7
10	0.097	21.7
15	0.104	6.0
20	0.106	0.5
25	0.086	0.0
30	0.070	0.0

Pipe (1)

Type : Pipe

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.046	9.6
10	0.225	44.2
15	0.225	11.3
20	0.225	1.1
25	0.225	0.6
30	0.225	0.6

Pipe (2)

Type : Pipe

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 60 mins: Winter

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.035	0.0
10	0.082	0.0
15	0.119	0.7
20	0.174	-0.4
25	0.225	-5.4
30	0.225	-9.1
35	0.225	-8.7
40	0.225	-4.2
45	0.225	-0.1
50	0.225	2.0
55	0.225	2.5
60	0.225	3.4
65	0.225	4.8
70	0.225	4.7
75	0.225	4.7
80	0.225	4.6
85	0.225	4.5
90	0.225	4.4
95	0.225	4.3
100	0.225	4.3
105	0.225	4.2
110	0.225	4.1
115	0.225	4.0
120	0.225	4.0

Apex House, Plymouth Grove:	Date:		
100 year + 45% CC	10/12/2025		
	Designed by:	Checked by:	Approved By:
	Adnan Yusuf		
Report Details:	Roscoe Engineering:		
Type: Connection Results Storm Phase: Phase			

Pipe (3)
Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 120 mins: Winter

Type : Pipe

Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.012	0.1
10	0.029	1.1
15	0.041	2.3
20	0.044	2.7
25	0.046	2.9
30	0.048	3.2
35	0.051	3.6
40	0.056	4.2
45	0.061	4.9
50	0.050	2.8
55	0.054	3.2
60	0.058	3.7
65	0.060	4.1
70	0.061	4.4
75	0.062	4.7
80	0.062	4.9
85	0.061	5.0
90	0.061	5.1
95	0.060	5.1
100	0.060	5.1
105	0.059	5.1
110	0.059	5.1
115	0.059	5.1
120	0.058	5.0
125	0.057	4.9
130	0.056	4.9
135	0.056	4.8
140	0.055	4.7
145	0.055	4.6
150	0.054	4.5
155	0.053	4.4
160	0.053	4.3
165	0.052	4.3
170	0.052	4.2
175	0.051	4.1
180	0.051	4.0
185	0.050	4.0
190	0.050	3.9
195	0.049	3.8
200	0.049	3.7
205	0.048	3.6
210	0.047	3.5
215	0.047	3.4
220	0.046	3.3
225	0.046	3.3
230	0.045	3.2
235	0.044	3.1
240	0.044	3.0

Pipe (4)

Type : Pipe

Critical by Return Period: FSR: 100 years: Increase Rainfall (%): +45: 15 mins: Summer

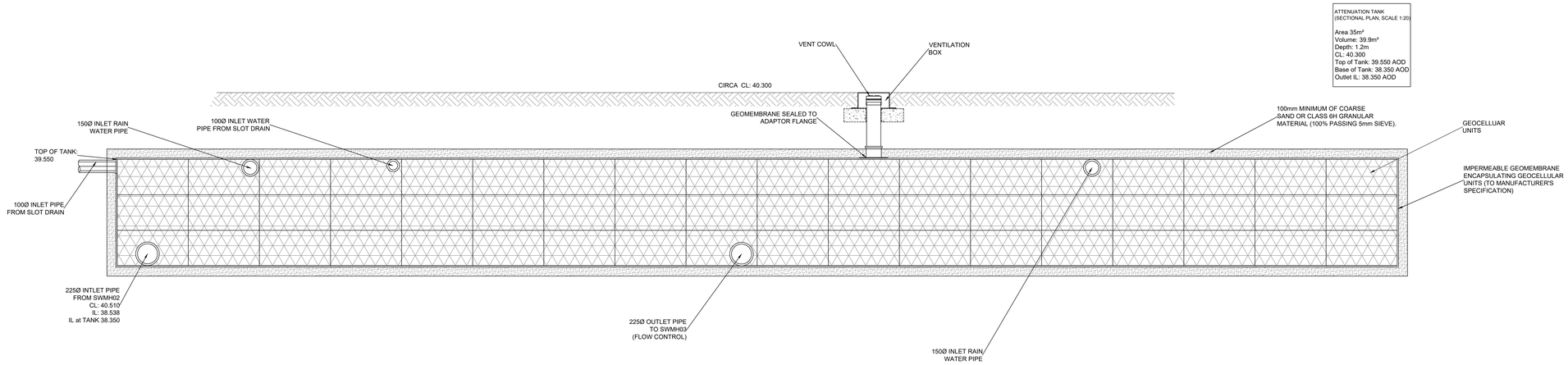
Tables

Time (mins)	Depth (m)	Flow (L/s)
0	0.000	0.0
5	0.048	5.1
10	0.076	14.3
15	0.060	7.5
20	0.053	4.5
25	0.052	4.2
30	0.051	4.1

Appendix C- Updated Flow Control Detail

ATTENUATION TANK DETAIL

1:20



DO NOT SCALE

NOTES:

1. For detailed drainage plan refer to Roscoe drawing 'P662-ROS-00-XX-DR-C-0501'.

REV	DATE	BY	DESCRIPTION	CHK	APP
C01	03.06.26	KT	ISSUED FOR CONSTRUCTION	JT	JC
P01	08.04.26	KT	FOR INFORMATION	JT	JC

DRAWING STATUS: CONSTRUCTION

Roscoe
CIVIL & STRUCTURAL ENGINEERS
INSPIRING BUILT ENVIRONMENTS

CLIENT: PLYMOUTH GROVE PROPERTY DEVELOPMENTS

ARCHITECT: DAY ARCHITECTURAL LTD

PROJECT: APEX HOUSE
PLYMOUTH GROVE

TITLE: ATTENUATION TANK 1:20

SCALE @ A3:	CHECKED:		APPROVED:
1:20	JT		JC
PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
25406	NP	KT	APRIL 2026

DRAWING No: P662-ROS-00-XX-DR-C-0520 REV: C01

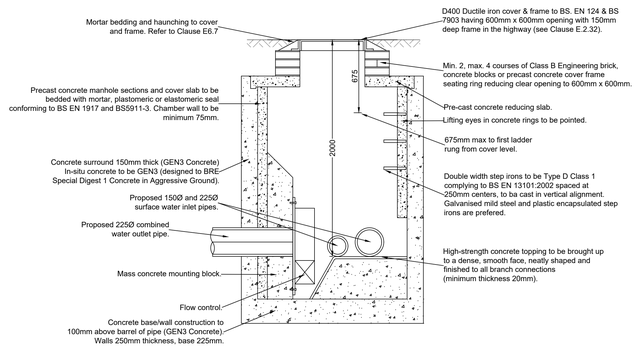
DO NOT SCALE

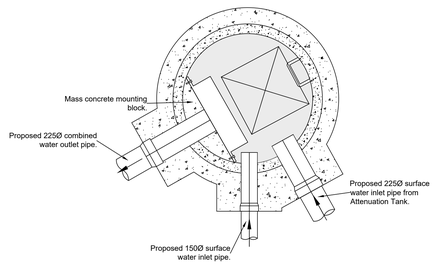
NOTES:

1. For detailed drainage plan refer to Roscoe drawing 'P662-ROS-00-XX-DR-C-0501'.

PROPOSED SWMH03(FC) ARRANGEMENT
(SECTIONAL PLAN, SCALE 1:20)

CL: 40.250
IL: 38.250
Design Head: 1.17m
Design Flow: 5l/s





REV	DATE	BY	DESCRIPTION	CHK	APP
C01	03.06.26	KT	ISSUED FOR CONSTRUCTION	JT	JC
P01	08.04.26	KT	FOR INFORMATION	JT	JC

DRAWING STATUS: CONSTRUCTION

Roscoe
CIVIL & STRUCTURAL ENGINEERS
INSPIRING BUILT ENVIRONMENTS

CLIENT: PLYMOUTH GROVE PROPERTY DEVELOPMENTS

ARCHITECT: DAY ARCHITECTURAL LTD

PROJECT: APEX HOUSE
PLYMOUTH GROVE

TITLE: PROPOSED SWMH03 1:20
(FLOW CONTROL)

SCALE @ A0:	CHECKED:		APPROVED:
1:20	JT		JC
PROJECT NUMBER:	DESIGNED:	DRAWN:	DATE:
25406	NP	KT	APRIL 2026

DRAWING No: P662-ROS-00-XX-DR-C-0521 REV: C01

Appendix D- Drainage CCTV Survey Results

SDS Ltd
DRAINAGE SPECIALIST

CCTV Inspection Report

View via iTouch Live

Your full report, including the video is only a click away download or view online now.

HG Construction, Dryde Street, M13 9AU

02/04/2026

Job Number: 5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU

Sewer Drainage Specialist Ltd

12 Urmston Lane, Stretford, Greater Manchester, M32 9BQ
Tel: 07799 803317

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Project Information

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**

Client Details:

UBU Environmental
Moss Lane, Worsley, M28 3LY

Site Details:

HG Construction, Dryde Street, M13 9AU

Contractor Details:

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Office Contact Number: 07799 803317

Purpose of Survey:

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**

Report Contents

Page 1	Cover Page	
Page 2	Job Overview	
Page 3	Contents Page	
Page 4	Site Drawings	
Page 5	Job Summary	
Page 6	Survey Run Sheet(Survey 1 - MH1 to MAIN)	View via iTouch Live
Page 9	Survey Run Sheet(Survey 2 - UU MH1 to UU MH2)	View via iTouch Live
Page 13	Defect Summary	
Page 15	Grade Defect Descriptions	

SDS Ltd
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Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Site Drawings/Photos

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**

This sketch is not to scale and does not represent the exact routing of the drainage system



Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Report Summary

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**

Job Information

Total Distance Surveyed: **84.75 meters**
Engineer: **Aden**
Number of Surveys: **2**
Number of Surveys grade 4 or above: **1**

Section 1 Overview (02/04/2026)

Manholes: **MH1 to MAIN**
Pipe Length: **7.26 metres**
Structural Grade: **5**
Service Grade: **3**
Material: **Vitrified clay**
Pipe Size: **225mm**
Use: **Surface water**

Section 2 Overview (02/04/2026)

Manholes: **UU MH1 to UU MH2**
Pipe Length: **77.49 metres**
Structural Grade: **0**
Service Grade: **3**
Material: **Brick**
Pipe Size: **600mm**
Use: **Combined**

SDS Ltd
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CCTV Inspection Report

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
Aden	**5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU**	**MH1 X**	**02/04/2026**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**3/5**	**4YX4UA9K4R**	**1**

Road **HG Construction, Dryde Street, M13 9AU**
Place
Location

Division
District
Location Details

Purpose
Duty **Surface water**
Catchment

Shape/Size **225mm**
Material **Vitrified clay**
Category

Start Node **MH1**
End Node **MAIN**
Total length **7.26 metres**

Scale **1:0.38**
Direction **Downstream**

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Start Node Ref:MH1 | I/L : metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH1	14576136	Comment / 0
0.00	WL	Water level 5% height/diameter	14576165	Comment / 0
0.00	DER	Settled deposits coarse 10% cross-sectional area loss	14576253	Service / 3
0.40	DER	Settled deposits coarse 10% cross-sectional area loss	14576255	Service / 3
1.36	JDL	Joint displaced large	14576257	Structural / 1
2.71	D	Deformed drain/sewer 50%	14576261	Structural / 5
2.71	B	Broken pipe from 9 to 12 o'clock	14576263	Structural / 4
3.55	OJL	Open joint large	14576266	Structural / 1
3.55	LR	Line of drain/sewer deviates right	14576268	Comment / 0
6.79	LR	Line of drain/sewer deviates right	14576270	Comment / 0
7.26	BRF	Finish node type, major connection without manhole, reference MAIN	14576272	Comment / 0

End Node Ref:MAIN | I/L : metres

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112 Urmston Lane
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Greater Manchester
M32 9BQ

CCTV Inspection Photos

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**



Start node type, manhole, reference MH1



Water level 5% height/diameter



Settled deposits coarse 10% cross-sectional area loss



Settled deposits coarse 10% cross-sectional area loss



Joint displaced large



Deformed drain/sewer 50%

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

CCTV Inspection Photos

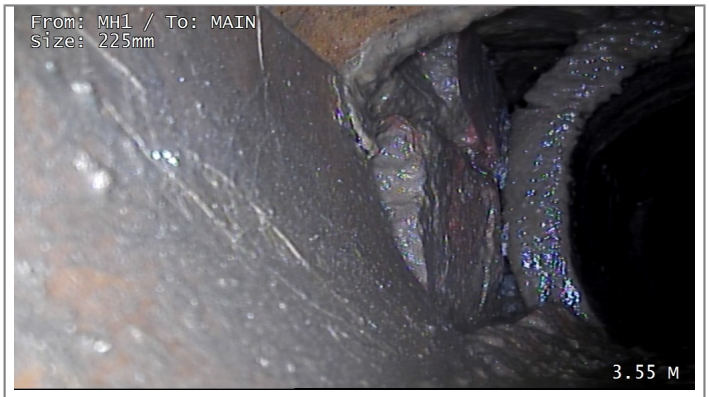
Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**



Broken pipe from 9 to 12 o'clock



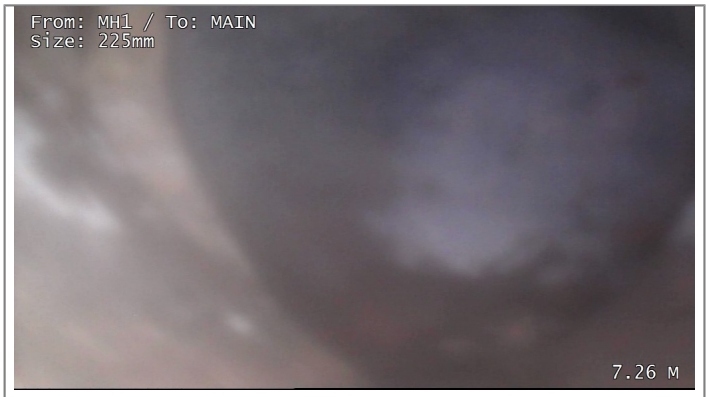
Open joint large



Line of drain/sewer deviates right



Line of drain/sewer deviates right



Finish node type, major connection without manhole, reference MAIN

SDS Ltd
DRAINAGE SPECIALIST

CCTV Inspection Report

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
Aden	**5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU**	**UU MH1 X**	**02/04/2026**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**3/0**	**4YX4UA9K4R**	**2**

Road **HG Construction, Dryde Street, M13 9AU**
Place
Location

Division
District
Location Details

Purpose
Duty **Combined**
Catchment

Shape/Size **600mm**
Material **Brick**
Category

Start Node **UU MH1**
End Node **UU MH2**
Total length **77.49 metres**

Scale **1:4.07**
Direction **Downstream**

View via iTouch Live | Download

Start Node Ref:UU MH1 | I/L : metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference UU MH1	14576621	Comment / 0
0.00	WL	Water level 5% height/diameter	14576624	Comment / 0
17.43	REM	BURIED CHAMBER	14576776	Comment / 0
24.07	JN	Junction at 2 o'clock, diameter 300mm	14576778	Comment / 0
25.11	DES	Settled deposits fine 10% cross-sectional area loss	14576780	Service / 3
29.14	DES (S01)	Settled deposits fine 10% cross-sectional area loss, Start	14576781	Service / 3
33.89	REM	BURIED CHAMBER	14576782	Comment / 0
44.35	REM	POTENTIAL LINE FROM MH1 WITHIN SITE	14576892	Comment / 0
44.49	JN	Junction at 9 o'clock, diameter 300mm x 450mm	14576783	Comment / 0
50.00	REM	BURIED CHAMBER	14576899	Comment / 0
57.93	CN	Connection other than junction at 9 o'clock, diameter 150mm	14576938	Comment / 0
67.58	REM	BURIED CHAMBER	14576947	Comment / 0
73.36	JN	Junction at 9 o'clock, diameter 400mm x 300mm	14576956	Comment / 0
77.49	DES (F01)	Settled deposits fine 10% cross-sectional area loss, Finished	14576961	Service / 3
77.49	MHF	Finish node type, manhole, reference UU MH2	14576962	Comment / 0

End Node Ref:UU MH2 | I/L : metres

SDS Ltd
DRAINAGE SPECIALIST

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

CCTV Inspection Photos

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**



Start node type, manhole, reference UU MH1



Water level 5% height/diameter



BURIED CHAMBER



Junction at 2 o'clock, diameter 300mm



Settled deposits fine 10% cross-sectional area loss



Settled deposits fine 10% cross-sectional area loss, Start

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

CCTV Inspection Photos

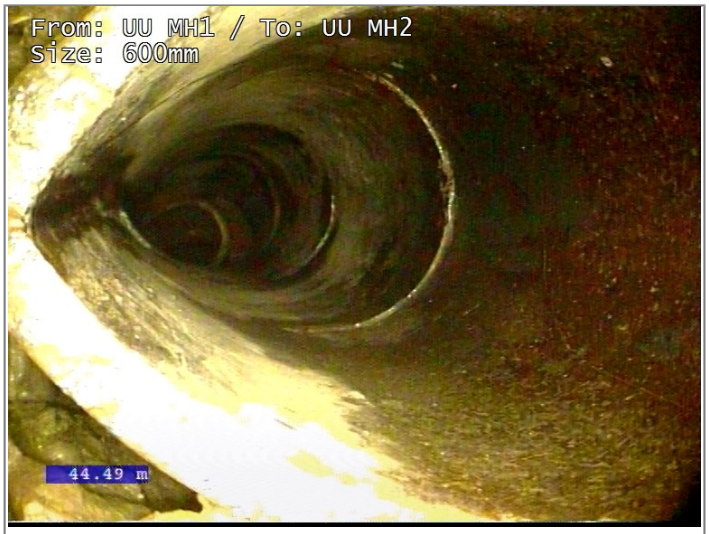
Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**



BURIED CHAMBER



POTENTIAL LINE FROM MH1 WITHIN SITE



Junction at 9 o'clock, diameter 300mm x 450mm



BURIED CHAMBER



Connection other than junction at 9 o'clock, diameter 150mm



BURIED CHAMBER

SDS Ltd
DRAINAGE SPECIALIST

CCTV Inspection Photos

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**



Junction at 9 o'clock, diameter 400mm x 300mm



Settled deposits fine 10% cross-sectional area loss, Finished



Finish node type, manhole, reference UU MH2

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Structural Defects (SRM 4)

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**

No.	PLR	Dir.	Use	Shape/Size	Date	Mat.	Total Length	Inspection Length	Cat.	Peak Score	Grade	Mean Score	Total Score
1	MH1 X	D	S	225	02/04/2026	Vitrified clay	7.26 metres	7.26		165	5	34.30	249
2	UU MH1 X	D	C	600	02/04/2026	Brick	77.49 metres	77.49		0	1	0	0

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Service Defects (SRM 4)

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**

No.	PLR	Dir.	Use	Shape/Size	Date	Mat.	Total Length	Inspection Length	Cat.	Peak Score	Grade	Mean Score	Total Score
1	MH1 X	D	S	225	02/04/2026	Vitrified clay	7.26 metres	7.26		2	3	0.55	4
2	UU MH1 X	D	C	600	02/04/2026	Brick	77.49 metres	77.49		2	3	0.08	6

SDS Ltd
DRAINAGE SPECIALIST

Defect Grade Descriptions

Sewer Drainage Specialist Ltd
112 Urmston Lane
Stretford
Greater Manchester
M32 9BQ

Job Number	Surveyed by (Operator)	Base Unit	Date
5402 HG Construction, Plymouth Grove / Dryden Street M13 9AU	**Aden**	**4YX4UA9K4R**	**02/04/2026**

1: Occurences without damage. For example, laterals, joints,etc.

NO DEFECTS WERE DETECTED.

2: Constructional deficiencies or occurences with insignificant influence to tightness, hydraulic or static pressure or pipe: Eg. wide joints, badly torched intakes, minor deformation of plastic pipes, minor erosions etc.

REHABILITATION CAN BE SCHEDULED LONG-TERM.

3: Constructional deficiencies diminishing static, hydraulic and tightness: Eg. untorched intakes, cracks, minor drainage obstructions such as calcite build ups, protruding laterals, minor damages to pipe wall, individual root penetrations, corroded pipe walls etc.

REHABILITATION IS NECESSARY MEDIUM-TERM WITHIN 3 TO 5 YEARS.

4: Constructional damages with insufficent static safety, hydraulic or tightness: Eg. axial/radial pipe bursts, pipe deformations, visually noticeable infiltration/exfiltration, cavities, in pipe-wall, severe protruding, laterals severe root penetrations, severe corrosion of pipe wall etc.

REHABILITATION PROCEDURE IS URGENT AND HAS TO BE COMPLETED WITHIN 1 TO 2 YEARS. NECESSITY FOR EMERGENCY OPERATIONS HAS TO BE EXAMINED.

5: Pipe is already or will shortly be impermeable: Eg. collapsed pipe, deeply rooted pipe or other drainage obstructions. Pipe loses water or danger of backwater in basements etc.

REHABILITATION IS URGENT AND SHORT-TERM. IN ORDER TO PREVENT FURTHER DAMAGE, NECESSARY TEMPORARY SPOT REPAIR HAS TO BE CONDUCTED ON EMERGENCY LEVEL.

Appendix E- Soakaway Test Results

Job Ref: 18-678-L1
Date: 14th April 2026

FAO Andrew Shaw
HG Construction Ltd
4 Hunting Gate
Hitchin
Hertfordshire
SG4 0TJ

By Email

BRE365 SOAKAWAY TESTING
PLYMOUTH GROVEE, MANCHESTER

1. BACKGROUND & OBJECTIVES

E3P have been instructed by HG Construction Ltd (the client) to complete a series of Soakaway Tests in accordance with the BRE365 methodology at a site located off Plymouth Grove, Manchester (M13 9AU); herein referred to as the site.

The objectives of the BRE365 Soakaway Tests is to assess thee suitability of the strata underlying the site for soakaway drainage.

The site was historically occupied by terraced housing (southern sector) and a number of other smaller unspecified structures. A former Dye Works occupied a small portion of the northernmost part of the site, with the footprint of the works continuing north of the site boundary.

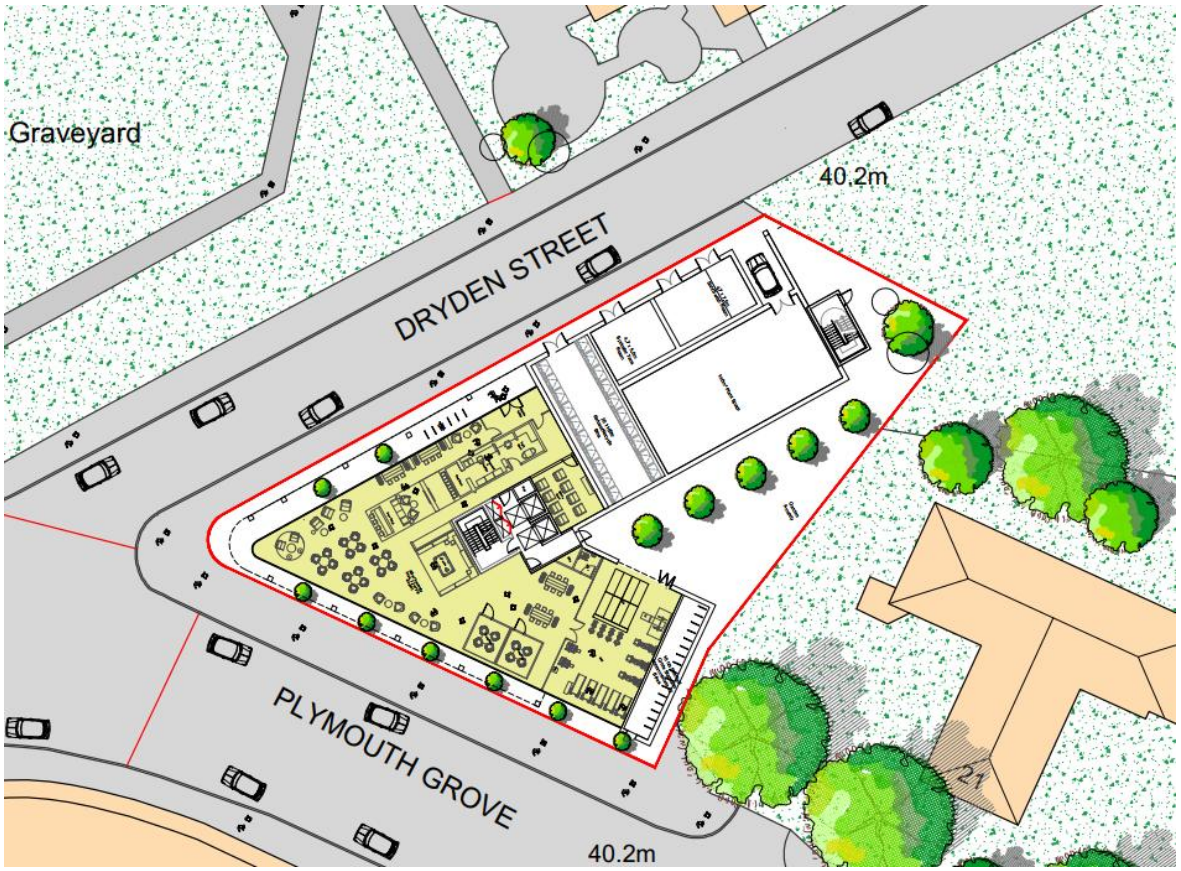
All structures appear to have been demolished by the year 2000.

E3P understands the client intend to redevelop the site with the construction of a high-rise seven storey residential development comprising two apartment blocks with associated gardens, estate roads and infrastructure.

The proposed development layout is presented in Figure 1 overleaf.

As part of the redevelopment, sustainable drainage is being considered, which requires BRE365 soakaway testing to be undertaken to determine suitability and assist with the detailed appraisal of the drainage design for the development.

Figure 1- Proposed Development Plan



2. GENERAL OVERVIEW

E3P attended site on Thursday 9th April 2026 to supervise the BRE365 soakaway tests.

The test locations were determined by the clients structural engineer and the depth of the testing pits specified by the client, based on the proposed level for soakaway drainage systems.

Two soakaway test pits (SA101 and SA102) were excavated to depth of between 1.35m and 1.40m bgl in accordance with anticipated drainage levels.

The location of the soakaway tests is presented in Figure 2 overleaf.

Based on the agreed depths, testing was carried out within the natural superficial cohesive soils underlying the Made Ground.

Figure 2 Location of Soakaway Tests



3. BRE365 SOAKAWAY ASSESSMENT

3.1. SUMMARY OF GROUND CONDITIONS

The ground conditions identified during the intrusive investigation have been set out in Table 1 below.

Table 1 Summary of Strata

LOCATION	DEPTH TO STRATUM (M BGL)	
	Made Ground	CLAY
SA101	GL – 0.40	0.40 – 1.40
SA102	GL – 0.35	0.35 – 1.35

Made Ground
The granular Made Ground was recorded to depth of between 0.35m and 0.40m bgl.

Superficial Deposits
The superficial soils comprised of Glacial Till from the base of the Made Ground to proven completion depths of between 1.35m bgl and 1.40m bgl.

The soils were generally described as firm becoming very stiff brown and mottled bluish grey slightly sandy gravelly CLAY with gravels of angular to subangular fine to coarse sandstone, mudstone, siltstone, quartzite and rare coal.

Bedrock
No bedrock was encountered during this phase of investigation.

Groundwater
No groundwater was encountered during the site investigation.

3.2. RESULTS

The BRE365 soakaway test results are presented in Table 2 below.

Table 2 Summary of Soakaway Test Results

LOCATION	DEPTH (m)	MATERIAL	TEST NO.	SOIL INFILTRATION RATE (m/s)	DESIGN SOIL INFILTRATION RATE (m/s)
SA101	1.40	CLAY	1	FAIL	N/A
SA102	1.20	CLAY	1	FAIL	N/A

During the BRE365 soakaway testing, the recorded water levels did not fall below 25% of the storage depth within the required timeframe (6 hours) at either location.

The failure to achieve the required drawdown indicates that the infiltration rate of the underlying soil is insufficient to allow effective drainage.

As a result, the soakaway is deemed to have failed in accordance with BRE365 criteria.

4. CONCLUSION

The site is underlain by >6m of stiff clay and the presence of significant depths of cohesive soils would restrict the movement of water. In such conditions, soakaways cannot function as intended, as they rely on the ability of the surrounding soil to absorb and disperse surface water efficiently.

In light of the ground conditions and testing results, sustainable drainage systems (SuDS) that rely on infiltration, such as soakaways, are not considered feasible for this site.

Alternative drainage solutions, such as attenuation with controlled discharge to a suitable outfall, should be considered to manage surface water in a safe and effective manner.

Yours sincerely,
For and on behalf of E3P Ltd

Written By
Alex Smith
Associate Director

Appendix F- UU Correspondence

Niro Perera

From: [redacted]
Sent:
To:
Subject:

Good morning Niro,

Thank you for your email, i can confirm that i have discharged the condition today for the drainage design, 5 l/s is acceptable to United Utilities.

Regards,



James Darlington
Developer Engineer
Developer Services & Metering
T: 07917096253
unitedutilities.com

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If you are happy with the service we have provided, please consider submitting a nomination in the following link – this only takes a moment and would be greatly appreciated: **unitedutilities.com/wow**

---------- Original Message ----------
From: Niro Perera[redacted]
Sent: 03/04/2026 16:08
To:[redacted]
Subject: Plymouth Grove Enquiry

Dear Sir/Madam,

I am currently working on the above project. Please find the project details below, along with our proposed drainage layout attached for your review.

Could you kindly confirm whether we can discharge into the combined water manhole indicated on the plan at a controlled discharge rate of 5 l/s?

Application Number: CDN/26/0195
Proposal: Discharge of Conditions 9 (Drainage), 10 (Ground Conditions), 13 (Piling), 19a (Noise Amenity Spaces), 33

(Accessible Rooms), and 44 (Boundary Treatment) of Planning Permission 138294/FO/2023.
Location: Land at Plymouth Grove, Manchester.

I look forward to your confirmation. Please let me know if you require any further information.

Regards
Niro Perera
Civil Engineer
E: [redacted]
M: +44 7799 469525

Civil & Structural Engineering | DfMA & Precast Concrete
Website | LinkedIn | Twitter

Registered in England. Registration No: 04377793.
Registered Address: Quayside House, Furnival Road, Sheffield, S4 7YA.
Legal: roscoe.co/disclaimer

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Niro Perera

From: [redacted]
Sent: 29 April 2026 10:48
To: Niro Perera
Subject: RE: Plymouth Grove Enquiry

Hi Niro,

Yes, a connection to the sewer via a junction connection is acceptable.

Regards,



James Darlington
Developer Engineer
Developer Services & Metering
T: 07917096253
unitedutilities.com

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If you are happy with the service we have provided, please consider submitting a nomination in the following link – this only takes a moment and would be greatly appreciated: **unitedutilities.com/wow**

---------- Original Message ----------
From: Niro Perera [redacted]
Sent: 27/04/2026 09:13
To: [redacted]
Subject: RE: Plymouth Grove Enquiry

Hi,

Just wondering if this query has been picked up by anyone?

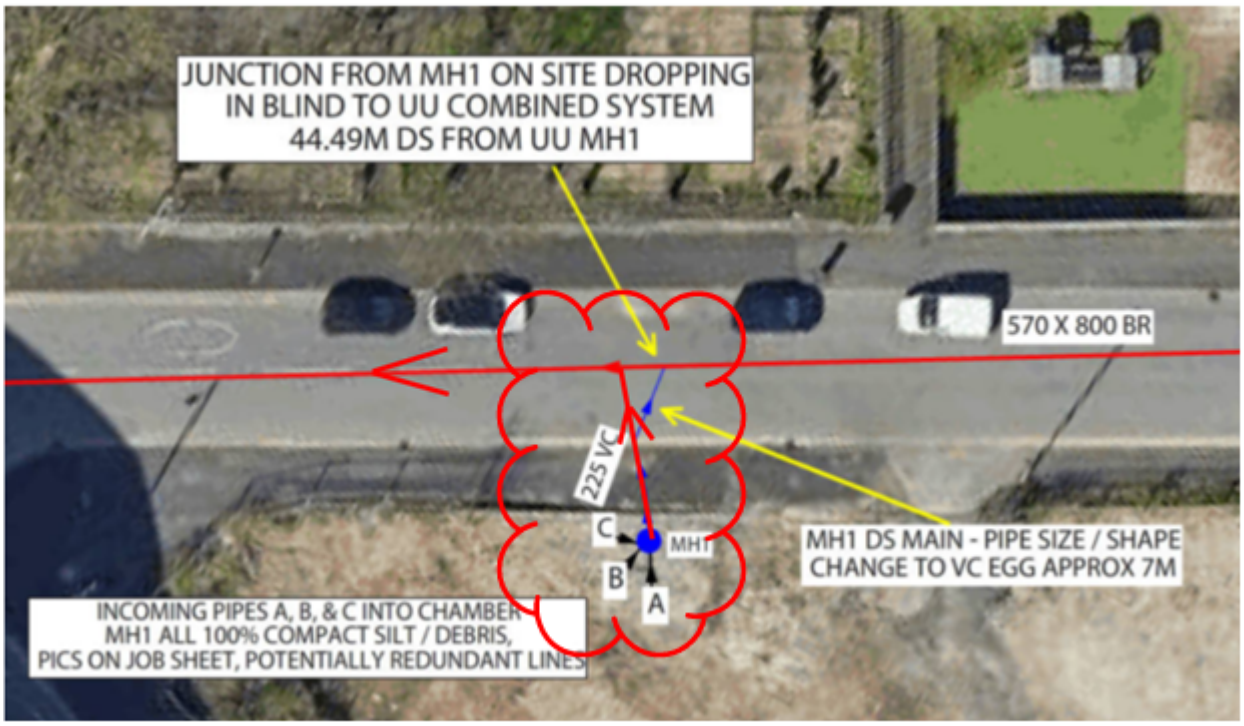
Regards
Niro Perera
Civil Engineer
E: niro.perera@roscoe.co
M: +44 7799 469525
Website | LinkedIn | Twitter

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Registered Address: Quayside House, Furnival Road, Sheffield, S4 7YA.
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From: Niro Perera
Sent: 20 April 2026 10:16
To: [redacted]
Subject: RE: Plymouth Grove Enquiry

Hi,

Sorry, just to clarify as shown on the drawing that was attached- the surface water pipe is to connect into the combined UU sewer- not into a manhole. Please confirm if this is still fine. Ive clouded the connection below.



Regards
Niro Perera
Civil Engineer
E: niro.perera@roscoe.co
M: +44 7799 469525
Website | LinkedIn | Twitter

Registered in England. Registration No: 04377793.
Registered Address: Quayside House, Furnival Road, Sheffield, S4 7YA.
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Appendix C- Updated Flow Control Detail

Appendix D- Drainage CCTV Survey Results

Appendix E- Soakaway Test Results

Appendix F- UU Correspondence